# Oracle Utilities
# Customer Care and Billing

Administration Guide

Release 2.5.0.0

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# Contents

# Chapter 1

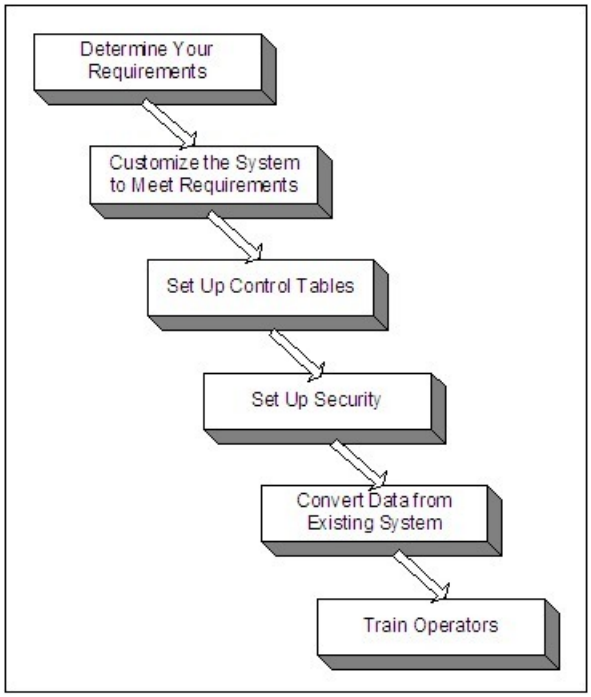
# Oracle Utilities Customer Care and Billing Administration

Introduction to Customer Care and Billing Administration.

## Preparing To Implement

Getting ready for production takes a good deal of planning. You have probably already begun analyzing your requirements according to your business and organizational needs. You will need to review your current environment and think about what changes could be made now and in the future. And while you might have decided to simply transfer your current processing structure to Oracle Utilities Customer Care and Billing, you may also have discovered that Oracle Utilities Customer Care and Billing can provide new options.

Because the system is sophisticated and customizable, there are a number of steps involved in rolling out and using your new system.




The topics in this section describe the order in which the control tables should be set up.

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# Control Table Setup Sequence

To implement the system, you must set up your organization's business rules in "control tables". Setting up these tables is time-consuming because we allow you to tailor many aspects of the system to meet your organization's requirements. We strongly recommend that you take the time to document how you plan to set up all of these tables before you use the following roadmap to enter the control data. Time spent understanding the interrelationships between this data will reap the rewards of a clean system that meets your current and long term needs.

While we describe the transactions and options in more detail in other sections of this manual, use the following chart (and the remaining sections of this chapter) as your roadmap. Here we list the order in which you perform tasks and the pages you'll use to set up your system. The order is important because some information must exist before other information can be defined (i.e., many dependencies exist).

**NOTE:**
**Auto setup.** The Auto Setup column in the following table contains suggestions to save you time. It also indicates if a control table contains information when the system is installed.

**You don't have to set up every control table.** You need only set up those control tables that govern functions that are applicable to your organization.

| Function | Menu | Auto Setup |
|---|---|---|
| Global Context | | |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that populates global context values. The global context is used by various zones in the system to display relevant data. This algorithm is plugged-in on the *installation record*. | |
| Accounting Environment | | |
| Country & State | Admin, Country | |
| Currency Codes | Admin, Currency Code | USD is automatically populated |
| Accounting Calendar | Admin, Accounting Calendar | |
| GL Division | Admin, General Ledger Division | |
| Security Environment | | |
| Application Service | Admin, Application Service | All base package transactions are automatically populated |
| Security Type | Admin, Security Type | |
| User Group | Admin, User Group<br>Note, you won't be able to set up users at this point | One user group, ALL-SERVICES, is automatically setup. It references all other application services and a single user called SYSUSER . |
| Language | Admin, Language | ENG is automatically populated |
| Display Profile | Admin, Display Profile | Two display profiles are automatically setup: NORTHAM displays currencies and dates in a classic American format; EURO displays information in a classic European format |

| | | |
|---|---|---|
| Data Access Role | Admin, Data Access Role | |
| Access Group | Admin, Access Group | |
| User | Admin, User | SYSUSER is automatically set up.<br>Note, you may be able to *import your users if your organization has already defined them using LDAP*. |
| Return to User Group | You must return to your user groups and define all of their users | |
| Customer Class Environment | | |
| Customer Class | Admin, Customer Class. At this point, you'll only be able to set up your customer class codes. You will return to these customer classes throughout the setup process to populate additional information. | |
| Financial Transaction Environment | | |
| Work Calendar | Admin, Work Calendar | |
| CIS Division | Admin, CIS Division | |
| Revenue Class | Admin Revenue Class | |
| Algorithm | Admin, Algorithm. You will need to set up the algorithm that constructs a distribution code's corresponding GL account when it is interfaced to the general ledger | |
| Distribution Code | Admin, Distribution Code | |
| Bank & Bank Accounts | Admin, Bank | |
| Billable Charge Template | Admin, Billable Charge Template. Note, if you want the system to default service quantities onto billable charges created using this template, you must setup the appropriate unit of measure code, time-of-use code and/or service quantity identifier. | |
| Billable Charge Upload Line Type | Admin, Billable Charge Line Type | |
| Algorithm | Admin, Algorithm. You will need to set up several algorithms. These algorithms: 1) retrieve a bill segment's consumption, 2) calculate a bill segment's bill lines, 3) construct a bill segment's financial transaction, 4) cancel previously estimated bill segments | |
| Bill Segment Type | Admin, Bill Segment Type | |
| Algorithm | Admin, Algorithm. You may want to set up an algorithm that formats the Bill Segment information that is displayed throughout the system for a specific Bill Segment Type. This algorithm is plugged-in on the Bill Segment Type. | |

| | |
|---|---|
| Algorithm | Admin, Algorithm. You will need to set up the algorithm that constructs a payment segment's financial transaction |
| Payment Segment Type | Admin, Payment Segment Type |
| Algorithm | Admin, Algorithm. You will need to set up the algorithm that constructs an adjustment's financial transaction |
| Algorithm | Admin, Algorithm. Several plug-in spots are available to perform additional logic when processing adjustments. For example, if you have the system calculate adjustments, you must set up an adjustment generation algorithm. Refer to *Adjustment Type* for other available plug-in spots that may be used by your implementation. |
| Algorithm | Admin, Algorithm. You may want to set up an algorithm that formats the Adjustment information that is displayed throughout the system for a specific Adjustment Type. This algorithm is plugged-in on the *Adjustment Type*. |
| Algorithm | Admin, Algorithm. You may want to set up an algorithm that formats the Adjustment information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Adjustment Type | Admin, Adjustment Type |
| Adjustment Type Profile | Admin, Adjustment Type Profile |
| Approval Profile | Admin, Approval Profile. Note, an approval profile references a To Do type and one or more To Do Roles; these must be set up before you can set up the approval profile. After the approval profile(s) are set up, they must be referenced on the adjustment types that they govern. |
| Cancel Reason - Bill | Admin, Bill Cancel Reason |
| Cancel Reason - Payment | Admin, Payment Cancel Reason |
| Cancel Reason - Adjustment | Admin, Adjustment Cancel Reason |
| Tender Type | Admin, Tender Type |
| Tender Source | Admin, Tender Source |
| A/P Request Type | Admin, A/P Request Type |
| Issuing Center | Admin, Issuing Center. You will need to set up issuing centers if your organization assigns document numbers to bills. |
| Installation | Admin, Installation Options - Framework and Admin, Installation Options. Many fields on the installation record impact the financial transaction environment. Refer to |

| | |
|---|---|
| | the description of the *Billing* and *Financial Transaction* tabs and the *Messages* tab in the Framework page for more information. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that distributes payments. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that handles overpayment situations. |
| Algorithm | Admin, Algorithm. You may need to set up an algorithm if specific customers can have individual bill due dates. |
| Algorithm | Admin, Algorithm. You may need to set up an algorithm if you want the system to delete bills that contain only information about historical payments. |
| Algorithm | Admin, Algorithm. You may need to set up an algorithm if you want the system to levy a non-sufficient funds charge if a payment is canceled due to non-sufficient funds. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that formats the bill information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that formats the payment information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that defaults the amount when a payment is manually added. This algorithm also calculates the amount of an automatic payment for a bill for an account with an active auto pay option. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. Refer to *Customer Class* for other available plug-in spots that may be used by your implementation to perform additional logic when processing payments and bills. |
| Return to Customer Class | Admin, Customer Class. You will need to plug-in the algorithms defined above on your customer classes. |
| Budget Environment | |
| Algorithm | Admin, Algorithm. You will need to set up several algorithms at this time: How To Calculated The Recommended Budget Amount, How To Periodically True Up A Customer's Budget Amount, The Circumstances When The System |

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|---|---|
| | Should Highlight A Customer As Having An Anomalous Budget. |
| Budget Plan | Admin, Budget Plan |
| Algorithm | Admin, Algorithm. Budget eligibility is set at the SA type level. You will need to set up an override budget eligibility algorithm if some service agreements for an SA type are not eligible for budget based on certain conditions. |
| Customer Environment | |
| Account Management Group | Admin, Account Management Group. Note, you will probably have to set up To Do Type and To Do Roles before you can setup account management groups. Refer to *Assigning A To Do Role* for more information on how account management groups may be used to define an entry's role. |
| Account Relationship | Admin, Account Relationship Type |
| Alert Type | Admin, Alert Type |
| Bill Message | Admin, Bill Message |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a bill in a PDF (for the purpose of online display), you will need to create an algorithm that formats the extract records that are sent to your bill image software. |
| Bill Route Type | Admin, Bill Route Type |
| Contract Quantity Type | Admin, Contract Quantity Type |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a letter in a PDF (for the purpose of online display), you will need to create an algorithm that formats the extract records that are sent to your letter image software. |
| Letter Template | Admin, Letter Template |
| Customer Contact Class | Admin, Customer Contact Class |
| Customer Contact Type | Admin, Customer Contact Type |
| Conservation Programs | Admin, Conservation Program. You will need to set up conservation programs if your organization provides rebates to customers based on eligibility and verification of newly purchased appliances and hardware that are rated to conserve the demand for energy. |
| Algorithm | Admin, Algorithm. You may need to set up the algorithms that determine if person ID's are in a predefined format. |
| Identifier Type | Admin, Identifier Type |

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|---|---|
| SICs | Admin, SIC Code |
| Tax Exempt Type | Admin, Tax Exempt Type |
| Algorithm | Admin, Algorithm. You may need to set up the algorithms that determine if phone numbers are in a predefined format. |
| Phone Type | Admin, Phone Type. |
| Person Relationship Type | Admin, Person Relationship Type. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that formats the person information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to validate a person's name. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You can override the system's standard account information string by setting up an algorithm that produces this string of information. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a letter in a PDF for the purpose of online display, you will need to create an algorithm that renders this PDF. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a bill in a PDF for the purpose of online display, you will need to create an algorithm that renders this PDF. This algorithm is plugged-in on the *installation record*. |
| Installation | Admin, Installation Options. Many fields on the installation record impact the Customer Environment. Refer to the description of the *Main*, *Person*, and *Account* tabs for more information. |
| Statements | |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a statement in a PDF (for the purpose of online display), you will need to create an algorithm that formats the extract records that are sent to your statement image software. |
| Statement Route Type | Admin, Statement Route Type |
| Statement Cycle | Admin, Statement Cycle |

| | |
|---|---|
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a statement in a PDF for the purpose of online display, you will need to create an algorithm that renders this PDF. This algorithm is plugged-in on the *installation record*. |
| Automatic Payment (EFT) Environment | |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to create automatic payments. This algorithm is plugged-in on the *installation record*. |
| Tender Source | Admin, Tender Source<br>Note: earlier, you created tender sources for the remittance processor and your cash drawers. At this point, you'll need to add at least one tender source for automatic payments. Why? Because automatic payments get linked to a tender control (which, in turn, gets linked to a tender source) when they are interfaced out of the system. |
| Algorithm | Admin, Algorithm. You will need to set up the appropriate automatic payment date calculation algorithm to populate the extract, GL interface and payment dates on automatic payments. |
| Auto Pay Route Type | Admin, Auto Pay Route Type |
| Tender Type | Admin, Tender Type<br>Note: earlier, you created tender types for things like cash, checks, etc. At this point, you'll need to add a tender type for each type of automatic payments (e.g., direct debt, credit card, etc.). |
| Work Calendar | Admin, Work Calendar. You need only set up additional work calendars if the auto pay sources (i.e., the financial institutions) have different working days than does your organization |
| Algorithm | Admin, Algorithm. If you need to validate the customer's bank account or credit card number, you will need to set up the appropriate validation algorithms. |
| Auto Pay Source Type | Admin, Auto Pay Source Type |
| Algorithm | Admin, Algorithm. You may need to set up an algorithm if your customers can define a maximum withdrawal limit on their autopay options. |
| Return to Customer Class | Admin, Customer Class. You should plug-in the Autopay Over Limit Algorithm in each appropriate customer class. |

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| Deposit Environment | |
| Algorithm | Admin, Algorithm. You will need to set up several algorithms at this time: The Definition Of A Good Customer, When To Refund A Deposit To A Customer, When To Recommend An Additional Deposit, How / When To Calculate Interest, How To Generate The Recommended Deposit Amount. |
| Deposit Class | Admin, Deposit Class |
| Non Cash Deposit Type | Admin, Non Cash Deposit Type |
| Field Work Environment - Phase 1 | |
| Representative | Admin, Representative |
| Operation Area | Admin, Operation Area |
| Field Service Class | Admin, Field Service Class |
| Algorithm | Admin, Algorithm. You will need to set up the algorithms that execute special functions (if any) when a field activity is completed |
| Field Activity Type & Steps | Admin, Field Activity Type |
| Field Activity & Field Order Cancellation Reason | Admin, Fieldwork Cancel Reason |
| Field Activity & Field Order Reschedule Reason | Admin, Fieldwork Reschedule Reason |
| Algorithm | Admin, Algorithm. If you need anything special to happen when a remark is associated with a field activity (e.g., generate a To Do), you will need to set up an algorithm to do whatever you need to do and associate it with the respective Field Activity Remark. |
| Field Activity Remarks | Admin, Field Activity Remark |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a field order in a PDF (for the purpose of online display), you will need to create an algorithm that formats the extract records that are sent to your field order image software. |
| Dispatch Group | Admin, Dispatch Group |
| Disconnect Location | Admin, Disconnect Location |
| Field Activity Type Profiles | Admin, Field Activity Type Profile |
| Algorithm | Field activities for Start / Stop will only be created if the SA Type linked to the service point has a SASP field work creation algorithm. Refer to the SA Type section below. |
| Algorithm | Admin, Algorithm. If you have software that's capable of reconstructing an image of a field order in a PDF for the purpose of online |

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| | display, you will need to create an algorithm that renders this PDF. This algorithm is plugged-in on the *installation record*. |
| Credit & Collections Environment (if you collect on overdue bills (as opposed to overdue debt), you will NOT set up these tables; refer to *Overdue Processing - Set Up Tasks* for the list of control tables required to collect on overdue bills) | |
| Algorithm | Admin, Algorithm. You may need to set up algorithms if you have non-standard collection events. |
| Collection Event Type | Admin, Collection Event Type |
| Algorithm | Admin, Algorithm. You may need to set up a collection process cancellation algorithm if your organization allows individual service agreements to be removed from a collection process if they are paid (rather than performing cancellation based on all SAs in a debt class). |
| Collection Process Template | Admin, Collection Process Template |
| Collection Class | Admin, Collection Class |
| Algorithm | Admin, Algorithm. You will need to set up several algorithms at this time: Collection process cancellation criteria, Severance process cancellation criteria, and Override arrears due to pay plans. |
| Debt Class | Admin, Debt Class |
| Write Off Debt Class | Admin, Write Off Debt Class |
| Algorithm | Admin, Algorithm. You will need to set up Collection Condition algorithms. |
| Collection Class Control | Admin, Collection Class Control |
| Algorithm | Admin, Algorithm. You may need to set up algorithms if you have non-standard severance events. |
| Severance Event Type | Admin, Severance Event Type |
| Algorithm | Admin, Algorithm. You may need to set up a severance process cancellation algorithm if your organization allows a severance process to be canceled when the related service agreement is paid (rather than performing cancellation based on all SAs in a debt class). |
| Severance Process Template | Admin, Severance Process Template |
| Algorithm | Admin, Algorithm. You will need to set up several algorithms at this time: How to refer debt to a collection agency, How to transfer debt to another active service agreement, How to write down small amounts of debt, and How to refund credit balances to a customer. |
| Algorithm | Admin, Algorithm. You may need to set up algorithms if you have non-standard write-off events. |

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|---|---|---|
| Write Off Event Type | Admin, Write Off Event Type (Note, you'll have to wait until you have defined your SA Types before you can set up the Write Off Events because SA Type is a necessary parameter to write off debt). | |
| Write Off Process Template | Admin, Write Off Process Template | |
| Write Off Control | Admin, Write Off Control | |
| Collection Agency | Admin, Collection Agency. Note, each collection agency references a person therefore you must set up a person for each agency before you can enter collection agency information. | |
| Algorithm | Admin, Algorithm. You may need to set up algorithms if you have special logic that should be executed when a pay plan is canceled. | |
| Pay Plan Type | Admin, Pay Plan Type | |
| Payment Method | Admin, Payment Method | |
| Third Party Payor | Admin, Third Party Payor. Note, you must create an account before you can create a third party payor. | |
| Installation | Admin, Installation. Several fields on the *installation record* impact the Credit & Collections Environment. | |
| Algorithm | Admin, Algorithm. You will need to setup an algorithm that's called when a user write-off debt real time. | |
| Return to Customer Class | Admin, Customer Class. You should plug-in the Autopay Over Limit Algorithm in each appropriate customer class. | |
| Services & Characteristics | | |
| Service Type | Admin, Service Type | |
| Algorithm | Admin, Algorithm. If you have ad hoc characteristic types, you may need to set up the algorithms that control how they are validated | |
| Foreign Key Reference | Admin, FK Reference. If you have foreign key characteristic types, you may need to set up foreign key references to control how the user selects the characteristic values (and how the foreign key values are validated). | All base package FK references are automatically populated |
| Characteristic Type & Values | Admin, Characteristic Type | |
| Device Testing Environment | | |
| Algorithm | Admin, Algorithm. If you need to validate a specific device test component result, you will need to set up the appropriate validation algorithms. | |

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| Device Test Component Type | Admin, Device Test Component Type |
| Algorithm | Admin, Algorithm. If you need the system to determine if a device test's results are considered "passing", you will need to set up an algorithm to perform this processing. |
| Device Test Type | Admin, Device Test Type |
| Algorithm | Admin, Algorithm. If you have the system select meters / items for testing, you will need to set up an algorithm to perform this processing. |
| Meter & Item Environment | |
| Meter Type | Admin, Meter Type [Note - you won't be able to define the collection of valid Equipment Types and Item Types until after you define the Item Types. You also will not be able to define the collection of Meter Configuration Types until after you define the Meter Configuration Types.] |
| Meter ID Type | Admin, Meter ID Type |
| Manufacturer / Model | Admin, Manufacturer |
| Unit of Measure | Admin, Unit of Measure |
| Time of Use | Admin, Time of Use |
| Meter Configuration Type | Admin, Meter Configuration Type |
| Retirement Reason | Admin, Retire Reason |
| Protocol | Admin, Protocol |
| Read Out Type | Admin, Read Out Type |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to generate estimated consumption. |
| Trend Area | Admin, Trend Area |
| Trend Class | Admin, Trend Class |
| High / Low | Admin, High Low Factor |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that calculates the high / low limits used on meter reads. This algorithm is plugged-in on the *installation record*. |
| Meter Location | Admin, Meter Location |
| Meter Read Instructions | Admin, Meter Read Instruction |
| Algorithm | Admin, Algorithm. If you need anything special to happen when a meter read with a given remark is uploaded (e.g., generate a field activity), you will need to set up an algorithm to do whatever you need to do and associate it with the respective Meter Read Remark. |
| Meter Reader Remarks | Admin, Meter Reader Remark |

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|---|---|
| Meter Read Source | Admin, Meter Read Source |
| Meter Read Warning | Admin, Meter Read Warning |
| Item Type | Admin, Item Type |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to format the standard meter info that appears throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to format the standard item info that appears throughout the system. This algorithm is plugged-in on the *installation record*. |
| Premise & Service Point Environment | |
| Premise Type | Admin, Premise Type |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm to format the standard premise info that appears throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You will need to set up an algorithm that formats the service point information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You may need to set up the algorithms that determine if geographic ID's are in a predefined format. |
| Geographic Type | Admin, Geographic Type |
| Service Point Type | Admin, SP Type. [Note - you won't be able to define the SP Type's SA Types until after you define the SA Types or the FA Type Profiles until after you define the Field Activity Type Profiles.] |
| Facility Level 1 to 2 | Admin, Facility Level 1 to 2 |
| Facility Level 2 to 3 | Admin, Facility Level 2 to 3 |
| Field Work Environment - Phase 2 | |
| Field Service Control | Admin, Field Service Control |
| Bill & Service Cycle Environment | |
| Bill Cycle, Bill Cycle Schedule | Admin, Bill Cycle |
| Bill Period, Bill Period Schedule | Admin, Bill Period |
| Route Type | Admin, Route Type |
| Service Cycle / Route | Admin, Service Cycle |
| Service Schedule | Admin, Service Schedule |
| Rate Environment | |

| | | |
|---|---|---|
| Frequency | Admin, Frequency | |
| Service Quantity Identifier | Admin, Service Quantity Identifier | |
| Algorithm Type | Admin, Algorithm Type. If you create new pre-processing calculation rules, you must set up an algorithm type for each such rule (the algorithm type defines the types of parameters that are passed to the calculation rule). | All base package algorithm types are automatically populated |
| Bill Factor | Main, Rates, Bill Factor | |
| Algorithm Type | Admin, Algorithm Type. If you create new Register Rules you must set up an algorithm type for each such rule (the algorithm type defines the types of parameters that are passed to the register rule). | All base package algorithm types are automatically populated |
| Rate | Main, Rates, Rate Schedule | |
| Calculation Group | Main, Rates, Calculation Group | |
| Algorithm | Admin, Algorithm. If you use algorithms to dynamically change step boundaries, calculate prices, or implement calculation rule eligibility rules, you must set up these algorithms. | |
| Calculation Rule | Main, Rates, Calculation Rule | |
| Bill Factor Value | Main, Rates, Bill Factor Values | |
| Bill Factor Interval Values | Main, Rates, BF Interval Values | |
| Item Type SQ Estimate | Admin, Item Type SQ Estimate | |
| Degree Day | Admin, Degree Days | |
| Late Payment Environment | | |
| Algorithm | Admin, Algorithm. You will need to set up the algorithm that determine if customers in a customer class are eligible for late payment charges | |
| Algorithm | Admin, Algorithm. You will need to set up the algorithm that levies late payment charges for customers in a customer class | |
| Return to Customer Class | Admin, Customer Class. You will need to plug-in the late payment charge algorithms set up above. | |
| SA Configuration | | |
| Algorithm | Admin, Algorithm. You will need to set up the algorithms that determine:<br>• How to calculate the late payment charge amount for service agreements of a given type<br>• Special criteria to be tested before a service agreement is severed. | |

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|---|---|
| | • How to create field activities for service agreements of a given type.<br>• Special processing that should take place prior to the completion of a bill that references service agreements of a given type.<br>• Special processing that should take place during completion of a bill that references service agreements of a given type.<br>• Special processing that should take place when service agreements of a given type are created.<br>• Special processing that should take place when a financial transaction is frozen for service agreements of a given type. |
| Algorithm | Admin, Algorithm. You may want to set up an algorithm that formats the SA information that is displayed throughout the system. This algorithm is plugged-in on the *installation record*. |
| Algorithm | Admin, Algorithm. You may want to set up an algorithm that formats the SA information that is displayed throughout the system for a specific SA Type. This algorithm is plugged-in on the *SA Type* . |
| Algorithm | Admin, Algorithm. If you want a Control Central alert to highlight when the current account has any stopped service agreement(s), you will need to set up the algorithm that does this. This algorithm is plugged-in on the *installation record*. |
| Service Agreement Type | Admin, SA Type |
| Terms and Conditions | Admin, Terms and Conditions |
| SA Type Start Options | Admin, SA Type Start Option |
| Update SP Types with initial SA types and with FA Type Profiles | Admin, SP Type |
| SA Relationships | |
| SA Relationship Type | Admin, SA Relationship Type |
| Service Provider | Admin, Service Provider. Note, you must create a person before you can create a service provider. If you have financial relationships (you bill for them or they bill for you), you must also create an account and a financial settlement service agreement before you can create the service provider. |
| SA Type / SA Relationship | Admin, SA Type SA Relationship Type |
| Notification and Workflow | |
| Workflow Event Type | Admin, Workflow Event Type |
| Workflow Process Template | Admin, Workflow Process Template |

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|---|---|
| Notification Upload Type | Admin, Notification Upload Type |
| Workflow Process Profile | Admin, Workflow Process Profile |
| Notification External (Sender) ID's | Admin, Notification External ID |
| Notification Download Type | Admin, Notification Download Type |
| Service Provider. | Admin, Service Provider. Note, you must create a person before you can create a service provider. |
| Notification Download Profile | Admin, Notification Download Profile |
| Algorithm | Admin, Algorithm. If you want a Control Central alert to highlight when the current account and/or premise has active workflow processes, you will need to set up the algorithm that does this. This algorithm is plugged-in on the *installation record*. |
| Sales and Marketing | |
| Order Hold Reason | Admin, Order Hold Reason |
| Order Cancel Reason | Admin, Order Cancel Reason |
| And more... | Refer to *Campaign and Package Setup Sequence* for additional setup requirements |
| Service Credit Membership | |
| Algorithm | Admin, Algorithm. You may need to set up algorithms for the service credit membership type and service credit event type to control behavior for the service credit membership and its events. |
| Credit Unit | Admin, Credit Unit. If your service credits record non-monetary units. |
| Service Credit Membership Type | Admin, Service Credit Membership Type |
| Service Credit Event Type | Admin, Service Credit Event Type |
| Membership Inactive Reasons | Admin, SC Membership Inactive Reason |
| Wrap Up | |
| Algorithm | Admin, Algorithm. You will need to set up the algorithms that determine:<br>#x2022; Special alerts on Control Central (assuming you have special alerts) |
| Installation Options | Admin, Installation Options - Framework and Admin, Installation Options. At this point, it's a good idea to double-check everything on the installation record. |
| Postal Default | Admin, Postal Code Default |

If you have cash drawers you will also need to set up the following information:

- Create a person / account to which you will link your over / under service agreement. Refer *How To Get An Unbalanced Tender Control In Balance (Fixing Over/Under)* for more information.

- Create a service agreement to which your over/under payments will be linked. This service agreement will reference your over / under SA type. Refer to *Over / Under Cash Drawer Segmentation* for more information.

If you upload payments from an external source (e.g., a remittance processor or lock box), you must set up the following information:

- Create a person and account to which the system will link payments with invalid account. Refer to *Phase 3 - Create Payment Events, Tenders, Payments and Payment Segments* for information about the process that books invalid payments to this account. Refer to *How To Transfer A Payment From One Account To Another* for how a user transfers the payment from the invalid account to the correct account (once known).
- Create a service agreement for this account. This service agreement will reference your payment suspense SA type. The system needs this service agreement so that it can distribute the invalid account's payment (and this is necessary so that cash will reflect the payment). Refer to *Payment Upload Error Segmentation* for more information.
- Update the tender source associated with the respective source of payments to indicate the service agreement created in the previous step should be used for payments with invalid accounts. Refer to *Setting Up Tender Sources* for more information.
- Because the payment upload process simply books payments that reference invalid accounts to the account associated with the suspense service agreement on the payment's tender source, this account should belong to a customer class with the appropriate payment distribution algorithms. This may entail creating a new customer class that will only be used on suspense accounts. This customer class would need the following algorithms:
- We'd recommend using a simple payment distribution algorithm like *PYDIST-PPRTY* (distribute payment based on SA type's payment priority).
- We'd recommend using an overpayment distribution algorithm like *OVRPY-PPRTY* (distribute overpayment to highest priority SA type).

The remaining sections describe additional control tables that must be set up for specific functional areas.

## Cross-Reference To The Remaining Chapters

The table in the previous section describes the order in which you should enter your control tables. These tables are described at length in the following chapters.

- Refer to *Defining General Options Addendum* and *Defining General Framework Options* for a discussion of the control tables associated with general functionality (e.g., country codes, state codes, etc.).
- Refer to *Defining Financial Transaction Options* for a discussion of the tables affecting your financial transactions (e.g., bill segment types, payment segment types, etc.)
- Refer to *Defining Customer Options* for a discussion of the control tables affecting persons, accounts and service agreements.
- Refer to *Defining Fieldwork Options* for a discussion of the control tables affecting fieldwork.
- Refer to *Defining Credit and Collections Options* for a discussion of the control tables affecting your collection activities.
- Refer to *Defining Meter and Item Options* for a discussion of the control tables affecting your meters and items.
- Refer to *Defining Premise and Service Point Options* for a discussion of the control tables affecting your premises and service points.
- Refer to *Defining Cycles and Schedules* for a discussion of the control tables affecting your cyclical processes.
- Refer to *Rates* for a discussion of the control tables affecting your rates.
- Refer to *Defining SA Type Options* for a discussion of the control tables affecting your service agreement types.
- Refer to *Defining Background Process* for a discussion of the control tables affecting your background processes.

- Refer to *Defining Algorithms* for a discussion of the control tables affecting the algorithms referenced on many control tables.
- Refer to *Defining SA Relationships* for a discussion of the control tables affecting the relationships between service providers.
- Refer to *Defining Workflow and Notification Options* for a discussion of the control tables affecting the processing of notifications to and from service providers.
- Refer to *Defining Interval Billing Options* for a discussion of the control tables affecting the interval billing options for your customers.
- Refer to *Statements* for a discussion of the tables affecting the statement setup options for your customers.
- Refer to *Defining Service Credit Options* for a discussion of the tables affecting the service credit membership setup options for your customers.

## Open-Item Accounting Table Setup Sequence

Open-item accounting tables need only be set up if your organization practices *Open Item Accounting*. Refer to *Setting Up The System To Enable Open Item Accounting* for a description of the tables that must be set up to enable this functionality.

## Fund Accounting Table Setup Sequence

Fund accounting tables need only be set up if your organization practices *Fund Accounting*. Refer to *Setting Up The System To Enable Fund Accounting* for a description of the tables that must be set up to enable this functionality.

## Payment Event Distribution Table Setup Sequence

Payment event distribution tables need only be set up if your organization opted to use the distribution rules method to create payment events. Refer to *Setting Up The System To Use Distribution Rules* for a description of the tables that must be set up to enable this functionality.

## Loans Table Setup Sequence

Loans need only be set up if your organization offers *loans* to your customers. Refer to *Setting Up The System To Enable Loans* for a description of the tables that must be set up to enable this functionality.

## Quotes Table Setup Sequence

Quotes need only be set up if your organization sends quotes to customers or prospects. Refer to *Defining Quotation Options* for a description of the tables that must be set up to enable this functionality.

## Non-billed Budget Table Setup Sequence

*Non-billed budgets* need only be set up if your organization allows your customers to pay set amounts at specified intervals (e.g. every two weeks). Refer to *Setting Up The System To Enable Non-billed Budgets* for a description of the tables that must be set up to enable this functionality.

## Appointments Table Setup Sequence

*Appointments* need only be set up if your organization allows your customers to make appointments for field activities. Refer to *Enabling Appointments* for a description of the tables that must be set up to enable this functionality.

## Scripting Table Setup Sequence

Scripts need only be set up if your organization opts to create *scripts* to step your users through business processes. Refer to *Defining Script Options* for information about scripting and the tables that must be set up to enable this functionality.

## Reports Setup Sequence

In order to use the reporting tool, you will need to set up reporting options. Refer to *Configuring The System To Enable Reports* for more information.

## XML Application Integration Setup Sequence

In order to use the XAI tool for sending information between third parties, you will need to set up XAI control tables. Refer to *XML Application Integration* for more information.

## Case Management Setup Sequence

Case management options need only be set up if your organization uses cases to manage issues. Refer to *Setting Up Case Types* for more information.

## Workforce Management Setup Sequence

Workforce management options need only be set up if your organization interfaces with an external workforce management system. Refer to *Setting Up The System To Enable FA Integration* for more information.

## Umbrella Agreement Management Setup Sequence

Umbrella agreement management options need only be set up if your organization uses umbrella agreements to manage contracts. Refer to the integration documentation for more information.

## Outage Management Setup Sequence

Outage management options need only be set up if your organization interfaces with Oracle Utilities Network Management System. Refer to the integration documentation for more information.

## Prepaid Metering Setup Sequence

Prepaid metering options need only be set up if your organization offers prepaid metering service to your customers. Refer to *Defining Prepaid Metering Options* for more information.

## Batch Scheduler Setup Sequence

Batch scheduler options need only be set up if your organization uses the batch scheduling functionality provided by the system rather than a third party batch scheduling system. Refer to *Setting Up The Batch Scheduler* for more information.

## Zone Set Up

Most zones are delivered with the base-package and do not require any configuration. However, some zones are only available if configured by your implementation. Refer to *Configuring Zones* for more information.

## To Do Options Setup

Refer to *Setting Up To Do Options* for more information on how to configure the system to match your organization's To Do management needs.

# Defining General Options

This section describes control tables that are used throughout Oracle Utilities Customer Care and Billing.

**Contents**

# Defining Installation Options

The topics in this section describe the various installation options that control various aspects of the system that are specific to the Oracle Utilities Customer Care and Billing product.

**FASTPATH:**
Refer to *Installation Options - Framework* for options that are common to products on the same framework.

**Contents**



# Installation Options - Main

Select **Admin** > **Installation Options** and use the **Main** page to define system-wide installation options.

**Description of Page**

Use **Quick Add Tender Type** to define the tender type *defaulted on payments added using the Payment Quick Add transaction*.

Use **Starting Balance Tender Type** to define the tender type of the starting balance recorded on your tender controls (this will almost always be the tender type associated with "cash"). This value is used during tender control balancing as a separate balance is required for each tender type in order to balance a tender control. Refer to *The Lifecycle Of A Tender Control* for more information.

**FASTPATH:**
For more information, refer to *Setting Up Tender Types*.

Turn on the **Create Field Activity Start Stop** if field activities should be created when a start or stop is recorded (as opposed to shortly before the start / stop date). You might want to turn this switch off if it's possible for the state of the

service point (or its meter / item) to change between the time service is requested and the actual service date. Why? Because the state of the service point and the state of its meter / item affects the type of field activity that is created. For example, if a customer wants to start service and there is no meter at the metered service point, an "install meter" field activity is created. However, if by the time the install date comes around, a meter has been installed by some other means; this field activity is inappropriate. This is why you might want to setup the system to wait until shortly before the service date to create the field activity (i.e., it reduces the likelihood that an inappropriate field activity is created). Refer to *Starting Service and Field Activities* for more information.

**NOTE:**
**Appointments require field activities.** If you don't create field activities when service is started / stopped, you cannot use the appointment scheduling functions. Refer to *The Big Picture of Appointments* for more information.

If you use orders to create new customers, define the **Campaign** that should be defaulted on orders created when the order transaction is opened for a new customer. Refer to *Real time Marketing of Services to a New Customer* for more information.

Use the **Premise Geo Type** to indicate whether at least one geographic identifier (e.g., GPS coordinate) is Required or Optional on a premise. Refer to *Defining Geographic Types* for more information.

The **Alternate Representation** flag should be set to None unless your organization uses multiple character sets for a person's main name and / or a premise's address. Alternate representations are typically only used in countries where multiple character sets are used. For example,

- In Hong Kong, a person's name may be written in both Chinese characters and in English.
- In Japan, a person's name may be written in both Kanji and Katakana.

In both of the above situations, users need to be able to use both representations to find a customer or a premise.

**NOTE:**
**Spouses.** If your organization doesn't use multiple character sets, you might want to consider using this functionality for spousal relationships. For example, rather than setup a person for each party in a spousal relationship, you could simply define one party using the person's main name and the spouse using the alternate name. While this is a bit of a "hack", it might be sufficient for your implementation as it will be much easier for an end user to use.

**Alerts that should appear adjacent to a person's name or address.** If your organization doesn't use multiple character sets, you might want to consider using this functionality to implement critical person or premise alerts. For example, if you have a customer who's supported by a specific account representative, you could enter the account rep's name as the person's alternate name. If you do this, the account rep's name would appear in parenthesis following the customer's name. In addition, you can search for the customers supported by the account rep on Control Central by entering the account rep's name. This is a bit of a "hack", but it might prove useful for a variety of functions.

If your organization uses alternate representations of person name or address, set this flag to one of the following values:

- Use a value of Address if you only use alternate representations for premise addresses.
- Use a value of Name if you only use alternate representations for a person's primary names.
- Use a value of Name & Address if you use alternate representations for both premise addresses and person names.

The following points describe the ramifications of this flag in the system:

- If you support alternate representations of a person's primary name,
- The name grid on *Person - Main* allows you to specify an Alternate name for the person.
- If you use the base package *name formatting algorithm*, a person's name will be shown throughout most of the system in the format AAA (BBB), where AAA is the person's primary name and BBB is the person's alternate name. Note, this format does not apply to names that appear in search results (i.e., the alternate name is not concatenated to the main name in search results; however you can search for information using the alternate name).

- Most of the system's person name-oriented searches will allow users to use both a person's primary and alternate names to search for information.
- If you support alternate representations of a premise's address,
- A new tab is available on the *Premise* page that allows a user to define an alternate address for a premise.
- If you use the base package *address formatting algorithm*, a premise's address will be shown throughout most of the system in the format AAA (BBB), where AAA is the premise's primary address and BBB is the premise's alternate address.
- Most of the system's premise-oriented searches will allow users to use both a premise's primary and alternate addresses to search for information.

If the CTI Integration flag has been enabled, set the **CTI Integration** flag to Yes if your organization integrates with an external computer telephony integration (CTI) system that supports a "get next caller in the queue" function. If this flag is set to Yes, then the **Next Call** button will appear in the application toolbar allowing customer service representatives to request the next customer waiting in the queue to speak to a CSR.

**WARNING:**
In order to improve response times, installation options are cached the first time they are used after a web server is started. If you change this field's option and you don't want to wait for the cache to rebuild, you must clear the cached information so it will be immediately rebuilt using current information. Refer to *Caching Overview***for information** on how to clear the system login cache (this is the cache in which installation options are stored).

## Installation Options - Person

Select **Admin** > **Installation Options** and use the **Person** page to define person-specific installation options.

**Description of Page**

Use the **Person ID Usage** to indicate whether or not at least one form of identification is Required or Optional when a new person is added.

Each form of identification has an identifier type. For persons that are humans (as defined by the person type), the system defaults the identifier type defined in **Identifier Type (Person)**. For persons that are businesses (as defined by the person type), the system defaults the identifier type defined in **Identifier Type (Business)**.

## Installation Options - Account

Select **Admin** > **Installation Options** and use the **Account** page to define account-specific installation options.

**Description of Page**

When a new account is added, the system requires it have a customer class. If the main customer linked to the account is a human (as defined by the customer's person type), the system defaults the customer class defined in **Customer Class (Person)**. For persons that are businesses (as defined by the person type), the system defaults the customer class defined in **Customer Class (Business)**. For more information, refer to *Setting Up Customer Classes*.

In addition to requiring a customer class when a new customer is added, the system also requires a "main customer" (i.e., a reference to a person who is identified as the main customer for the account). Enter the default **Account Relationship Type Code** to be used to define the main customer relationship. For more information, refer to *Setting Up Account Relationship Codes*.

Enter the default **Bill Route Type** to be used to define how bills should be routed to a customer. For more information, refer to *Setting Up Bill Route Types*.

Enter the default **Quote Route Type** to be used to define how quotes should be routed to a customer. For more information, refer to *Setting Up Quote Route Types* .

If the number of pending start and pending stop service agreements exceeds the **Start Stop Detail Threshold** for an account, it is considered a large account for start stop purposes. Refer to *Start/Stop Maintenance* for more information.

# Installation Options - Billing

Select **Admin** > **Installation Options** and use the **Billing** page to define billing-specific installation options.

**Description of Page**

The **Bill Segment Freeze Option** controls when a service agreement's balance and the general ledger is affected by bill segments and certain types of adjustments. Refer to *Preventing SA Balances And The GL From Being Impacted Until Bill Completion* to understand the significance of this option.

The **Accounting Date Freeze Option** controls how the accounting date defined on financial transactions is populated. Refer to *Forcing The Freeze Date To Be Used As The Accounting Date* to understand the significance of this option.

Define the **Rollover Threshold Factor** used by billing to determine if a register's consumption is sensible. This value is used as follows:

- Whenever billing calculates a meter's register's consumption, it compares it to a value equal to X times the register's maximum capacity (where X is the Rollover Threshold Factor).
- If consumption exceeds this value, a bill segment error is generated. If this consumptive value is correct, a user will need to override the consumption value billed on the bill segment (billing will never use such a read).

Define the **Minimum Amount for Final Bill**. If a final bill is less than this amount, the bill is still produced; it's just not printed.

Typically, the system sets a bill's Bill Date equal to the date on which it is completed. If you want to be able to specify a bill's Bill Date when you complete a bill, turn on **User Can Override Bill Date**. You would only want to override the bill date if you are setting up sample bills from historical period whose bill date needs to reflect the respective historical period.

Turn on **Use High Low Failures on Bill** if the system should mark meter reads that fail high / low checks as billable. Turn off this switch if such reads should not be used by billing. Users may override this default value on a specific read. Refer to *Review High / Low* for more information.

**Base Time** is used by interval billing algorithms to determine the effective start and end times for a given period. The **Start Day Option** further defines how to use the base time, indicating whether the base time is for the Current Day or for the Previous Day . Refer to *Start and End Times for Billing* for more information.

Turn on **Use Alternative Bill ID** if your implementation uses assigned document numbers or sequential bill numbers. In the **Alternative Bill ID Option** list:

- Select **Document Numbers** if you require a system-assigned document number for each bill in addition to the Bill Id, which is a system-assigned random number used as the bill's primary identifier. Refer to *Document* Numbers for more information.
- Select **Sequential Bill Numbers** if you require a system-assigned unique sequential number for each bill in addition to the Bill Id, which is a system-assigned random number used as the bill's primary identifier. Refer to *Sequential Bill Numbers* for more information

**NOTE:**
**Document Number Algorithms.** In addition to turning on **Use Alternative Bill ID** and specifying the **Alternative Bill ID Option**, the *Document Number* and *Document Number Details* algorithms must be enabled on the *Installation* record. These algorithms contain the logic used by the system to assign a document number to a bill.

The **Bill Correction** option lets you control whether your implementation uses Credit Notes or Correction Notes. Select the **Credit Note** option if you require bill segment cancellation details to be presented to the customer on a separate bill (referred to as a credit note). Refer to *Credit Notes* for more information. Select the **Correction Note** option if you require bill segment cancellation details and bill segment rebill details to be presented to the customer on a separate bill (referred to as a correction note). Refer to *Correction Notes* for more information.

**NOTE:**
**Credit Notes or Correction Notes.** The Bill Correction option on the Installation table controls whether Credit Notes or Correction Notes are allowed. If your implementation uses Correction Notes, the override label on the following should be customized accordingly:

Lookup value CRNT on the customizable lookup field TXN_FLTR_TYPE_FLG (this lookup value is used on the Match Event Page and Account Bill History transactions)

Lookup value CR on the customizable lookup field PYCAN_SYS_DFLT_FLG (this lookup value is used on the Pay Cancel Reason transaction)

Metadata field CR_NOTE_FR_BILL_ID (this field is used on the Bill Search Page)

The **Autopay Creation Option** controls when automatic payments are created, distributed, and frozen. This option allows you to control when automatic payments will affect customer's balances and when their financial impact affects the general ledger. Refer to *How And When Are Automatic Payments Created* to understand the significance of this option.

## Installation Options - C&C

Select **Admin** > **Installation Options** and use the **C&C** page to define credit and collections-specific installation options.

**Description of Page**

When you look at an account or service agreement's debt, the system shows the respective age of each piece of outstanding debt. The **Oldest Bucket Age (Days)** defines the debt age after which the system groups all outstanding debt together. For example, if this field is 180 :

- The exact age of each element of debt that is less than 180 days old would be shown as a separate line item in the aged debt information.
- All debt older than 180 days would be amalgamated into a single "bucket".

**Oldest Bucket Age (Days)** also has another use - it defines the age of financial transactions that are considered by the background process that marks old debt as "redundant". This batch process is referred to by the batch code of REDSAAMT . Please refer to *Process What's Ready Background Processes* for more information about this process.

**WARNING:**
If you change the value of **Oldest Bucket Age (Days)**after debt has been marked as "redundant" by REDSAAMT , the system will NOT re-age the old debt (i.e., once a financial transaction has been marked as "redundant", it is "redundant" forever).

Enter what you consider to be an excellent credit rating in **Beginning Credit Rating**. Collection events can cause an account's credit rating to decrease. When an account's credit rating falls below a certain level, different collection processes may ensue.

Use **Beginning Cash-Only Score** to define the cash-only score for accounts with a perfect payment history (i.e., one without non-sufficient funds). When you cancel a payment tender and use a cancellation reason marked as NSF, the system will cause the account's cash-only score to increase by the value on the payment cancellation reason.

Use **Credit Rating Threshold** to define when an account's credit rating becomes risky. When an account's credit rating falls beneath the Credit Rating Threshold, the system will:

- Assuming you've enabled the Control Central alert algorithm, *C1-CRRT-ACCT*, an alert displays when an account's credit rating falls below the credit rating threshold on the CIS installation table. This algorithm is plugged-in on the *installation record*.
- Subject the account's debt to different collection criteria. For more information, refer to *Designing Your Collection Class Control Overrides*.

Use **Cash-Only Threshold** to define the number of cash-only points a customer must have before the system warns the CSR accepting payments that the account is cash-only.

# Installation Options - Financial Transaction

Select **Admin** > **Installation Options** and use the **Financial Transaction** page to define financial transaction installation options.

**Description of Page**

Use **G/L Batch Code** to define the batch process that is used to interface your financial transactions to your general ledger. The process is snapped on FT download records by the GLS background process.

Use **A/P Batch Code** to define the batch process that is used to interface your check requests (initiated with adjustments with an adjustment type that reference an A/P request type) to you accounts payable system.

Use **Fund Accounting** to indicate if *fund accounting* is Practiced or Not Practiced at your organization.

Use **Alternate Currency** to indicate if your organization accepts customer payments in currencies other than the account's currency.

**FASTPATH:**
Refer to *Alternate Currency Payments* to understand the significance of this option.

# Installation Options - Algorithms

Select **Admin** > **Installation Options** and use the **Algorithms** page to define specific system events.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Account Information | Optional | We use the term "Account information" to describe the basic information that appears throughout the system to describe an account. The data that appears in "account information" is constructed using this algorithm.<br>Plug an algorithm into this spot to override the system default "Account information".<br>Click *here* to see the algorithm types available for this system event. |
| Adjustment Information | Optional | We use the term "Adjustment information" to describe the basic information that appears throughout the system to describe an adjustment. The data that appears in "Adjustment information" is constructed using this algorithm. |

| | | |
|---|---|---|
| | | Plug an algorithm into this spot to override the system default "Adjustment information".<br><br>Note: This algorithm may be further overridden by an "Adjustment information" plug-in on the Adjustment Type. Refer to *Adjustment Type* for how algorithms of this type are used.<br><br>Click *here* to see the algorithm types available for this system event. |
| Appointment Information | Required | We use the term "Appointment information" to describe the basic information that appears throughout the system to describe an *appointment*. The data that appears in "appointment information" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Automatic Payment Creation | Required if you allow customers to *pay automatically* | This algorithm is executed to create automatic payments whenever the system creates automatic payments. Refer to *How And When Are Automatic Payments Created* for the details.<br><br>Click *here* to see the algorithm types available for this system event. |
| Bill Information | Required | We use the term "Bill information" to describe the basic information that appears throughout the system to describe a bill. The data that appears in "bill information" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Bill Segment Information | Optional | We use the term "Bill segment information" to describe the basic information that appears throughout the system to describe a bill segment. The data that appears in "bill segment information" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Case Information | Optional | We use the term "Case information" to describe the basic information that appears throughout the system to describe a case. The data that appears in "case information" is constructed using this algorithm.<br><br>Plug an algorithm into this spot to override the system default "Case information".<br><br>Note: This algorithm may be further overridden by a "Case information" plug-in on the Case Type. Refer to *Case Type* for how algorithms of this type are used. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Collection Agency Referral Information | Optional | We use the term "Collection Agency Referral information" to describe the basic information that appears throughout the system to describe a collection agency referral.<br><br>Plug an algorithm into this spot to override the system default "collection agency referral information".<br><br>Click *here* to see the algorithm types available for this system event. |
| Collection Process Additional Information | Optional | This algorithm displays additional information related to a collection process in a special field on the *collection process* main page.<br><br>Click *here* to see the algorithm types available for this system event. |
| Control Central Alert | Optional | There are two types of alerts that appear in the *Alert Zone* and on *Payment Event - Main*: 1) hard-coded system alerts and 2) alerts constructed by plug-in algorithms. You cannot change the hard-coded alerts (see the *Alert Zone* for the complete list). However, by plugging in this type of algorithm you can introduce additional alerts.<br><br>An error displays if more than 60 alerts are generated for an account by plug-in algorithms.<br><br>Click *here* to see the algorithm types available for this system event. |
| Credit Rating "Created By" Information | Required | The data that appears in the credit rating "created by" information is constructed using this algorithm.<br><br>Refer to *Account - C&C* for more information about the credit rating.<br><br>Click *here* to see the algorithm types available for this system event. |
| Credit Rating History Information | Optional | We use the term Credit Rating History information to describe the basic information that appears throughout the system to describe a *credit rating history* entry.<br><br>Plug an algorithm into this spot to override the system default "credit rating history information".<br><br>Click *here* to see the algorithm types available for this system event. |
| Document Number | Optional | If document numbers have been enabled on the installation record, this algorithm type assigns a document number to a bill or payment event. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Document Number Details | Optional | If document numbers have been enabled on the installation record, this algorithm type is responsible for returning the details used to construct the document number.<br><br>Click *here* to see the algorithm types available for this system event. |
| Determine Open Item Bill Amounts | Required if you use overdue functionality to *collect on bills* | This algorithm is responsible for determining the unpaid amount of an open-item bill. It can also be used to return the unpaid amount for a specific SA on a bill.<br><br>Click *here* to see the algorithm types available for this system event. |
| FA Additional Information | Optional | This algorithm displays additional information related to a field activity in a special field called Additional Info on the *field activity* main page.<br><br>For example, contact information linked to the field activity's field order may be displayed.<br><br>Click *here* to see the algorithm types available for this system event. |
| FA Information | Required | We use the term FA information to describe the basic information that appears throughout the system to describe a *field activity*. The data that appears in "FA information" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Item Information | Required if you have items | We use the term "Item info" to describe the basic information that appears throughout the system to describe an item. The data that appears in "Item info" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Meter Information | Required if you have meters | We use the term "Meter info" to describe the basic information that appears throughout the system to describe a meter. The data that appears in "Meter info" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Meter Read High Low Limits | Optional | This algorithm is executed to calculate high and low limits for *high / low check* when a meter read is added to the system (whether through a batch upload or online).<br><br>Click *here* to see the algorithm types available for this system event. |

| | | |
|---|---|---|
| Online Bill Display | Optional | This algorithm constructs a PDF that contains the image of a bill. This algorithm is executed when the Display Bill button is clicked on the *Bill* page. Refer to *Technical Implementation of Online Bill Image* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Online Field Order Image | Optional | This algorithm constructs a PDF that contains the image of a field order. This algorithm is executed when the Display Field Order button is pressed on the *Field Order* page. Refer to *Technical Implementation of Online Field Order Image* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Online Letter Image | Optional | This algorithm constructs a PDF that contains the image of a letter. This algorithm is executed when the Display Letter button is pressed on *Customer Contact - Main*. Refer to *Technical Implementation of Online Letter Image* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Online Quote Image | Optional | This algorithm constructs a PDF that contains the image of a quote. This algorithm is executed when the Display Quote button is pressed on *Quote - Main*. Refer to *Technical Implementation of Online Quote Image* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Online Statement Image | Optional | This algorithm constructs a PDF that contains the image of a statement. This algorithm is executed when the Display Statement button is pressed on *Statement - Main*. Refer to *Technical Implementation of Online Statement Image* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Override Proration Factors | Optional | This algorithm is only used if your organization has unusual rate proration requirements that necessitate the overriding of the base package proration logic. For example, you may have certain calculation rules whose charges should never be prorated. Refer to *Overriding Proration Factors* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |

| | | |
|---|---|---|
| Override Seasonal Proration | Optional | This algorithm is only used if your organization has unusual method of determining the seasons for your calculation rules. For example, you may determine the seasonal boundaries for a calculation rule based on the scheduled meter read date associated with the bill cycle.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Amount Calculation | Required | This algorithm is executed to calculate the amount of an automatic payment for a bill for an account with an active auto pay option. Refer to *How And When Are Automatic Payments Created* for more information on automatic payments. This algorithm is also executed to default the amount of a manually added payment. Refer to *How To Add A New Payment Event* for more information on adding a payment manually.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Information | Required | We use the term "payment information" to describe the basic information that appears throughout the system to describe a payment. The data that appears in "payment information" is constructed using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Person Information | Required | In most parts of the system, a person's Main name is displayed to describe a person. However, several transactions do not use this method. Rather, these transactions call the algorithm that's plugged into this spot to construct the person's name. Refer to the description of the **Alternate Representation** flag on the **Main** tab for a list of these transactions and for the rationale behind this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Person Name Validation | Required | The format of names entered on *Person - Main* and *Order - Main* is validated using this algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| Premise Information | Required | We use the term "premise info" to describe the basic information that appears throughout the system to describe a premise. The data |

| | | |
|---|---|---|
| | | that appears in "premise info" is constructed using this algorithm.<br>Click *here* to see the algorithm types available for this system event. |
| Reporting Tool | Optional | If your installation has integrated with a third party reporting tool, you may wish to allow your users to submit reports on-line using *report submission* or to review *report history* on-line. This algorithm is used by the two on-line reporting pages to properly invoke the reporting tool from within the system.<br>Click *here* to see the algorithm types available for this system event. |
| SA Information | Optional | We use the term "SA information" to describe the basic information that appears throughout the system to describe a service agreement. The data that appears in "SA information" is constructed using this algorithm.<br>Plug an algorithm into this spot to override the system default "SA information".<br>Note: This algorithm may be further overridden by an "SA information" plug-in on the SA Type. Refer to *SA Type - Algorithms* for how algorithms of this type are used.<br>Click *here* to see the algorithm types available for this system event. |
| Severance Process Cancellation | Optional | This algorithm is executed to perform additional processing when the system cancels a severance process.<br>Note: This algorithm is executed before the *Severance Process Template - Post Cancel Algorithm* is executed. Canceling a severance process on-line manually does not execute this algorithm.<br>Click *here* to see the algorithm types available for this system event. |
| SP Information | Required | We use the term "SP info" to describe the basic information that appears throughout the system to describe a service point. The data that appears in "SP info" is constructed using this algorithm.<br>Click *here* to see the algorithm types available for this system event. |

# Defining Customer Languages

As described under *Defining Languages*, you define the language in which each user see the system. In addition to defining each user's language, the system allows you to define each customer's preferred language. For example, one customer can receive bills in English whereas another customer could receive their bills in Chinese.

Each customer's language is defined by the *language code* on their *person record*. Bills, adjustments and other system-generated records will then be done in the language of the main customer of the account. In addition, the language code is passed on to all customer-facing interfaces, such as letter requests and bill print.

**NOTE:**
You can define Rates in multiple languages - when a bill is generated, the line-item descriptions are generated and stored in the account's main customer's language of choice. Anyone who subsequently views these bills can only see the descriptions in that language.

To support bills and other correspondence, you must also provide translations of standard bill stock and letters. This must be handled by your printing software vendor.

# Defining Accounting Calendars

Accounting calendars determine the accounting period to which a financial transaction will be booked. The following points describe how the system determines a financial transaction's account period:

- Every financial transaction references an accounting date and its service agreement
- Every service agreement references a service agreement type
- Every service agreement type references a GL division
- Every GL division references an accounting calendar
- The accounting calendar contains the cross-reference between the accounting date specified on the financial transaction and related accounting period in your general ledger

**WARNING:**
This information must be the same as the information in your financial database.

To add or review an accounting calendar, choose **Admin** > **Accounting Calendar** > **Search.**

**Description of Page**

Enter a unique **Calendar ID** and **Description** for the calendar.

Enter the **Number Of Periods** for the calendar. Don't count the adjustment period, if you use one, or any special "system" periods.

Specify the **Fiscal Year**, each **AccountingPeriod** in that year, a **Period Description**, the **Begin Date** and the **End Date**.

When you enter begin and end dates, you can define monthly calendar periods or any fiscal period that matches your accounting calendar (weekly, bimonthly) as long as the begin and end dates of successive periods do not overlap. Every day of the year must be included in a period; do not leave gaps between period dates.

For each fiscal period, enter the **Open From Date** and **Open To Date**. These dates define when that particular business dates are open for posting financial transactions to that fiscal period. For example, you might calculate a bill on Sept 1 for usage recorded on 31 August. To post this financial transaction in the August period, you must keep it open through Sept 1.

As time passes, you will need to return to this transaction to manually enter ensuing years. You can enter several years at a time or incorporate the task into end-of-year system maintenance.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CAL_GL*

# Defining General Ledger Divisions

There are two types of Divisions referenced in the system: a CIS Division and a GL Division. This is a rather powerful structure, but it can be confusing.

- General Ledger divisions typically comprise individual entities (e.g., companies) in your general ledger. You must set up a GL division for each such entity. The GL division's sole purpose in the system is to define the accounting period associated with financial transactions linked to service agreements associated with the GL division (service agreements are associated with GL divisions via their SA type). The system cares about accounting periods in order to prevent a user from booking moneys to closed periods. It also uses accounting periods when it produces the flat file that contains the consolidated journal entry that is interfaced to your general ledger (refer to *The GL Interface* for more information).

  **NOTE:**
  When determining how many GL Divisions you need, be sure to consider your general ledger and how your chart-of-accounts is structured. You will typically have one GL division for each "company" in your general ledger.

- A CIS division is typically associated with a jurisdiction. The definition of a jurisdiction is a geographic-oriented entity with unique business rules. For example, if you conduct business in California and Nevada, and each state has different collection rules, you will need a separate jurisdiction for each state. You must set up a CIS division for each jurisdiction in which you conduct business.

  **FASTPATH:**
  Refer to *Setting Up CIS Divisions* for information about CIS Divisions.

To define a general ledger division, select **Admin** > **General Ledger Division.**

**Description of Page**

Enter a unique **GL Division** for the general ledger division.

Enter a **Description** of this general ledger division.

Define the accounting **Calendar ID** that controls how to convert an FT's accounting date into an accounting period. Refer to *Defining Accounting Calendars* for more information.

You may define a **Currency Code** for the GL division. Note that the system does not use this currency code.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_GL_DIVISION*.

# Defining Banks & Bank Accounts

The topics in this section describe how to maintain your implementation's bank accounts.

**Contents**

## Bank - Main

To review Banks choose **Admin** > **Bank** > **Search** .

**Description of Page**

Enter a unique **Bank Code** and **Description** for the bank.

The **Bank Accounts** collection displays the bank accounts currently linked to this bank code. Use the drill down button to view more details or to modify the bank account details. Alternatively, you may navigate to the Bank Account tab and scroll to the desired bank account.

## Bank - Bank Account

To review Bank Accounts for a Bank, choose **Admin** > **Bank** > **Search** and then navigate to the **Bank Account** page.

**Description of Page**

Use the **Bank Accounts** tab to define the attributes of each bank account. For each account, enter the following information:

- Enter a **Bank AccountKey** to identify an Account at a Bank. You may have more than one account at a given bank, and you may have accounts at more than one bank. This code will allow the system to easily identify a specific account.
- Enter a **Description** to appear on prompt lists, inquiries, and reports.
- Enter the **Account Number**, **Check Digit** and if needed, the **Branch ID** of the bank where the account is held.
- Enter the **CurrencyCode** for the currency in which the account is denominated.
- Use **DFI ID** to define the Depository Financial Institution ID that is interfaced to the automatic payment-processing agent as part of the automatic payment interface.
- Enter the **Distribution Code** to be used for cash GL distributions when a payment is frozen or canceled.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BANK_ACCOUNT*.

# Defining Issuing Centers

This section provides information about defining issuing centers that are used to assign document numbers to bills and payment events. An issuing center should be configured for each location that issues bills. The installation record *Document Number* and *Document Number Details* algorithms contain the logic used by the system to assign a document number to a bill. To set up an issuing center, open **Admin** > **Issuing Center** > **Add.**

**FASTPATH:**
Refer to *Document Numbers* for information about document number assignment.

**NOTE:**
**This section is only relevant for some organizations.** The information in this section is only relevant if your organization indicated on the installation record that it uses document numbers as an alternative bill id. If your organization does not use document numbers as an alternative bill id, then no other setup is required.

The topics in this section describe the base-package zones that appear on the Issuing Center portal.

**Contents**



## Actions

This is a standard *actions zone*.

If the issuing center is in a state that has valid next states, buttons to transition to each appropriate next state are displayed.

## Issuing Center List

The Issuing Center *List zone* lists every issuing center. The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent issuing center.
- Click the Add link in the zone's title bar to add a new issuing center.

## Issuing Center

The Issuing Center zone contains display-only information about an issuing center, including its current and historic branches. This zone appears when an issuing center has been broadcast from Issuing Center List zone or if this portal is opened via a drill down from another page.

Please see the zone's help text for information about this zone's fields.

## Issuing Center Log

This is a standard *log zone*.

# Setting Up Service Types

You will have one service type for each type of service you provide to your customers. If we assume that your organization sells electricity, gas and water, you will need three service types for these services. In addition, you will probably want a catch all service type of Other to put on SA types used for write-offs, payment arrangements and deposits.

**NOTE:**
**Non Service Point-Oriented Service Types.** You may require additional service types if you have non service point-oriented services, e.g., land leases and deposits. Refer to *Service Segmentation* for more information.

This page is also used to define valid facility levels for a service type. You may wonder, What is a facility level? Every type of service tends to use a different mapping philosophy to designate the facility hierarchy that supplies service to the service point. For example, electric service typically uses a substation / feeder / node facility hierarchy to define how electricity is supplied to a service point (the substation is the highest level in the hierarchy, the feeder comes next, and finally the node). On the other hand, gas service uses a city gate / main / feeder hierarchy.

If your organization maintains this type of information on service points, you will set up your facilities and their interrelationships. On this page you set up the number and type of facility levels used for every service and you define the valid values for each facility level. On the *Facility Level 1 & 2* and *Facility Level 2 & 3* pages, you define the values that may coexist in each level. After these set up tasks are complete, you're ready to enter facility levels on your service points.

**NOTE:**
A service point's facility levels are used to help pinpoint problems and dispatch service crews during outages.

The topics in this section describe how to set up service types and facility levels.

**Contents**



# Service Type - Main

To define service types and the types of facility levels, select **Admin** > **Service Type** > **Add.**

**Description of Page**

Enter a unique **Service Type** and **Description** for each service type.

Use the **Facility Level Names** collection to define the **Facility Level** and **Description** for each level in the service type's hierarchy. The description is used as the label prefixing the respective facility level on the Service Point Maintenance page.

Move to the **Level 1** tab to maintain the valid values for the highest facility level.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SVC_TYPE*.

# Service Type - Level 1

Open **Admin** > **Service Type** > **Add** and navigate to the **Level 1** page to define the various facilities classified at the highest level.

**Description of Page**

You can optionally start the grid at a given **Facility Level 1**.

Enter a **Facility Level 1** code and a **Description** for each facility in the highest level.

# Service Type - Level 2

Open **Admin** > **Service Type** > **Add** and navigate to the **Level 2** page to define the various facilities classified at the second level.

**Description of Page**

You can optionally start the grid at a given **Facility Level 2**.

Enter a **Facility Level 2** code and a **Description** for each facility at the second level.

## Service Type - Level 3

Open **Admin** > **Service Type** > **Add** and navigate to the **Level 3** page to define the various facilities classified at the third level.

**Description of Page**

You can optionally start the grid at a given **Facility Level 3**.

Enter a **Facility Level 3** code and a **Description** for each facility at the third level.

# To Do Lists Addendum

This section is an addendum to the general *To Do Lists* chapter. This addendum describes the To Do functionality that is specific to Oracle Utilities Customer Care and Billing.

**Contents**



## Assigning A To Do Role

As described in *To Do Entries Reference A Role*, each To Do entry requires a role. To Do entries created in Oracle Utilities Customer Care and Billing may attempt to assign a role based on an account management group or division if it is applicable to the type of data related to the To Do entry.

As described in *The Big Picture of To Do Lists*, users are informed that something requires their attention by entries that appear in a To Do List. For example, consider what happens when billing can't find a reading (and it's not allowed to estimate):

- The billing process creates a bill segment that is in error (meter read cannot be found).
- This bill segment that's in error, in turn, triggers the creation of a To Do entry.
- The To Do entry is assigned a role. A role is one or more users who can look at / work on the entry.
- When users view a To Do List, they only see entries addressed to roles to which they belong.

You can optionally use account management groups (AMG) to define the respective role to be assigned to To Do entries that are associated with an account and To Do type. For example, you can create an AMG called Credit Risks and assign this to accounts with suspect credit. Then, whenever an account-oriented To Do entry is created for such an account, it will be assigned a role based on the Credit Risks AMG. Refer to *Setting Up Account Management Groups* for more information.

By assigning an AMG to an account, you are telling the system to address this account's To Do list entries to the roles defined on the AMG (note, each To Do type can have a different role defined for it on an AMG).

You can optionally use division to define the respective role to be assigned to To Do entries that are associated with an account and To Do type. For example, you may have a division called California Operations and assign this to accounts located in California. Then, whenever an account-oriented To Do entry is created for such an account, it will be assigned a role based on the California Operations division. Refer to *Setting Up CIS Divisions* for more information.

A To Do Pre-Creation installation options plug-in is provided to determine the appropriate To Do Role for an account based on AMG and division setup. If plugged in, the logic to determine To Do role for an account is performed whenever a To Do entry is created. Refer to *C1-TDCR-DFRL* for further details on how this plug-in works.

**FASTPATH:**
Refer to *To Do Entries Reference A Role* for the details of how an initial role is assigned to To Do entries.

## System To Do Types

**NOTE:**
**List of available To Do types.** The To Do types available with the product may be viewed in the *application viewer* 's *To Do type* viewer. In addition if your implementation adds To Do types, you may *regenerate* the application viewer to see your additions reflected there.

# Defining Service Tasks Options

This section describes concepts and procedures related to service tasks.

**Contents**



## About Service Tasks

Service tasks are records that can be used to perform a variety of tasks. Examples include:

- Task-related records performed by users of other Oracle Utilities applications, such as Oracle Utilities Customer Self Service.
- Task-related records performed by Oracle Utilities Customer Care and Billing to manage specific processing, such as net energy metering true-ups, or prepaid billing to create bill segments for smart meter prepaid service agreements.

The main attribute used to define a service task is service task type. The service task type defines properties common to specific types of service tasks.

For more information, see *Searching and Viewing Service Tasks*.

## About Service Task Types

Service task types define properties common to specific types of service tasks. Service task types represent different types of tasks that can be performed by:

- Users of other Oracle Utilities applications, such as Oracle Utilities Customer Self Service. An example of a service task includes self service meter reads, in which users enter their own meter reads via the Customer Self Service application.
- Oracle Utilities Customer Care and Billing to manage specific processing. Examples include net energy metering true-ups, or prepaid billing to create bill segments for smart meter prepaid service agreement.

Service task types can be defined by the following attributes:

- **Service Task Type**: the name of the task type.
- **Service Task Type Business Object:** the business object that defines the behavior of the service task type.
- **Service Task Business Object:** the business object instantiated when service tasks of this type are created.
- **Service Task Class:** the category used to define service task types for reporting purposes (self-service, miscellaneous, etc).
- Other data based on the specific type of service task (such as minimum days in true-up period, billing frequency, or default payment method.)

For more information about defining service task types, see *Defining Service Task Types*.

For more information about the service task types delivered with the application, see *Base Package Service Task Types*.

## Defining Service Task Types

Use this procedure to define service task types.

To maintain existing service task event types, select **Admin** > **Service Task Type** > **Search,** then use standard actions to edit, duplicate, or delete a service task type.

To define a new service task type, follow these steps:

1. Select **Admin** > **Service Task Type** > **Add**.
2. Enter a name and a meaningful description for the service task type.
3. If needed, select the business object to use when creating service tasks of this type.
4. Select the service task class applicable to service tasks of this type, if applicable.

   Some service tasks types used solely by Oracle Utilities Customer Care and Billing have a default class of **Miscellaneous**.
5. Enter a detailed description for the service task type.
6. Complete the remaining fields and sections, as needed.
7. If applicable, select a To Do type and corresponding To Do role to use when creating To Do entries related to service tasks of this type.
8. Click **Save**.

This service task type can now be used when service tasks are received from other Oracle Utilities applications, such as Oracle Utilities Customer Self Service, or service tasks created specifically by Oracle Utilities Customer Care and Billing. For more information about service task types, see *About Service Task Types*.

For more information about the service task types delivered with the application, see *Base Package Service Task Types*.

## Base Package Service Task Types

This section provides descriptions of the service task types provided with the base package.

| Service Task Type | Business Object | Detailed Description | Related Transaction Business Object |
|---|---|---|---|
| Appointment Notification Task Type | C1-NotifyAppointmentTaskType | This business object is used to capture the information to use in appointment notification processing. | Appointment Notification Task |
| Create Customer Contact Task Type | C1-CreateCustContactTaskType | This business object is used to capture the information to use in create customer contact task processing. | Customer Contact Request Task |
| Direct Debit Task Type | C1-DirectDebitMandateTaskType | This business object defines configuration information that is used for processing Single Euro Payments Area (SEPA) direct debit transactions. | Direct Debit Mandate Task |
| FA Completion Task Type | C1-FACompletionTaskType | This business object captures the attributes used in field activity completion task processing. | FA Completion Task |
| Field Activity Remark Task Type | C1-FieldActivityRemarkTaskType | This business object is used to capture the information to use in create field activity remark task processing. | Field Activity Remark Task |
| Form Task Type | C1-FormTaskType | This business object captures attributes relevant for a particular form type to be used when a self-service customer creates a form. | Form Task |
| Missed Appointment Notification Task Type | C1-NotifyMissedApptTaskType | This business object is used to capture the information to use in missed appointment processing. | Missed Appointment Notification Task |
| Notification Task Type | C1-NotifyTaskType | This business object captures information about a notification that is made available for sign-up by self-service users. | Notification Preferences |
| Net Energy Metering Task Type | C1-NEMTrueUpTaskType | This business object is used to maintain the various configuration options that are used by the true up monitor (TUM) business object's algorithms. It defines the length of the true up period as well as the adjustments types used during the true up process. For true up reversals, the adjustment cancel reason to use is also captured here. | True Up Monitor Task |
| Outage Call Type | C1-OutageCallType | This business object defines the behavior of an outage call type used to support trouble calls captured in CCB and integrated to NMS. | Outage Call |

| | | | |
|---|---|---|---|
| Payment Arrangement Task Type | C1-PATaskType | This business object defines the expected behavior for when a self-service user requests a payment arrangement. | Payment Arrangement Task |
| PPB Payment Notification Task Type | C1-PPBPaymentNotifyTaskType | This business object captures information about the Prepaid Billing Payment Request notification that is made available for sign-up by self-service users. | Notification Preferences |
| Prepay Biller Task Type | C1-PrepayBillerTaskType | This business object defines the behavior of a prepay biller task type used in smart meter prepay billing. | Prepay Biller Task |
| Product Offer Publish | C1-ProductOffer | This business object contains the product offer elements that are relevant when publishing product offers to Siebel Energy. It is used to read product offer information when building the initial and final snapshots for the sync request. | Not defined |
| Product Offer Task Type | C1-ProductOfferTaskType | This business object is used to define the behavior of a product offer. Product offers are configured in CCB and published to Siebel Energy. | Not defined |
| SA Creation Rule Publish | C1-SACreationRule | This business object contains the SA creation rule elements that are relevant when publishing product offers to Siebel Energy. It is used to read SA creation rule information when building the initial and final snapshots for the sync request. | Not defined |
| SA Creation Rule Task Type | C1-SACreationRuleTaskType | This business object defines the behavior of the SA creation rules for a product offer. Each SA creation rule indicates the type of service agreement to create for the product offer. | Not defined |
| Service Request Task Type | C1-ServiceRequestTaskType | This business object is used as a parent service task type business object for service request related task types such as appointment notification, missed appointment and customer contact creation requests. | Not defined |
| Siebel Customer Maintenance Task Type | C1-CustomerMaintenanceTaskType | This business object is used in the Siebel integration. When a customer maintenance request is received from Siebel, an inbound | Siebel Customer Maintenance Task |

| | | | |
|---|---|---|---|
| | | service determines the service task type to use for the event. | |
| Start/Stop Task Type | C1-StartStopTaskType | This business object defines the expected behavior for when a self-service user requests to start, stop or transfer service. | Start/Stop Request Task |

# Defining Self-Service Integration Options

Integrating the application with a self service application such as Oracle Utilities Customer Self Service requires adding a master configuration to capture general configuration details for your self-service business processes.

**Contents**



## Setting Up the Self-Service Integration Master Configuration

Use this procedure to create a master configuration for self-service integration.

1. Select **Admin** > **Master Configuration.**
2. Select the **Add** action icon for Self-Service Integration.
3. Use the following sections to define the following configuration items for your self-service integration:

   **NOTE:** Additional information for these sections can be found in the embedded help.

   - In the Self-Service Alerts section, define the alerts and notifications that you want your business to display to a self-service user.
   - In the Payments Processing Information section,
     - Define the payment types your business accepts on its self-service web site.
     - Define the card types that your business accepts on its self-service web site.
   - In the Line of Business Verification Fields section, define the classification of accounts that your business supports, and the fields that are prompted to a self-service user when they enroll for online access (e.g. employer identity and business phone number for a commercial business, social security number and home phone number for a residential customer).
   - In the Scripts section, define the scripts used for processing specific self-service logic (e.g. script for building an information string for each account linked to a self-service user, script to determine a suggested budget amount for each budget-eligible service agreement linked to the accounts for a self-service user).
   - In the Self-Service Tasks section, define the self-service task types that your implementation supports.
   - In the Notification Service Tasks section, define the notifications that your business wants to make available to a self-service user to sign up for.
   - In the Payment Arrangement Service Task Types section, define the service task types that your implementation supports for pay arrangement self-service requests.
   - In the New Service Information section,
     - Specify the campaign to use when a customer requests to start service.

    - Specify the list of identifiers to present to new customers when they attempt to start service. These may differ between an individual person and a business.
- In the Account List Filter Information section, specify the default value to use to select a subset of accounts associated with a self-service user (e.g. filtering by street address, city, postcode, state.
- In the Account Document Types section, define the characteristic types that will contain file location values for account documents that your business will allow customers to view.
- In the Forms section, define the types of forms that your business wants to make available for creation by a self-service user.
- In the External Communication section, configure the external communication values for communicating with external parties in a self-service integration (e.g. Oracle Utilities Meter Data Management).

4. Click **Save** to save your master configuration.

## Maintaining the Self-Service Integration Master Configuration

Use this procedure to maintain the self-service master configuration.

1. Select **Admin** > **Master Configuration.**
2. Select the **Edit** action icon for Self-Service Integration master configuration.
3. Use the following sections to define the following configuration items for your self-service integration:

   **NOTE:** Additional information for these sections can be found in the embedded help.

   - In the Self-Service Alerts section, define the alerts and notifications that you want your business to display to a self-service user.
   - In the Payments Processing Information section,
     - Define the payment types your business accepts on its self-service web site.
     - Define the card types that your business accepts on its self-service web site.
   - In the Line of Business Verification Fields section, define the classification of accounts that your business supports, and the fields that are prompted to a self-service user when they enroll for online access (e.g. employer identity and business phone number for a commercial business, social security number and home phone number for a residential customer).
   - In the Scripts section, define the scripts used for processing specific self-service logic (e.g. script for building an information string for each account linked to a self-service user, script to determine a suggested budget amount for each budget-eligible service agreement linked to the accounts for a self-service user).
   - In the Self-Service Tasks section, define the self-service task types that your implementation supports.
   - In the Notification Service Tasks section, define the notifications that your business wants to make available to a self-service user to sign up for.
   - In the Payment Arrangement Service Task Types section, define the service task types that your implementation supports for pay arrangement self-service requests.
   - In the New Service Information section,
     - Specify the campaign to use when a customer requests to start service.
     - Specify the list of identifiers to present to new customers when they attempt to start service. These may differ between an individual person and a business.
   - In the Account List Filter Information section, specify the default value to use to select a subset of accounts associated with a self-service user (e.g. filtering by street address, city, postcode, state.

- In the Account Document Types section, define the characteristic types that will contain file location values for account documents that your business will allow customers to view.
- In the Forms section, define the types of forms that your business wants to make available for creation by a self-service user.
- In the External Communication section, configure the external communication values for communicating with external parties in a self-service integration (e.g. Oracle Utilities Meter Data Management).

4. Click **Save** to save your master configuration.

## Defining Converted COBOL Program Options

The topics in this section describe the transaction that allows you to define the metadata for converted COBOL programs within the current environment's database.

**CAUTION:** Updating converted COBOL Programs requires technical knowledge of the system. This is an implementation and delivery issue and should not be attempted if you do not have previous experience.

Contents:



## Converted COBOL Program - Main

**NOTE: Not available for all products.** This page is only available for products that support converted COBOL.

Use this transaction to define converted COBOL program user exits for your system. Navigate to this page using **Admin** > **Converted COBOL Program** > **Search.**

### Description of Page

The following describes fields that are relevant to defining the user exit code that a converted COBOL Program should use:

**Program Component ID** represents the internal ID that is given to the converted COBOL program component.

**Program Com Name** is the physical name of the converted COBOL program component.

**Template** is the template used to generate the converted COBOL program component.

**Location ID**

**Table**

**User Exit Program.** Specify if you have written user exit code for this converted COBOL program component.

**Development Status Flag.** Options include Note Generated and Not Regeneratable.

**Short Comments** provides a short description of the converted COBOL program component.

**Long Comments** provides more details of the converted COBOL program component.

# Defining Financial Transaction Options

Bills, payments and adjustments share one very important trait - they affect how much your customers owe. This section explains the financial design of the system and describes how to set up the tables that control the financial impact of these transactions.

**NOTE:**
The tables in this section are the first of many that must be set up before you can create bills and apply payments. In this section, we limit the discussion to those tables that control the financial impact of bills, payments and adjustments. In later sections, we describe the tables that control other billing-related functions like meter reading and rates. It is only after all of these tables are set up that you will be able to generate the various financial transactions.

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# The Financial Big Picture

This section provides an overview of the relationship between an account and the various financial transactions that influence how much a customer owes.

**WARNING:**
If your organization practices cash accounting for payables (i.e., you only pay the taxing authority when you get paid), refer to *Payables Cash Accounting*. If you organization practices open-item accounting (i.e., payments must be matched to bills), refer to *Open Item Accounting* .

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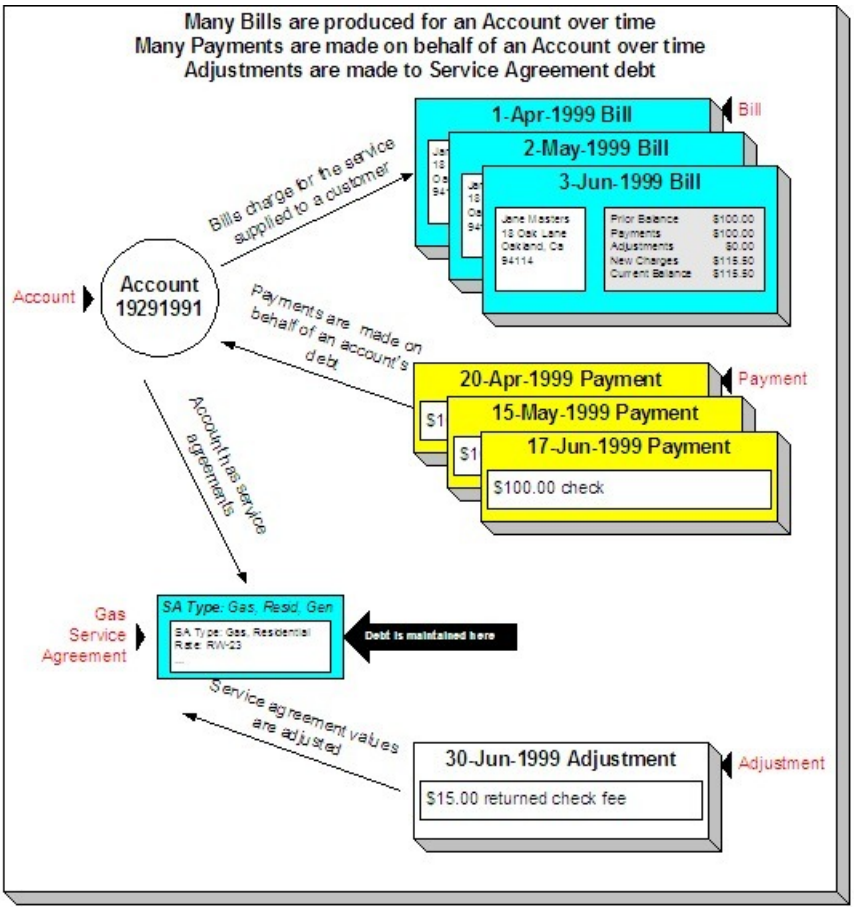
## Bills, Payments & Adjustments

The following diagram illustrates the relationship between an account and its financial transactions:




The following concepts are illustrated above:

**Bills are produced for accounts** Over time, many bills may be produced for an account. For more information about a bill, see *Bill Details*.

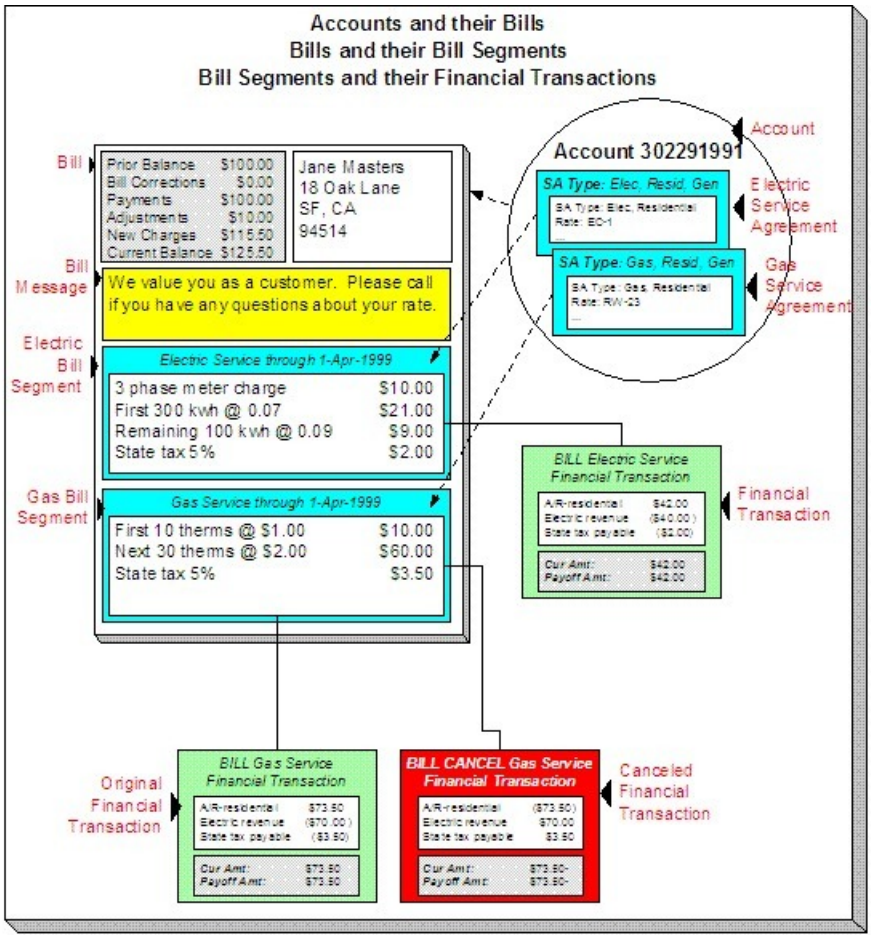
**Payments are made for accounts** Over time, many payments may be applied to an account's debt. For more information about a payment, see *Payment Details*.

**Service agreements have debt** The system maintains debt on each individual service agreement. An account's debt is the sum of its service agreements' debt.

**Service agreements are adjusted** Over time, the debt that is stored on an account's service agreement(s) may be adjusted. For more information about an adjustment, see *Adjustment Details*.

# Bill Details

The following diagram illustrates the relationship between an account and its bills:




The following concepts are illustrated above:

**A bill is produced for an account** Over time, many bills are produced for an account. Bills charge for the services supplied to a customer. The above illustration shows a single bill.

**Bills contain bill segments** A bill typically contains one bill segment for every active service agreement linked to its account. The only time this is not true is when service agreements for different frequencies exist. For example, an account with a monthly and a quarterly service agreement will only have 4 bills a year that contain both bill segments; the other months' bills will contain a single bill segment for the monthly service agreement.

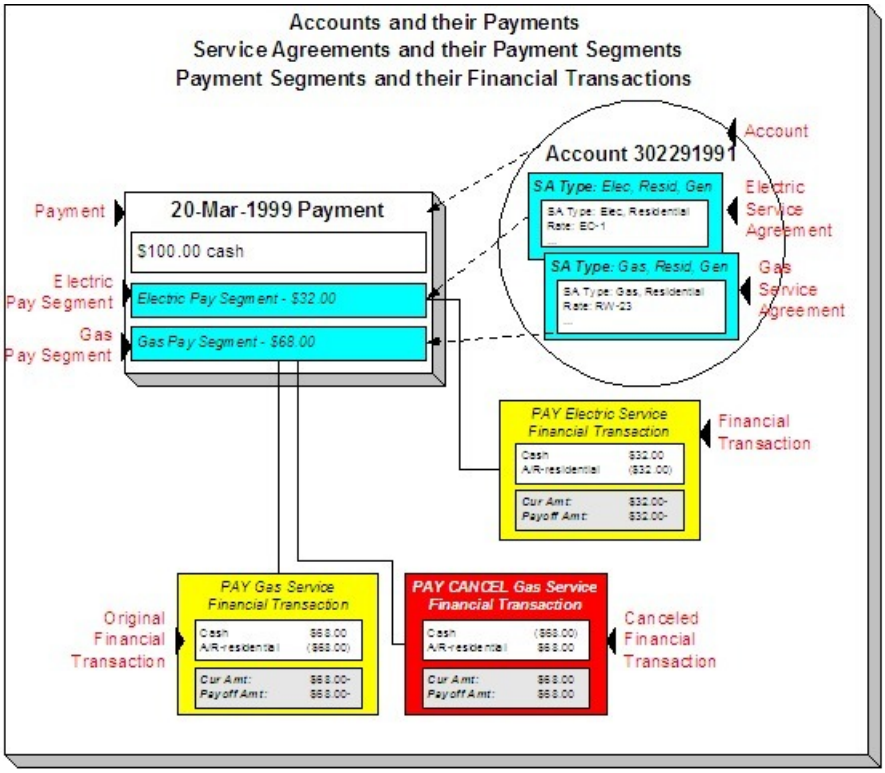
**Bill segments contain calculation details** A bill segment contains information showing how the segment was calculated and how it should be printed on the customer's bill.

**A bill segment has a financial transaction** A bill segment has a related financial transaction. A financial transaction contains the financial effects of the bill segment on the service agreement's current and payoff balances and on the general ledger.

**Canceling a bill cancels the financial tran.** If the bill segment is eventually cancelled, another financial transaction will be linked to the bill segment to reverse its original financial transaction. The cancellation financial transaction appears on the next bill produced for the account as a bill correction.

## Payment Details

The following diagram illustrates the relationship between an account and its payments:




The following concepts are illustrated above:

**Payments are made for accounts** Over time, many payments may be applied to an account's debt. The above illustration shows a single payment.

**Payments contain payment segments** A payment contains one payment segment for every service agreement to which the payment is distributed. For a customer who pays in full, the number of payment segments will coincide with the number of bill segments on the bill being paid.

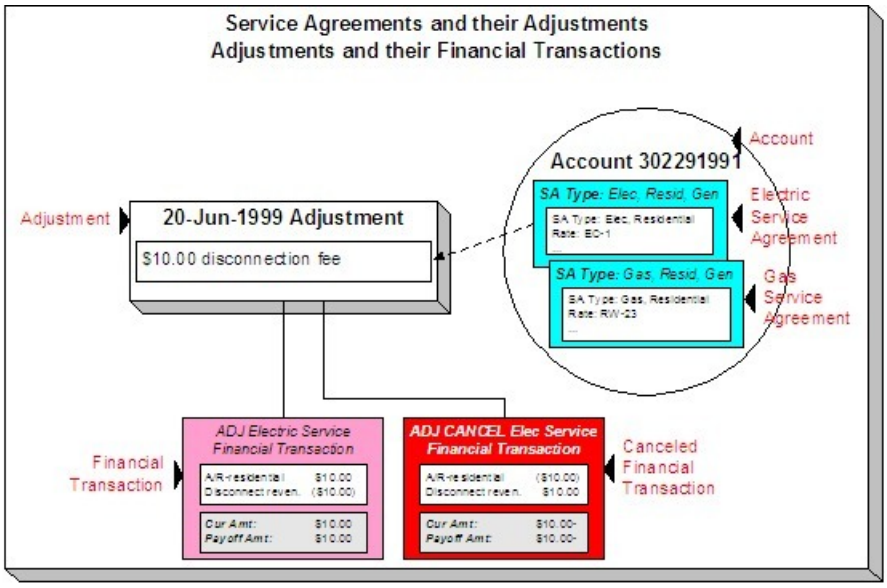
**A pay. segment has a financial transaction** A payment segment has a related financial transaction. A financial transaction contains the financial effects of the segment on the service agreement's current and payoff balances and on the general ledger.

**Canceling a payment cancels the fin. tran.** If the payment is eventually cancelled, another financial transaction will be linked to the related payment segment(s) to reverse their financial effect. The cancellation financial transaction appears on the next bill produced for the account as a negative payment.

**FASTPATH:**
A payment cannot be applied to an account's debt without an associated payment event. Refer to *The Big Picture of Payments* for more information.

## Adjustment Details

The following diagram illustrates the relationship between an account and its adjustments:




The following concepts are illustrated above:

**Service agreements have adjustments** Over time, a service agreement may have many adjustments. The above illustration shows a single adjustment to one of the account's service agreements.

**An adjustment has a financial transaction** An adjustment has a related financial transaction. The financial transaction contains the financial effects of the adjustment on the service agreement's debt and on the general ledger.

**Canceling an adjust. cancels the fin. tran.** If the adjustment is eventually canceled, another financial transaction will be linked to the adjustment to reverse its financial effect. The cancellation financial transaction appears on the next bill produced for the account as an adjustment.

## Current Amount versus Payoff Amount

A financial transaction contains two very important attributes: payoff amount and current amount. These attributes contain the grand total of how much the customer owes.

- Current amount contains how much the customer THINKS THEY OWE.
- Payoff amount contains how much the customer REALLY OWES.

You may be wondering when these two values can be different? Well, for most financial transactions, these values are the same. These values differ under the following situations:

- When a bill segment charges a customer for a charitable contribution, payoff amount will be zero because the customer doesn't really owe anything (they don't have to contribute if they don't want to). Current amount will be equal to the agreed charitable contribution amount (the customer thinks they owe the contribution).
- When a bill segment charges a customer for a deposit, payoff amount will be zero because the customer doesn't really owe anything (billed deposits are typically not viewed as being a receivable). Current amount will be equal to the amount billed (the customer thinks they owe the deposit amount).

- When a bill segment charges a customer who participates in a levelized payment program (e.g., budget billing or non-billed budgets) the two "amounts due" will contain different values. Payoff amount is equal to how much the customer really owes for the service they consumed; current amount is equal to how much they think they owe in accordance with their monthly budget.

A perhaps easier way to view these two attributes is to consider payoff amount as the "cash out amount", i.e., the amount the customer would owe the utility if they wanted to clear up all debt. The current amount contains the amount the customer thinks they owe. If you're still struggling with the difference, think about your monthly Visa bill: it contains a monthly minimum payment and the total amount owed. The minimum payment is the current amount; the total amount owed is the payoff amount.

The topics in this section provide more information about these two fields.

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## What Controls What Gets Booked To Current And Payoff Amount?

As described in *Bill Details*, every bill segment has a sibling financial transaction. The financial transaction defines the bill segment's affect on current and payoff amounts due. The system populates these two fields as per the Financial Transaction Algorithm defined on the bill segment's bill segment type.

> **FASTPATH:**
> For more information, refer to *Billing - Current Balance versus Payoff Balance* and *Designing and Defining Bill Segment Types*.

As described in *Payment Details*, every payment segment has a sibling financial transaction. The financial transaction defines the payment segment's affect on current and payoff amounts due. The system populates these two fields as per the Financial Transaction Algorithm defined on the payment segment's payment segment type.

> **FASTPATH:**
> For more information, refer to *Payment - Current Balance versus Payoff Balance* and *Setting Up Payment Segment Types* .

As described in *Adjustment Details*, every adjustment has a sibling financial transaction. The financial transaction defines the adjustment's affect on current and payoff amounts due. The system populates these two fields as per the Financial Transaction Algorithm defined on the adjustment's adjustment type.

> **FASTPATH:**
> For more information, refer to *Adjustments - Current Balance versus Payoff Balance* and *Setting Up Adjustment Types* .

## Arrears

The system keeps track of the age of each customer's debt to the day. For example, if a customer hasn't paid their last two bills, the customer's aged debt might look as follows:

- $124.50: 22 days old

- $213.41: 51 days old

Please be aware that it is the current balance (i.e., what the customer thinks they owe) that is aged. Also keep in mind that the moment an FT is frozen , it impacts a customer's current balance.

The system represents aged debt in a variety of ways of the various transactions in the system. On the *Current Context Zone* and the *Financial Information Zone* arrears are shown in a colorful bar (where each color corresponds to different aged buckets):


Whereas on *Service Agreement - Main*, aged debt is shown in a grid:

Debt Class Arrears

| Days Old | Arrears Amount |
|---|---|
| 4 | $99.45 |
| 32 | $76.36 |

The grid method is used on many pages throughout the system. The following rows *may* appear in the grid:

- A row labeled New Charge highlights all debt that hasn't started aging yet. For example, if you've created a late payment charge and it hasn't appeared on one of the customer's bills, it will be classified as a New charge until the next bill is completed for the customer (unless a user overrides the late payment charge's arrears date by drilling into the financial transaction).
- A row with a label containing n Future (where n is the number of days) appears if there is "future debt". Future debt is very rare and can only exist if a debit financial transaction has a future arrears date. Financial transactions can receive a future arrears date if a bill is completed with a future date or if a user overrides a financial transaction's arrears date with a future date).
- A row that contains a number (and nothing else) represents debt that has started aging. The number is the age of the respective debt. In the above example, the customer has 1 day old debt, and debt that is more than 150 days old. Notice that the 150 day old debt is prefixed with a + . This means that the related debt is more than 150 days old. This age limit is controlled by a field on *Installation Options - CC* called "Oldest Bucket Age". This field limits the number of days the system will age debt. For example, if you set this field to 150, the system will never age an FT more than 150 days (and all debt that's older than 150 days will be classified as 150 day old debt). Also note, the aged debt bar that appears on *Current Context Zone* only ages debt a maximum of 60 days.
- A row with a label of Disputed appears if the account is an *open-item* customer and this customer has *disputed* financial transactions.

**FASTPATH:**
Refer to *Financial Transactions And Aged Debt* for more information.

## GL Accounting Information

Be aware that if payoff amount is non-zero, the financial transaction has general ledger detail lines.

There are unusual financial transactions whose payoff amount is zero, but still affect the general ledger:

- Bill segments for company usage do not impact payoff amount (because your organization doesn't really owe itself anything). However, the GL is affected.

- Payment segments for charitable contributions (created when your customers contribute extra money to a charity) do not impact payoff amount. Why? Because payoff amount is never debited when a charitable contribution is billed (the customer doesn't truly owe you for this receivable). It's only when the customer pays the contribution that the GL is impacted (debit cash, credit charitable contribution payable).
- If the SA has a special role of Loan , the financial transaction algorithms supplied with the base package transfer the current amount between the long-term receivables and the short-term receivables in the GL. This allows the general ledger to differentiate between unbilled loan receivables (long term) and billed loan receivables (short term). Refer to *Payoff Balance and Current Balance for Loans* for more information.

The effect on your GL is controlled by the financial transaction algorithm defined on your bill segment and payment segment types.

**FASTPATH:**
Refer to *The GL Interface* for how GL account information is interfaced to the general ledger.

## A Complicated Example

The financial ramifications of a revolving charge account are predictable (if you're an accountant). The following table outlines the different financial events and their impact on the general ledger, arrearage history, and the amounts due (both current and payoff).

| Event | GL Accounting | Arrearage Rule | Effect On Payoff Amt | Effect On Current Amt | Payoff Balance | Current Balance |
|---|---|---|---|---|---|---|
| Merchandise purchased | A/R 1000<br>Revenue <1000> | n/a (current amount is zero) | +1000 | 0 | 1000 | 0 |
| Monthly bill | A/R 10<br>Int. Rev <10> | $120 aged accordingly | +10 | +120 | 1010 | 120 |
| Payment received | Cash 120<br>A/R <120> | $120 relieved accordingly | -120 | -120 | 890 | 0 |

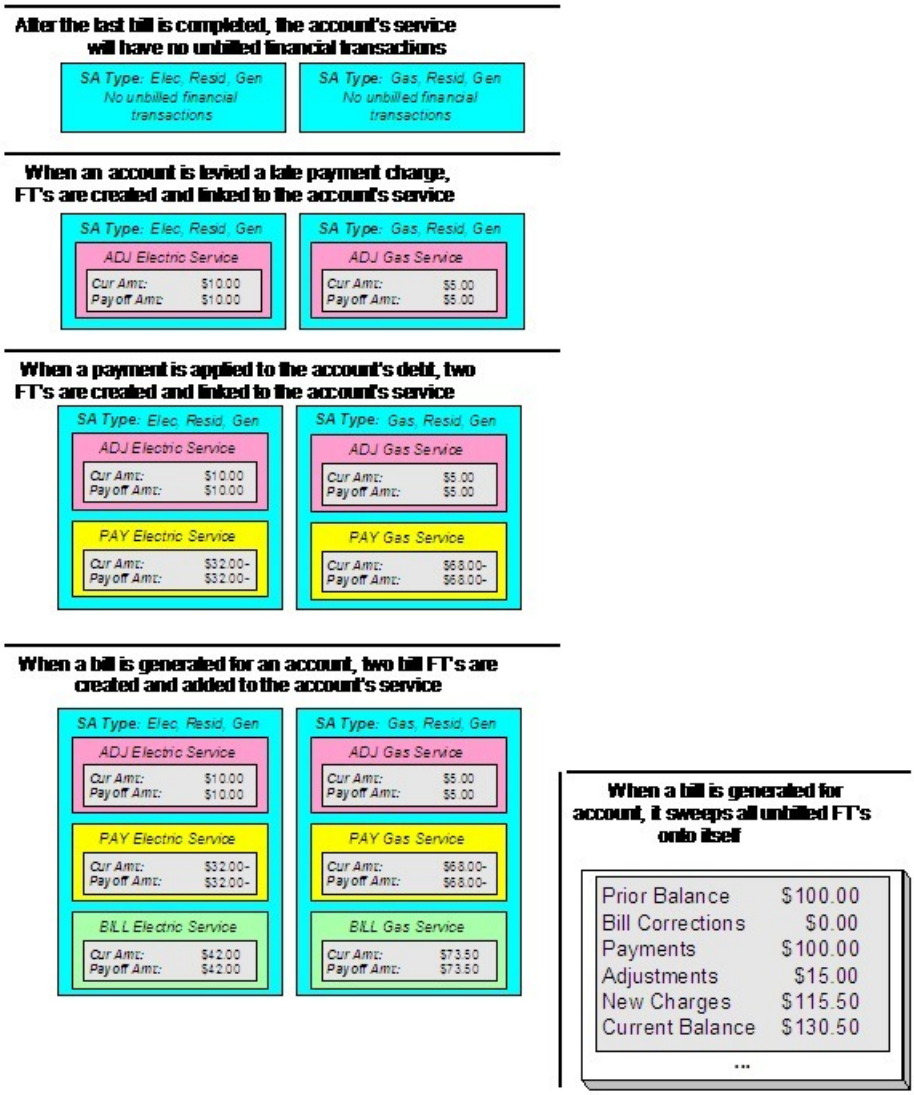
The following points describe the events in the above table:

- **Merchandise purchased.** When a customer purchases an air conditioner:
  - The system generates an adjustment to book the purchase.
  - The customer doesn't really think they owe the entire $1,000 (because they've purchased it on credit), therefore no moneys are booked to current amount. However, if the customer wanted to cash out, they would owe your organization $1,000, therefore the entire amount of the purchase is booked to payoff amount.
  - Because no money was booked to current amount, this event has no impact on the arrearage history.
- **Customer billed.** Monthly, the system calculates how much the client owes. In this example, interest is calculated to be $10 and the minimum monthly payment is set at $120.
  - The interest is posted to the GL, but principal isn't since it was booked when the merchandise was purchased.
  - The customer really thinks they owe the minimum payment amount, $120. Therefore, current amount is affected. However, if the customer were to cash out, they would owe your organization $1,000 + $10 (the interest); therefore payoff amount is affected by only $10.
  - Because current amount changed by $120, arrearage history is affected accordingly.
- **Payment received.** With any luck, the client will pay the $120 that was billed (note, they could obviously pay more).

- The payment has a normal affect on the GL (debit cash, credit A/R).
- The amount the customer thinks they owe decreases by $120, therefore current amount is affected by the payment amount. And, if the customer was to cash out, they would owe the utility $120 less, therefore payoff amount is affected by the payment amount.
- Because current amount changed by $120, arrearage history is affected accordingly.

## Financial Transactions Created Between Bills

The following diagram illustrates how frozen financial transactions (FT's) accumulate between bills and are swept onto the next bill produced for the account (when the bill is completed ). This example assumes




When any type of financial transaction is frozen , it impacts the related service agreement's *current and payoff balances*. If you do not want adjustments and bill segments to affect the customer's balance until they appear on the customer's next bill, refer to *Preventing SA Balances And The GL From Being Impacted Until Bill Completion* .

Notice the balances in the financial summary of the above bill:

- The **Prior Balance** is the ending balance from the customer's prior bill.
- The **Bill Corrections** portion is blank. It contains a value if you cancel / rebill a bill segment that appeared on an earlier bill.
- The **Payments** portion shows payment financial transactions (both new payments and cancellations) that have been created since the last bill.
- The **Adjustments** portion shows adjustment financial transactions (both new adjustments and cancellations) that have been created since the last bill.
- The **New Charges** portion shows bill financial transactions that were created when the bill was created.
- The **Current Balance** is the total amount owed.

**FASTPATH:**
If you practice *Open Item Accounting*, refer to *Open Item Versus Balance Forward Accounting* for more information about financial transactions and bills.

## Financial Transactions And Aged Debt

The system keeps track of how old a service agreement's current balance is in order to determine if the customer is in arrears (and therefore credit and collections processing should start).

A financial transaction (FT) impacts the related service agreement's current and payoff balances the moment it is frozen . However, some types of frozen FTs have no impact on a customer's aged debt until the next bill is completed for the account associated with the service agreement.

As described in the previous section, a frozen financial transaction (FT) waits in limbo until the customer's next bill is produced. This limbo period could be several weeks if the customer is billed infrequently. When the customer's next bill is completed, all such frozen FT's are linked to the bill. It is important to stress the following in respect of these FT's:

- If the FT decreases the amount of debt, the customer's aged debt is affected immediately regardless of whether the FT appears on a bill.
- If the FT increases the amount of debt, the amount the customer owes from an aged debt perspective may or may not be affected by the FT. There is a switch on an FT called New Charge that controls the arrears behavior.
  - If this switch is on, the amount of debt will be reflected as a "new charge" when you look at the customer's aged debt. This amount will remain classified as a "new charge" until the FT is swept onto a bill. The moment the FT is swept onto the customer's bill, the debt starts aging. This logic exists because you probably don't want to start aging an FT until the customer has actually seen it.
  - If this switch is off, the date on which the FT starts aging must be defined in the Arrears Date field. The Arrears Date is used to compute how many days old the debt is.

**NOTE:**
**Aged debt limitations.** It's important to be aware that there's a field on *Installation Options - CC* called "Oldest Bucket Age" that limits the number of days old the system will age debt. For example, if you set this field to 360, the system will never age an FT more than 360 days (and all debt that's older than 360 days will be classified as 360 day old debt). Also note, the aged debt bar that appears on *Control Central - Account Information* only ages debt a maximum of 60 days.

**FASTPATH:**

If you practice *Open Item Accounting*, refer to *Open Item Versus Balance Forward Accounting* for information about how open-item FT's affect aged debt.

## Preventing SA Balances And The GL From Being Impacted Until Bill Completion

It's important to understand that when any type of financial transaction is frozen , the related service agreement's balance is affected. For example:

- When a payment is frozen , the customer's balance is reduced.
- When an adjustment is frozen , the customer's balance is impacted.
- When a bill segment is frozen , the customer's balance is increased (typically).

For payments, there is no issue. However, for bill segments and certain types of adjustments, you may NOT want the customer's balance to be impacted until the next bill is completed. Consider the following scenarios:

- Late payment charges:
  - You can setup the system to create a late payment charge (i.e., an adjustment) say 5 days after an unpaid bill is due.
  - If the related adjustment is frozen, the customer's balance will be impacted. However, its impact will not affect *aged debt* until the next bill is completed. In other words, the amount of the frozen adjustment segment will appear as a "New Charge" until the bill is completed.
- Batch billing:
  - If a customer has multiple service agreements, it's possible for one of the service agreements to have a bill segment that's in error and the other service agreement's bill segment to be error-free.
  - If this happens and you have setup the bill cycle schedule to freeze bill segments if they're error-free, then you could have one bill segment frozen and another in error .
  - The frozen bill segment will impact the customer's balance. However, its impact will not affect *aged debt* until the bill is completed (and a bill cannot be completed until all of its bill segments are error-free). In other words, the amount of the frozen bill segment will appear as a "New Charge" until the bill is completed.

**WARNING:**
We'd like to stress that while a frozen financial transaction impacts a customer's balance the moment it is frozen, the amount of the financial transaction appears as a "New Charge" when viewing a customer's *aged-debt*. This amount will remain classified as a "New Charge" until the next bill is completed (i.e., the customer's debt doesn't start aging until the next bill is sent to the customer).

While *aged-debt* isn't impacted by frozen FT's, the general ledger is. This is because a financial transaction is marked for *interface* to the general ledger when it is frozen. This can be problematic if you have a long period between FT freeze and bill completion (you could impact the general ledger but not impact the customer's balance). If this is unacceptable, you can setup the system to not allow certain types of FT's to be frozen until the next bill is completed. This means that neither the customer's balance nor the general ledger will be impacted until bill completion time. To do this:

- Choose the Freeze At Bill Completion option on *Installation Options - Billing*.
- Examine each of your *adjustment types*. Select Freeze At Bill Completion for those that should not impact the customer's balance or the general ledger until the next bill is completed. Select Freeze At Will for those that should impact the customer's balance and the GL when they are frozen. Typically, the only adjustment types for which you'd choose Freeze At Will option are those that cause a customer's balance to be reduced, those that are used to refund money to a customer, and those that are created at bill completion. Adjustment types for adjustments created during bill completion

(e.g., by a bill completion algorithm) must have their adjustment freeze option set to Freeze At Will . Otherwise (i.e., if the option is Freeze At Bill Completion ) they will not be frozen until a subsequent bill is completed.

Please be aware of the following in respect of the Freeze At Bill Completion options:

- If you turn on Freeze At Bill Completion on *Installation Options - Billing*:
  - Users will not be allowed to freeze bill segments online. This means that the freeze button will be disabled on *Bill - Main* , *Bill - Bill Segments* and *Bill Segment - Main*.
  - The Billing background process will not freeze bill segments until all segments on a bill are error free (and permission has been granted on the bill cycle schedule to complete bills).
  - Bill segments will exist in the freezable state until the bill is completed .
- If you turn on Freeze At Bill Completion on *Adjustment Type - Main*:
  - Users will not be allowed to freeze adjustments of this type online. This means that the freeze button will be disabled on *Adjustment - Main* .
  - Background processes that create adjustments will not freeze this type of adjustment. Rather, the adjustments will be frozen when the next bill is completed.
  - Adjustments of this type will therefore exist in the freezable state until the next bill is completed .

**NOTE:**
**Alerts highlight freezable FT's.** Please be aware that messages appear in the *Account Information - Financial Information Zone* and in the *Dashboard - Financial Information Zone* to highlight the existence of freezable financial transactions.

Please be aware of the following in respect of the Freeze At Will options:

- If you turn on Freeze At Will on *Installation Options - Billing*:
  - Users will be allowed to freeze bill segments online. This means that the freeze button will be enabled on *Bill - Main* , *Bill - Bill Segments* and *Bill Segment - Main*.
  - The Billing background process will freeze bill segments when the individual segment is error-free (and permission has been granted on the bill cycle schedule to freeze bill segments).
  - Bill segments will exist in the frozen state regardless of whether the bill is completed.
  - The frozen bill segment's FT will be interfaced to the GL when the interface next runs.
  - All adjustment types must be also be set to Freeze At Will (otherwise they wouldn't get frozen).
- If you turn on Freeze At Will on *Adjustment Type - Main*:
  - Users will be allowed to freeze adjustments of this type online. This means that the freeze button will be enabled on *Adjustment - Main* .
  - Background processes that create adjustments will freeze this type of adjustment.
  - Adjustments of this type will exist in the frozen state prior to bill completion.
  - The frozen adjustment's FT will be interfaced to the GL when the interface next runs.

## Forcing The Freeze Date To Be Used As The Accounting Date

Every financial transaction references an accounting date. The accounting date controls the accounting period to which the financial transaction is booked as described below:

- Every financial transaction references an accounting date and a service agreement

- Every service agreement references a service agreement type
- Every service agreement type references a GL division
- Every GL division references an *accounting calendar*
- The accounting calendar contains the cross-reference between the accounting date specified on the financial transaction and the related accounting period in your general ledger

The accounting date is populated on financial transactions when they are initially generated. The following points describe the source of the accounting date:

- The user who creates or cancels a bill segment online defines the accounting date as part of the generation/cancel dialog (note, the current date defaults).
- Bill segments that are produced by the *BILLING* background process have their accounting date defined on the *bill cycle schedule* that caused the bill to be created.
- The user who creates or cancels an adjustment online defines the accounting date as part of the generation / cancel dialog (note, the current date defaults).
- Payments are unusual in that their financial transaction is only created when they are frozen (rather than when the payment is first distributed amongst the account's service agreements). At payment freeze time, the accounting date is set to the current date.

For payments, there is no issue because the accounting date is only populated on the financial transaction when a payment is frozen. However, for bill segments and adjustments, your business practice may dictate that the freeze date should be used as the accounting date rather than the original accounting date. Alternatively, your business practice may dictate that the accounting date that's originally stamped on bill segments / adjustments should be used (unless this associated period is closed at freeze time). It's really a question of the interpretation of the local accounting rules. After you've decided on your approach, populate the **Accounting Date Freeze Option** on *Installation Options - Billing* with one of the following values:

- Choose Always change if the accounting date on your financial transactions should be populated with the freeze date (i.e., the current date when the financial transaction is frozen).
- Choose Change if period is closed if the accounting date defined when the financial transaction is generated should be used (unless the associated accounting period is closed).

Please be aware of the following in respect of your choice:

- If you choose Always change:
  - When a user freezes a bill segment online, they will be prompted to supply an accounting date. The current date will default, but the user can override this value.
  - When a user freezes an adjustment online, they will be prompted to supply an accounting date. The current date will default, but the user can override this value.
  - The *BILLING* background process will use the current business date as the accounting date on bill segments that it freezes.
  - Also note, if you have chosen the Freeze At Bill Completion **Bill Segment Freeze Option** on the *installation record*, bill segments and certain types of adjustments are frozen when a bill is completed. This means that the accounting date on the related financial transactions will be set to the completion date (because the completion date is the freeze date with this setting). Refer to *Preventing SA Balances And The GL From Being Impacted Until Completion* for more information.
- If you choose Change if period is closed:
  - When a user freezes a bill segment online, they will only be prompted to supply an accounting date if the related accounting period is closed (because the accounting period closes after the bill segment is generated but before it's frozen). The current date will default, but the user can override this date.

- When a user freezes an adjustment online, they will only be prompted to supply an accounting date if the related accounting period is closed (because the accounting period closes after the adjustment is generated but before it's frozen). The current date will default, but the user can override this date.
- The *BILLING* background process will use the accounting date defined on the related bill cycle schedule as the accounting date on the bill segments that it creates and freezes.

**NOTE:**
The above installation option only controls the final accounting date for GL recording purposes. Rate and bill factor value selection based on accounting date uses the date as initially determined.

## How Late Payment Charges Get Calculated

Late payment charges are system-generated adjustments used to penalize a customer for late (or no) payments. This section describes how to set up the tables that control how and when late payment charges are generated. The following points describe how and when late payment charges are calculated.

- When a bill is completed, the system marks it with the date on which late payment charges will be calculated if the bill is not paid.
  - This date is calculated by adding grace days to the bill's due date. Grace days are defined on the account's *Customer Class / Division*.
  - This date will be zero if the account's *Customer Class / Division* indicates the account is not eligible for late payment charge processing.
- The late payment charge background process (referred to by the batch ID of ***LATEPYMT*** ) selects all bills on or after their late payment charge date.
  - For each such bill, the system determines if its account satisfies the late payment charge eligibility criteria defined on the account's *Customer Class / Division*. The eligibility criteria are defined in an algorithm and can therefore be as flexible as required.
  - If an account is eligible for late payment charges, the system checks each of the account's service agreements to determine if it is eligible for late payment charges (as defined on the service agreement's *SA Type* ).
  - If a service agreement is eligible for late payment charges, the system calls the SA type's late payment charge calculation algorithm. This algorithm should calculate the late payment charge amount, if applicable and return the calculated amount and an appropriate adjustment type to use. If this algorithm returns this information, an adjustment is generated to levy the late payment charge.

**FASTPATH:**
Refer to *Setting Up Customer Classes* for more information about how to set up an account's due days and grace period. Refer to *SA Type - Main Information* for more information about enabling late payment charges calculations for your service agreements.

You can update the **Late Payment Charge Details** section on the Bill - Main Information page to indicate if and when late payment charges may be levied. For more information, see *Bill - Main Information* .

## Service Agreement Type Controls Everything

The previous section illustrated three important concepts:

The true financial impact of the three financial events - bills, payments, adjustments - is at the service agreement level, not at the account level. This means that bills and payments are meaningless on their own. It's the service agreements' bill segments, payment segments and adjustments that affect how much a customer owes.

- Every bill segment, payment segment, and adjustment has a related financial transaction. These financial transactions contain the double-sided journal entries that will be interfaced to your general ledger. They also contain the information defining how the customer's debt is affected by the financial event (i.e., current amount and payoff amount).
- A single bill can contain many bill segments, each of which may have a different frequency. For example, a bill could contain future charges, monthly retroactive charges based on service cycle, quarterly charges that must end on a quarter-end boundary.

You control the financial effects of the various financial events using a single field on the service agreement. This field is called the service agreement (SA) Type. In this section, we describe many of the tables that must be set up before you can create a SA type.

**NOTE:**
**Foreshadowing.** You will notice that we don't explain how to set up SA types in this section. This is because SA type controls numerous aspects of a service agreement's behavior in addition to its financial behavior. The non-financial aspects are discussed in later chapters. It's only after you have set up all of the control tables in this manual that you'll be able to finally define your SA types. Refer to *Setting Up SA Types* for more information.

**WARNING:**
Take the time to define how you will record the various financial events in your general ledger before you attempt to set up these control tables. If you have simple accounting needs, this setup process will be straightforward. However, if you sell many services and use sophisticated accounting, this setup process will require careful analysis.

**Contents**



# Setting Up CIS Divisions

There are two types of Divisions referenced on a SA type: a CIS Division and a GL Division. This is a rather powerful structure, but it can be confusing.

- General Ledger divisions typically comprise individual entities (e.g., companies) in your general ledger. You must set up a GL division for each such entity. The GL division's sole purpose in the system is to define the accounting period associated with financial transactions linked to service agreements associated with the GL division (service agreements are associated with GL divisions via their SA type). The system cares about accounting periods in order to prevent a user from booking moneys to closed periods. It also uses accounting periods when it produces the flat file that contains the consolidated journal entry that is interfaced to your general ledger (refer to *The GL Interface* for more information).

- A CIS division is associated with a jurisdiction. The definition of a jurisdiction is a geographic-oriented entity with unique business rules. For example, if you conduct business in California and Nevada, and each state has different collection rules, you will need a separate jurisdiction for each state. You must set up a CIS division for each jurisdiction in which you conduct business.
- CIS division is also referenced on service agreement, premise and account.
  - The CIS division on SA is actually part of the SA's SA type. Because SA type controls many business rules, all business rules that are on the SA type can be thought of as being defined for a given jurisdiction and SA type combination. For example, you could define your valid rates for electric residential service in California which differ from the valid rates for electric residential service in Nevada. Refer to *Defining Service Agreement Types* for more information. In addition to controlling the business rules defined on the SA's SA type, the SA's CIS division also controls the type of collection criteria used to determine if and how to collect overdue debt. Refer to *Setting Up Collection Class Control* for more information.
  - The CIS division on premise defines the jurisdiction in which the premise is located. This jurisdiction controls the types of service agreements that can be associated with the premise's service points (e.g., you can only link California-oriented service agreements to premises governed by the California jurisdiction). You can also set up your field activity types to execute special algorithms when a field activity is completed at a service point located in specific jurisdiction.
  - The CIS division on account when combined with the account's customer class defines the jurisdiction that governs financial business rules (e.g., the bill's due date, when and how late payment charges are calculated, etc.). Refer to *Setting Up Customer Classes* for more information about these rules. The CIS division on account can also play a part in the addressee of To Do entries associated with the account. To assign To Do entries to a role based on the division, simply link the To Do type to the division. Refer to *To Do Entries Reference A Role* for more information.

**NOTE:**
Both CIS Division and GL Division are stored on the financial transactions associated with a service agreement. However, only GL Division plays a part in *The GL Interface*. Refer to *SettingUp GL Divisions* for information about GL Divisions.

The following topics describe the pages used to maintain a CIS division.

**Contents**



## CIS Division - Main

To define a CIS division, select **Admin** > **CIS Division** > **Add.**

**Description of Page**

Enter an easily recognizable **CIS Division** and **Description** for the CIS Division.

Enter the **Work Calendar** that defines the days on which this division operates. This calendar is used to ensure system-calculated dates (e.g., bill due date, credit and collection event dates, etc.) fall on a workday.

Use the **To Do Roles** scroll area if an account's division influences the role assigned to To Do entries associated with the account. In the collection, define the **To Do Role** to be assigned to entries of a given **To Do Type** that are associated with accounts that reference the **Division**. Refer to *Assigning A To Do Role* for more information.

**NOTE:**
Only To Do entries that are account-oriented take advantage of the roles defined for a division.

**Where Used**

Follow this link to view the tables that reference *CI_CIS_DIVISION* in the data dictionary schema viewer.

## CIS Division - Characteristics

You can define characteristics for a CIS division. You may need these for reporting purposes or in your algorithms. Refer to *Characteristic Types* for more information.

Select **Admin** > **CIS Division** > **Search** and navigate to the **Characteristics** page to maintain a division's characteristics.

**Description of Page**

Select a **Characteristic Type** and **Characteristic Value** to be associated with this CIS division. Indicate the Effective Date of the characteristic type and value.

> **NOTE:**
> You can only choose characteristic types defined as permissible on a CIS division record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

# Setting Up Revenue Classes

Every service agreement references a service agreement (SA) type. Amongst other things, the SA type defines a service agreement's revenue class. The revenue class is used when the service agreement's rate books revenue to different GL distribution codes based on the service agreement's revenue class.

> **FASTPATH:**
> See *Designing Calculation Groups and Rules* for more information about how revenue class is used to determine the GL revenue accounts referenced on a bill. See *Revenue Segmentation* for more information about how revenue class affects the number of SA types you will need.

To set up revenue classes, choose **Admin** > **Revenue Class**.

**Description of Page**

Enter an easily recognizable **Revenue ClassID** and **Description** for every revenue class.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_REV_CL*.

# Setting Up Distribution Codes

Distribution codes simplify the process of generating accounting entries by defining valid combinations of chart of account field values.

> **FASTPATH:**
> Refer to *The Source Of GL Accounts On Financial Transactions* for more information about the accounting entries associated will bills, payments and adjustments.

To set up distribution codes, open **Admin** > **Distribution Code** > **Add** .

**Description of Page**

Enter a unique **Distribution Code** and **Description** for the distribution code.

If this distribution code is a holding account used for payables cash accounting, check the **Use For Non-Accrual Accounting** switch and select the accounting method from the **Accounting Method** list. Select the priority level for the distribution code from the **Accounting Priority** list and enter the actual payable **Accounting Code.** The system will transfer monies from the holding account to the distribution code when the cash event occurs. Transfers will occur based on priority and debt age. For more information, refer to *Payables Cash Accounting* and *Deferred Accrual Accounting* .

Define the **GL Account Algorithm** used by the system when it interfaces financial transactions that reference this distribution code to your general ledger (refer to *GLDL - Create General Ledger Download* for more information about the download process). The logic embedded in this algorithm constructs the actual GL account number. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that constructs your general ledger account number. Click *here* to see the algorithm types available for this plug-in spot.

The **Write Off Controls** control how the system writes off debt associated with the distribution code. Refer to *The Ramifications of Write Offs in the General Ledger* for an explanation of how these fields are used at write-off time.

- Define the **Division** and **SA Type** of the service agreement to which bad debt associated with this distribution code should be transferred at write-off time. Note: only SA Types with a special role of Write Off may be selected.
- When the system transfers debt to the write-off service agreement defined above, the distribution code defined on this **Division / SA Type** will be debited unless you turn on the **Override Switch**. When this switch is turned on, the system overrides the distribution code of the transfer to side of the adjustment with the distribution code associated with the debt being written off. You'd typically turn this switch on for liability distribution codes because you want to debit the original liability account when the debt is written off. Note: if this switch is on the system also overrides the characteristic type / value with the respective value associated with the debt that is being written off.

Use the **GL Account Details** scroll to define how the system constructs the GL account associated with the distribution code when it interfaces the financial transaction to your general ledger. For each distribution code, enter the following information:

- Enter the **Effective Date** of the following information.
- Define whether, on the **Effective Date**, the following information is Active or Inactive . The system will only use effective-dated information that is Active .
- Enter the **GL Account** that the general ledger uses to process financial transactions tagged with this distribution code.
- Enter the **Statistics Code** that should be passed to the general ledger during the GL interface for this **GL Account**. For example, if this **Distribution Code** is used to record electric, residential revenue, the **Statistics Code** would be kWh if you record the number of kWh in you general ledger along with the dollar value of the revenue.
- If you have configured your installation options to indicate that *fund accounting* is practiced , define the **Fund** associated with this distribution code. If your installation options indicate that fund accounting is not practiced , the field is not visible.
- Use the grid to define characteristic values for the **Distribution Code**. To modify a characteristic, simply move to a field and change its value. The following fields display:
  - **Characteristic Type**. Indicate the type of characteristic.
  - **Characteristic Value**. Indicate the value of the characteristic.

**NOTE:**
You can only choose characteristic types defined as permissible on the distribution code record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_GL_DIVISION*.

## Setting Up Billable Charge Templates

A user creates a billable charge whenever a customer should be levied an ad hoc charge. For example, you would create a billable charge to charge a contractor for the repair of a ruptured gas line.

**NOTE:**
**Interfacing billable charges from an external system.** In addition to being entered manually, billable charges can also be interfaced from an external system. You would interface billable charges if your organization provides "pass through" billing services for a service provider. Refer to *Uploading Billable Charges* for more information.

A billable charge must reference a service agreement. This service agreement behaves just like any other service agreement:

- **Bill segments are created for the service agreement.** Whenever billing is performed for an account with billable charge service agreements, the system creates a bill segment for each unbilled billable charge.
- **Payments are distributed to the service agreement.** Payments made by an account are distributed to its billable charge service agreements just like any other service agreement.
- **Overdue debt is monitored.** The credit and collections process monitors billable charge service agreements for overdue debt and responds accordingly when overdue debt is detected.

**NOTE:**
**Rates can be applied to billable charges**. Billable charges can be connected to a service agreement that also specifies a rate. The rate will be applied and lines added to the bill segment after the billable charge lines are added. For example, a rate can insert flat charges or be applied to service quantities associated with the billable charge.

**Taxes on top of billable charges.** Rates cannot be applied to billable charge lines. If you need to perform a calculation such as applying taxes on top of the existing lines, add a service quantity (SQ) that contains the taxable amount with an SQ identifier that describes it as a taxable amount. A calculation rule can apply the tax to this SQ.

**FASTPATH:**
Refer to *How To Create A One-Time Invoice* for instructions describing how to create a bill for a billable charge outside of the normal bill creation process.

Billable charge templates exist to minimize the effort required to create a billable charge for a customer. A billable charge template contains the default bill lines, amounts and distribution codes used to levy a one-off charge.

The information on the template may be overridden by a user when the billable charge is created. For example, you can create a billable charge template to levy tree-trimming charges. This template would contain the bill lines, amounts and distribution codes associated with a tree trimming activities. Then, when you trim a tree for a customer, a user can create a billable charge using the template and override the amount to reflect the actual amount (if it differs from the norm).

**NOTE:**
**Templates aren't required**. A billable charge can be created without a template for a truly unexpected charge.

After setting up the billable charge templates, you must indicate the SA types that can use each template. Obviously, only billable charge SA types (as defined on the SA type's special role) will reference billable charge templates.

**Contents**

*Billable Charge Template - SQ Details*

## Billable Charge Template - Main

Open **Admin** > **Billable Charge Template** > **Add** to define your billable charge templates.

**Description of Page**

Enter a unique **Billable Charge Template** ID and **Description** for the billable charge template.

Use **Description on Bill** to define the verbiage that should print on the customer's bill above the billable charge's line item details.

Use **Currency Code** to define the currency in which the billable charge's amounts are expressed.

Use the grid to define the line item details associated with the billable charge (note, the **Total Line Amount** field is automatically calculated. It is the sum of the **Charge Amount** on each of the Line Sequence items). The following fields are required for each entry in the grid.

**Sequence** Line sequence controls the order in which the line items appear on the bill segment.

**Description on Bill** Specify the verbiage to print on the bill for the line item.

**Charge Amount** Specify the default amount to charge for the line item.

**Show on Bill** Turn this switch on if the line item should appear on the customer's printed bill. It would be very unusual for this switch to be off.

**Appears in Summary** Turn this switch on when the amount associated with this line also appears in a summary line.

**Memo Only, No GL** Turn this switch on when the amount associated with this line does not affect the GL (or the total amount owed by the customer).

**Distribution Code** Specify the default distribution code associated with this line item.

If you use the drill down button on the left most column in the grid, you will be taken to the Line Characteristics tab with the selected line displayed.

**FASTPATH:**
For more information about creating a billable charge, refer to *Maintaining Billable Charges*. For more information about billing billable charges, refer to *How To Create A One-Time Invoice*.

## Billable Charge Template - Line Characteristics

Open **Admin** > **Billable Charge Template** > **Search** and navigate to the **Line Characteristics** page to define your billable charge templates line characteristics.

**Description of Page**

The **Line Sequence** scroll defines the billable charge template line to which you wish to assign characteristic values.

To modify billable charge template line characteristics, simply move to a field and change its value. To add characteristics, press + to insert a row and then fill in the information for each field. The following fields display:

**Characteristic Type** The type of characteristic.

**Characteristic Value** The value of the characteristic.

## Billable Charge Template - SQ Details

Open **Admin** > **Billable Charge Template** > **Search** > **Search** and navigate to the **SQ Details** page to define your billable charge templates service quantities.

**Description of Page**

To modify a template's service quantity, simply move to a field and change its value. To add a new service quantity to the billable charge template, press the + button to insert a row and fill in the information for each field. The following fields display:

**Sequence** Specify the sequence number of the SQ.

**UOM** Select the unit of measure of this SQ. One or more of UOM, TOU, or SQ identifier must be selected.

**TOU** Select the time of use period.

**SQ Identifier** Select the SQ identifier.

**Service Quantity** Specify the number of units of this service quantity.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_B_CHG_TMPLT*.

# Designing and Defining Bill Segment Types

Every service agreement references a service agreement (SA) type. Amongst other things, the SA type references a bill segment type. The bill segment type controls how bill segments and their related financial transactions are created.

> **WARNING:**
> We strongly recommend understanding the concepts described in *The Big Picture of Billing* before setting up your bill segment types.

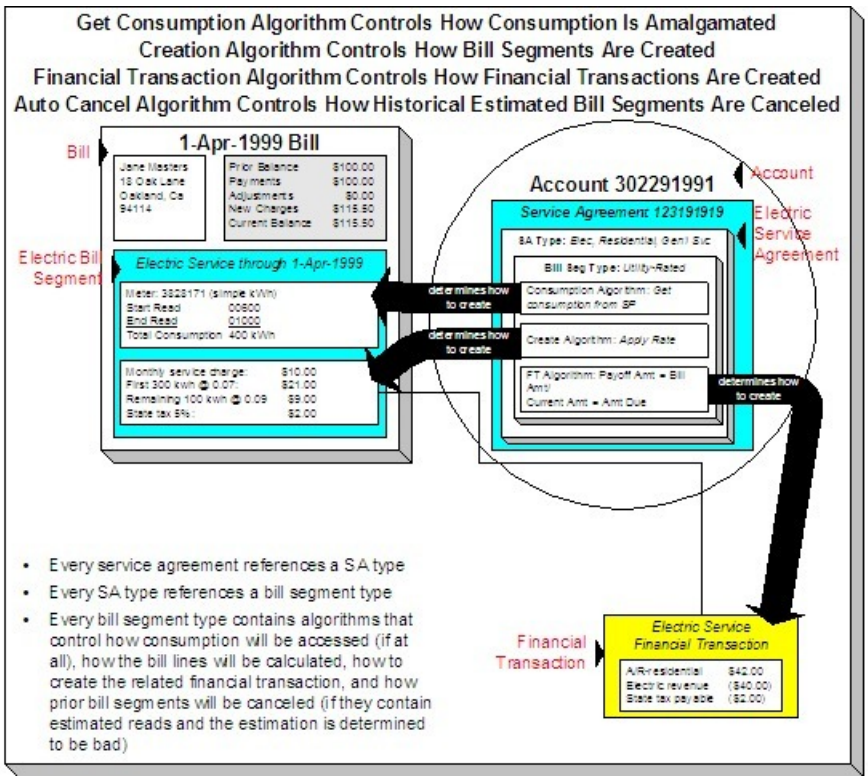
The topics in this section describe how to design and set up bill segment types.

**Contents**



## What Do Bill Segment Types Do?

Bill segment types control how bill segments and their related financial transactions are created. The following illustration will help you understand how the system uses bill segment types during the bill segment creation process:




## Designing Your Bill Segment Types

The following table contains a subset of the SA types listed under *Defining Service Agreement Types* and *Designing Your SA Types And Start Options For Sub SAs* and *Designing SA Types For Service Provider Financial Settlements* . However, if you are reading this document from top to bottom, you probably don't know what your SA types are (they are only designed much later) and will have to forestall this task until that time.

We're going to cheat and assume you know what your SA types are and fill in the algorithms necessary to create bill segments for each SA type. After this table is complete, we will look for unique combinations of the 4 algorithms and create a bill segment type for each one.

**NOTE:**
Before you can fill in the columns for your own SA types, you should be comfortable with the descriptions of the algorithms described under *Setting Up Bill Segment Types* .

| Div-<br>SA Type | Calculation Algorithm | FT Algorithm | Consumption Algorithm | Auto Cancel Algorithm |
|---|---|---|---|---|
| CA/G-RES | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | *Auto cancel bad estimates* |
| CA/G-COM | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption |
| CA/G-IND | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption |
| CA/CABLE | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption |

| | | | | |
|---|---|---|---|---|
| CA/E-COY | *Apply Rate* | *Payoff = 0 / Current = 0* | *Get Consumption From SP's* | N/A - can't estimate consumption |
| CA/E-RESU | *Apply Rate To Usage Request* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption Using Usage Request* | N/A - can't estimate consumption |
| CA/E-COMU | *Apply Rate To Usage Request* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption Using Usage Request* | N/A - can't estimate consumption |
| CA/WO-STD | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable |
| CA/WO-LIA | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable |
| CA/CHARITY | *Recurring Charge* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| CA/PA-REGU | *Recurring Charge With Auto Stop* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| CA/MERCH-I | *Recurring Charge With Auto Stop* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| CA/DEP-I | *Recurring Charge For Amount To Bill* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| CA/ONETIME | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption |
| CA/OVR UNDR | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable |
| CA/E-SUB ENR | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From Master Bill Segment* | N/A - rated sub service agreements are cancelled when there master is cancelled |
| CA/E-SUB BC | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption |
| **CA/E-FIN SETTL** | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable |

Now, we'll extract unique combinations of the 4 algorithms and create a bill segment type for each.

| Bill Segment Type | Calculation Algorithm | FT Algorithm | Consumption Algorithm | Auto Cancel Algorithm |
|---|---|---|---|---|
| SP RATED | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | *Auto cancel bad estimates* |
| BD RATED | *Apply Rate To Usage Request* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption Using Usage Request* | N/A - can't estimate consumption |
| NOESTRAT | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption |
| COMPUSAG | *Apply Rate* | *Payoff = 0 / Current = 0* | *Get Consumption From SP's* | N/A - can't estimate consumption |
| BILLCHRG | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption |
| RECUR | *Recurring Charge* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| RECUR AS | *Recurring Charge With Auto Stop* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |
| RECURATB | *Recurring Charge For Amount To Bill* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption |

| | | | | |
|---|---|---|---|---|
| SUB RATE | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From Master Bill Segment* | N/A - rated sub service agreements are cancelled when there master is cancelled |
| SUB BC | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption |

Just to make sure everything has been designed appropriately, we will return to our SA type samples and specify their respective bill segment types:

| Div-<br>SA Type | Calculation Algorithm | FT Algorithm | Consumption Algorithm | Auto Cancel Algorithm | Bill Segment Type |
|---|---|---|---|---|---|
| CA/G-RES | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | *Auto cancel bad estimates* | SP-RATED |
| CA/G-COM | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption | NOESTRAT |
| CA/E-RES | *Apply Rate To Usage Request* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption Using Usage Request* | N/A - can't estimate consumption | BD RATED |
| CA/E-COM | *Apply Rate To Usage Request* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption Using Usage Request* | N/A - can't estimate consumption | BD RATED |
| CA/G-IND | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption | NOESTRAT |
| CA/CABLE | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From SP's* | N/A - can't estimate consumption | SP-RATED |
| CA/E-COY | *Apply Rate* | *Payoff = 0 / Current = 0* | *Get Consumption From SP's* | N/A - can't estimate consumption | COMPUSAG |
| CA/WO-STD | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable | |
| CA/WO-LIA | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable | |
| CA/CHARITY | *Recurring Charge* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption | RECUR |
| CA/PA-REGU | *Recurring Charge With Auto Stop* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption | RECUR-AS |
| CA/MERCH-I | *Recurring Charge With Auto Stop* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption | RECUR-AS |
| CA/DEP-I | *Recurring Charge For Amount To Bill* | *Payoff = 0 / Current = Bill Amount* | N/A - no consumption is needed | N/A - no consumption | RECURATB |

| | | | | | |
|---|---|---|---|---|---|
| CA/ONETIME | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption | BILLCHRG |
| CA/OVR UNDR | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable | |
| CA/E-SUB ENR | *Apply Rate* | *Payoff = Bill Amount / Current = Amount Due* | *Get Consumption From Master Bill Segment* | N/A - rated sub service agreements are cancelled when there master is cancelled | SUB RATE |
| CA/E-SUB BC | *Billable Charge* | *Payoff = Bill Amount / Current = Amount Due* | N/A - no consumption is needed | N/A - no consumption | SUB BC |
| **CA/E-FIN SETTL** | N/A - non billable | N/A - non billable | N/A - non billable | N/A - non billable | |

And now you're ready to set up your bill segment types.

## Setting Up Bill Segment Types

To set up bill segment types, open **Admin** > **Bill Segment Type** > **Add.**

**Description of Page**

Enter an easily recognizable **Bill Segment Type** and **Description** for every type of bill segment.

For each bill segment type, define the **Create Algorithm**. The logic embedded in this algorithm creates the bill segment. Refer to *Designing Your Bill Segment Types* for examples.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that creates a bill segment in the appropriate manner. Click *here* to see the algorithm types available for this plug-in spot.

**WARNING:**
The **BS Create Algorithm** is a very important field as it controls how the system creates bill segments. There are some restrictions in respect of the values of certain fields on the SA type and the bill segment algorithm used on a SA type. Refer to *Require Total Amount Switch versus Bill Segment Creation Algorithm*, *Allow Recurring Charge Switch versus Bill Segment Creation Algorithm*, and *Rate Required Switch versus Bill Segment Creation Algorithm***for more information**.

For each bill segment type, define the **Financial Algorithm**. The logic embedded in this algorithm constructs the financial transaction associated with the bill segment. Refer to *Designing Your Bill Segment Types* for examples.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that constructs the bill segment financial transaction in the appropriate manner. Click *here* to see the algorithm types available for this plug-in spot.

**FASTPATH:**
For more information about current and payoff amounts, refer to *Current Amount versus Payoff Amount*.

If the bill segment requires consumption (e.g., meter reads) to be retrieved, define the **Get Consum Algorithm**. The logic embedded in this algorithm retrieves the consumption that is billed on the bill segment. Refer to *Designing Your Bill Segment Types* for examples.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that retrieves consumption in the appropriate manner. Click *here* to see the algorithm types available for this plug-in spot.

The **Auto Cancel Algorithm** is used by the system when it detects that a prior bill segment contains an estimated read that meets certain conditions when a non-estimated read is used on the current bill. Examples include:

- The prior bill segment contains a bad estimated read (by "bad" we mean that the current bill has a non-estimated reading that is less than the estimated end read on the prior bill segment).
- The prior bill segment contains an estimated read (there may be situations where you want to cancel an estimated bill segment when a non-estimated read is also higher than the end read on the prior bill segment. For example, when tiered rates may cause a customer to be penalized by consumption being charged at a higher rate).

For detecting a bad estimated read on the prior bill segment, if you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that cancels bill segments that contain poorly estimated consumption. Click *here* to see the algorithm types available for this plug-in spot.

For detecting an estimated read on the prior bill segment, if you haven’t done so already, you must set up this algorithm in the system and configure a feature configuration option. To do this:

- Create a new algorithm for the Auto Cancel Algorithm.
- On this algorithm, reference an Algorithm Type that cancels bill segments that contain estimated consumption. Click *here* to see the algorithm types available for this plug-in spot (refer to *Setting Up Algorithms*).
- Configure the **Always Call Auto Cancel** option type on the Financial Transactions Option feature configuration and set the option type value to 'Y'. For more information about Feature Configurations, see *Defining Feature Configurations* .

The **Bill Segment Information Algorithm** is used by the system to format the bill segment information that appears throughout the system. If the information you'd like displayed differs for bill segment types, you must set up this algorithm in the system. To do this:

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BILL_SEG_TYP*.

# Designing and Defining Deposit Classes

If you bill for deposits, you must set up one or more deposit classes. If your company does not bill for deposits, you can skip this section.

> **FASTPATH:**
> We strongly recommend familiarizing yourself with the concepts described in *The Big Picture Of Deposits* before tackling the information in this section.

The topics in this section describe how to design and set up deposit classes.

**Contents**

## What Do Deposit Classes Do?

A deposit class contains the business rules that govern:

- How and when deposit interest is calculated.
- How the recommended deposit amount is calculated.
- When a deposit will be automatically refunded to a customer.
- When the system will recommend a new or additional deposit.

When you link a deposit class to a SA type, you are indicating that the SA type's service agreements are governed by the deposit class' business rules.

In addition to linking a deposit class to the SA types used to bill for a deposit, you must also define a deposit class on SA types whose debt is covered by a deposit. Consider the following examples:

- Assume your company sells electricity, gas, and water; but deposits are only held only for electric service. In this situation, you'd need one deposit class - Electric - and you'd associate it with both the electric deposit SA type and the electric usage SA type(s) (the gas and water SA types would NOT reference a deposit class).
- If your company can apply a deposit to any type of debt, then you'd have just one deposit class - General Deposit . You'd link this deposit class to the deposit SA type, and to the other SA types whose debt is covered by the deposit.

**NOTE:**
**Non-cash deposits.** You can also use the system to manage non-cash deposits (e.g., letters of credit, surety bonds, 3 rd party deposits). Non-cash deposits are held in respect of an account (and an account may have an unlimited number of non-cash deposits). Each non-cash deposit must reference a deposit class. Why? Because the system amalgamates cash and non-cash deposits when it determines if an account is holding an adequate deposit. Refer to *3rd Party Deposits* for more information.

## Designing Your Deposit Classes

A deposit class contains the business rules that govern:

- How and when deposit interest is calculated.
- How the recommended deposit amount is calculated.
- When a deposit will be automatically refunded to a customer.
- When the system will recommend a new or additional deposit.

You will need multiple deposit classes if any of the above rules / conditions differ for different types of customers. For example, if residential customers use a different recommended deposit algorithm as compared to commercial customers, you'd need one deposit class for residential and another for commercial.

You will need additional deposit classes if your customers can have multiple deposits where each deposit is restricted to a specific type of debt. For example, if separate deposits are held for regulated and unregulated debt (and a customer could hold a combination of regulated and unregulated debt), you'd need one deposit class for regulated debt and another for unregulated debt.

We'll design deposit classes to satisfy the needs of a theoretical company to help you understand how to design your deposit classes. The following points describe the deposit requirements of our theoretical company:

- The recommended deposit amount is 2 times the average bill (averaged over the last 12 months). This is true regardless of the type of customer or debt.
- The system should automatically refund a deposit to a customer after:
  - The deposit has been held for at least 6 months; and
  - The account's credit rating is greater than the credit rating threshold defined on the installation record (i.e., the credit rating is no longer considered bad)
- This is true regardless of the type of customer or debt.
- Interest is calculated every 6 months. The interest rate is defined using a bill factor (refer to *Setting Up Bill Factors* for more information). This is true regardless of the type of customer or debt.
- When it's time to refund a refund a deposit, all outstanding debt will be paid off first. If any moneys remain, a check should be sent to the customer for the remainder. This is true regardless of the type of customer or debt.
- A customer could have both regulated and unregulated debt under a single account. When this happens, separate deposits will be held for each type of debt (where the regulated deposit can only be used to satisfy regulated debt and the unregulated deposit can only be used to satisfy unregulated debt).

You'd need the following deposit classes to satisfy the above requirement:

| Deposit Class | Recommended Amount Rule | Auto Refund Condition | Interest Rules | Deposit Refund Method |
|---|---|---|---|---|
| Regulated | 2 x Average Bill | Held for 6 months and credit rating is good | Simple interest every 6 months | Apply to outstanding debt first, refund remainder with a check |
| Unregulated | 2 x Average Bill | Held for 6 months and credit rating is good | Simple interest every 6 months | Apply to outstanding debt first, refund remainder with a check |

You may wonder why two deposit classes are needed when the rules are the same for both? Well, besides defining the applicable business rules for a deposit service agreement, a deposit class is defined on the SA types whose debt is covered by the deposit class' deposit. So, if you have two different types of debt where each type of debt can have its own deposit, you'd need at two deposit classes. Each deposit class would be associated with the service agreements that are being secured by the deposit.

Refer to *Setting Up Deposit Classes* for a description of the various algorithms defined in respect of a deposit class.

## Setting Up Deposit Classes

In the previous section, Designing Your Deposit Classes, we presented a case study that illustrated a mythical organization's deposit classes. In this section, we explain how to maintain your Deposit Classes.

**Contents**

*Deposit Class - Refund Interest*

*Deposit Class - Review Method*

## Deposit Class - Main

To set up deposit classes, select **Admin** > **Deposit Class** > **Add.**

**Description of Page**

Enter an easily recognizable **Deposit Class** and **Description**.

Use **Refund Description on Bill** to define the information that appears on the bill segment produced when it's time to refund the customer's deposit.

The remaining information on this page is used by the various deposit-oriented processes.

Refer to *Deposit Class - Good Customer* for information about the **Good Customer Algorithm**.

Refer to *Deposit Class - Recommendation* for information about the **Recommendation Algorithm** and **Review Tolerance Percentage**.

Refer to *Deposit Class - Refund Method* for information about the **Refund Method Algorithm**.

Refer to *Deposit Class - Refund Criteria* for information about the **Refund Criteria Algorithm**.

Refer to *Deposit Class - Refund Interest* for information about the **Interest Refund Algorithm** and **Months Between Interest Refund**.

Refer to *Deposit Class - Review Method* for information about the **Review Method Algorithm**.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_DEP_CL*.

## Deposit Class - Good Customer

On *Deposit Class - Main* you must define the **Good Customer Algorithm** used by the system when it determines if a customer is considered good (the system recommends new / additional deposits for bad customers). Refer to *Deposit Review* for a description of the background process that reviews customers for adequate deposits.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that determines if a customer is considered good. Click *here* to see the algorithm types available for this plug-in spot.

## Deposit Class - Recommendation

On *Deposit Class - Main* you must define the **Recommendation Algorithm** used by the system when it calculates a customer's recommended deposit amount.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that recommends deposits. Click *here* to see the algorithm types available for this plug-in spot.

The system uses the **Review Tolerance Percentage** to prevent the recommendation of small deposits by the Deposit Review background process. For example, if this field contains 10(%), the system would only recommend an additional deposit if the recommended amount was more than 10% of the existing deposit.

## Deposit Class - Refund Method

On *Deposit Class - Main* you must define the **Refund Method Algorithm** used by the system when it refunds a deposit to the customer.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that refunds a deposit to a customer. Click *here* to see the algorithm types available for this plug-in spot.

## Deposit Class - Refund Criteria

On *Deposit Class - Main* you must define the **Refund Criteria Algorithm** used by the system when it determines if it should automatically refund a deposit to a customer. Refer to *Deposit Review* for a description of the background process that reviews deposits for refunds.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that determines if a customer qualifies for a deposit refund. Click *here* to see the algorithm types available for this plug-in spot.

## Deposit Class - Refund Interest

On *Deposit Class - Main* you must define the **Interest Refund Algorithm** to define how the system calculates interest and how it refunds the interest to the customer.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that calculates interest on a deposit. Click *here* to see the algorithm types available for this plug-in spot.

Interest will be automatically calculated every X months where X is defined in **Months Between Interest Refund**. Refer to *Deposit Interest* for a description of the background process that calculates interest on deposits. Also note that interest is calculated when a *deposit service agreement is stopped*.

## Deposit Class - Review Method

On *Deposit Class - Main* you must define the **Review Method Algorithm** used by the system to determine what action to take if the system recommends a deposit (or additional deposit) amount for an account. Refer to *Review Deposits* for a description of the background process that reviews deposits for refunds. The algorithm supplied with the base product highlights new deposits and deposit amounts on the *Deposit Review* page.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that determines the review method the system uses if it recommends a deposit or additional deposit be applied to an account. Click *here* to see the algorithm types available for this plug-in spot.

## Setting Up Non-Cash Deposit Types

Non-cash deposit types are used to indicate the type of monetary instrument used for non-cash deposits. Refer to *Non-Cash Deposits* for more information.

To define your non-cash deposit types, select **Admin** > **Non-Cash Deposit Type.**

**Description of Page**

To modify a non-cash deposit type, move to a field and change its value.

To add a new non-cash deposit type, insert a row, then fill in the information for each field. The following fields display:

**Non-Cash Deposit Type** The unique identifier of the non-cash deposit type.

**Description** The description of the non-cash deposit type.

**Review Before Expiration** This switch indicates if the system will create a To Do entry when non-cash deposits of this type are close to expiration.

**Third Party Deposit** This switch indicates if the system requires a reference to a 3rd party's deposit service agreement for this type of non-cash deposit. Refer to *3rd Party Deposits* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_NCD_TYPE*.

## Setting Up Payment Segment Types

Every service agreement references a service agreement (SA) type. Amongst other things, the SA type references a payment segment type. The payment segment type controls how payment segments and their related financial transactions are created. To set up payment segment types, open **Admin** > **Payment Segment Type.**

**Description of Page**

Enter an easily recognizable **Payment Segment Type** and **Description** for every type of payment segment.

> **FASTPATH:**
> For more information about the source of the distribution codes on financial transactions, see *The Source Of GL Accounts On Financial Transactions*.

For each payment segment type, define the **Payment Segment Fin Algorithm**. The logic embedded in this algorithm constructs the actual financial transaction associated with the payment segment. Refer to *Examples of Common Payment Segment Types* for examples of how algorithms are used on common payment segment types.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that constructs the payment segment financial transaction in the appropriate manner. Click *here* to see the algorithm types available for this plug-in spot.

> **FASTPATH:**

For more information about current and payoff amount, see *Current Amount versus Payoff Amount*.

## Examples of Common Payment Segment Types

The following table shows several classic payment segment types used by many organizations:

| Payment Segment Type | Payment Segment Financial Transaction Algorithm |
|---|---|
| Normal payment (if you practice accrual accounting). Refer to *Accrual versus Cash Accounting* for more information. | *Payoff = Pay Amount / Current = Pay Amount (no cash accounting)* |
| Normal payment (if you practice cash accounting). Refer to *Accrual versus Cash Accounting* for more information. | *Payoff = Pay Amount / Current = Pay Amount (plus Cash Accounting)* |
| Charity payment | *Payoff =0 / Current = Pay Amount (the GL is affected)* |
| Non-CIS Payments (When the FT is created, the distribution code and GL account to credit is retrieved from the pay). Refer to *Non CIS Payments* for more information | *Payoff = Pay Amount / Current = Pay Amount (no cash accounting)* |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PAY_SEG_TYPE*.

# Designing And Defining Adjustment Types

A service agreement's debt may be changed with an adjustment. Every adjustment must reference an adjustment type. The adjustment type contains a great deal of information that is defaulted onto the adjustment, including whether the adjustment amount is calculated. It also controls many business processes associated with the adjustment. The topics in this section describe how to design and set up adjustment types.

**Contents**



## What Do Adjustment Types Do?

An adjustment type contains the business rules that govern how its adjustments are managed by the system. Please refer to *The Big Picture Of Adjustments* for a complete description of how adjustment types impact the lifecycle of adjustments.

## Setting Up Adjustment Types

The topics in this section describe how to set up adjustment types.

**NOTE:**
**When a new adjustment type is added.** When you introduce a new adjustment type, you must update one or more adjustment profiles with the new adjustment type. Why? Because adjustment profiles define the adjustment types that may be levied on service agreements (adjustment profiles are defined on SA types). If you don't put the adjustment type on an adjustment profile, the adjustment type can't be used on any adjustment.

**Contents**



## Adjustment Type - Main

To set up adjustment types, open **Admin** > **Adjustment Type** > **Add.**

**Description of Page**

Enter a unique **Adjustment Type** ID and **Description** for the adjustment type.

The **AdjustmentAmount Type** indicates whether the adjustment about is calculated or not. Select Calculated Amount when you want to use a rate to perform calculations to generate the adjustment amount otherwise select Non-Calculated Amount . Refer to *Setting Up Calculated Adjustment Types* for more information about calculated adjustments.

Enter the **Distribution Code** that references the GL account associated with the adjustment. For example, if this adjustment type is used to levy a charge for a bad check, the distribution code would reference the revenue account to which you associate such revenue. Note, the offsetting distribution code is kept on the SA type.

**NOTE:**
**Distribution Code for Calculated Adjustments.** Depending on the algorithm used for the *calculated adjustment* , the distribution code may come from the adjustment type or the calculation lines of the algorithm. If the adjustment's calculation algorithm gets the distribution code from the calculation lines, you do not need to specify a distribution code on the adjustment type.

**FASTPATH:**
For more information about the source of the distribution codes on financial transactions, see *The Source Of GL Accounts On Financial Transactions*.

Enter the **Currency Code** for adjustments of this type.

Turn on **Sync. Current Amount** if adjustments of this type exist to force a service agreement's current balance to equal its payoff balance. These types of adjustments are issued before a service agreement's funds are transferred to a write-off service agreement. If this switch is on, choose an **Adjustment Fin Algorithm** that does not impact payoff balance or the GL, but does affect the SA's current balance (refer to *ADJT-CA* for an example of such an algorithm).

Enter a **Default Amount** if an amount should be *defaulted* onto adjustments of this type.

**FASTPATH:**
For more information about current and payoff amounts, refer to *Current Amount versus Payoff Amount*.

If the AP Adjustment should be recorded in respect of the customer's 1099 amounts, indicate the **A/P 1099 Flag**. This would typically be used on the adjustment used to credit the deposit service agreement with accrued interest. The values of this field are Interest and Miscellaneous . This type of adjustment would also have an **A/P Request Type Code** selected, as 1099 reporting is handled in A/P.

Turn on **Print By Default** if information about adjustments of this type should print on the account's next bill.

Choose an **A/P Request Type Code** if this adjustment is interfaced to accounts payable (i.e., it's used to send a refund check to a customer). Refer to *A/P Check Request* for more information.

The **Adjustment Freeze Option** defines when adjustments can be frozen and therefore when a service agreement's balance and the general ledger are affected by an adjustment. Refer to *Preventing SA Balances And The GL From Being Impacted Until Bill Completion* to understand the significance of this option. Also note, if the *installation option's* Bill Segment Freeze Option is Freeze At Will , this field is defaulted to Freeze At Will and cannot be changed.

---

**WARNING:**
Adjustment types for adjustments created during bill completion (e.g., by a bill completion algorithm) must have their adjustment freeze option set to Freeze At Will . Otherwise (i.e., if the option is Freeze At Bill Completion ) they will not be frozen until a subsequent bill is completed.

---

If adjustments of this type require approval, define an **Approval Profile**. For more information, refer to *The Big Picture of Adjustment Approvals*.

Enter the verbiage to appear on the printed bill in **Description on Bill**.

Use the characteristics collection to define a **Characteristic Type** and **Characteristic Value** common to all adjustments of this type. These can be used for reporting purposes or in your algorithms.

## Adjustment Type - Adjustment Characteristics

To define characteristics that can be defined for adjustments of a given type, open **Admin** > **Adjustment Type** > **Search** and navigate to the **Adjustment Characteristics** page.

**Description of Page**

Use the **Adjustment Characteristics** collection to define characteristics that can be defined for adjustments of a given type. Turn on the **Required** switch if the **Characteristic Type** must be defined on adjustments of a given type. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on. Use **Sequence** to control the order in which characteristics are defaulted.

## Adjustment Type - Algorithms

To define algorithms for adjustments, open **Admin** > **Adjustment Type** > **Search** and navigate to the **Algorithms** page.

**Description of Page**

The grid contains **Algorithms** that control important adjustment functions. If you haven't already done so, you must *set up the appropriate algorithms* in your system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence Number** and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Adjustment Cancellation | Optional | When an adjustment is canceled an algorithm of this type may be called to do additional work.<br><br>Refer to *The Lifecycle Of An Adjustment* for more information about canceling an adjustment.<br><br>Click *here* to see the algorithm types available for this system event. |
| Adjustment Freeze | Optional | When an adjustment is frozen an algorithm of this type may be called to do additional work.<br><br>Refer to *The Lifecycle Of An Adjustment* for more information about freezing an adjustment.<br><br>Click *here* to see the algorithm types available for this system event. |
| Adjustment Information | Optional | We use the term "Adjustment information" to describe the basic information that appears throughout the system to describe an adjustment. The data that appears in "Adjustment information" is constructed using this algorithm.<br><br>Plug an algorithm into this spot to override the "Adjustment information" algorithm on installation options or the system default "Adjustment information" if no such algorithm is defined on installation options.<br><br>Click *here* to see the algorithm types available for this system event. |
| Adj. Financial Transaction | Required | Algorithms of this type are used to construct the actual financial transaction associated with the adjustment. The financial transaction controls the adjustment's affect on the service agreement's payoff and current balances. It also constructs the information that is eventually interfaced to your general ledger. Refer to *Examples of Common Adjustment Types* for examples of how algorithms are used on common adjustment types.<br><br>Click *here* to see the algorithm types available for this system event. |
| Default Adjustment Amount | Optional | Algorithms of this type are used to default the adjustment amount. Refer to *Default the Adjustment Amount* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Determine SA | Optional | Algorithms of this type are used to find a service agreement for which the adjustment can be posted. This plug-in is used |

| | | |
|---|---|---|
| | | particularly during adjustment upload when a staging record does not identify the SA ID. Refer to *Interfacing Adjustments From External Sources* for more information.<br>Click *here* to see the algorithm types available for this system event. |
| Resolve Suspense | Optional | Algorithms of this type are used to automatically resolve adjustments that are in suspense. Refer to *Suspense Adjustments* for more information<br>Click *here* to see the algorithm types available for this system event. |
| Generate Adjustment | Optional | Algorithms of this type are used to calculate the adjustment amount if an adjustment type indicates that the adjustment amount is calculated. Refer to *Setting Up Calculated Adjustment Types* for more information.<br>Click *here* to see the algorithm types available for this system event. |
| Validate Adjustment | Optional | Algorithms of this type are used to validate information for the adjustment after it is generated.<br>Click *here* to see the algorithm types available for this system event. |

## Setting Up Calculated Adjustment Types

You can use an algorithm to calculate an adjustment amount for example if you need to calculate tax on a base amount or calculate a non-sufficient funds charge based on the customer's credit rating. Because the base package algorithm calculates adjustment amounts by calling the rate application, calculated adjustments are sometimes referred to as ratable adjustments.

**NOTE:**
**Ratable Adjustments Appear Deceptively Simple.** But, they are not. Calculated adjustments that use the base package algorithm have all the power and flexibility (and complexity) of the rate application. Anything that you can do with a rate can be applied to a calculated adjustment. For examples that illustrate the flexibility of the rate application (and therefore calculated adjustments), refer to *Rate Examples*.

Adjustment types that indicate they are calculated have a generate adjustment algorithm. The base package algorithm defines the rate schedule used to calculate the adjustment as well as any UOM, TOU or SQI parameters.

To set up calculated adjustment types using the base package generate adjustment algorithm type:

- Define the rate that performs the calculations, including the rate schedule, calculation groups, and calculation rules. Refer to *Rates* for information.

**NOTE:**
If you create your own Generate Adjustment algorithm type, you may not need to set up a rate that performs the calculations. It depends on the needs of your algorithm type.

- Create a Generate Adjustment algorithm (refer to *Setting Up Algorithms* ) that references the base package algorithm type that generates calculated adjustments (see the table above).
- If you want the generation algorithm's calculation lines to provide the distribution codes when the adjustment is posted to the GL, create an Adjustment Financial Transaction algorithm (refer to *Setting Up Algorithms* ) that references an algorithm type that creates the adjustment's financial transactions using the calculation lines. A parameter of the adjustment financial transaction algorithm determines whether the distribution codes are taken from the adjustment type (AT) or calculation lines (CL). The system comes supplied with several sample algorithm types that *create adjustment financial transactions*.
- Create an adjustment type where the **Adjustment Amount Type** is Calculated Amount , the Generate Adjustment event references the generation algorithm created above, and the Adj. Financial Transaction event references the adjustment financial transaction algorithm created above.

## Examples of Common Adjustment Types

The following table shows several classic adjustment types used by many organizations:

| Adjustment Type | Typical Distribution Code | Default Amount | Financial Transaction Algorithm | Print On Bill | A/P Adjust-ment | 1099 |
|---|---|---|---|---|---|---|
| NSF | NSF revenue | Your NSF fee | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | No | No |
| LPC | Late payment charge revenue | N/A | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | No | No |
| CONNECT | Connection charge revenue | Your connection charge | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | No | No |
| CUSTREL | Customer relationship expense | N/A | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | No | No |
| ADDCHARG | Misc Revenue | N/A | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an | Yes | No | No |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | example of such an algorithm type | | | |
| XFER | Balance transfer clearing | N/A | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | No | No |
| WO SYNC | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | No | No | No |
| REFUNDAP | A/P clearing | N/A | Payoff = Current = Adj. Amt<br>Refer to *ADJT-NM* for an example of such an algorithm type | Yes | Yes | No |
| DPA FIX | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |
| CHARITFX | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |
| BUDG ON | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |
| BUDG OFF | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |

| | | | | | | |
|---|---|---|---|---|---|---|
| BUDG FIX | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |
| DEPOSREF | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | Yes | No | No |
| DEPOSINT | Interest expense | N/A | Payoff = Current = Adj. Amt. Refer to *ADJT-NM* for an example of such an algorithm type.<br>Or<br>Payoff Amt = Adj Amt / Current Amt = 0. Refer to *ADJT-TA* for an example of such an algorithm type.<br>Use the first method if you want to have the interest reflected as a credit balance on the customer's bill. Use the second method if you roll the interest amount into the customer's existing deposit on hand. | Yes | No | Yes |
| DEPFIXCR | N/A | N/A | Payoff = 0 / Current = Adj. Amt<br>Refer to *ADJT-CA* for an example of such an algorithm type | No | No | No |

## Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_ADJ_TYPE*.

## Setting Up Adjustment Type Profiles

Adjustment type profiles categorize your adjustment types into logical groups. When you link a profile to a SA type, you limit the type of adjustments to be linked to the SA type's service agreements. The creation of adjustment profiles and their linkage to SA types prevents inappropriate adjustments from being linked to your service agreements. More than one adjustment type profile may be linked to a SA type.

For example, you can create an adjustment type profile called Miscellaneous Fees and link to it the miscellaneous fee adjustment types. Then, you would link this profile to those SA types that are allowed to levy such fees.

> **NOTE:**
> **Bottom line.** An adjustment can only be linked to a service agreement if its adjustment type is part of an adjustment type profile that is valid for the service agreement's SA type. If an adjustment type is not linked to a profile, it could never be levied.

To set up adjustment type profiles, open **Admin** > **Adjustment Type Profile** > **Add.**

**Description of Page**

Enter a unique **Adjustment Type Profile** and **Description** for the adjustment type profile.

Indicate the **Adjustment Types** that are part of the profile.

## Examples Of Common Adjustment Profiles

The following table shows several classic adjustment profiles used by many organizations (we've displayed some attributes from the adjustment type in the following table to help make it more understandable):

| Adjustment Profile | Adjustment Type | Typical Distribution Code | Default Amount | Financial Transaction Algorithm |
|---|---|---|---|---|
| FEES | NSF | NSF revenue | Your NSF fee | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| | LPC | Late payment charge revenue | Your LPC | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| | CONNECT | Connection charge revenue | Your connection charge | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| MISCEXP | CUSTREL | Customer relationship expense | N/A | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| XFER | TRANSBAL | Balance transfer clearing | N/A | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| REFUND | REFUND | A/P clearing | N/A | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| DPA | ADJCURR | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| | SYNCCURR | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |

| | | | | |
|---|---|---|---|---|
| CHARITY | CHAR FIX | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| BUDGET | BUDG ON | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| | BUDG OFF | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| | BUDG FIX | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| | FIX PAY | Customer relationship expense | N/A | Payoff Amt = Adj Amt / Current Amt = 0 |
| DEPOSIT | DEPOSBILL | N/A | Your standard deposit amount | Payoff Amt = 0 / Current Amt = Adj Amt |
| | DEPOSINT | Interest expense | N/A | Payoff Amt = Adj Amt / Current Amt = Adj Amt |
| | SYNCCURR | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |
| | ADJCUR | N/A | N/A | Payoff Amt = 0 / Current Amt = Adj Amt |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_ADJ_TYP_PROF*.

## The Big Picture Of Adjustment Approval

Some implementations require adjustments to be approved by one or more managers before they impact a customer's debt and the general ledger. For example, an adjustment used to rebate a credit balance may require managerial approval before the rebate is sent to the customer. The topics in this section describe how to set up the system to support the approval of adjustments.

**Contents**

## Approval Is Controlled By Approval Profiles

An approval profile contains the rules that define if and how an adjustment is approved. If an adjustment type does not reference an approval profile, the related adjustments do not require third-party approval before they impact a customer's debt. If an adjustment type references an approval profile, the approval profile's approval hierarchy defines if the adjustment requires approval and who the authorized approvers are. For example, an approval profile can be configured with the following approval hierarchy:

- Adjustments < $0 require approval by the "credit approvers role"
- Adjustments >= $0 and <= $10 do not require approval
- Adjustments > $10 and <= $100 require the approval of a user that belongs to the "level 1 approvers role"
- Adjustments > $100 require two levels of approval: first a user that belongs to the "level 1 approvers role" must approve the adjustment; afterwards, the adjustment must be approved by a user that belongs to the "level 2 approvers role"

**NOTE:**
**Transfer adjustments.** The term "transfer adjustment" refers to two adjustments that are used to transfer moneys between two service agreements. The adjustment with the positive amount is considered to be the debit adjustment; the other adjustment is considered the credit adjustment. When a transfer adjustment requires approval, only one of the adjustments needs to be approved. You control whether the debit side or the credit side of a transfer adjustment is used to control the approval process when you set up the approval profile.

## Approval Profiles Can Be Linked To Multiple Adjustment Types

Approval hierarchies are frequently the same for many adjustment types. The system allows an approval profile to be linked to multiple adjustment types to simplify the definition and maintenance of the rules over time.

## Adjustments Created In Batch Are Not Approved

The system assumes that no approval is necessary for adjustments created by batch processes even those whose adjustment type references an approval profile.

## Approval Inserts A Step Into An Adjustment's Lifecycle

*The Lifecycle Of An Adjustment* explains how an adjustment is transitioned from the Freezable state to the Frozen state when it should impact the general ledger and the customer's balance. If an adjustment's adjustment type references an approval profile, the user cannot freeze the adjustment directly. Rather, the user must submit the adjustment for approval when it's ready and only when the last applicable approver approves the adjustment will it become Frozen .

**NOTE:**
**Freeze during bill completion.** You can configure the system to only freeze certain types of adjustments when the next bill is completed for the adjustment's account. When the last approver approves such adjustments, they remain in the Freezable . When the next bill is completed for the account, these adjustment become Frozen . Such adjustments that have not been approved at the time of bill completion will remain in the Freezable state. Refer to *Preventing SA Balances And The GL From Being Impacted Until Bill Completion* for more information.

## Approval Requests Manage And Audit The Approval Process

Users submit an adjustment for approval using a dedicated button on the *Adjustment* page. When an adjustment is submitted for approval, the system creates an "approval request". The approval request determines if the adjustment requires approval and, if so, the list of approvers. If the adjustment does not require approval, the approval request is updated to indicate such and the adjustment is Frozen immediately (if freezing is allowed prior to bill completion). If the adjustment requires approval, the approval request's state becomes Approval In Progress and the approver(s) are notified.

**NOTE:**
**Approval submission logic is customizable.** The previous paragraph describes how the base-package works when an adjustment is submitted for approval. This logic resides in an algorithm that's plugged in on the C1-AdjustmentApprovalProfile business object in the Determine Approval Requirements system event. Your implementation can change this logic by developing a new algorithm and plugging it into this business object. If your logic is meant to supersede the base-package algorithm, remember to inactivate the base-package algorithm by adding an appropriate inactivation option to this business object.

## To Do Entries Are Created To Notify Approvers

When an approval request detects an adjustment requires approval, it notifies the first approver by creating a To Do entry. The To Do entry is created using the To Do type and To Do role defined on the approval profile. All users who belong to the approving To Do role can see the entry. When a user drills down on an adjustment approval To Do entry, the *Adjustments - Approval* portal is opened. This portal contains summary information about the adjustment and the approval history of the adjustment. This portal is also where the user approves or rejects the adjustment.

When the first user in the To Do role approves an adjustment, the To Do entry is Completed and the approval request's audit log is updated. If there are no higher levels of approval required, the adjustment is Frozen (if freezing is allowed prior to bill completion) and the approval request is moved to the Approved state. If there are higher levels of approval required, a new To Do entry is created to the next To Do role in the approval hierarchy.

**NOTE:**
**To Do entries can create email.** A To Do entry can be configured to create an email message for every user in the To Do role to inform the user(s) of new adjustments requiring their attention. Refer to *To Do Entries May Be Routed Out Of The System* for the details.

## Monitoring and Escalating Approval Requests

The base-package is supplied with an algorithm that your implementation can use to monitor approval requests that have been waiting too long for approval. This algorithm can complete the current To Do entry and create a new one for a different role when the timeout threshold defined on the algorithm's parameters is exceeded. If you've configured the system to send email for approval, this algorithm can also send x reminder emails (where x is defined on the algorithm's parameters) before the approval request is escalated to the new To Do role. Refer to *C1-APR-TMOUT* for more information about this algorithm. If you plan to enable this functionality, plug-in your configured algorithm on the Approval In Progress state on the C1-AdjustmentApprovalRequest business object.

## Rejecting Deletes The Adjustment

When an adjustment is being approved, anyone with access to the adjustment can reject it by using the *Adjustments - Approval* portal. Users other than the current approver are allowed to reject an adjustment to allow an "in process" an adjustment to be withdrawn.

When an adjustment is rejected, the following takes place:

- The user is prompted for a reject reason.
- The approval request's audit log is updated with the reject reason and the approval request is moved to the Rejected state.
- The adjustment is deleted.

## Designing Your Approval Profiles

The following points describe a recommended design process:

- Create logical groups of adjustment types where each group has the same monetary hierarchy and approvers. An approval profile will be required for each of these groups.
- The number of To Do types (if any) that need to be created is dependent on how the adjustment approval To Do entries should be organized on To Do lists. For example, if all approval request To Do entries can appear in the same To Do list, you can use the base-package adjustment approval To Do type. However, if your organization prefers each approval profile's To Do entries to appear in a distinct To Do list, a separate To Do type will be needed for each list. Note that the base-package is supplied with a To Do type called ***C1-ADAPP*** that should be used as the basis for any new approval request To Do type.
- The number of To Do roles is dependent on who approves your adjustments. At a minimum, you will require a separate To Do role for each level in your approval profiles. Remember that every user in a To Do role will see its entries (and receive email if you've configured the system to do such).
- Refer to *Monitoring and Escalating Approval Requests* for how to configure the system to escalate approval requests that have been waiting too long.
- If your implementation requires email notification when an adjustment requires approval, the following setup is required:
  - Set up an outbound message type, external system, and message sender. Refer to *To Do Entries May Be Routed Out Of The System* for the details.
  - Every To Do type referenced on your approval profiles should be configured as follows:
- Define the *F1-TDEER* batch process as the To Do type's routing process
- Set up an algorithm that references the *C1-ADJAREQEM* algorithm type and plug it in the External Routing system event.

## Exploring Adjustment Approval Data Relationships

Use the following links to open the application viewer where the physical tables and data relationships behind the approval functionality are documented:

- Click *C1-APPR PROF* to view the approval profile maintenance object's tables.
- Click *C1-APPR REQ* to view the approval request maintenance object's tables.

## Implementing Other Approval Paradigms

The above sections describe how the base-package adjustment approval process works. Because adjustment approval has been implemented using the C1-AdjustmentApprovalProfile and the C1-AdjustmentApprovalRequest business objects,

your implementation can add additional business rules and change the approval user interface as required. Alternatively, if your implementation has a radically different approval process, you can create a different business objects with their own business rules. To learn how to do this, please enroll in the Configuration Tools training class.

## Setting Up Approval Profiles

Approval profiles contain the rules that control how adjustments are approved. To set up an approval profile, open **Admin** > **Approval Profile** > **Add**.

> **FASTPATH:**
> Refer to *The Big Picture Of Adjustment Approval* for a detailed description of how approval profiles govern the adjustment approval process.

The topics in this section describe the base-package zones that appear on the Approval Profile portal.

**Contents**



### Approval Profile List

The Approval Profile *List zone* lists every approval profile. The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent approval profile.
- Click the Add link in the zone's title bar to add a new approval profile.

### Approval Profile

The Approval Profile zone contains display-only information about an approval profile. This zone appears when an approval profile has been broadcast from the Approval Profile List zone or if this portal is opened via a drill down from another page. The following functions are available:

- Click the **Edit** button to start a business process that updates the approval profile.
- Click the **Delete** button to start a business process that deletes the approval profile.
- Click the **Duplicate** button to start a business process that duplicates the approval profile.

Please see the zone's help text for information about this zone's fields.

### Approval Profile's Adjustment Types

The Approval Profile's Adjustment Types zone lists every *adjustment type* that is governed by this approval profile. This zone appears when there is at least one adjustment type governed by the approval profile displayed in the Approval Profile zone:

To add an adjustment type to this list:

- Navigate to the Adjustment Type page and display the desired adjustment type.

- Specify the governing approval profile and update the adjustment type.

To remove an adjustment type from this list:

- Navigate to the Adjustment Type page and display the desired adjustment type.
- Change or remove its approval profile and update the adjustment type.

# Designing and Defining Budget Plans

If you allow your customers to pay a budget amount each month (as opposed to their actual bill amount), you must set up one or more budget plans. If your company does not offer budget billing options, you can skip this section.

The topics in this section describe how to design and set up budget plans.

**Contents**



## The Financial Impact Of Budget Plans

The only difference between a customer who participates in budget billing and one who doesn't is that budget billing customer have bill segments where payoff amount differs from current amount. Why? Because the payoff amount is the actual amount of the bill. The current amount is the amount the customer is expected to pay (i.e., their budget amount).

Let's run through an example of a customer on a budget to illustrate a service agreement where these two balances are not the same. The values in the payoff balance and current balance columns reflect the amount due after the financial transaction has been applied:

| Date | Financial Transaction | Payoff Balance | Current Balance |
|---|---|---|---|
| 1-Jan-99 | Bill: $125, Budget $150 | 125 | 150 |
| 15-Jan-99 | Payment: $150 | -25 | 0 |
| 2-Feb-99 | Bill: $175, Budget $150 | 150 | 150 |
| 14-Feb-99 | Payment: $150 | 0 | 0 |
| 3-Mar-99 | Bill: $200, Budget $150 | 200 | 150 |
| 15-Mar-99 | Payment: $150 | 50 | 0 |

**FASTPATH:**
For more information about current and payoff amounts, refer to *Current Amount versus Payoff Amount* .

## What Do Budget Plans Do?

A budget plan contains the business rules that govern:

- How the recommended budget amount is calculated.

- When and how a customer on an ongoing budget plan will have their budget amount periodically trued up.
- The conditions under which the system will highlight an existing budget amount as being anomalous with the customer's current use patterns.

You may have different budget plans for different customer segments. For example, customers with large bills may have their budget amount recalculated every month, whereas small customers may have their budget amount only recalculated annually. You define which budget plans govern a customer's bills via a **budget plan on the customers' accounts**. An account's initial budget plan is defaulted from its customer class. You may override an account's budget plan at will.

## Designing Your Budget Plans

**FASTPATH:**
Refer to *Budget Billing* for background information about budget billing.

A budget plan contains the business rules that govern:

- How the recommended budget amount is calculated.
- When and how a customer on an ongoing budget plan will have their budget amount periodically trued up.
- The conditions under which the system will highlight an existing budget amount as being anomalous with the customer's current use patterns.

You will need multiple budget plans if any of the above rules / conditions differ for different types of customers. For example, if residential customers use a different recommended budget algorithm as compared to commercial customers, you'd need one budget plan for residential and another for commercial.

We'll design budget plans to satisfy the needs of a theoretical company to help you understand how to design your budget plans. The following points describe the budget requirements of our theoretical company:

- The recommended budget amount is the last year's real bill amounts plus any existing debit/credit balance divided by 12. This is true regardless of the type of customer.
- The frequency of budget true up is monthly for commercial customers and annually for residential customers.
- The system should highlight when a residential customer's budget is more than 30% out of whack with what their budget amount would be if it was recalculated.
- The system should highlight when a commercial customer's budget is more than 20% out of whack with what their budget amount would be if it was recalculated.

You'd need the following budget plans to satisfy the above requirement:

| Budget plan | Recommended Amount Algorithm | True Up Algorithm | Monitor Algorithm |
|---|---|---|---|
| Residential | Average Bill | True up every 12 months | Highlight when more than 30% out |
| Commercial | Average Bill | True up every month | Highlight when more than 20% out |

Refer to the Page Controls under *Setting Up Budget Plans* for a description of the various algorithms defined in respect of a budget plan.

## Setting Up Budget Plans

In the previous section, Designing Your Budget Plans, we presented a case study that illustrated a mythical organization's budget plans. In this section, we explain how to maintain your Budget Plans.

**Contents**



## Budget Plan - Main

To set up budget plans, select **Admin** > **Budget Plan** > **Add.**

**Description of Page**

Enter an easily recognizable **Budget Plan** and **Description**.

The remaining information on this page is used by the various budget-oriented processes.

Refer to *Budget Plan - Calculation Algorithm* for information about the **Calculation Algorithm**.

Refer to *Budget Plan - Monitor Algorithm* for information about the **Monitor Algorithm**.

Refer to *Budget Plan - True Up Algorithm* for information about the **True Up Algorithm** and **Months for True Up**.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BUD_PLAN*.

## Budget Plan - Calculation Algorithm

On *Budget Plan - Main* you must define the **Calculation Algorithm** used by the system when it calculates a customer's recommended budget amount.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that calculates recommended budget amounts. Click *here* to see the algorithm types available for this plug-in spot.

## Budget Plan - Monitor Algorithm

On *Budget Plan - Main* you must define the **Monitor Algorithm** used by the *Budget Monitor* background process when it determines if a customer's budget plan is out-of-sync with their consumption patterns.

> **NOTE:**
> **What happens?** If the algorithm determines that a customer's budget plan is out-of-sync with its current recommended amount, an entry is added to the *Budget Review* page.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).

- On this algorithm, reference an Algorithm Type that highlights if a customer's current budget amount is out-of-sync with their consumption patterns. Click *here* to see the algorithm types available for this plug-in spot.

## Budget Plan - True Up Algorithm

On *Budget Plan - Main* you must define the **True Up Algorithm** used by the *Budget True Up* background process when it periodically trues up a customer's budget.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that trues up budget amounts. Click *here* to see the algorithm types available for this system event.

The system will automatically true up a customer's budget amount every X months (X is defined in **Months for True Up**).

# Tender Management

When a payment is received, a tender is created to record what was remitted (e.g., cash, check, credit card). The topics in this section describe control tables that must be set up in order to remit tenders.

**FASTPATH:**
We strongly recommend *Tender Management and Workstation Cashiering* before setting up the control tables described in this section.

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## Setting Up Tender Types

Tender types are used to indicate the method in which the tender was made. A unique **Tender Type** must exist for every type of tender that can be remitted. For example, if you allow cash, checks, direct debits from a checking account, and direct debits from a credit card to be tendered, you'd need the following tender types:

| Tender Type | Description | Like Cash | Generate Auto Pay | Require External Source ID | Require Expiration Date | External Type |
|---|---|---|---|---|---|---|
| CASH | Cash | Yes | No | N/A | N/A | N/A |
| CHEC | Check | No | No | N/A | N/A | N/A |
| OVUN | Cash drawer - over/under | No | No | N/A | N/A | N/A |
| DDCH | Direct debit - checking | No | Yes | Yes | No | Checking withdrawal |
| CRED | Direct debit - credit card | No | Yes | No | Yes | Credit card withdrawal |

Go to **Admin** > **Tender Type** > **Add** to define your tender types.

**Description of Page**

Enter a unique **Tender Type** and **Description** for the tender type.

Turn on the **Like Cash** switch if this tender type is cash or the equivalent of cash. This indicator controls if the system generates a warning if a cash-only account remits a tender other than cash. It is also used to generate a warning for online cashiers to turn in their tenders when the cash-like amount exceeds the maximum amount balance defined for the *tender source*.

Turn on **Generate Auto Pay** if this type of tender causes an automatic payment request to be routed to a financial institution. For example, this switch will be on if this tender type is used for direct debits from a customer's checking account (because every tender of this type will have an automatic payment request created when the tender is created).

The following fields are only used for tender types associated with automatic payments:

**External Type** This field is used by the background process that creates the information that is interfaced to the automatic payment source. Specifically, it controls the record type associated with the different types of automatic payments that are routed to the automated clearinghouse (ACH).

> **NOTE:**
> The values for this field are customizable using the Lookup table. This field name is EXT_TYPE_FLG.

**Require Ext. Src. ID** This switch indicates if an Auto-Pay Source that references this type of tender must contain an External Source ID. The External Source ID is the unique identifier of the financial institution to which the automatic payment will be routed.

This switch is typically turned on for tender types associated with checking / saving direct debits. It is turned off for tender types associated with credit card debits (you don't need an external source for a credit card debit, you just need the credit card number).

**Expiration Date Required** Turn this switch on if an Auto-Pay Option that references an auto-pay source that references this type of tender must also contain an expiration date (e.g., automatic debit / credit cards).

Turn this switch off for tender types associated with checking / saving direct debits.

**Tender Authorization** Indicates that tenders of a particular type require authorization prior to being created.

**Business Object** If **Tender Authorization** has a value of Required , a **Business Object** must be specified for the tender type. The primary function of this **Business Object** is to manage the authorization of payment tenders.

> **FASTPATH:**
> For more information on authorizing credit card payments, refer to the Tender Type - Credit Card with Authorization business object.

Turn on **Allow Cash Back** if the system should automatically calculate a cash back amount when a tender is remitted for this tender type and the amount tender exceeds the amount being paid.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TENDER_TYPE*.

## Setting Up Tender Sources

A unique **Tender Source** must exist for every potential source of funds. For example,

- Every cashiering station will have a unique tender source.

> **NOTE:**

If your organization accepts alternate currency payments online, then a tender source must exist for each currency code accepted at the cashiering station.

- Every lock box will have a unique tender source.
- Your remittance processor will have a unique tender source.
- If you allow customers to pay bills automatically (e.g., via EFT), you'll need a tender source for each institution to which you route automatic payment requests. For example, if you route automatic payment requests to the automated clearinghouse (ACH), you'll need a tender source for the ACH.

For example, if you have 3 lock boxes, 2 cash drawers at an area office A, 2 cash drawers at area office B, and a single remittance processor, you'd need the following tender sources:

| Tender Source | Type | External Source ID (Lockbox ID) | Default Starting Balance | Currency Code | Suspense Service Agreement |
|---|---|---|---|---|---|
| CASH-A01 | Cashiering | N/A | 150.00 | USD | N/A |
| CASH-A02 | Cashiering | N/A | 150.00 | USD | N/A |
| CASH-B01 | Cashiering | N/A | 150.00 | USD | N/A |
| CASH-B02 | Cashiering | N/A | 150.00 | USD | N/A |
| LB-INDUS | Lockbox | 112910-A | N/A | USD | 9291019281 |
| LB-COMM | Lockbox | 938219-C | N/A | USD | 4739837372 |
| LB-RESID | Lockbox | 372829-B | N/A | USD | 1912910192 |
| REMIT | Lockbox | N/A | N/A | USD | 1920038437 |
| ACH | Auto Pay | N/A | N/A | USD | N/A |

To set up a tender source, select **Admin** > **Tender Source** > **Add.**

**Description of Page**

Enter an easily recognizable **Tender Source** and **Description** for the tender source.

Define the **TenderSource Type**. Valid values are: Ad Hoc, Auto Pay , Online Cashiering and Lockbox . The system uses this information to prevent tender controls from different sources from being included under the same deposit control. In other words, you can't mix ad hoc, automatic payment, cashiering and lockbox tenders under the same deposit control.

**FASTPATH:**
For more information, refer to *Maintaining Deposit Controls*.

If the source is an external system (e.g., a lockbox or an automatic payment destination), use **External Source ID** to define the unique identifier of the source. The background process that interfaces tenders from this source uses this information to create the appropriate tender control when it interfaces payments from external sources.

If this source is a cash drawer, define the **Default Starting Balance**. This balance is defaulted onto new tender controls and may be overridden.

**NOTE:**
The tender type of the **Start Balance** is defined on the installation record.

If this source is a cash drawer, define the **Max Amount Balance**. When the amount of *cash-like* tenders in a cash drawer exceeds this balance, a warning is issued to remind the cashier to turn in some of the funds to a tender control.

Define the **Currency Code** of tenders linked to this source. All tenders in a source must be of the same currency.

If this tender source is associated with payments that are *interfaced from an external source* (e.g., a lockbox or a remittance processor), use Suspense **Service Agreement** to define the service agreement whose account will hold uploaded payments with an invalid account. Refer to *Payment Upload Error Segmentation* for more information about suspense service agreements. Also note, because the payment upload process simply books payments that reference invalid accounts to the account associated with this service agreement, this account should belong to a customer class with the appropriate payment distribution algorithms. This may entail creating a new customer class that will only be used on these "suspense accounts". This customer class would need the following algorithms:

- We'd recommend using a simple payment distribution algorithm like *PYDIST-PPRTY* (distribute payment based on SA type's payment priority and the age of the debt).
- We'd recommend using an overpayment distribution algorithm like *OVRPY-PPRTY* (distribute overpayment to highest priority SA type).

Define the **Bank Code** and **Bank Account** into which the tender source's moneys will be deposited. The bank account defines the distribution code used to build the GL details for the payment. Refer to The *Source of GL Accounts on Financial Transactions* for more information. Note that the bank code and bank account can later be overwritten when entering Tender Deposits on *Deposit Control*.

If this tender source is associated with payments that are *interfaced from an external source*, for example tender sources associated with Auto Pay and Lockbox **Tender Source Types**, the information is also used as follows:

- The *payment upload process* uses this information to populate the bank and bank account when it creates deposit control records for the tender controls it creates during the interface. Refer to *Managing Payments Interfaced From External Sources* for more information.
- The *automatic payment interface* uses this information to populate the bank and bank account when it creates deposit control records for the tender controls it creates during the interface.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TNDR_SRCE*.

**NOTE:**
If your organization accepts alternate currency payments online, then a tender source must exist for each currency code accepted at the cashiering station. When a user adds a tender control the system attempts to default a tender source based on the currency of the deposit control and the tender source(s) define on the user's record.

**FASTPATH:**
Refer to *Alternate Currency Payments* for more information.

# Automatic Payment Options

If your customers can pay their bills automatically (via direct debit or credit card debits), you'll need to set up the various control tables described in this section.

**IMPORTANT:**
Besides the tables described in this section, additional values must also be added to control tables defined under *Tender Management*. Specifically, refer to *Setting Up Tender Types* and *Setting Up Tender Sources*.

**FASTPATH:**
Refer to *Automatic Payments* for more information about how automatic payments are handled in the system.

**Contents**



# Setting Up Auto-Pay Route Types

Auto Pay Route Types are used to control when and how automatic payment requests are routed to a financial institution, and when the general ledger is impacted. Select **Admin** > **Auto Pay Route Type** to define your route types.

**Description of Page**

To modify an auto pay route type, simply move to a field and change its value.

To add a new route type, press + to insert a row, then fill in the information for each field. The following fields display:

**Route Type** The unique identifier of the route type.

**Description** The description of the route type.

**Tender Source** The background process that routes automatic payment requests to a financial institution (e.g., the automated clearing house interface) will mark each automatic payment's associated tender with a tender control for audit and control purposes. The following points describe how this happens:

- When the system sees that it's time to send an automatic payment to a financial institution, it looks at the automatic payment's auto-pay source.
- Every auto-pay source references an auto-pay route type.
- Every auto-pay route type references a tender source.
- A **Tender Source** has a tender control for each group of tenders deposited / interfaced together one batch.
- The system marks each automatic payment's associated tender with the latest tender control for the **Tender Source**. The system will create a new tender control each time it routes automatic payments to the tender source. Refer to *Managing Payments Interfaced From External Sources* for more information about tender source and tender control.

**Extract Batch Cd** This field defines the background process that interfaces the automatic payment requests to the financial institution.

**Autopay Date Calculation Alg** This algorithm populates 3 dates associated with the automatic payment: 1) the date the automatic payment will be sent to the financial institution, 2) the date the general ledger will be impacted by the automatic payment, 3) the date of the payment.

If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms* ). On this algorithm, reference an Algorithm Type that populates automatic payment dates. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_APAY_RT_TYPE*.

# Setting Up Auto-Pay Source Codes

A unique **Auto-Pay Source** must exist for every bank / credit card company / bill payment service that your customer's use as the source of the funds when they sign up for automatic payment. For example,

- Every bank will have a unique auto-pay source.
- Every credit card company will have a unique auto-pay source.

To set up an auto-pay source, select **Admin** > **Auto Pay Source Type** > **Add.**

**Description of Page**

Enter an easily recognizable **Auto Pay Source Code** and **Description** for the auto-pay source.

The **Source Name** is the name of the financial institution.

When the system creates an automatic payment request, it also creates an associated payment tender. This tender (like all tenders) must have a tender type. This field defines the **Tender Type** associated with this auto-pay source's tenders. Refer to *Setting Up Tender Types* for more information.

The **External Source ID** is the unique identifier of the financial institution to which the automatic payment will be routed (e.g., the bank routing ID of the bank). This field is typically blank on automatic payments routed to credit card companies because the credit card company doesn't have an external source ID (whereas direct debits from banks must have a bank routing number). Whether this field is required is controlled by the **Tender Type**.

The **Auto Pay Route Type** controls when and how automatic payment requests get routed to a financial institution. It also controls when the general ledger is impacted by the automatic payments financial transaction. Refer to *Setting Up Auto-Pay Route Types* for more information.

The **Work Calendar** defines the financial institution's workdays. This information is used to determine the date on which automatic payment requests will be sent to the financial institution. Refer to *Setting Up External Workday Calendars* for more information.

The **Validation Algorithm** defines how the system validates the customer's account ID at the financial institution. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that validates the customer's account ID at the financial institution. Click *here* to see the algorithm types available for this plug-in spot.

Refer to *Account - Auto Pay* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_APAY_SRC*.

# SEPA Payments

The topics in this section provide background information about the Single Euro Payments Area (SEPA) payment functionality.

> **NOTE: This section is only relevant for some organizations.** The system configuration requirements described in this section are only relevant if your organization is participating in SEPA payment transactions such as direct debit collection.

**Contents**



## What Is SEPA?

SEPA (Single Euro Payments Area) is a European Union (EU) integration initiative that is aimed at streamlining processes that are related to cross-border payments. SEPA consists of the EU member states plus a few additional countries. In SEPA,

customers can make electronic Euro payments within and across these countries under the same rights and obligations. SEPA payment services are based on global ISO (International Organization for Standardization) standards.

## SEPA Direct Debit

The SEPA Direct Debit (SDD) scheme allows a creditor to collect money from the debtor, with prior approval from the debtor. The direct participants are the following:

- Creditor
- Creditor's bank
- Debtor
- Debtor's bank

The debtor and creditor must each hold an account with a payment service provider located within SEPA. The accounts may be in Euro or in any other SEPA currency. However, the transfer of funds between the debtor's bank and the creditor's bank always takes place in the Euro currency. The indirect participants are the following:

- Clearing and Settlement Mechanisms (CSMs) such as an automated clearinghouse
- Intermediary Banks that offer intermediary services to debtor banks and/or creditor banks

## SEPA Direct Debit Mandate

The mandate is the consent and authorization that the debtor gives to the creditor, to allow the creditor to initiate direct debit collections. The creditor is responsible for storing the original mandates, together with any amendments relating to the mandate or information regarding its cancellation or lapse. The contents of this section describe how mandates are issued and canceled.

**Contents**



### Issuing a Mandate

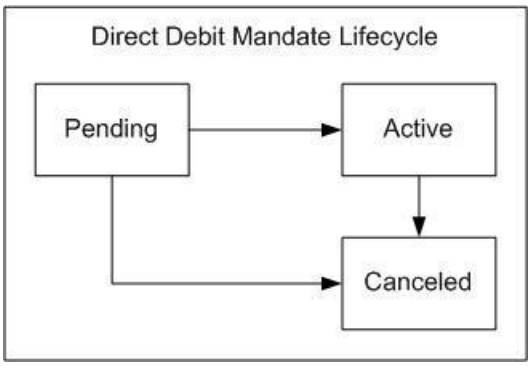
The creditor initiates the issuance of a mandate by sending the mandate form (either paper or electronic) to the debtor with the creditor information filled in. The creditor information includes the creditor's unique identifier as a SEPA creditor. An ISO standard specifies the structure of the creditor identification, which includes country code, a check digit, the creditor's business code and a country-specific identifier for the creditor. The creditor ensures that the mandate form contains the mandatory legal wording and the mandatory set of information, as specified in the standards. The debtor must ensure that the required information is supplied and that the mandate is signed, either in writing or electronically. The mandatory debtor information includes the debtor's international bank account number (IBAN) and bank identifier code (BIC). The creditor assigns a unique reference for the mandate and provides that reference to the debtor before the first initiation of a collection. The debtor can then use both the unique mandate reference and the creditor identification to verify the bank transactions.

### Canceling a Mandate

A mandate can be canceled by either the debtor or the creditor, without the involvement of either bank.

## The Lifecycle of a Direct Debit Mandate Task

The following diagram shows the possible lifecycle of the Direct Debit Mandate Task business object:




**Pending State:** The direct debit mandate starts out in a pending state.

**Active State:** The direct debit mandate is transitioned manually by a user to the active state. Once a mandate is created and activated in the system, the account's auto pay information must be updated to reflect information on the mandate. This process may be automated within the mandate's lifecycle and a sample algorithm exists in the demo database to achieve this. This algorithm is also included in the export bundle in the demo database.

**Canceled State:** The direct debit mandate is transitioned manually by a user to the canceled state.

# Configuring the System for SEPA Direct Debits

The following sections describe the setup required if your organization intends to process SEPA direct debit transactions.

**Contents**



## Define Auto-Pay Route Type

Configure an auto-pay route type for routing direct debit requests to a financial institution. This auto-pay route type must reference the SEPA Direct Debit Payment Extract (C1-SDDCE) batch process.

Refer to *Setting Up Auto-Pay Route Types* for more information.

### Define Auto-Pay Source Type

Ensure that your auto-pay source codes reference the above auto-pay route type. You must also configure a validation algorithm on the auto-pay source type to ensure the International Bank Account Number (IBAN) defined on the Auto-pay Source of the Account has the correct format.

Refer to *Setting Up Auto-Pay Source Codes* for more information.

## Define a Direct Debit Task Type

Your implementation must configure a **Direct Debit Task Type.** This service task type captures general information that the SEPA extract process needs to create the output file. The base product provides a business object for direct debit task type, **C1-DirectDebitMandateTaskType.**

Note that the direct debit task type is maintained on the Service Task Type portal.

## Define SEPA Country Codes

The list of countries and territories that are part of the Single Euro Payment Area (SEPA) must be defined on extendable lookup **C1-SEPACountryCodeLookup**. These country codes are used by the system to validate the creditor identification entered on a direct debit task type.

Note that an export bundle exists in the demo database that includes a sample list of SEPA country codes. This list must be verified by your implementation for accuracy.

## Define Mandate Cancel Reasons

A cancel reason is required when canceling a direct debit mandate. Ensure that these status reasons have been configured for the direct debit task business object, **C1-DirectDebitMandateTask.**

## Define Navigation Options

The base product includes navigation options for easy access to query and maintain an account's direct debit mandate. To access these portals, add a new menu item to the account context menu (**CI_CONTEXTACCOUNT**). This menu item should include two menu lines:

- A context menu line for navigation to the direct debit mandate that references a navigation option of **c1DirectDebitMandate.** The system uses the account in context and attempts to find the most recent active mandate for the account. If a mandate exists, navigation is to the service task maintenance portal. If an active mandate does not exist, navigation is to the service task query portal.
- A context menu line for adding a new direct debit mandate that references a navigation option of **c1AddDirectDebitMandate.**

## Setting Up Account Auto Pay

The SEPA direct debit extract process retrieves banking details from the account's auto pay record. Once a mandate is created and activated in the system, the account's auto pay information must be updated to reflect information on the mandate. This process may be automated within the mandate's lifecycle and a sample algorithm exists in the demo database to achieve this. This algorithm is also included in the export bundle in demo.

# Payment Advices

The topics in this section provide background information about payment advice functionality.

**NOTE:**

**This section is only relevant for some organizations.** The system configuration requirements described in this section are only relevant if your organization issues payment advices to the customer instead of initiating electronic funds transfer directly to the customer's bank.

**Contents**



## What Is A Payment Advice?

Payment advice is a money order that is established at the initiative of the utility. When a bill is completed, the utility sends the customer a document that indicates a payment amount and the customer's bank details. If the customer agrees to the information on the payment advice, he/she signs it and returns it to the clearinghouse address that is indicated on the payment advice. The clearinghouse, in turn, sends the dated and signed payment advice to the customer's bank, which completes the payment.

## Payment Advice vs. Direct Debit

The existing functionality that creates automatic payments is referred to as direct debit processing. Payment advice processing differs from direct debit processing in the way that automatic payments get initiated. With payment advice processing, the usual automatic payment records - i.e. payment event, payment, tender and auto pay clearinghouse staging - are not created. Instead, a payment advice is printed and sent to the customer. The customer sends the approved payment advice directly to the clearinghouse.

**NOTE:**
The system does not provide sample processes for extracting and printing payment advice information. Your implementation team would have to create these.

## Setting Up The System To Enable Payment Advices

You must set up a Financial Transaction Options *Feature Configuration* to define parameters that control payment advice functionality.

The following points describe the various **Option Types** that must be defined:

- Payment Advice Functionality Supported. This option controls whether the system allows for payment advice processing.
  - Enter Y if the system should allow for both direct debit and payment advice processing.
  - Enter N if the system should only allow for direct debit processing.
- Default Auto Pay Method. This option is used for defaulting the auto pay method on new account auto pay records.

Refer to *Account - Auto Pay* for more information on auto pay method.

**NOTE:**

The system assumes direct debit processing if the above feature options are not defined.

# Credit Card Payments

If your organization accepts credit card payments, you can configure the system to authorize customers' credit card charges in real-time, and perform an authorization reversal (also in real-time) when the credit card payment is canceled. When the authorization web service is not available, you can permit users to enter authorization codes manually so that they can continue processing payments.

## Configuring the System for Tender Authorization

The following sections describe the setup required if your organization intends to use the base CyberSource integration tender authorization functionality.

**Contents**



### Define the Outbound Message Type

An outbound message type is required for the CyberSource authorization outbound message. This outbound message type must reference the base CyberSource - Credit Card Authorization business object.

An outbound message type is required for the CyberSource reversal outbound message. This outbound message type must reference the base CyberSource - Credit Card Reversal business object.

### Define the Message Sender

A Message Sender is required to define how to send messages to CyberSource. Use the context of the Message Sender to define the web service interface.

### Define the External System and Configure the Messages

Define an external system and configure the valid outbound message types and the method of communication for each ( XAI,Batch,orReal Time ; Real Time is generally the appropriate choice for credit card authorization). You will also need to select the appropriate XSLs to format both the request and response to the outbound message types for CyberSource.

## Define a User

Add a user to hold details required for CyberSource communication. Security information (e.g. Merchant Id, Merchant Reference Code, CyberSource User Name and Password) needed to interface with CyberSource is stored as user characteristics.

## Set up the Tender Authorization Algorithm

A Tender Type (BO) - Tender Authorization algorithm must be configured. This algorithm performs a tender authorization or a tender authorization reversal through CyberSource.

## Define a Business Object

A business object (BO) must be created for the TENDER TYPE maintenance object. This BO must reference the tender authorization algorithm created.

## Define Tender Types

Update the appropriate tender type(s) to denote that authorization is required. The new business object must be specified on the tender type(s).

## Tender Authorization - Feature Configuration

If your implementation has a need to prevent users from overriding the automatic tender authorization, then you must set up the Allow Manual Tender Authorization Override option type on the Financial Transaction Options *Feature Configuration*. The Allow Manual Tender Authorization Override option must have a value of N in order to suppress the Authorization Override checkbox.

**FASTPATH:**
For more information on credit card payment authorization refer to the Tender Type - Credit Card with Authorization business object.

# Non CIS Payments

Payment Templates can be configured for common types of non CIS payment allocations. These templates are used to default the payment distribution and allow non CIS payments to be directly allocated to specific distribution codes.

## Setting Up Payment Templates

Payment templates contain the rules that control how non CIS payments are created. You can use a payment template to default the payment distribution for common types of non CIS payments. To set up a payment template, open **Admin** > **Payment Template** > **Add.** The topics in this section describe the base-package zones that appear on the Payment Template portal.

**Contents**



## Payment Template List

The Payment Template *List zone* lists every payment template. The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent payment template.
- Click the Add link in the zone's title bar to add a new payment template.

## Payment Template

The Payment Template zone contains display-only information about a payment template. This zone appears when a payment template has been broadcast from the Payment Template List zone or if this portal is opened via a drill down from another page. The following functions are available:

- Click the **Edit** button to start a business process that updates the payment template.
- Click the **Delete** button to start a business process that deletes the payment template.
- Click the **Duplicate** button to start a business process that duplicates the payment template.
- Click the **Activate** or **Deactivate** button to start a business process that updates the status of the payment template.

Please see the zone's help text for information about this zone's fields.

# Alternate Currency Payments

The topics in this section provide background information about alternate currency payments.

> **NOTE:**
> **This section is only relevant for some organizations.** The system configuration requirements described in this section are only relevant if your organization accepts payments tendered in a currency other than the customer's currency. If your organization does not accept alternate currency payments, you need only indicate such on the *Installation Record* ; no other setup is required.

**Contents**



## What Is An Alternate Currency Payment?

The currency code on the customer's account defines the currency in which the account's financial transactions are expressed. If the customer remits a payment in a different currency, this is referred to as an alternate currency payment. The system enables conversion of the tendered amount to the account's currency and captures the alternate currency and amount, as well as the exchange rate used in the conversion on the payment tender. The payment tender is linked to a tender control that references the alternate currency.

# Configuring the System for Alternate Currency Payments

**Contents**



## Allowing Alternate Currency Payments

You must set the **Alternate Currency** flag on the *Installation Record* to Allowed if your organization accepts alternate currency payments. This option controls whether the **Currency Converter** button is displayed when a payment is processed on the payment portal.

## Payment Event Business Object

A business object (BO) must be created for the PAY EVENT maintenance object. You must specify this BO as the option value for the CIS Payment Event Add BO option type on the Financial Transaction Options *Feature Configuration*. This BO must have the Currency Conversion Script BO option defined. This BPA script is invoked when the user clicks on the **Currency Converter** button during CIS payment processing on the payment portal.

**NOTE:**
**Currency conversion logic is customizable.** The base product includes a script for currency conversion called C1-ConvCurr that's plugged in on the C1-CISPaymentEvent business object. This script converts an alternate currency amount to the account's currency using a bill factor value. The bill factor to use is derived by concatenating the alternate currency code and the account's currency code. For example, if converting US Dollars (USD) to Barbados Dollars (BBD) the bill factor code to use would be USDBBD. Your implementation can change this logic by developing a new script and plugging it into the payment event business object.

## Define the User's Tender Sources

Define the tender source(s) for the location (e.g., the specific cash drawer) in which a user's payment tenders are stored during the day. A tender source should be specified for each currency that payments are accepted in. The tender source(s) on the user record are used by the system when a user adds a new tender control. The system attempts to default a tender source on a new tender control based on the deposit control's currency and the tender source(s) defined on the user's record.

# Payment Event Distribution

The base-package, by default, creates a single payment for a payment event. If your business requires potentially many payments to be created when payment events are added, you'll need to set up the various control tables described in this section.

**FASTPATH:**
Refer to *Distributing A Payment Event* for more information about how payment event distribution is handled in the system.

**Contents**



# Making Payments Using Distribution Rules

As part of this method, one or more distribution details are provided at payment time along with the usual payment and tender information. Each distribution detail record references a distribution rule and a corresponding value. The distribution rule encapsulates the business rules that govern the distribution of the payment amount into payments using the specified value.

The type of value being captured on the distribution detail and the logic that uses it to create payments are defined on the *distribution rule*.

**Contents**



## Rule Value

The primary use of the rule value is to identify the business entity whose balance is to be relieved by creating payment(s). In most cases where the payor account is the same as the payee account it may also used to identify the tender account associated with the payment(s).

## Determine Tender Account

The very first step in processing a distribution detail is to identify the tender account (i.e. the payor) associated with the payment. To do that the system calls the Determine Tender Account *algorithm* defined on the distribution rule providing it with the rule value and other tender information.

## Creating Payment(s)

The business logic that distributes a payment amount into one or more payments(s) targeted towards the entity identified by a rule value is held in designated Create Payment *algorithms* defined on the distribution rule.

## Rule Value Can Capture Additional Information

A rule value can also be used to capture additional information provided at payment time, like address information, comments, etc. Obviously payment distribution details with this type of rule value should have a zero payment amount, as they are not real payments. These distribution details end up being linked to a payment event, but unlike other distribution details they do not contribute any payments. You can think of these details as payment event characteristics.

You don't have to set up a Create Payment algorithm for distribution rules intended solely to capture additional payment information.

# Setting Up The System To Use Distribution Rules

**Contents**



# Setting Up Distribution Rules

Define a Distribution Rule for each payment event distribution method practiced by your business.

**Contents**



## Distribution Rule - Main

To set up a distribution rule, navigate to **Admin** > **Distribution Rule** > **Add.**

**Description of Page**

Enter a unique **Distribution Rule** and **Description** for the distribution rule.

Provide a short and unique **Distribution Rule Label** to be used as rule's name throughout the system.

**Characteristic Type** defines the type of entity whose balance is relieved by the payment(s) this rule creates. For example, if this rule targets payments(s) towards a specific service agreement, you'd reference a characteristic that its value identifies a service agreement. We use the term "rule value" for the characteristic value.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_DST_RULE*

## Distribution Rule - Algorithms

Navigate to **Admin** > **Distribution Rule** > **Search** and navigate to the **Algorithms** page to set up the algorithms appropriate for your distribution rule.

**Description of Page**

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** (note, all system event's are optional and you can define an unlimited number of algorithms for each event).

| System Event | Optional / Required | Description |
|---|---|---|
| Create Payment | Optional | This algorithm is executed to distribute a payment distribution detail payment amount into one or more payments.<br>Click *here* to see the algorithm types available for this system event. |
| Determine Tender Account | Optional | This algorithm is executed to determine the tender account associated with the payment distribution detail.<br>Only one such algorithm may be specified.<br>Click *here* to see the algorithm types available for this system event. |

## Feature Configuration

You must set up a Financial Transaction Options *Feature Configuration* to define parameters that control various payment event distribution options.

The following points describe the various **Option Types** that must be defined:

- Always Enable Distribution Rule. This option controls whether the system should only use the distribution rule method to add payment events or rather allow both the default method and the distribution rule method to coexist.
  - Enter Y if the system should always use distribution rules. With this setting, navigation to the Payment Event page in add mode opens up the *Payment Event Quick Add* page (defaulting it to the single payment event dialog). This dialog is designed to create a payment event using distribution rules
  - Enter N if the system should allow both methods. With this setting, navigation to the Payment Event page in add mode opens up the standard *Payment Event - Add Dialog* that uses the default method to create a payment event. If you want to use the distribution rule method, navigate to the Payment Event Quick Add page from the menu.
- Default Distribution Rule. This option states your default distribution rule that appears throughout the system.

# Cancel Reasons

As described in *The Financial Big Picture*, the various types of financial transactions can be canceled if their financial impact needs to be reversed from the system. Whenever a financial transaction is canceled, a cancel reason must be specified. This section describes the control tables that contain the cancel reason codes.

**Contents**

## Setting Up Bill (Segment) Cancellation Reasons

Open **Admin** > **Bill Cancel Reason** to define your bill segment cancellation reason codes.

**Description of Page**

Enter an easily recognizable **Bill Cancel Reason** and **Description** for the bill cancellation reason.

Only use **System Default** on those reason codes that are placed on bill segments that are automatically canceled by the system. Valid values are: Turn off auto-cancel , Bad estimated read auto-cancel, MDM Corrected Read and Mass Cancel . The reason code identified as Turn off auto-cancel is placed on bill segments that are automatically canceled when the final bill segment ends before the prior bill (and therefore we have to cancel the prior bill). The reason code identified as Bad estimated read auto-cancel is placed on bill segments that are automatically canceled by the system when it detects that it used an estimated read whose consumption is greater than the next actual read (and therefore we have to cancel the estimated bill segment). The reason code identified as Mass Cancel is placed on bill segments that are canceled as a result of the execution of the Mass Cancellation background process. Refer to *Mass Cancellation* for more information. The reason code identified as MDM Corrected Read is placed on bill segments that are automatically canceled by the system when processing a corrected read notification. Corrected read notifications are received from MDM when reads that were used in bill determinant calculation requests (usage requests) are replaced or modified. This notification may result in the rebill of frozen bill segments. Refer to *Usage Requests* for more information.

**NOTE:**
**Required values.** You must have one reason code defined for each of the System Default values.

## Setting Up Payment Cancellation Reasons

Open **Admin** > **Pay Cancel Reason** to define your payment cancellation reason codes.

**Description of Page**

Enter an easily recognizable **Cancel Reason** and **Description** for the payment cancellation reason.

Turn on the **NSF Charge** switch if the system should invoke the non-sufficient funds (NSF) algorithm when a tender is cancelled using this reason code. Refer to *NSF Cancellations* for more information.

The next several fields are used to change an account's credit rating or cash-only points if a tender is canceled using the respective reason code.

- Use **Affect Cash-Only Score By** to define how tenders canceled using this reason will affect the account's cash-only score. This should be a positive number. When a customer's cash-only points exceed the cash-only threshold amount defined on the CIS installation record, the account is flagged as cash only during payment processing and on Control Central.
- Use **Affect Credit Rating By** to define how tenders canceled using this reason will affect the account's credit rating. This should be a negative number. A customer's credit rating is equal to the start credit rating amount defined on the CIS installation record plus the sum of credit rating demerits that are currently in effect.
- Use **Months Affecting Credit Rating** to define the length of time the demerit remains in effect. This information is used to define the effective period of the credit rating demerit record.

**FASTPATH:**

For more information, refer to *Account - Credit Rating*.

**NOTE:**
**The payor gets the credit rating / cash only hit.** When you cancel a tender you must specify a cancellation reason. If the cancellation reason indicates a credit rating / cash only demerit should be generated, the system levies the credit rating transaction on the PAYOR's account.

The **System Default Flag** is specified on those cancellation reasons that are placed on payment segments that are automatically cancelled by the system. Valid values are: Re-opened Bill . The Re-opened Bill value is used as follows:

- Payments are automatically created for accounts who pay their bills automatically when their bills are completed.
- If such a bill is reopened before the automatic payment is interfaced to the paying authority, the system automatically cancels the payment. The Re-opened Bill cancellation reason is placed on such payments.

## Setting Up Adjustment Cancellation Reasons

Open **Admin** > **Adjustment Cancel Reason** to define your adjustment cancellation reason codes.

**Description of Page**

Enter an easily recognizable **Cancel Reason** and **Description** for each adjustment cancellation reason.

## Miscellaneous Financial Controls

This section describes miscellaneous control tables.

**Contents**



## A/P Check Request

Adjustments whose adjustment type is marked with an A/P check request code are interfaced to your A/P system. Your A/P system then cuts the checks.

**FASTPATH:**
Refer to *Controls The Interface To A/P* for more information about the accounts payable interface.

You must set up at least one A/P check request code if you want A/P to cut checks.

To set up A/P check request types, open **Admin** > **A/P Request Type.**

**Description of Page**

Enter an easily recognizable **A/P Request Type** for the accounts payable request type.

Use **Due Days** to define when the check is cut. The cut date is equal to the adjustment date plus due days.

Select a **Payment Method**. Choose from these options:

System Check System check

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_APREQ_TYPE*.

# Billable Charge Line Type

> **NOTE:**
> **Background information.** Before using this page, you should be comfortable with the topics described under *Setting Up Billable Charge Templates* and *Uploading Billable Charges*.

Billable charge line types will simplify the effort required to interface billable charges from an external system. Each line type contains values that will be defaulted onto the line details associated with the uploaded billable charges. Obviously, this defaulting is possible only if you specify a billable charge line type on the billable charge upload staging lines.

To set up billable charge line types, select **Admin** > **Billable Charge Line Type** > **Add**.

**Description of Page**

Enter an easily recognizable **Billable Charge Line External Type** and **Description**.

Use **Currency Code** to define the currency to be defaulted onto billable charge upload lines that reference this line type.

Use **Show on Bill** to define the value to be defaulted into the Show on Bill indicator on billable charge upload lines that reference this line type.

Use **App in Summary** to define the value to be defaulted into the App in Summary indicator on billable charge upload lines that reference this line type.

Use **Memo Only, No GL** to define the value to be defaulted into the Memo Only, No GL indicator on billable charge upload lines that reference this line type.

Use **Distribution Code** to define the values to be defaulted into the Distribution Code field on billable charge upload lines that reference this line type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BCHG_UP_XTYP*.

# Payables Cash Accounting

In some areas, taxes and other 3 rd party liabilities are not truly payable until the customer remits payment. We refer to this as "payables cash accounting". This practice should be contrasted with "payables accrual accounting" in which the liability is realized when the bill is created (as opposed to when it is paid).

> **NOTE:**
> **Value Add Tax (VAT).** VAT is a form of taxation common throughout the European Union. It is a common practice to only book the VAT payable when the customer remits payment. This means that most European implementations will use the functionality described in this section.

If your organization does not practice payable cash accounting, you may skip this section as accrual accounting is the system default. If you practice payables cash accounting, the contents of this section describe how to configure the system appropriately.

**Contents**

*Distribution Code Controls Cash Accounting For A GL Account*

*Bill Segments and Cash Accounting*

*Payment Segments and Cash Accounting*

*Write Down Adjustment*

*Write-Offs*

## Accrual versus Cash Accounting Example

The following is an example of the financial events that transpire when a customer is billed and payment is received using accrual accounting.

| Event | GL Accounting | Tax Payable Balance |
|---|---|---|
| Bill segment created | A/R 110 | (10) |
| | Revenue <100> | |
| | Tax Payable <10> | |
| Payment received | Cash 110 | (10) |
| | A/R <110> | |

In the above example, you'll notice that the payable is booked when the bill is created. Let's contrast this with what takes place if the payable is subject to payables cash accounting.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Payment received | Cash 110 | (10) | 0 |
| | A/R <110> | | |
| | Tax Holding 10 | | |
| | Tax Payable <10> | | |

Notice that when the bill segment is produced, the liability is not booked, rather, the amount of the liability is placed in a "holding" GL account. When the customer pays, the moneys are transferred from the "holding" GL account to the true tax payable account.

**NOTE:**
**Cash accounting is only applicable for liabilities.** In the above example, you'll notice that only the tax payable account had cash accounting implications. This is because organizations that practice cash accounting only do it for liability accounts; they never do it for assets, revenue or expenses.

If the above seems simple, consider the following complications that must be considered:

- What happens if a partial payment is received?
- What happens if there are multiple taxes subject to cash accounting rules?
- What happens if the A/R is relieved via a deposit seizure (or transference of a credit balance from another SA)?

- What if, after payment, the original bill segment is cancel/rebilled resulting in a different amount of tax (keep in mind that the payable got booked when the payment was received)?
- What happens if the payment is cancelled?
- What if the payment isn't received and we have to write-off debt?
- What happens if the customer overpays?
- What happens if the customer is allowed to prepay their tax (this is a common practice in the United Kingdom) and then the tax rate changes at billing time?

The above points, and more, are discussed below.

## Distribution Code Controls Cash Accounting For A GL Account

**NOTE:**
If you do not understand the significance of distribution codes, please refer to *Setting Up Distribution Codes*.

Whether or not cash accounting is used for a specific GL account is defined on HOLDING GL account's distribution code (i.e., the holding GL account references the true payable account).

It is very important that unique payable and holding distribution codes be used for each type of tax subject to cash accounting rules. For example, if you have cash accounting requirements for both value-added tax (VAT) and a climate levy, you would need four distribution codes:

- VAT Payable.
- VAT Holding.
- Climate Levy Payable.
- Climate Levy Holding.

Without unique distribution codes for each payable and holding account, the system cannot keep track of how much of a given tax is being held, awaiting payment.

## Bill Segments and Cash Accounting

The contents of this section describe how cash accounting is implemented when bill segments are created.

**Contents**



## Bill Segment Financial Transactions Are Not Affected By Cash Accounting

There are NO changes to rate calculation associated with cash accounting. This is because the rate components that calculate tax reference the HOLDING payable distribution codes.

**NOTE:**
**Prepaid taxes - future functionality.** If your organization allows customers to prepay taxes in anticipation of a future tax increase (the customers receive the lower rate if they pay in advance), please speak to your account manager for information about when corresponding functionality will be available.

# Payment Segments and Cash Accounting

The contents of this section describe how cash accounting is implemented when payment segments are created.

**Contents**



## Payment Segment Financial Transaction Algorithms Transfer Holding Amounts to Payable GL Accounts

Logic exists in the pay segment's FT algorithm that transfers amounts from payable holding distribution codes to their respective payable real distribution codes.

**FASTPATH:**
Refer to *Setting Up Payment Segment Types* for how to define the appropriate FT algorithm.

The following table shows what happens to the financial transaction associated with the payment segment for a cash accounting customer.

| Event | GL Accounting |
|---|---|
| Bill segment is created | A/R 110<br>Revenue <100><br>Tax Holding <10> |
| Payment segment relieves receivables | Cash 110<br>A/R <110> |
| Additional GL details created when the payment segment FT algorithm transfers the holding amount to a payable account | Tax Holding 10<br>Tax Payable <10> |
| Net effect of the above | Cash 110<br>A/R <110><br>Tax Holding 10<br>Tax Payable <10> |

## How Does The System Know What Amounts To Transfer From Holding To Payables?

When a payment segment is created for an account that is subject to cash accounting processing, the system determines if there is a CREDIT balance for any holding distribution code in respect of the service agreement. If so, it generates additional GL details to transfer moneys from the holding distribution code to the payable distribution code in proportion to the amount of receivables relieved by the payment. Therefore, if 100% of receivables are relieved by the payment segment, 100% of the holding amounts will be transferred to payable distribution codes. Refer to *Partial Payments Result In Partial Payables* for an example of what happens when a partial payment is created.

## Partial Payments Result In Partial Payables

The previous example showed the entire tax holding amount being transferred to the tax payable account. The entire holding amount was transferred because the service agreement was paid in full. If a partial payment is received, only part of the holding amount will be transferred to the payable amount (proportional to the amount of receivables reduced by the payment). An example will help make the point.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Partial payment received | Cash 27.50 | (2.50) | (7.50) |
| | A/R <27.50> | | |
| | Tax Holding 2.50 | | |
| | Tax Payable <2.50> | | |

The above example assumes the use of the base product payment segment FT creation algorithm *PSEG-AC* to transfer the holding amount to the tax payable account. If multiple holding accounts are used, you may want to specify which holding amounts are relieved first. The base product includes an additional payment segment FT creation algorithm *C1-FTGL-PSAC* that handles booking holding amounts based on a priority.

## Partial Payments Using Accounting Priority

To book holding amounts based on a priority, each holding distribution code must be assigned an **Accounting Priority**. When a partial payment is posted, only part of the holding amount will be transferred to the payable amount (proportional to the amount of receivables reduced by the payment). When the holding amount consists of various holding distribution codes with different accounting priorities, the amount to transfer is allocated as follows:

- Holding distribution codes associated with the oldest debt are settled first
- Within the same debt age, holding distribution codes with a higher accounting priority are booked first. If more than one distribution code shares the same priority, the settlement is distributed among them in proportion to the holding account balance

The above logic is handled by the payment segment FT creation algorithm *C1-FTGL-PSAC*. As an example of how these rules apply, let's assume an implementation practices cash accounting; i.e. revenue, taxes and other third party liabilities are not recognized until payment is received. Also assume the following distribution codes have been configured:

| Holding Distribution Code | Description | Cash Accounting Distribution Code | Accounting Priority |
|---|---|---|---|
| HLD-LPC | Late Payment Charge | R-MISC | 10 |
| HLD-RGEN | Revenue - Generation Charge | R-GEN | 20 |
| HLD-RDIS | Revenue - Distribution Charge | R-DIST | 30 |
| HLD-RTRN | Revenue - Transmission Charge | R-TRAN | 30 |
| HLD-THRD | 3 rd Party Charges | R-THRD | 40 |
| HLD-VAT | VAT | A/P-VAT | 90 |

Assume a customer has an outstanding third party charge with an arrears date of 2/Jan/2009:

| Event | GL Accounting | SA's Payoff Balance | Holding Balances | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |
| Unpaid Amount | A/R 50<br>HLD-HRD <45><br>HLD-VAT <5> | 50 | 0 | 0 | 0 | 0 | (45) | (5) |

A bill is created for a customer and the result of the bill's financial transactions (an LPC adjustment in the amount of 10 and a bill segment in the amount of 127) include the following FT GL lines (both financial transactions have an arrears date of 15/Jan/2009):

| Event | GL Accounting | SA's Payoff Balance | Holding Balances | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |
| Bill segment created | A/R 127<br>HLD-RGEN <15><br>HLD-RDIS <20><br>HLD-RTRN <55><br>HLD-THRD <10><br>HLD-VAT <27> | 177 | 0 | (15) | (20) | (55) | (55) | (32) |
| Adjustment created | A/R 10<br>HLD-LPC <10> | 187 | (10) | (15) | (20) | (55) | (55) | (32) |

No payment is received prior to the next bill. The result of the next bill's financial transaction (a bill segment in the amount of 100) includes the following FT GL lines (this financial transaction has an arrears date of 16/Feb/2009):

| Event | GL Accounting | SA's Payoff Balance | Holding Balances | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Bill segment created | A/R 100<br>HLD-RGEN <15><br>HLD- RDIS <20><br>HLD- RTRN <45><br>HLD- THRD <10><br>HLD-VAT <10> | 287 | (10) | (30) | (40) | (100) | (65) | (42) |

The following shows the result if a customer makes a payment on 20/Feb/2009. At payment time we'll build a table of holding amounts by accounting priority and debt age as follows:

| Distribution Code & Priority<br>Debt Age | HLD-LPC<br>(10) | HLD-RGEN<br>(20) | HLD-RDIS<br>(30) | HLD- RTRN<br>(30) | HLD-THRD<br>(40) | HLD- VAT<br>(90) |
|---|---|---|---|---|---|---|
| 4 days old | | (15) | (20) | (45) | (10) | (10) |
| 36 days old | (10) | (15) | (20) | (55) | (10) | (27) |
| 49 days old | | | | | (45) | (5) |

## Examples of Partial Payments Using Accounting Priority

The examples below assume a customer has the financial history described above and attempts to illustrate the financial effect when a payment is made.

**Contents**



Example 1 - Customer Pays In Full

Assume the customer makes a payment in the amount of 287. This amount is sufficient to satisfy all holding amounts, so the payment will have the following financial effect:

| Event | GL Accounting | SA's Payoff Balance | Holding Balances | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |
| Payment received | Cash 287<br>A/R <287><br>HLD-LPC 10<br>R-MISC <10><br>HLD-RGEN 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | |
|---|---|
| | R-GEN <30> |
| | HLD- RDIS 40 |
| | R-DIST <40> |
| | HLD- RTRN 100 |
| | R-TRAN <100> |
| | HLD- THRD 65 |
| | R-THRD <65> |
| | HLD-VAT 42 |
| | A/P-VAT <42> |

Example 2 - Customer Makes a Partial Payment

Assume the same financial history described above for a customer and a partial payment in the amount of 70 is made. This amount is not sufficient to satisfy the total holding amounts of 287, so the system will start settling held amounts starting with distribution codes with the oldest debt first from highest priority until the payment amount is exhausted.

A payment in the amount of 70 will be applied in the following sequence

| Distribution Code & Priority / Debt Age | HLD-LPC (10) | HLD-RGEN (20) | HLD-RDIS (30) | HLD- RTRN (30) | HLD-THRD (40) | HLD- VAT (N/A) |
|---|---|---|---|---|---|---|
| 4 days old | | (15.00) | (20.00) | (45.00) | (10.00) | (10.00) |
| 36 days old | 3 (10.00) | 4 (15.00) | (20.00) | (55.00) | (10.00) | (27.00) |
| 49 days old | | | | | 1 (45.00) | 2 (5.00) |

The following describes how the holding amounts will be booked as a result of this partial payment:

- Settle oldest debt first (49 days old), i.e. 3rd Party Charges (HLD-THRD) and VAT (HLD-VAT). Note that even though these holding accounts have the lower accounting priorities, they are booked first because they have the oldest debt. An amount of 20 now remains on the partial payment.
- Next, we'll settle the 36 days old debt from the highest priority:
  - Late Payment Charge (HLD-LPC) in the amount of 10. An amount of 10 now remains on the partial payment
  - Revenue - Generation Charge (HLD-RGEN) gets the remaining payment amount of 10
- So, this partial payment in the amount of 70 will result in the following financial effect:

| Event | GL Accounting | SA Balance | Holding Balances | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |
| Payment received | Cash 70 | 217 | 0 | (20) | (40) | (100) | (20) | (37) |
| | A/R <70> | | | | | | | |
| | HLD-LPC 10 | | | | | | | |

R-MISC
<10>

HLD-RGEN
10

R-GEN <10>

HLD- THRD
45

R-THRD
<45>

HLD-VAT 5

A/P-VAT
<5>

---

Example 3 - Customer Makes a Partial Payment

Assume the same financial history described above for a customer and a partial payment in the amount of 220 is made. This amount is not sufficient to satisfy the total holding amounts of 287, so the system will start settling held amounts starting with distribution codes with the oldest debt first from highest priority until the payment amount is exhausted.

A payment in the amount of 220 will be applied in the following sequence

| Distribution Code & Priority / Debt Age | HLD-LPC (10) | HLD-RGEN (20) | HLD-RDIS (30) | HLD- RTRN (30) | HLD-THRD (40) | HLD- VAT (N/A) |
|---|---|---|---|---|---|---|
| 4 days old | | 9 (15.00) | 10 (20.00) | 11 (45.00) | (10.00) | (10.00) |
| 36 days old | 3 (10.00) | 4 (15.00) | 5 (20.00) | 6 (55.00) | 7 (10.00) | 8 (27.00) |
| 49 days old | | | | | 1 (45.00) | 2 (5.00) |

The following describes how the holding amounts will be booked as a result of this partial payment:

- Settle oldest debt first (49 days old), i.e. 3rd Party Charges (HLD-THRD) and VAT (HLD-VAT). Note that even though these holding accounts have the lower accounting priorities they are booked first because they have the oldest debt. An amount of 170 now remains on the partial payment.
- Next, we'll settle the 36 days old debt from the highest priority, i.e. Late Payment Charge (HLD-LPC), Revenue - Generation Charge (HLD-RGEN), Revenue - Distribution Charge (HLD-RDIS), Revenue - Transmission Charge (HLD-RTRN), 3rd Party Charges (HLD-THRD) and VAT (HLD-VAT). An amount of 33 now remains on the partial payment.
- Next we'll settle the 4 day old debt from the highest priority:
  - Revenue - Generation Charge (HLD-RGEN) in the amount of 15. An amount of 18 now remains on the partial payment
  - The two holding accounts at the next priority have an outstanding amount of 65. Since the remainder of the payment is not enough to satisfy this amount, the remainder of the payment is prorated amongst HLD-RDIS and HLD-RTRN as follows:
    - (Remaining Pay Amount / Total Outstanding Holding Amount) * Holding Account Amount
    - So for the Revenue - Distribution Charge (HLD-RDIS) holding account the amount booked will be (18/65 * 20) = 5.54
- So, this partial payment in the amount of 220 will result in the following financial effect:

| Event | GL Accounting | SA Balance | Holding Balances |
|---|---|---|---|

| | | | HLD-LPC | HLD-RGEN | HLD-RDIS | HLD-RTRN | HLD-THRD | HLD-VAT |
|---|---|---|---|---|---|---|---|---|
| Payment received | Cash 220 | 67 | 0 | 0 | (14.46) | (32.54) | (10) | (10) |
| | A/R <220> | | | | | | | |
| | HLD-LPC 10 | | | | | | | |
| | R-MISC <10> | | | | | | | |
| | HLD-RGEN 30 | | | | | | | |
| | R-GEN <30> | | | | | | | |
| | HLD-RDIS 25.54 | | | | | | | |
| | R-DIST <25.54> | | | | | | | |
| | HLD-RTRN 67.46 | | | | | | | |
| | R-TRAN <67.46> | | | | | | | |
| | HLD-THRD 55 | | | | | | | |
| | R-THRD <55> | | | | | | | |
| | HLD-VAT32 | | | | | | | |
| | A/P-VAT <32> | | | | | | | |

## Adjustments That Behave Like Payments

There are several types of adjustments that behave just like payments (in respect of payables cash accounting). Consider the following events:

- Seizing a deposit (i.e., transferring a credit from a deposit service agreement to a regular service agreement)
- Overpayments transferred from one service agreement to another

The above events should cause the system to transfer holding amounts to true payable amounts (notice that the above examples are all transfer adjustments).

However, there are many other adjustments that should NOT behave like payments. You control how the adjustment works by selecting the appropriate FT algorithm when you *set up adjustment types* (refer to *ADJT-AC* and *ADJT-TC* for a

description of the base package algorithms that cause the holding amounts to be manipulated in proportion to the amount of receivable being adjusted; and to *C1-FTGL-ADAC* and *C1-FTGL-ADTC* for the base package algorithms that take **Accounting Priority** into consideration). In other words, there are adjustment FT algorithms that cause the transference of holding payable amounts to real payable amounts when the A/R balance is decreased by the adjustment.

**NOTE:**
**Cash refunds can behave like "anti-payments".** In addition to the above examples of transfer adjustments behaving like payments, you should be aware that cash refunds may impact your holding and true payable balances. Refer to *Cash Refunds* for more information.

## Overpayment Of Taxes Due To Cancel/Rebills

Let's assume a cancel / rebill occurs after a payment is received and the net effect of the cancel / rebill is that the customer has overpaid their taxes.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Payment received | Cash 110 | (10) | 0 |
| | A/R <110> | | |
| | Tax Holding 10 | | |
| | Tax Payable <10> | | |
| Cancel | A/R <110> | (10) | 10 |
| | Revenue 100 | | |
| | Tax Holding 10 | | |
| Rebill | A/R 27.50 | (10) | 7.50 |
| | Revenue <25> | | |
| | Tax Holding <2.50> | | |

You'll notice that the amount payable to the taxing authority still indicates $10 (the amount of tax that was paid by the customer). However, you'll notice that the tax holding balance is 7.50 (debit). This looks a bit odd, but it's correct. Remember that at this point, the customer has a credit balance of $75 and this will be whittled down as successive bills are produced as shown below. Note: refer to *Cash Refunds* for an example of what happens if you refund the credit with a check rather than letting it whittle down.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| | | (10) | 7.50 |
| Bill segment created | A/R 55 | (10) | 2.50 |
| | Revenue <50> | | |
| | Tax Holding <5> | | |
| Bill segment created | A/R 110 | (10) | (7.50) |
| | Revenue <100> | | |

In the unlikely event of a payment being received while the tax holding has a debit balance, nothing will be done in respect of transferring funds from holding to payable (there is nothing to transfer).

## Cash Refunds

If you refund moneys to a cash accounting customer, it's important to do the opposite of what was done when the payment was received (i.e., you need to transfer the payable back to the holding account). The following example should help clarify this situation (this example shows a refund due to a credit balance that occurred as a result of a cancel/rebill).

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance | SA's Payoff Balance |
|---|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | 0 | (10) | 110 |
| Payment received | Cash 110<br>A/R <110><br>Tax Holding 10<br>Tax Payable <10> | (10) | 0 | 0 |
| Cancel | A/R <110><br>Revenue 100<br>Tax Holding 10 | (10) | 10 | (110) |
| Rebill | A/R 27.50<br>Revenue <25><br>Tax Holding <2.50> | (10) | 7.50 | (82.50) |
| Payment refunded (via an A/P adjustment) | Cash <82.50><br>A/R 82.50<br>Tax Holding <7.50><br>Tax Payable 7.50 | (2.50) | 0 | 0 |

We understand this is tricky, but consider this - when a cash accounting customer makes a payment, the system transfers tax holding CREDIT balances to tax payable distribution codes in proportion to the amount of the receivable DEBIT amount that was reduced by the payment. Therefore, when cash is returned to the customer, the system should transfer tax holding DEBIT balances to tax payable distribution codes in proportion to the amount of the receivable CREDIT that was reduced by the refund.

**NOTE:**
The above takes place when an A/P adjustment is created if the related adjustment type references the appropriate FT algorithm (refer to *ADJT-AC and **C1-FTGL-ADAC** for a description of the adjustment FT algorithms used for adjustments that behave like payments)*.

## Overpayments

An overpayment, by definition, does not "match" to open items. However, the match type algorithms supplied with the base package will result in a balanced match event if an overpayment is made. The following points explain how this is achieved:

- The base package's match type algorithms will distribute the payment until the customer's current debt is satisfied.
- The amount of the overpayment will be kept on a separate SA (this only happens if you plug-in the appropriate Overpayment Distribution algorithm on your customer classes). Refer to *Overpayment Segmentation* for more information.
- When the payment is frozen, the payment segments that satisfy current debt will be matched against their respective open-items. The payment segment used to book the overpayment (on the overpayment SA) will not be matched.
- When future bills are completed, the credit balance on this "overpayment SA" will be transferred to the "real SAs" when future bills are completed (if you have plugged in the appropriate bill completion algorithm on the overpayment SA's SA type). If the overpayment satisfies all newly calculated charges, a match event is created that matches the new charges against the funds transferred from the overpayment SA. Refer to *When Are Match Events Created* for information about how the system creates match events at bill completion time when the new charges on the bill are satisfied by other credits (overpayments, deposit refunds, etc.).
- At some point in the future, the overpayment will be exhausted (i.e., all funds will be transferred to "real SAs"). At that point in time, the overpayment SA will close (assuming you set up the overpayment SA's SA type as a "one time"). At close time, the system creates a match event that matches the original overpayment payment segment with the adjustments that were used to transfer funds to the "real SAs". Refer to *When Are Match Events Created* for information about how the system creates match events when a SA closes.

## Write Down Adjustment

Writing down debt is very different from *writing off debt*. When you write down debt, you are removing the receivable with no expectation of it being paid. For example, most organizations write down small debit and credit balances as part of their write-off process (e.g., they don't send a very small amount to a collection agency).

Let's run through an example to illustrate this:

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance | SA's Payoff Balance |
|---|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | 0 | (10) | 110 |
| Payment received | Cash 109.50<br>A/R <109.50><br>Tax Holding 9.95<br>Tax Payable <9.95> | (9.95) | .05 | 0.50 |
| Write down cash accounting debt | Tax Holding 0.05<br>Write Down Expense 0.45<br>A/R <0.50> | (9.95) | 0 | 0 |

In order to achieve the above, you must set up an adjustment type that references a special financial transaction algorithm (refer to non-accrual accounting write down algorithms *ADJT-AD and* ***C1-FTGL-AD*** for more information). This algorithm will reduce / increase the receivable balance accordingly AND cause any holding amounts to be set to zero. This adjustment type should be referenced on your write-down algorithm that is referenced on your write-off controls.

## Write-Offs

At write-off time we may refund credit balances. The refunding of credit balances is handled by A/P adjustments and these have cash accounting processing as described under *Cash Refunds*.

If we have to write-off debt, holding balances are relieved in proportion to the amount of debt that is written off (as usual). It's important to understand that for this to work, you must set up the system as follows:

- The tax holding distribution codes must have their override distribution switch turned on.
- The distribution code on the SA type associated with the service agreement to which the written-off payables are transferred must be the REAL payable distribution codes. This is important so that if the customer pays after the payables are reversed, we will be able to debit cash and credit the REAL payable distribution code.

Let's run through an example to illustrate this.

| Event | Normal SA GL Accounting | Write Off Revenue SA GL Accounting | Reverse Liabilities SA GL Accounting |
|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | | |
| Write Off Time | | | |
| Reverse the held payables | Xfer 10<br>A/R <10> | | Tax Holding 10<br>Xfer <10><br>Note, the tax holding only gets debited if you have turned on the override at write-off switch on its distribution code |
| Write off revenue | Xfer 100<br>A/R <100> | Write Off Expense 100<br>Xfer <100> | |
| If the customer subsequently pays | | Cash 100<br>Write Off Exp <100> | Cash 10<br>Tax Payable <10><br>Note, the tax payable only gets credited if the SA type's distribution code has been defined as such |

# Deferred Accrual Accounting

Some implementations use a hybrid accounting method that combines cash and accrual accounting. In this case revenue, taxes, etc. are recognized on the earlier of the bill due date or the date payment is received. In this scenario, the cash accounting method is used up until the bill's due date, at which time the accrual method is enforced (let's call this "deferred accrual accounting"). A simpler flavor of deferred accrual accounting is when the revenue and liability recognition is done solely at bill due date regardless of when the payment is made.

Deferred accrual accounting affects distribution codes identified as **Use For Non-Accrual Accounting** with an associated **Accounting Method** of either Payable on Earlier of Payment or Due Date or Payable on Due Date . The system

accomplishes the holding amount settlement on the bill due date using a customer class post bill completion algorithm *C1-CR-BLRVWS* that creates a bill review record to be processed on the bill's due date. The bill review batch process then analyzes these bill review records on the bill due date. If a bill review record is due for processing, the algorithm checks the outstanding balance of the holding accounts on each SA linked to the bill and creates a settlement adjustment for each SA.

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# Deferred Accrual Accounting Examples

The examples below illustrate the financial transactions that transpire under these different scenarios.

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## Example 1 - Payable On Due Date, Customer Pays In Full

The following is an example of the financial events that transpire when a customer is billed and full payment is received prior to the bill due date. The accounting method in this case is Payable On Due Date .

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | 0 | (10) |
| Payment received | Cash 110<br>A/R <110> | 0 | (10) |
| Adjustment created on bill due date | Tax Holding 10<br>Tax Payable <10> | (10) | 0 |

## Example 2 - Payable On Due Date, Customer Does Not Pay

In the following example a customer is billed and no payment is received prior to the bill due date. The bill review batch process is responsible for creating the settlement adjustment for any outstanding holding amounts on the bill's due date. The accounting method in this case is Payable On Due Date .

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |

| | | | |
|---|---|---|---|
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Adjustment created on bill due date | Tax Holding 10 | (10) | 0 |
| | Tax Payable <10> | | |

## Example 3 - Payable On Due Date, Customer Makes A Partial Payment

In the following example a customer is billed and a partial payment is received prior to the bill due date. The bill review batch process is responsible for creating the settlement adjustment for any outstanding holding amounts on the bill's due date. The accounting method in this case is Payable On Due Date .

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Payment received | Cash 27.50 | 0 | (10) |
| | A/R <27.50> | | |
| Adjustment created on bill due date | Tax Holding 10 | (10) | 0 |
| | Tax Payable <10> | | |

## Example 4 - Payable On Earlier Of Payment Or Due Date, Customer Pays In Full

In the following example a customer is billed and full payment is received prior to the bill due date. The accounting method in this case is Payable On Earlier Of Payment Or Due Date .

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110 | 0 | (10) |
| | Revenue <100> | | |
| | Tax Holding <10> | | |
| Payment received | Cash 110 | (10) | 0 |
| | A/R <110> | | |
| | Tax Holding 10 | | |
| | Tax Payable <10> | | |

## Example 5 - Payable On Earlier Of Payment Or Due Date, Customer Does Not Pay

In the following example a customer is billed and no payment is received prior to the bill due date. The bill review batch process is responsible for creating the settlement adjustment for any outstanding holding amounts on the bill's due date. The accounting method in this case is Payable On Earlier Of Payment Or Due Date . Note that if a payment is subsequently received after the settlement adjustment has been created, it's financial transaction(s) will not have any impact on the holding or liability accounts as these have already been booked.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | 0 | (10) |
| Adjustment created on bill due date | Tax Holding 10<br>Tax Payable <10> | (10) | 0 |

## Example 6 - Payable On Earlier Of Payment Or Due Date, Customer Partially Pays

In the following example a customer is billed and a partial payment is received prior to the bill due date. The bill review batch process is responsible for creating the settlement adjustment for any outstanding holding amounts on the bill's due date. The accounting method in this case is Payable On Earlier Of Payment Or Due Date . Note that if a payment is subsequently received after the settlement adjustment has been created, it's financial transaction(s) will not have any impact on the holding or liability accounts as these have already been booked.

| Event | GL Accounting | Tax Payable Balance | Tax Holding Balance |
|---|---|---|---|
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | 0 | (10) |
| Payment received | Cash 27.50<br>A/R <27.50><br>Tax Holding 2.50<br>Tax Payable <2.50> | (2.50) | (7.50) |
| Adjustment created on bill due date | Tax Holding 7.50<br>Tax Payable <7.50> | (10) | 0 |

# Payment Cancellations and Deferred Accrual Accounting

If a payment was responsible for transferring moneys from the holding distribution code to the payable distribution code, it stands to reason that if the payment is cancelled, it results in the reversal of this transfer from the holding distribution code to payable distribution code. If deferred accrual accounting is used and the payment is cancelled after the bill due date, the holding amounts that were transferred should remain booked.

Assume, for example, that the payment below was cancelled after the bill due date:

| Event | GL Accounting |
|---|---|
| Payment received | Cash 110 |

| | |
|---|---|
| | A/R <110> |
| | Tax Holding 10 |
| | Tax Payable <10> |

At cancellation, the above entry will be reversed, reinstating the balance in the holding account:

| Event | GL Accounting |
|---|---|
| Payment cancelled after bill due date | Cash <110> |
| | A/R 110 |
| | Tax Holding <10> |
| | Tax Payable 10 |

However, since the bill's due date has passed, the holding account needs to be booked. For open item accounts, the system comes with a customer class FT freeze algorithm ( *C1-PR-CA-RVS*) that creates a bill review schedule for the affected bill, if one does not already exist. When the bill review batch process next runs, it checks the outstanding balance of the holding accounts on each SA linked to the bill and creates a settlement adjustment for each SA.

| Event | GL Accounting |
|---|---|
| Adjustment created | Tax Holding 10 |
| | Tax Payable <10> |

Note that this solution is only applicable to open item accounting where the bill matched to the payment can be determined. If balance forward accounting is practiced, the bill or bills that the payment applied to cannot be determined. In this case, the next bill review record created for the account as part of billing will cause the balances of the holding accounts to be analyzed and the settlement will catch up at that point.

# Open Item Accounting

The topics in this section provide background information about open-item accounting.

**NOTE:**
**This section is only relevant for some organizations.** The system configuration requirements described in this section are only relevant if your organization practices open-item accounting. If your organization practices balance-forward accounting, you need only indicate such on your *customer classes* ; no other setup is required. Refer to *Open Item Versus Balance Forward Accounting* for more information about these two accounting practices.

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# Open-Item Versus Balance-Forward Accounting

If you practice open-item accounting, you match payments against bills. The term "open-item accounting" is used to describe this accounting practice because:

- Payments are matched against "open items" (i.e., unpaid bills and adjustments)
- Only unmatched bills and adjustments (i.e., open items) affect aged debt.

Contrast open-item accounting with "balance-forward" accounting - in a balance-forward world, payments are not matched to bills. Rather, payments implicitly relieve a customer's oldest debt. For example, consider the following unpaid financial transactions that exist for an account and the resultant aged debt.

Financial Transactions on 9-Mar-00

| Date | SA | Bill | Amount |
|---|---|---|---|
| 7-Mar-00 | Electric | Bill ID: 65 | $500 |
| 7-Feb-00 | Gas | Bill ID: 23 | $1,500 |
| 7-Feb-00 | Electric | Bill ID: 23 | $500 |
| 7-Jan-00 | Gas | Bill ID: 2 | $1,000 |

Aged Debt

Aged Debt on 9-Mar-00

| Debt Age | Amount |
|---|---|
| 2 days | $500 |
| 32 days | $2,000 |
| 62 days | $1,000 |

In a balance-forward world, if a $1,000 payment was made on 9-Mar-00, the customer's aged debt would look as follows:

Aged Debt on 9-Mar-00

| Debt Age | Amount |
|---|---|
| 2 days | $500 |
| 32 days | $2,000 |

Notice how the $1,000 payment relieves the 62 day old debt - it does this because, in a balance-forward world, payments payoff oldest debt first.

However, let's assume the customer wants the payment to settle his electric debt (e.g., because he disagrees with the gas bills). If you could match the $1,000 payment to the two electric bills (i.e., open-item accounting exists), the customer's aged debt would look as follows:

Aged Debt on 9-Mar-00

| Debt Age | Amount |
|---|---|
| 32 days | $1,500 |
| 62 days | $1,000 |

In sum,

- In an open-item world, payments are matched to bills and only unpaid bills and adjustments (i.e., open items) affect aged debt.
- In a balance-forward world, payments are not matched to bills and therefore a customer's aged debt is computed by aging debits (bills and adjustments) and then relieving the oldest debits using credits (payments and adjustments).

**NOTE:**
**Financial Transactions and Bills**. In an open-item world, only bill segments and adjustments are presented on a bill. When a bill is completed, only those bill segments and adjustments to be presented are swept onto a bill. Payment and payment cancellation FTs, bill segment FTs canceled before bill completion together with their corresponding bill segment cancellation FTs, and adjustment FTs marked as do not show on bill are not swept onto a bill. An adjustment's adjustment type and its algorithms determine if its FT will show on a bill by default.

## Accounting Method Defined On Your Customer Classes

You define the type of accounting method that is practiced ( *balance-forward versus open-item* ) on your *customer classes*. For example, residential customers can practice balance-forward accounting whereas industrial / commercial customers can practice open-item accounting.

## Match Events

Match events are used to match open-items (i.e., debit and credit financial transactions) together. The topics in this section provide an overview of match events.

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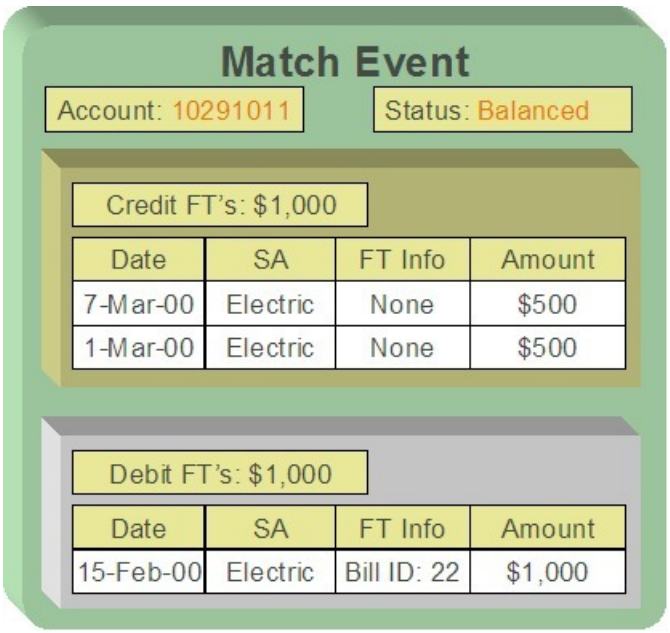
## Match Events Match Debit FTs To Credit FTs

For open-item customers, the system matches credit financial transactions (FT's) to debit FT's under a *match event*. The following is an example of a match event associated with two $500 payments that satisfy the debt associated with one bill (on February 2000).




Notice the following:

- The match event matches 2 credit FT's against a single debit FT. A match event may contain an unlimited number of FT's.
- The match event contains FT's associated with a single account. While the FT's under a match event may belong to multiple service agreements, all FT's under a match event must belong to the same account.
- The match event only contains bill segments that belong to a single bill. If you mix multiple bills under a single match event, then an individual bill balance cannot be properly determined when partial payments exist.
- The status of the match event is balanced . This is because the sum of the debits equals the sum of the credits. If debits do not equal credits, the status of the match event would be open and the various FT's would still affect the customer's aged debt. Refer to *Match Event Lifecycle* for more information.

**WARNING:**
It is strongly encouraged that you refrain from mixing multiple bills on a single match event. If you stick by the rule of "just one bill per match event" you will then be able to determine the outstanding balance of a partially paid bill (see the *bill page*, bill summary section). However, if you mix more than one bill under a match event, a particular bill's balance may become indeterminate. Algorithm types have been provided which help to enforce this rule of "one bill per match event", please refer to *Match By Bill, Pay Oldest Bill First* for an example of a matching algorithm that enforces this notion.

## When Are Match Events Created?

The following points describe when match events are created for open-item accounts:

**NOTE:**
Match events are only created for open-item accounts (i.e., those accounts with a customer class that indicates open-item accounting is practiced). Match events may not be created for balance-forward accounts.

- The system can create one or many match events when a payment is added. This match event matches the payment's credit FT's with the debit and credit FT's from bill segments and adjustments. The FT's that are linked to the match event

are controlled by the payment's **match type** and **match value** (payments made by open-item customers must reference a match type and match value). Refer to *Payments And Match Events* for more information.

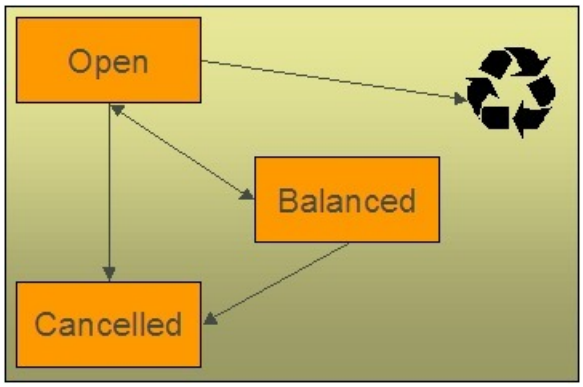
- The system may create a match event when any type of financial transaction is cancelled. This match event groups together the original FT with its cancellation FT. Refer to *How Are Match Events Cancelled?* for more information.
- The system creates a match event when a bill is completed for customers that pay automatically (i.e., direct debit customers). The match event groups together the bill's new charges against the automatic payment's payment segments.
- The system creates a match event when a bill is completed where the new charges are offset by other financial transactions. For example,
  - Consider a bill that contains a deposit refund. If the sum of the deposit refund equals or exceeds the amount of the bill, the bill's FT's can be matched against the debit refunds FT's. Refer to *Refunding Deposits* for more information about deposit refunds.
  - Consider a bill whose new charges are offset by a previous overpayment. Refer to *Over Payments* for more information about overpayments.

**FASTPATH:**
Refer to *Bill Lifecycle* for more information about what happens during bill completion.

- The system creates a match event when a service agreement closes and the service agreement has unmatched FT's. For example,
  - Consider a deposit service agreement that closes when the deposit is refunded to the customer. The system will create a match event with the deposit SA's FT's (the original credit and the debits used to refund the deposit) when the deposit SA closes (i.e., when its credit balance falls to zero). Refer to *Refunding Deposits* for more information about deposit refunds.
  - Consider a service agreement for utility debt that is written off. This service agreement closes when the system creates transfer adjustments to transfer the utility debt to a write-off service agreement (or writes down the debt). The system creates a match event to match the original debt to the transfer adjustments used to write-off the debt. Refer to *How Is Debt Financially Written Off* for more information about write-off processing.
- A user can create a match event manually at any time. Manual match events would be created under a variety of situations. For example:
  - If a customer disputes a charge. Refer to *Disputing Items* for more information about disputes.
  - To handle unusual situations when the system is unable to automatically match FT's together.

## Match Event Lifecycle

The following diagram shows the possible lifecycle of a match event:



Match events are initially created in the open state. Financial transactions (FT's) linked to open match events affect arrears, but not in an open-item fashion. Rather, FT's linked to open match events affect arrears in a balance-forward fashion. Refer to *Open Item Versus Balance Forward Accounting* for more information about these two accounting methods.

A user may delete an open match event. When an open match event is deleted, its FT's may be linked to other match events.

The system automatically changes an open event's status to balanced when the sum of the debit financial transactions (FT's) equals the sum of the credit FT's for each SA on the match event. It's worth stressing that a match event may contain FT's from many SAs and each SA's FT's must sum to zero before the match event can become balanced .

A user may re open a balanced event (by adding / removing FT's so that the match event becomes unbalanced).

A user may cancel a balanced or open match event. Refer to *How Are Match Events Cancelled?* for more information about cancellation.

## Payments And Match Events

As described under *When Are Match Events Created?*, the system creates a match event when a payment is added for an open-item account. The system uses the payment's **match type** and **match value** to determine the FT's (e.g., bill segments and adjustments) that will be matched with the payment's FT's (i.e., the payment segments).

Another way to think of this is as follows:

- When most payments are distributed, the system calls the payment distribution algorithm that is plugged-in on the account's customer class.
- However, a payment that is made in respect of a specific bill requires a different distribution algorithm because the payment should only be distributed amongst the debt associated with the specific bill being paid. This is accomplished by referencing a match type / match value on the payment. The match type references the appropriate payment distribution algorithm. This algorithm is used rather than the customer class distribution algorithm.

For example, if a payment were made in respect of bill ID 192910192101 , this payment would reference a match type of bill ID and a match value of 192910192101 . At payment distribution time, the system calls the override payment distribution algorithm associated with this match type. The base package bill ID distribution algorithm does several things:

- It distributes the payment amongst service agreements associated with the bill.
- It creates a match event and links the bill's bill segment and adjustment FT's to it.
- Refer to the *Bill ID Match Type Algorithm* for more information about this algorithm.

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**NOTE:**
**The match type's distribution logic is not "hard coded".** Because the match type's payment distribution logic is embedded in a plug-in algorithm, you can introduce new algorithms as per your company's requirements.

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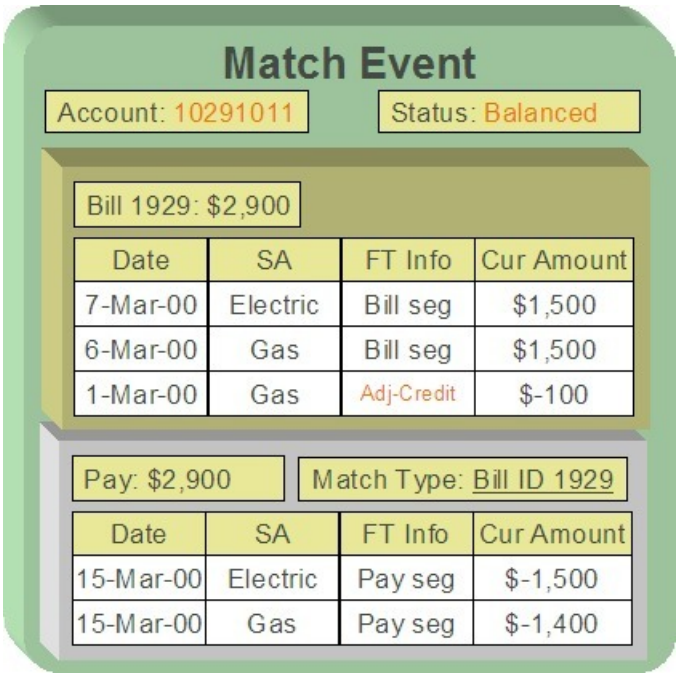
It's worth noting that payment *distribution* and *freezing* are two separate steps that typically happen in quick succession. The system's standard match event algorithms create the match event during payment distribution. This match event exists in the open state (because the payment segment's FT's have not yet been linked to the match event and therefore debit FT's do not equal credit FT's). The open match event references the debit FT's (the bill segments and adjustments) for which it pays. It is only at payment freeze time that the credit FT's (the payment segments) are linked to the match event thus allowing the match event to be become balanced .

If, at freeze time, the payment's credit FT's do not equal the debit FT's on the match event, the match event is left in the open state. An alert will appear on Control Central to highlight the existence of open match events (if the appropriate alert algorithm is plugged in the installation record). In addition, you can also set up a To Do entry to highlight the existence of open match events.

## Payments Are Matched To Debit Credit FTs

While the above discussion dealt with the typical situation where the payment's credit FT's are matched against a bill's debit FT's, we want to point out that a payment's FT's may be matched against debit and credit FT's. Consider the following example:




Notice that:

- The $2,900 payment is distributed amongst two service agreements (electricity and gas).
- The FT's to which the payment segments are matched are both debit and credit FT's. Notice that the debit FT's (the bill segments) and the credit FT (the adjustment) sum to $2,900.

Credits may result in a situation where the total amount on a bill for an SA is negative. This would be the case if in the above example the credit adjustment were for $-1600 resulting in the total amount for the Gas SA on this bill to be $-100 (credit). Assume a full payment of $1400 is made towards this bill. The *Bill ID Match Type Algorithm* first allocates negative payment amounts to any SA credit amount on the bill being paid. It then carries over the credit amount to pay off other bill amounts. In this example, a "negative" payment segment is created to match the $-100 credit of the Gas SA. Using the carried over credit a $1500 payment segment is created to match the $1500 debit of the Electric SA.

## How Are Match Events Cancelled?

A user can cancel an open or balanced match event at any time. When a match event is cancelled , the event's FT's again effect arrears (and they can be associated with new match events). In other words, when a match event is cancelled , its FT's are released from the match event and become open-items.

In addition to manual cancellation, the system may automatically cancel a match event when the last of its payment FT's, if any, is cancelled (if you plug-in the appropriate FT freeze plug-in on your open-item customer classes).

For example, consider a match event that was created when a payment was made. If the payment is subsequently cancelled, the match event is also cancelled (thus releasing the match event's FT's) if no other payment FT's are linked to the match

event. Please be aware that FT cancellation also causes a new match event to be created. This match event matches the original FT (the payment segment) and its cancellation FT. This means that the only "open items" that will exist after a payment is cancelled are the debit FT's that were originally paid.

**NOTE:**
**Reopening bills associated with automatic payment customers.** While many payments are cancelled due to non-sufficient funds, please be aware that if you reopen a bill for which an automatic payment was created, the system will cancel the associated payment. If this payment is associated with a match event (because the account is an open-item account), the match event will be cancelled and a new match event will be created to match the original automatic payment with its cancellation details. This is necessary because a new payment will be created with the bill is subsequently completed and this payment's FT's will be matched to the bill's FT's.

**Canceling a payment can result in many match events being created.** If a cancelled payment has multiple payment segments, a separate match event will be created for each payment segment.

While payment cancellation is the most common type of FT cancellation, be aware that bill segment or adjustment cancellation may also cause a new match event to be created. We don't necessarily want to always link the cancellation FT and its original FT to the same match event. For example, when the cancellation FT is swept on to the next bill it affects the next bill and not the original FT's bill. For cancellations that will not be swept on to the next bill (payment cancellation, cancellation of an adjustment that is not shown on bill, credit notes, and bill segment cancellation before the bill is completed) the system creates a new match event that matches the original FT and its cancellation FT. This way, neither FT affects aged debt. If the original FT was linked to an existing match event and no other FTs are left on this match event it is automatically canceled.

## Current Amount Is Matched, Not Payoff

The system matches the current amount of financial transactions, not the payoff amount.

**FASTPATH:**
Please refer to *Current Amount versus Payoff Amount* for more information about current and payoff amounts.

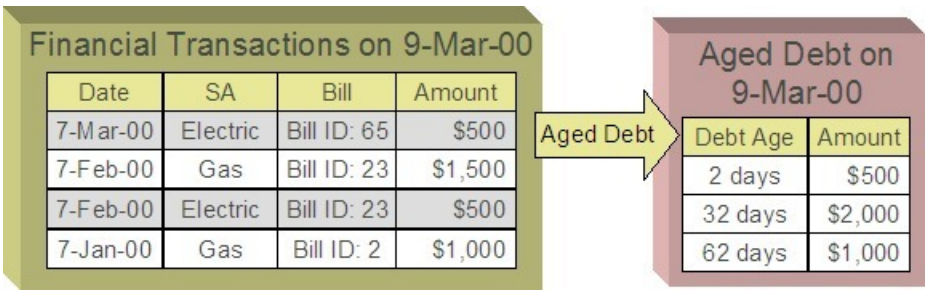
# Disputing Items

Open-item customers may dispute FT's that they are not comfortable paying. For example, a customer who receives a bill with an anomalous charge may decide to dispute it.

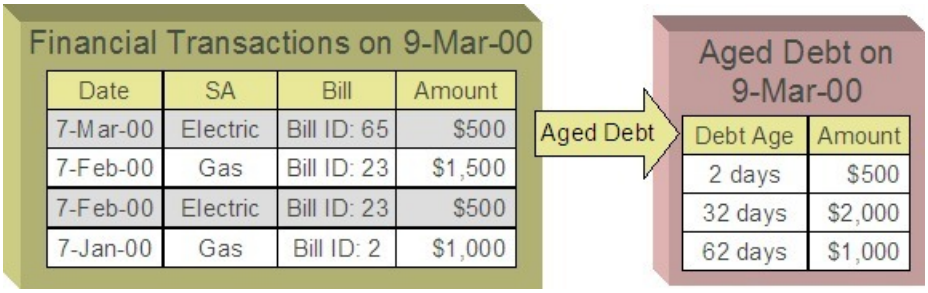
When an open-item customer disputes a charge, a user creates a match event and links the disputed FT(s) to it. This match event will be in the open state (because it does not contain FT's that sum to zero). In addition, the match event's "disputed switch" is turned on.

**NOTE:**
**Alerts.** An alert is displayed on control central to highlight the existence of disputed match events (if the appropriate alert algorithm is plugged in). In addition, you can also set up a To Do entry to highlight the existence of disputed match events.

While the dispute is being researched, the disputed amount will not affect aged debt, but it still forms part of the customer's balance. For example, consider the following unpaid financial transactions that exist for an account:



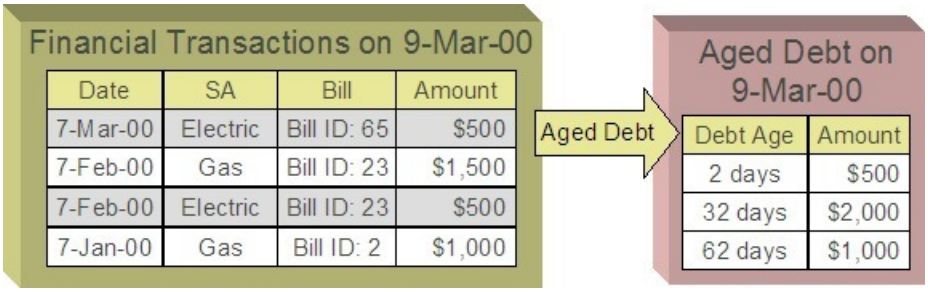

If the customer disputes the two electric bill segments, the customer's aged debt will look as follows:




Notice how a new category of debt appears - Disputed . Also notice how the 2 day old debt disappears and the 32 day old debt is reduced by the disputed amount.

The system shows disputed debt on Control Central. In addition, in all places where aged debt appears in the system, disputed debt is shown as a separate debt category.

If the dispute goes in your company's favor, the disputed match event should be cancelled (thus allowing the FT's to again impact aged debt). For example, if we assume 3 days have passed and the dispute match event is cancelled, the customer's aged debt will look as follows:




If the dispute goes in the customer's favor:

- You may decide to issue a credit note to cancel the offending bill or bill segment(s). As described above, the system in this case will automatically create new match events that match the original FTs with their cancellation FTs and cancel the disputed match event when the last item is unlinked from it.
- You may decide to cancel the offending bill segment(s) / adjustment(s). As described above, these cancellations are going to be swept on to the next bill. The system therefore will not automatically cancel the disputed match event. Notice that the cancellation effect of the disputed items is carried over on to the next bill. This means that the previously disputed items still need to be paid.

**NOTE:**
**Cancel / rebill.** If you cancel / rebill an offending bill segment, both the cancel and the rebill will become open-items that will be matched when the next bill is paid.

- You may decide to issue an adjustment to counter the effect of the disputed FT's. In this situation, you would simply link the adjustment FT to the disputed FT's (thus allowing the match event to become balanced ). It is important to use in this case an adjustment that does not show on bill.

## Pay Plans

You create a *pay plan* when a customer agrees to make one or more scheduled payments to satisfy past (or future) debt. These payments cannot be matched to open items because it is unlikely that debit FT's exist that equal the amount of each scheduled payment. However, you must specify a match type on all payments made by open-item customers. Therefore, a conundrum exists - the system requires a match type on payments made by open item accounts, but payments made for pay plans cannot be matched to existing FT's. This conundrum is solved by the fact that match types do not have to specify an override payment distribution algorithm. The customer class's standard distribution algorithm is used for payments that reference such a match type.

You may wonder how these payments will eventually get matched to open items? If ALL payments associated with a pay plan occur before the next bill is paid (or if the pay plan exists to satisfy future debt), these payments will be swept onto the match event that is created when the customer pays their next bill. However, if the pay plan exists to payoff historical debt and this debt has not been entirely paid by the time of the next bill, an unmatched event will exist when the customer pays their subsequent bills (if the payment amount doesn't match the amount of new charges on the bill). Why? Because, the customer is not paying the entire amount of the bill and therefore the system will not be able to match the payment to open items. If this occurs, we recommend canceling the match events that are created when the customer pays their subsequent bills. When the customer finally pays off all outstanding debt, the system will create a single match event that will contain all payments and bill segments.

## Over Payments

If a customer overpays a bill (i.e., we receive more cash than receivables), we strongly recommend you set up the system to NOT keep the excess credit on the customer's regular service agreements. Rather, we recommend you segregate the receivable onto an "excess credit" service agreement. If you do this, the system will transfer any excess credits to the regular service agreements at bill completion time. When this transfer occurs, the same accounting described under *Payments Segment Financial Transaction Algorithms Transfer Holding Amounts To Payable GL Accounts*occurs as shown in the following example. Note: this example assumes an excess credit of $110 was transferred to a normal service agreement and the normal service agreement had $10 of held payables.

**FASTPATH:**
Refer to *Overpayment Segmentation* for how to set up the system to segregate overpayments on a separate service agreement.

**NOTE:**
**Why not keep excess credits on a customer's regular service agreement?** Because the system can't differentiate between a credit that exists as a result of an overpayment and a credit that exists because of cancel/rebills, it would be impossible for the system to know if payables should be realized as a result of the reduced credit balance. However, if you keep overpayments on an excess credit service agreement, the system knows to treat any transference of these credits as "payments" and therefore it can transfer holding balances to true payables.

| Event | Normal SA GL Accounting | Excess Credit SA GL Accounting |
|---|---|---|
| Bill segment created | A/R 110 | |
| | Revenue <100> | |

| | | |
|---|---|---|
| | Tax Holding <10> | |
| Payment of $300 is received | Cash 110<br>A/R <110><br>Tax Holding 10<br>Tax Payable <10> | Cash 190<br>Overpay <190> |
| Bill segment created | A/R 110<br>Revenue <100><br>Tax Holding <10> | |
| Transfer excess credit amount to normal service agreement (when bill is completed). | Xfer 110<br>A/R <110> | Overpay 110<br>Xfer <110> |
| Because the transfer adjustment is the equivalent of a cash relief outstanding tax holding is relieved in proportion to the amount of receivables that are reduced by the transfer | Tax Holding 10<br>Tax Payable <10> | |
| Net effect of the transfer | Xfer 110<br>A/R <110><br>Tax Holding 10<br>Tax Payable <10> | Overpay 110<br>Xfer <110> |

**NOTE:**
**Prepaid taxes - future functionality.** If your organization allows customers to prepay taxes in anticipation of a future tax increase (the customers receive the lower rate if they pay in advance), we do not consider this prepayment to be an overpayment. Rather, it is a payment of future taxes that will be remitted to the taxing authorities at payment time (due to cash accounting). Please speak to your account manager for when corresponding functionality will be available.

# Setting Up The System To Enable Open Item Accounting

The following section provides an overview of how to enable open-item accounting.

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## Match Type Setup

The number of match types that you will need is dependent on the number of ways you want payments to be matched to open items. At a minimum, you will probably need the following match types:

- **Bill ID.** This match type should reference an override payment distribution algorithm that distributes the payment based on the bill ID specified on the payment (in match value). Refer to *Payments And Match Events* for more information.
- **SA ID.** This match type should reference an override payment distribution algorithm that distributes the payment based on the SA ID specified on the payment (in match value). Refer to *Payments And Match Events* for more information.
- **Pay Plan.** This match type should NOT reference an override payment distribution algorithm (if this algorithm is blank, the customer class's payment distribution algorithm is used). Refer to *Pay Plans* for more information.

## Match Event Cancellation Reason Setup

The number of match event cancellation reasons that you will need is dependent on the number of ways your organization can justify the cancellation of a match event. At a minimum, you will probably need the following match event cancellation reasons:

- **FT Cancellation.** This cancel reason should be referenced on the Customer Class FT Freeze algorithm that is responsible for canceling match events when one of its financial transactions is cancelled.
- **Incorrect Allocation.** This cancel reason should be specified by users when they cancel match events that were created by the system erroneously.

## Customer Class Setup

The following points describe *customer class* oriented set up functions:

- Turn on the open-item accounting switch.
- Set up the following algorithms for each CIS division:
  - Specify a **payment freeze** algorithm that causes a payment's FT's to be linked to the match event that was created when the payment was distributed. Refer to *Payments And Match Events* for more information.
  - Specify a **FT freeze** algorithm that causes match events to be cancelled (and a new match event to be created) when a FT is cancelled. Refer to *How Are Match Events Cancelled* for more information about cancellation.
  - We strongly recommend specifying an **overpayment** algorithm that causes overpayments to be segregated onto an "excess credit / overpayment" SA. Refer to *Overpayments* for more information.

## Overpayment SA Type Setup

Specify a **bill completion** algorithm that causes the credit amount on overpayment SAs to be transferred to newly create debt (created when the bill is created). This algorithm transfers an overpayment SA's balance to regular SAs and creates a match event if the overpayment covers the entire bill. Refer to *Overpayments* for more information.

## Installation Record Setup

Specify an **automatic payment** algorithm that causes a match event to be created when automatic payments are created for open-item accounts. The base package algorithm will do this for you if you specify the appropriate parameter on the algorithm. Refer to *APAY-CREATE* for more information about this algorithm.

If you want a Control Central alert to highlight when the current account has any open match events, plug in the appropriate **control central alert** algorithm on your installation record. Refer to *C1-OPN-MEVT* for more information about this algorithm.

If you want to enable manual pay segment distribution for open item accounts, along with other functions, you will need to plug in an installation algorithm for bill balance calculation. Refer to *C1-OI-BI-AMT* for more information about this algorithm.

## To Do Entry Setup

Two To Do types are supplied with the base package:

- **TD-MODTL**. This To Do type highlights the presence of open, disputed match events.
- **TD-MONTL**. This To Do type highlights the presence of open, non-disputed match events.

Each of the above To Do types should be configured with the roles that work on entries of each type.

In addition, the account management group and/or divisions from which the default roles are extracted should be updated to define the role that should be defaulted for each of the above To Do types.

**FASTPATH:**
Refer to *The Big Picture Of To Do Lists* for more information about To Do lists.

## Setting Up Match Types

Most payments are distributed amongst service agreements using the payment distribution algorithm specified on the payment's account's customer class. This algorithm decides how to distribute a payment amongst an account's existing debt if the customer doesn't specify how the payment should be distributed.

A customer can specify how a payment is distributed by specifying a match type and match value on their payments. Consider the following examples:

- Customers that are subject to open-item accounting (this is defined on the account's customer class) tell the system exactly which debt is covered by their payments. For example, an open-item customer might make a payment in respect of bill ID 123919101919 .
- Even non open-item customers can direct payments to specific SAs. For example, the system allows a balance-forward customer's payment to be directed to a specific service agreement (however, they cannot direct payments to specific bills as only open-item customers can do this).

Match types are used to define the specific type of debt that is covered by a payment. The match type contains the algorithm that effectively overrides the standard payment distribution algorithm defined on the account's customer class.

**NOTE:**
**Background information.** Please refer to *Payments And Match Events* and *Match Type Setup* for more information about how match types are used.

To set up match types, select **Admin** > **Match Type.**

**Description of Page**

Enter an easily recognizable **Match Type** and **Description**.

Define the **Pay Dist Override Algorithm** used to distribute payments that reference this match type. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that overrides the normal payment distribution algorithm.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MATCH_TYPE*.

## Setting Up Match Event Cancellation Reasons

When a match event is canceled, a cancel reason must be supplied.

> **NOTE:**
> **Background information.** Refer to *How Are Match Events Cancelled?* and *Setting Up Match Event Cancellation* for more information about cancellation.

To set up match event cancellation reasons, select **Admin** > **Match Event Cancel Reason.**

**Description of Page**

Enter an easily recognizable **Match Event Cancel Reason** and **Description**.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MEVT_CAN_RSN*.

# Fund Accounting

The topics in this section provide background information about fund accounting.

> **NOTE:**
> **This section is only relevant for some organizations.** The system configuration requirements described in this section are only relevant if your organization practices fund accounting (this type of accounting is typically performed by municipal utilities). If your organization does not practice fund accounting, you need only indicate such on the *Installation Record* ; no other setup is required.

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## Fund Accounting Overview

Municipal utilities, and not-for-profit organizations in general, often use a form of accounting different from that used by for-profit corporations. Municipal utilities typically practice fund accounting, whereas corporations practice corporate accounting.

Regulations or other restrictions may require a municipal utility to account for the finances of each of its departments as a separate entity. If a municipal utility provides both water and wastewater service, a municipal utility may need to track the receivables, revenue, and liabilities for water service separately from those of wastewater. In contrast, a corporation is free to co-mingle the moneys of the two services.

To track the services separately, the municipal utility sets up a fund for each department. A fund is an accounting entity with its own self-balancing set of accounts. Each fund has its own "sub general ledger" with its own chart of accounts, and within each fund, its debits equal its credits at all times. This allows the utility to report on the financial state of each fund independently.

In addition to having a fund for each department, there is also a general fund, which is used to handle inter-fund transfers as well as shared accounts.

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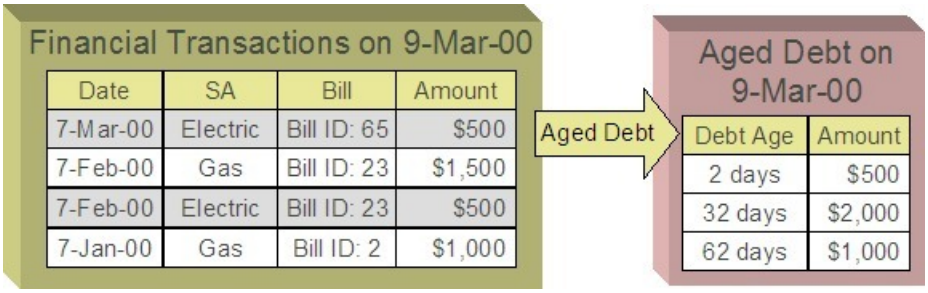
## Fund Accounting Example

Consider a municipal utility which provides water and wastewater service. The utility has two departments: water and wastewater. Each department must track their finances separately therefore a fund is setup for each department:

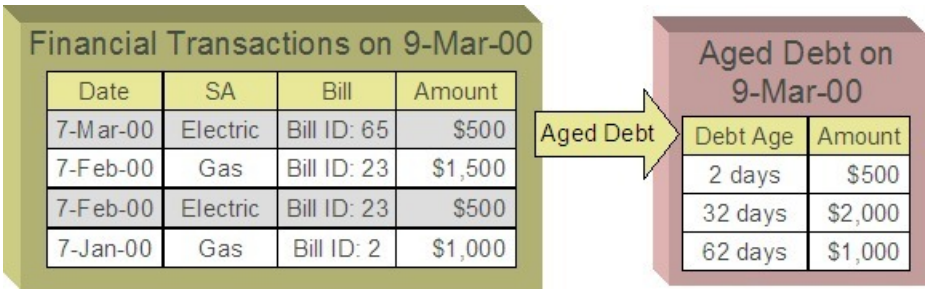
- Water (fund 01).
- Wastewater (fund 02).

In addition, with fund accounting, there is always a general fund (fund 99).

Assume the following bill is generated.



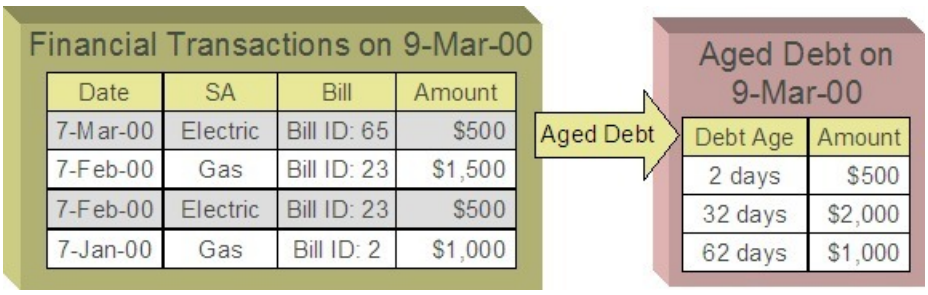

The bill would produce the following GL entries:




For each fund, the GL details of the bill will include a debit to the accounts receivable (A/R) account and credits to the revenue and taxes payable accounts. In organizational terms, each department is owed a portion of the overall bill by the customer, part of which is sales by the department and part of which is owed to the taxing authorities by the department. Each fund is balanced.

Note that the accounting could be identical under corporate accounting if each service is its own division with its own chart of accounts.

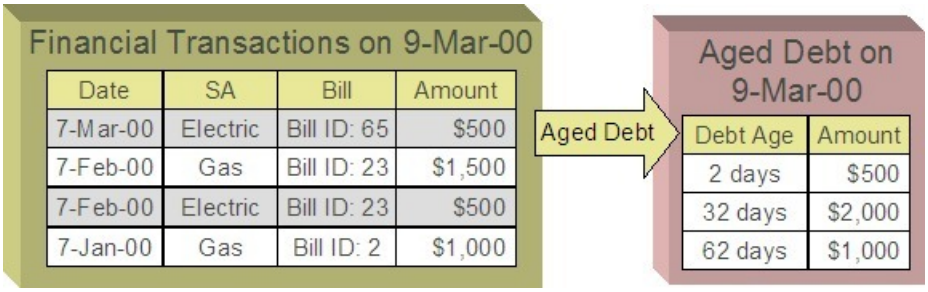
The following diagram illustrates the initial GL accounting that would occur when the payment arrives:




The utility's general cash account is debited, and the departmental funds' A/R accounts are credited. In other words, the cash is held by the utility as a whole but the receivables are reduced for the individual departments.

If the accounting were left in this state, the fund accounting principal - that each fund represents an independent entity with a self-balancing chart of accounts - would be violated. This violation is caused due to the fact that cash is recorded on the general fund, not the departmental funds, causing the general fund to have an excess debit and the departmental funds to have an excess credit.

From an organizational viewpoint, to make each department whole, the departments need to note what portion of the cash they own, and correspondingly, the utility needs to note what portion of the cash is owed to each department. The following diagram illustrates this point.




To maintain a balance of debits and credits within each fund, the departmental funds have an "equity in pooled cash" (EPC) account and the general fund has a liability account for each departmental fund. In addition to debiting the general fund's cash account and crediting the departmental funds' A/R accounts, the departmental funds' EPC accounts are debited and the general funds liability accounts are credited.

And so, with the additional GL entries, all funds have matching debits and credits.

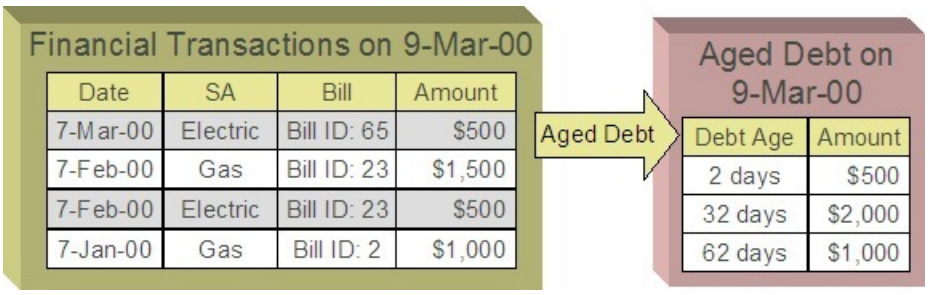
## An Example Of A Bill Segment That References Multiple Funds

Consider a municipal utility that primarily supplies water service but is also responsible for maintaining the city's fire hydrants. The costs for fire hydrant maintenance are borne by the water customers and make up just a small portion of the overall bill. These costs are simply added to the water bill as a line item. The utility has two departments:

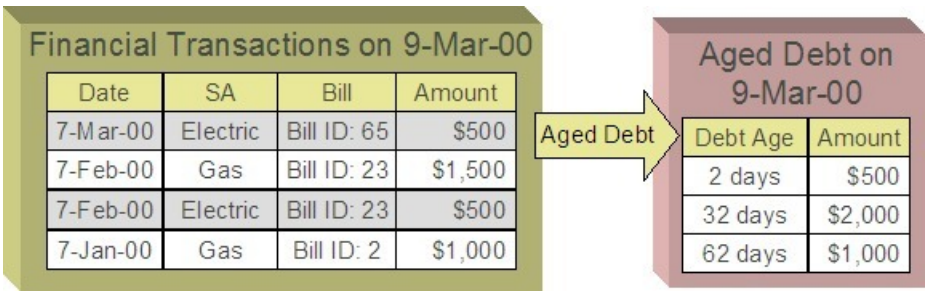
- Water service (fund 01)
- Hydrant maintenance (fund 39).

In addition, there is a general fund (fund 99).

Assume the following bill is generated for water and hydrant services.



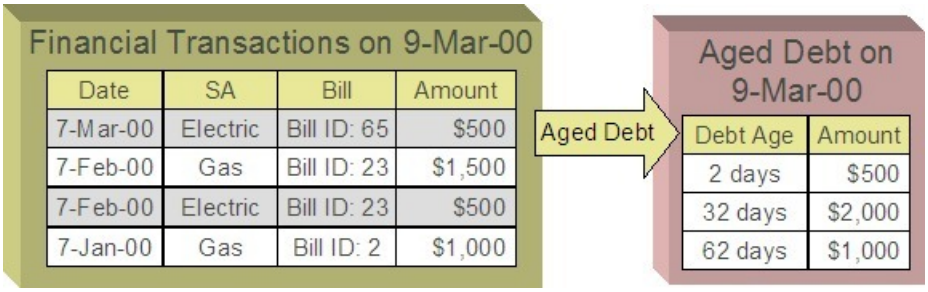

The following diagram illustrates the initial GL entries for the bill:




In accounting for the bill, the water fund's A/R is debited, the water and hydrant funds' revenue accounts are credited, and the water's taxes payable account is credited.

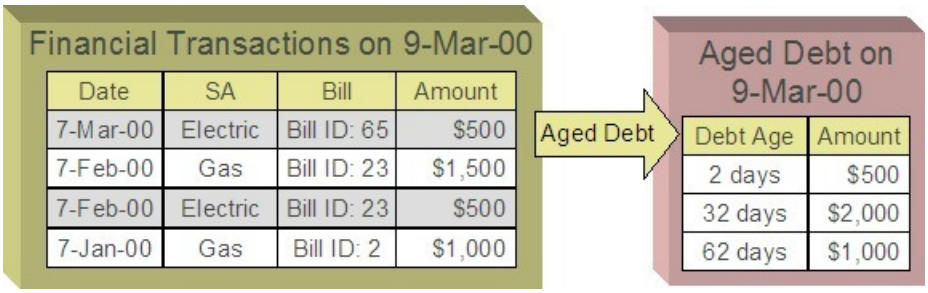
If left at this, the funds would be out of balance; the water fund would have an overall excess debit and the hydrant fund would have an equal excess credit. In organizational terms, the hydrant fund has recorded sales but that amount is recorded as being owed to the water department.

To balance each department, the water department accepts the responsibility for collecting the hydrant charges from the customer but immediately remunerates the charges to the hydrant fund.

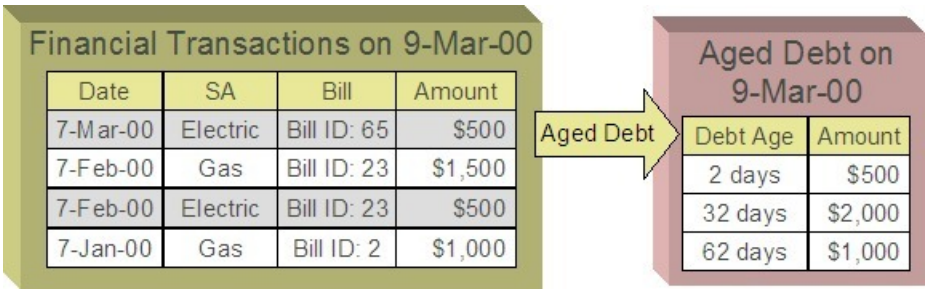



This transfer is done using the general fund. The water fund's EPC account is credited and the liability to water is debited with the amount of the hydrant revenue. Also, the hydrant fund's EPC account is debited and the general fund's liability to hydrant account is credited by the hydrant revenue. In effect, the water department owes the hydrant charges to the general fund, and the general fund owes the hydrant charges to the hydrant fund.

The following diagram illustrates the initial GL accounting that would occur when the payment arrives:



When the payment arrives, the cash is debited to the general fund's cash account, and the water fund's A/R is relieved. Again, the funds would be unbalanced if left in this condition; the water fund would have an excess of credits and the general fund would have an excess of debits.




To maintain each fund's balance of debits and credits, the general fund's liability to the water fund is credited by the amount of the department's share of the cash, and the water fund's EPC is debited. Note that the payment has no effect on hydrant fund's EPC and the general fund's liability to the hydrant fund. The hydrant department "received" its money from the water department when the bill was created.

And so, all funds have matching debits and credits.

## Accounting Method Is Defined On The Installation Options

You must turn on a switch on the *Installation Record* to enable fund accounting.

## Fund Controls Fund-Balancing Entries

There are two levels of debit and credit balancing in fund accounting. There is the balancing required by double entry accounting: the total debits in the entire GL must equal the total credits. This is required regardless of whether fund or corporate accounting is used. The distribution codes for these entries come from varying sources, depending on the type of financial event.

**FASTPATH:**
Refer to *The Source Of GL Accounts On Financial Transactions* for information on the sources of the distribution codes.

The second level of balancing is specific to fund accounting. Within each fund-not just across the GL-the total debits must equal the total credits. The original distribution code from the financial event has a fund specified. For example, a bill would cause a debit to a fund's A/R distribution code, and included in that A/R distribution code is the fund. It is the definition of the fund that specifies whether fund-balancing entries are required and provides the distribution codes for these entries.

For a departmental fund, the fund-balancing debit and credit would be specified. When a debit is applied to a departmental fund's GL account, an additional account (typically the general fund's liability to the departmental fund) is debited and an account (typically the departmental fund's EPC) is credited. When a credit is applied to a departmental fund's account, an additional account (typically the general fund's liability to the departmental fund) is credited and an account (typically the department's EPC) is debited.

For the general fund, no fund-balancing debits and credits are specified.

## Building Fund-Balancing GL Details

Building the GL details for a financial event is a two-step process.

- First, the system generates the regular GL details for a financial transaction (FT). This is done regardless of whether corporate or fund accounting is used.
- Second, if fund accounting is activated (by turning on a switch on the *Installation Record*), the system analyzes the distribution code on each GL detail associated with the FT. If a *fund* is specified on a distribution code, the system checks the definition of the fund. If fund-balancing entries are specified on the fund, two additional GL entries are added to the FT:
- An offsetting entry to the Equity in Pooled Cash account is created for the departmental fund (e.g., if the FT is debiting a given fund, an offsetting credit is created in the funds EPC account).
- Another entry to the departments Liability account is created for the general fund.

The result is a consolidated set of GL entries for the FT, incorporating the regular entries as well as the fund-balancing entries.

The topics in this section illustrate the generation of the GL details for the earlier examples.

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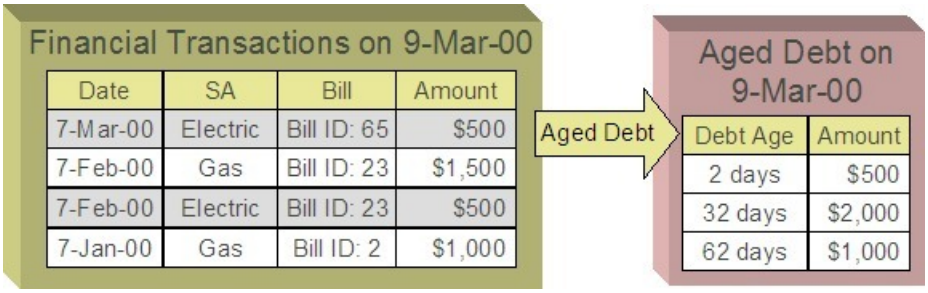
## FTs Whose GL Details All Reference The Same Fund Do Not Impact the General Fund or EPC Accounts

In *Fund Accounting Example*, where the bill's bill segments reference a single fund, the system creates a fund-balancing GL entry for each GL entry applied to a departmental fund:

- A debit to a departmental GL account triggers a debit to the general fund's liability-to-departmental-fund account and a credit to the departmental fund's equity-in-pending-cash account.
- A credit to a departmental GL account triggers a credit to the general fund's liability-to-departmental-fund account and a debit to the departmental fund's equity-in-cash account.



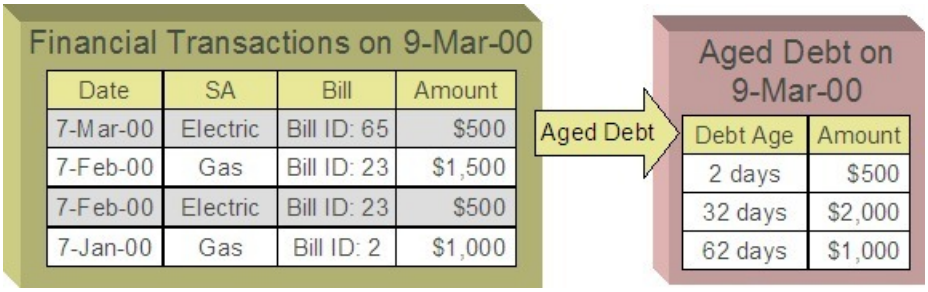

The net effect on the individual equity-in-cash and general fund's liability accounts is zero because the debits and credits net to zero for each GL account. In other words, the yellow boxes net to zero and therefore fund accounting does not impact the bill segment's financial transactions. Refer to *Fund Accounting Example* for the resulting consolidated GL entries.

## An FT Whose GL Details Reference Multiple Funds

In *An Example Of A Bill Segment That References Multiple Funds*, where the bill's bill segments reference multiple funds (water and hydrant), the system also creates fund-balancing GL entries for the financial transaction:

- A debit to a departmental GL account triggers a debit to the general fund's liability-to-departmental-fund account and a credit to the departmental fund's equity-in-pending-cash account.

- A credit to a departmental GL account triggers a credit to the general fund's liability-to-departmental-fund account and a debit to the departmental fund's equity-in-cash account.




The net effect of the bill on the GL is that the water fund's EPC has a credit of $0.80, the hydrant fund's EPC has a debit of $0.80, the general fund's liability to the water fund has a debit of $0.80, and the general fund's liability to the hydrant fund has a credit of $0.80. Note that, overall, the general fund's overall liability to the departmental funds nets to zero. Refer to *An Example Of A Bill Segment That References Multiple Funds* for the resulting consolidated GL entries.

## Setting Up The System To Enable Fund Accounting

The following section provides an overview of how to enable fund accounting.

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## Turn On Fund Accounting

On the *Installation Record*, indicate that fund accounting is Practiced .

## Defining Funds

A fund must be setup for each specific fund in your organization. Don't forget to also set up a fund for the general fund. Navigate using **Admin** > **Fund.**

**Description of Page**

Enter a **Fund** and a **Description** to identify the fund.

If this fund is used to balance other funds or to hold cash, indicate a **Fund Type** of General , otherwise indicate that it is Specific .

If the fund type is Specific , specify the **Equity Distribution Code** and **Liability Distribution Code**. These codes are used to balance financial transactions that span funds. The equity distribution code should belong to the same **Fund** as the one you are defining. The liability distribution code should belong to the general fund.

## Distribution Codes Must Include Fund ID

All of your distribution codes must include their respective fund ID.

**FASTPATH:**
**For more information**, refer to *Setting Up Distribution Codes*.

## Update Your Funds With Their Respective Equity and Liability Distribution Codes

After distribution codes have been setup, you must update your funds to indicate the equity and liability accounts used to balance inter-fund financial transactions.

# United Kingdom VAT and CCL

The topics in this section provide information about value added tax (VAT) and climate change levy (CCL) charges that are specific to non-domestic customers in the United Kingdom market.

**NOTE:**
**Applicable for UK market**. This section is only relevant for the United Kingdom market. Other markets may disregard this section.

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## UK VAT Overview

Two rates of VAT, referred to as standard rate VAT and reduced rate VAT, are applicable to energy related charges in the UK. Domestic (i.e., residential) customers always pay VAT at the reduced rate. Non-domestic customers on the other hand normally pay standard rate VAT. However, part or all of the energy related charges for a non-domestic customer might be subject to reduced rate VAT. De minimis and VAT declarations affect the percentage of the energy related charges that is subject to each VAT rate:

- If average daily usage at a premise for a given service type does not exceed a certain threshold (the de minimis limit), all energy related charges at that premise / service type are taxed at the reduced rate.
- Some non-domestic customers, such as those with a mixed-use premise, may be eligible to pay reduced rate VAT on part or all of their energy related charges. Customers may file a VAT declaration specifying the percentage of their energy

related charges that are eligible for reduced rate VAT - refer to *Maintaining Declarations* for more information. If the declared percentage exceeds a given threshold, the declared percentage is deemed to be 100% and the customer pays VAT at the reduced rate on all energy related charges at that premise. VAT declarations are non-transferable and must be filed for each account, premise, and service type combination.

In addition to the potential for different rates of VAT to be applicable on a bill, UK tax regulations require that excess credits are considered a prepayment of energy related charges together with VAT. Refer to *Excess Credits and UK VAT* for more information.

The system comes supplied with various algorithms types that can be used to perform the VAT calculations.

## UK CCL Overview

The climate change levy (CCL) is based on the amount of energy used that is subject to standard rate VAT. Similarly to VAT declarations, customers may file for exemption from CCL. A CCL declaration specifies the percentage of the CCL charges that the customer is exempt from - refer to *Maintaining Declarations* for more information. CCL declarations are non-transferable and must be filed for each account, premise, and service type combination.

CCL charges themselves are subject to standard rate VAT.

## UK VAT and CCL Bill Examples

The following examples show how a bill for a non-domestic customer is affected by de minimis, VAT declarations, and CCL declarations. In the examples, standard rate VAT of 17.5%, reduced rate VAT of 5%, a VAT declaration threshold of 60%, and a CCL charge of 0.43p per unit of energy are used.

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## Example 1 - Normal Account

This example shows the bill for a normal non-domestic account with no declarations and consumption above the de minimis limit. Standard rate VAT is applied to all energy related charges (the standing charge and the per unit charge) and to the CCL charge.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 2,000 units @ 10p | 200.00 |
| CCL on 2,000 units @ 0.43p | 8.60 |
| VAT @ 17.5% on 218.60 | 38.25 |
| Total | 256.85 |

## Example 2 - Account with Consumption Under the De Minimis Limit

In this example, consumption does not exceed the de minimis limit and therefore reduced rate VAT is applied to all the energy related charges. There is no climate change levy because only units subject to standard rate VAT are subject to CCL.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 2,000 units @ 10p | 200.00 |
| VAT @ 5% on £210.00 | 10.05 |
| Total | 220.05 |

## Example 3 - Account with VAT Declaration

This example is for a non-domestic account with a VAT declaration of 20%. Consumption is above the de minimis limit. CCL applies to only 80% of the total units as 20% is subject to reduced rate VAT and therefore exempt. 80% of the energy related charges (the standing charge and the per unit charge) and all of the CCL charge are subject to standard rate VAT. 20% of the energy related charges are subject to reduced rate VAT.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 2,000 units @ 10p | 200.00 |
| CCL on 1,600 units @ 0.43p | 6.88 |
| VAT @ 17.5% on £174.88 | 30.60 |
| VAT @ 5% on £42.00 | 2.10 |
| Total | 249.58 |

## Example 4 - Account with VAT Declaration and CCL Declaration

This example is for a non-domestic account with a VAT declaration of 20% and a CCL declaration of 10%. Consumption is above the de minimis limit. CCL applies to only 80% of the total units as 20% is subject to reduced rate VAT and therefore exempt. The customer gets a credit (CCL relief) for 10% of the CCL charges as a result of the CCL declaration. 80% of the energy related charges (the standing charge and the per unit charge) and all of the CCL charge less the CCL reliefs are subject to standard rate VAT. 20% of the energy related charges are subject to reduced rate VAT.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 2,000 units @ 10p | 200.00 |
| CCL on 1,600 units @ 0.43p | 6.88 |
| CCL relief | <0.68> |
| VAT @ 17.5% on £174.20 | 30.48 |

| | |
|---|---|
| VAT @ 5% on £42.00 | 2.10 |
| Total | 248.78 |

# Billing and UK VAT

The following sections describe how VAT rules are implemented when a bill is produced.

**Contents**



## Application of De Minimis

The de minimis rule specifies that all energy related charges at a premise be subject to reduced rate VAT if the total usage at a premise does not exceed a certain threshold. To determine if de minimis applies, the total billed consumption for a premise must therefore be known. However, energy usage at a premise may be measured with several meters and billed by multiple service agreements. To ensure that the final billed consumption for the premise is used to determine if de minimis applies, all service agreements for an account of a given service type at a given premise should be billed together and de minimis should be checked after the bill segments have been generated. In addition, all bill segments on one bill for consumption at a given premise must be for the same bill period.

**NOTE:**
**Bill segments from different periods may not appear on the same bill.** If a bill segment is canceled, all bill segments associated with consumption at a given premise for the same service type must be canceled and re-billed together. You cannot re-bill the bill segment on a bill for a different period.

An algorithm type is supplied with the base package that checks for de minimis at bill completion time. The base bill completion algorithm type checks that for any service agreement that was billed, bill segments for all the account's service agreements with the same service type and characteristic premise exist on the bill. It then calculates the total consumption for the premise and determines if de minimis applies. If de minimis applies, it sets a bill characteristic whose value is the premise ID to indicate that de minimis applies and regenerates the bill segment. Refer to the algorithm type *CPBC-DMCH* for more information on how this type of algorithm operates.

The calculation rule calculation algorithm type that calculates standard and reduced rate VAT ( *RCAM-VAT*) applies the de minimis rule if the bill characteristic for de minimis is found. Refer to *Calculation of VAT* for more information. Note that during the initial generation of each bill segment, the characteristic will not exist and standard rate VAT will be applied. This means that if you look at a bill before it is complete, VAT may not be accurately reflected.

**NOTE:**
**Batch billing cannot regenerate re-billed bill segments.** If you cancel and re-bill a bill segment, you should complete the bill on-line so that the re-billed bill segments can be regenerated if de minimis applies.

## Calculation of VAT

To calculate VAT, the percentages of energy related charges subject to standard rate VAT and reduced rate VAT must be determined. As these percentages vary from customer to customer and even from one bill to the next for the same customer, their calculation must take place at billing time and is handled by a calculation rule calculation algorithm.

A calculation rule calculation algorithm type *RCAM-VAT* is provided to calculate the percentages of energy related charges subject to standard rate and reduced rate VAT, taking into account de minimis and any VAT declaration that is in effect for the service type, account, and premise. The percentages can then be applied to the appropriate charges that are cross-referenced.

## Calculation of CCL

CCL is a charge per unit of energy subject to standard rate VAT. It is therefore dependent on the same percentage of energy related charges subject to standard rate VAT determined during the calculation of VAT. A calculation rule calculation algorithm handles calculation of CCL.

A calculation rule calculation algorithm type *RCAM-CCL* is provided to calculate CCL charges and CCL relief, taking into account any CCL declarations that are in effect for the service type, account, and premise.

# Excess Credits and UK VAT

When a financial transaction that results in a credit balance for a service agreement is frozen, the amount of the excess credit must be accounted for as a prepayment of energy related charges and VAT. VAT is calculated at the reduced rate for domestic customers and at the standard rate for non-domestic customers. When the excess credit is used, the VAT liability is reversed.

A customer class FT freeze algorithm type *CFTZ-VAT-GL* is provided to create additional GL detail entries for unbilled revenue and VAT liability when the freezing of an FT results in a credit balance or a change to a service agreement's credit balance.

## Excess Credit GL Accounting Example

The following example shows the additional GL details that are created when a service agreement's balance changes and the starting or ending balance is a credit. For this example, a single VAT rate of 10% is used simply to illustrate the principle.

The service agreement has a zero starting balance. Note the following:

- When the first payment is received, the overpayment results in a credit balance and additional GL entries are created to recognize the unbilled energy revenue and unbilled VAT liability.
- When the second bill segment is created, the credit balance is reduced and additional GL entries are created to back out the unbilled GL entries, up to the amount of the credit balance.
- When the bill segment is canceled, the service agreement again has a credit balance and additional GL entries are created to recognize the unbilled energy revenue and unbilled VAT liability.

| Event | Normal GL Accounting | Additional GL Accounting | SA Balance |
|---|---|---|---|
| Bill segment for £110 created | A/R 110 | | 110 |
| | Revenue <100> | | |
| | VAT <10> | | |
| Payment of £330 is received | Cash 330 | A/R 220 | <220> |
| | A/R <330> | Unbilled Energy <200> | |

| | | | |
|---|---|---|---|
| | | Unbilled VAT <20> | |
| Bill segment for £275 created | A/R 275<br>Revenue <250><br>VAT <25> | A/R <220><br>Unbilled Energy 200<br>Unbilled VAT 20 | 55 |
| Payment of £55 is received | Cash 55<br>A/R <55> | | 0 |
| Bill segment for £275 is canceled | A/R <275><br>Revenue 250<br>VAT 25 | A/R 275<br>Unbilled Energy <250><br>Unbilled VAT <25> | <275> |

# Setting Up The System For UK VAT and CCL

The following section provides an overview of how to configure the system to apply UK VAT and CCL charges for non-domestic customers.

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## Bill Segment Freeze Installation Option

Select Freeze at Bill Completion as the bill segment freeze option. The system determines if de minimis applies at bill completion time and has to regenerate the bill segments as necessary.

## Customer Class

Create a separate customer classes for non-domestic customers.

## Service Agreements

You must configure the system so that each service agreement that must be checked for de minimis is only linked to service points at a single premise. The service agreement must reference that premise as its characteristic premise. Refer to *Application of De Minimis* for more information.

## Bill Factors for UK VAT and CCL

- Standard Rate VAT
- Reduced Rate VAT
- VAT Declaration Percentage Threshold. Set up a separate bill factor for each service type as the thresholds differ based on service type.
- De Minimis Average Daily Amount Threshold. Set up a separate bill factor for each service type as the de minimis amounts differ based on service type.
- Climate Change Levy (CCL) Per Unit Price. Set up a separate bill factor for each service type as the CCL per unit prices differ based on service type.

## Characteristic Type for De Minimis Amounts

Set up a characteristic type to use for the bill characteristic that indicates when de minimis applies. Define the type of characteristic value as a Foreign Key Value and specify a foreign key reference that points to the premise table. Specify this characteristic type as parameters to the algorithms that apply the de minimis rule and that apply VAT.

You need to define a characteristic type for every service type that is subject to the de minimis rule, as the de minimis limit may apply for one service type but not another on the same bill.

## Distribution Code

Define the following distribution codes:

- Unbilled Prepaid Energy Related Charges
- Unbilled Prepaid VAT

These distribution codes are required as parameters to the algorithms to create the GL details for excess credit.

## UOM / TOU / SQI

The algorithm that calculates CCL requires the following service quantities:

- The percentage of energy related charges that is subject to standard rate VAT
- Define the SQI used to store this service quantity. You will specify this SQI as a parameter to the algorithm used to calculate VAT. Refer to the *RCAM-VAT* algorithm type for more information about the base package algorithm.
- The total consumption
- Define the UOM / TOU / SQI used to store these service quantities.

## Service Quantities

The algorithms that calculate VAT and CCL require a service quantity containing the total consumption. Unless you have registers that measure the total consumption independent of time of use or interval, you will need to set up a pre-processing calculation rule or rate calculation algorithm to aggregate the usage into one service quantity.

## Algorithms for UK VAT and CCL

Add the following *algorithms*:

- Apply De Minimis Rule. Define an algorithm for each service type for which de minimis should be checked. Plug the algorithm(s) in on the customer class for the Pre Bill Completion system event. Refer to the *CPBC-DMCH* algorithm type for more information about the base package algorithm.
- Apply VAT to Cross-Referenced Calculation Rules. Define one algorithm to calculate VAT at the standard rate and one algorithm to calculate VAT at the reduced rate (specify whether to calculate standard rate or reduced rate VAT using the algorithm parameter). You will need to define a set of algorithms for each service type (the bill characteristic to store the premise when de minimis applies and the VAT Declaration percentage threshold bill factor referenced in the algorithm parameters are different for each service type). Plug these algorithms in on the calculation rule for the Calculation Algorithm system event. Refer to the *RCAM-VAT* algorithm type for more information about the base package algorithm.
- Create Excess Credit GL Details. Plug this algorithm in on the customer class for the FT Freeze system event. Refer to the *CFTZ-VAT-GL* algorithm type for more information about the base package algorithm.
- Calculate CCL. Plug this algorithm in on the calculation rule for the Calculation Algorithm system event. Refer to the *RCAM-CCL* algorithm type for more information about the base package algorithm.
- Highlight Effective Declarations for Account and Premise. Plug this algorithm in on the installation option for the Control Central Alert system event. Refer to the *CCAL-DECL* algorithm type for more information about the base package algorithm.

## Calculation Rules to Charge VAT and CCL

Four additional calculation rules are required to charge for VAT and CCL on non-domestic rates:

- Calculate standard rate VAT
  - Calculation rule type = Calculation Algorithm
  - Value type = Percentage

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for standard rate VAT.

- Specify the UOM/TOU/SQI of the service quantity that holds the total consumption.
- Turn on Derive SQ
- Calculation algorithm = the algorithm you set up to calculate VAT at the standard rate
- Cross-reference all calculation rules that contribute to the total bill amount for energy related charges
- Note that the algorithm overrides description on bill
- Calculate reduced rate VAT
  - Calculation rule type = Calculation Algorithm

  - Value type = Percentage

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for reduced rate VAT.

- Specify the UOM/TOU/SQI of the service quantity that holds the total consumption.
- Turn on Derive SQ
- Calculation algorithm = the algorithm you set up to calculate VAT at the reduced rate
- Cross-reference all calculation rules that contribute to the total bill amount for energy related charges
- Note that the algorithm overrides description on bill
- Calculate CCL and CCL Relief
  - Calculation rule type = Calculation Algorithm
  - Value type = Unit Rate

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for CCL per unit price.

- UOM/TOU/SQI = the identifier of the service quantity containing the total units of energy consumed
- Calculation algorithm = the algorithm you set up to calculate CCL
- Note that the algorithm overrides description on bill
- VAT on CCL
  - Calculation rule type = Apply To
  - Value type = Percentage

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for standard rate VAT.

- Cross-reference the calculation rule that calculates CCL and CCL Relief

Setting up the calculation rules as above produces separate lines for VAT on energy related charges and on CCL (i.e., lines will be created for standard rate VAT on energy related charges, reduced rate VAT on energy related charges, and standard rate VAT on CCL charges).

You can set up rates to calculate standard rate VAT on energy related charges and CCL together as follows:

- Calculate standard rate VAT charges
  - Calculation rule type = Calculation Algorithm
  - Turn on For Calculation Purposes Only (Result Type = Charge )
  - Value type = Percentage

Define a value source of Value and a value of 100.

- Specify the UOM/TOU/SQI of the service quantity that holds the total consumption.
- Turn on Derive SQ
- Calculation algorithm = the algorithm you set up to calculate VAT at the standard rate
- Cross-reference all calculation rule that contribute to the total bill amount for energy related charges.
- Calculate CCL and CCL Relief
  - Calculation rule type = Calculation Algorithm
  - Value type = Unit Rate

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for CCL per unit price.

- UOM/TOU/SQI = the identifier of the service quantity containing the total units of energy consumed
- Calculation algorithm = the algorithm you set up to calculate CCL

- Note that the algorithm overrides description on bill.
- Calculate standard rate VAT
  - Calculation rule type = Apply To
  - Value type = Percentage

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for standard rate VAT.

- Cross-reference the calculation rule that calculates standard rate VAT charges and the calculation rule that calculates CCL and CCL Relief
- Calculate reduced rate VAT:
  - Calculation rule type = Calculation Algorithm
  - Value type = Percentage

It is recommended that you use a value source of Bill Factor and reference the bill factor you set up for reduced rate VAT.

- Specify the UOM/TOU/SQI of the service quantity that holds the total consumption.
- Turn on Derive SQ
- Calculation algorithm = the algorithm you set up to calculate VAT at the reduced rate
- Cross-reference all calculation rules that contribute to the total bill amount for energy related charges.
- Note that the algorithm overrides description on bill.

# Bill Taxation Threshold

Some implementations only apply taxes if the accumulated tax amount at the bill level exceeds some specified threshold amount.

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# Taxation Threshold Examples

The following examples show how taxation thresholds affect a customer's bill. In the examples a tax rate of 5% and a threshold amount of $21.30 is used.

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## Example 1 - Account With Taxes Under Threshold

This example shows the bill for an account where the accumulated tax amount is less than the threshold amount. Since the accumulated tax amount of $10.50 is less than the threshold amount, taxes are not applicable and the account's bill should be adjusted to exclude the tax amount of $10.50.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 2,000 units @ $0.10 | 200.00 |
| Tax @ 5% on $210.00 | 10.50 |
| Total | 220.50 |
| Adjusted Total | 210.00 |

## Example 2 - Account With Taxes Above Threshold

This example shows the bill for an account where the accumulated tax amount is greater than the threshold amount. Since the accumulated tax amount of $27.92 is greater than the threshold amount, taxes are applicable and the account should be billed for the total amount.

| Bill Line | Amount |
|---|---|
| Standing Charge | 10.00 |
| 4,000 units @ $0.10 | 400.00 |
| Additional Charge | 148.45 |
| Tax @ 5% on $558.45 | 27.92 |
| Total | 586.37 |

## Example 3 - Account With Rounding Discrepancy

This example shows the resulting bill segment calc lines for an account with 3 service agreements. Here the accumulated tax amount at the bill level is $21.29 with taxes calculated and rounded for each SA's bill segment. However, if the same taxes were calculated for each SA's bill segment and then accumulated and rounded at the bill level, the accumulated tax amount would be $21.30 implying that taxes are applicable and the account should be billed for the tax amount of $21.30 accounting for the discrepancy of $0.01.

| Bill Segment | Bill Line | Amount | Pre-rounding Amount |
|---|---|---|---|
| Bill segment for SA 1 | 964.70 units @ $0.10 | 96.47 | 96.47000 |
| | Tax @ 5% on $96.70 | 4.82 | 4.82350 |
| | Bill Segment Total | 101.29 | |
| Bill segment for SA 2 | 2222.90 units @ $0.10 | 222.29 | 222.29000 |
| | Tax @ 5% on $222.29 | 11.11 | 11.11450 |
| | Bill Segment Total | 233.40 | |
| Bill segment for SA 3 | 1072.40 units @ $0.10 | 107.24 | 107.24000 |
| | Tax @ 5% on $107.24 | 5.36 | 5.36200 |

| | | |
|---|---|---|
| | Tax Discrepancy | 0.01 |
| | Bill Segment Total | 112.61 |

**NOTE:**
**Pre-rounding amount.** Rate application captures two calculated amounts on the resulting bill segment calc lines. The first is the calculated amount rounded to two decimal places, and the second is a raw calculated amount with a five decimal precision. The base package algorithm that calculates taxation thresholds uses both amounts to account for any rounding discrepancy; however, only the raw calculated amount is used to compare against the taxation threshold.

# Billing and Taxation Thresholds

The following sections describe how taxation threshold rules are implemented when a bill is produced.

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## Calculation of Taxation Thresholds

When taxation thresholds are applied at the account's bill level, it means that the system must calculate taxes for each of the account's service agreements, then sum these tax amounts and apply any applicable rounding rules. This accumulated tax amount is compared to a threshold amount and if the accumulated tax amount is less than the threshold amount, then taxes should not be applied to the customer's bill. To ensure the accumulated tax amount is accurate, all service agreements for an account whose tax amounts should be taken into consideration when comparing to the specified threshold should be billed together and the threshold comparison should take place after the bill segments have been generated. In addition, all bill segments whose tax amounts should be taken into consideration when comparing to the specified threshold must be for the same bill period.

**NOTE:**
**Bill segments from different periods may not appear on the same bill.** If a bill segment is canceled, all bill segments associated with that bill must be canceled and re-billed together. You cannot re-bill the bill segment on a bill for a different period.

An algorithm type is supplied with the base package that checks for taxation thresholds at bill completion time. The base bill completion algorithm type accumulates identified tax calc line amounts (accomplished using a bill segment calc line characteristic), and compares this to a specified threshold amount to determine if taxes apply for the account. If taxes do not apply, it sets a bill characteristic indicating this and regenerates the bill segment. Refer to the algorithm type *C1-CPBC-TAXT* for more information on how this type of algorithm operates.

**NOTE:**
**Calculated adjustments are included in the evaluation against taxation thresholds.** Adjustments that use a rate to calculate the adjustment amount may be included in the taxation threshold evaluation if their rate's components are set up to do so. The base algorithm *C1-CPBC-TAXT* looks at adjustments that are about to be swept onto the bill and, if applicable, includes them in the calculation.

The calculation rule(s) that calculate taxes make use of calculation rule eligibility criteria to ensure that taxes are only computed if the bill does not have the characteristic indicating that taxes are not applicable. Note that during the initial

generation of each bill segment, the characteristic will not exist and taxes will be applied. This means that if you look at a bill before it is complete, taxes may not be accurately reflected.

## Tax Amount Discrepancies

Since tax calculation rules are calculated and rounded at the bill segment level, it's possible that rounding discrepancies may occur if rounding of these tax amounts occurs at the bill level instead as illustrated in the example above. To account for this, the system uses both the two decimal precision and the five decimal precision calculated amounts that rate application captures on bill segment calc lines; however, only the raw calculated amount is used to compare against the taxation threshold. If there is a discrepancy in the tax amount (as shown in example 3 above), the system captures this amount as an entry in one of the bill segment's SQ collections prior to regenerating the bill segments. This is depicted in example 3 above where the tax discrepancy SQ resulted in an additional bill segment calc line on one of the bill segments for the rounding amount of 0.01. Note that a calculation rule is configured to bill for this discrepancy amount SQI.

**NOTE:**
**Pre-rounding amount.** Rate application captures two calculated amounts on the resulting bill segment calc lines. The first is the calculated amount rounded to two decimal places, and the second is a raw calculated amount with a five decimal precision. The base package algorithm that calculates taxation thresholds uses both amounts to account for any rounding discrepancy; however, only the raw calculated amount is used to compare against the taxation threshold.

# Setting Up The System For Bill Taxation Thresholds

The following section provides an overview of how to configure the system to calculate taxes at the account's bill level.

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## Installation Option

Select Freeze at Bill Completion as the bill segment freeze option. The system compares tax amounts calculated to a specified threshold amount and based on this determines if taxes should apply at bill completion time. If taxes should not be applied for the account, the system has to regenerate the bill segments as necessary.

## Adjustment Types

Select Freeze at Bill Completion as the adjustment freeze option. The system compares tax amounts calculated to a specified threshold amount and based on this determines if taxes should apply at bill completion time. If taxes should not be applied for the account, the system has to regenerate the adjustments as necessary.

## Bill Factors

Tax Threshold. Set up a separate bill factor for each distinct tax threshold amount.

## Characteristic Type

Set up a characteristic type and value to identify the tax calculation rules and bill segment calculation lines that the system will use to compare to the specified threshold amount. Specify this characteristic type and value as parameters to the algorithms that apply the taxation threshold. This characteristic type and value must also be specified on each of your tax calculation rules that should be included in the threshold comparison.

Set up a characteristic type and value to use for the bill characteristic that indicates when bill level taxes apply. Specify this characteristic type and value as parameters to the algorithms that apply the taxation threshold.

## Service Quantity Identifiers

Optional service quantity identifiers may be configured to capture the following:

- Tax Amount. The system compares the accumulated bill's tax amount to the specified threshold amount to determine if taxes are applicable. If taxes should not be applied for the account, the system regenerates the bill segments as necessary. If you wish to capture the tax amount computed for informational purposes, then a tax amount SQI should be set up and specified as a parameter on the algorithms that apply the taxation threshold.
- Tax Discrepancy Amount. Since tax calculation rules are calculated and rounded at the bill segment level, it's possible that rounding discrepancies may occur if rounding of these tax amounts should take place at the bill level. If you wish to account for these rounding discrepancies, then a tax discrepancy amount SQI should be set up and specified as a parameter on the algorithms that apply the taxation threshold. Your rates should also be configured to cater for this rounding discrepancy. The system adds an entry for the discrepancy amount to one of the bill segment's SQ collections prior to regenerating the bill segments.

## Algorithms

Apply Taxation Threshold. Define an algorithm for each distinct tax threshold amount. Plug the algorithm(s) in on the appropriate customer class for the Pre Bill Completion system event. Refer to the *C1-CPBC-TAXT* algorithm type for more information about the base package algorithm.

Adjustment Generation - Apply Rate. Define an algorithm for each rate to be used by calculated adjustment types that are to be included in the tax threshold evaluation. Plug the algorithm(s) in on the appropriate adjustment type for the Generate Adjustment system event. Refer to the *ADJG-RT* algorithm type for more information about the base package algorithm.

## Calculation Rules For Bill Taxation Thresholds

Your calculation rules that bill for taxes require the following:

- A characteristic that identifies them as calculation rules to include in taxation threshold comparisons
- Calculation rule eligibility criteria to ensure that taxes are not calculated if the taxation threshold algorithm dictates this

Only one eligibility group on the calculation rule is required. It would look as follows:

| Group No. | Group Description | If Group is True | If Group is False |
|---|---|---|---|
| 1 | Tax applies if total accumulated tax amount at the account's bill level exceeds the threshold amount | Apply calculation rule | Skip calculation rule |

The following criteria will be required for this group:

| Seq | Field to Compare | Comparison Method | If True | If False | If Insufficient Data |
|---|---|---|---|---|---|
| 10 | Bill characteristic: Characteristic type = Tax Not Applicable indicator | = YES | Group is false | Check next condition | Group is true |
| 20 | Characteristic Collection: Characteristic type = Tax Not Applicable | = YES | Group is false | Group is true | Group is true |

**NOTE:**
The second criterion included above is used to evaluate the applicability of the tax on calculated adjustments. Since these adjustments are not yet linked to the bill, the first criterion cannot be used to evaluate the applicability of the tax threshold. The pre-bill completion algorithm *C1-CPBC-TAXT* instead adds the characteristic to the characteristic collection for use by the rate application when evaluating the adjustment's rate's eligibility rules. Refer to the *ADJG-RT* algorithm type for more information about the base package algorithm.

**FASTPATH:**
For more information, refer to *Designing Calculation Groups and Rules*.

An additional calculation rule is required to bill for the tax rounding discrepancy as follows

- Calculation Rule type = Service Quantity
- UOM/TOU/SQI = the identifier of the service quantity containing the tax discrepancy amount
- Value Type = Unit Rate
- Value Source = Value
- Value = 1

# Other Financial Transaction Topics

Various topics about financial transactions are discussed in this section.

## The Source Of GL Accounts On Financial Transactions

The following table lists the major financial events, their standard accounting, and the source of distribution codes used to derive the GL accounts sent to your general ledger.

| Financial event | GL Accounting | Source Of Distribution Code |
|---|---|---|
| Create a normal utility bill segment.<br>Bill Segment FT Algorithm is Payoff Amt = Bill Amt / Current Amt = Amt Due | Debit: A/R | SA Type |
| | Credit: Revenue / Taxes Payable | Calculation Rule |
| Create a bill for company usage.<br>Bill Segment FT Algorithm is Payoff Amt = 0 / Current Amt = 0 | Debit: Company Usage Expense | SA Type |
| | Credit: Revenue / Taxes Payable | Calculation Rule |
| Create a bill for charity.<br>Bill Segment FT Algorithm is Payoff Amt=0 / Current Amt = Bill Amt | N/A - charity bills have no effect in the GL | N/A |
| | N/A | N/A |
| Create a payment segment for a normal utility service agreement | Debit: Cash | Bank Account on the Tender Source of the Tender Control for the Payment Segment's Tender. |
| | Credit: A/R | SA Type |
| Create a payment segment for a charitable contribution service agreement | Debit: Cash | Bank Account on the Tender Source of the Tender Control for the Payment Segment's Tender. |
| | Credit: Charity Payable | SA Type |
| Create a payment segment for auto-pay at bill completion time | Debit: Cash | Bank Account on the Tender Source on the Auto-pay Route Type of the Auto-pay Source. |
| | Credit: A/R | SA Type |
| Canceling a payment | Debit: A/R | SA Type |
| | Credit: Cash | Bank Account specified by the user on the cancel tender page. Note that this defaults to the original tender's bank account. |
| Create an adjustment to levy a charge | Debit: A/R | SA Type |
| | Credit: Revenue | Adjustment Type |

The bottom line is as follows:

- If a bill segment has a financial effect, the distribution code to debit comes from the distribution code on the SA Type, the distribution code to credit comes from the calculation rule(s) used to calculate the bill segment.
- Payment segments always have a financial effect; the distribution code to debit comes from the bank account on the tender source of the tender control of the tender, the distribution code to credit comes from the SA type.
- If an adjustment has a financial effect, the distribution code to debit and credit comes from the SA type and adjustment type. If the adjustment is positive (i.e., the customer owes your organization more money), the distribution code to debit comes from the SA type; the distribution code to credit comes from the adjustment type. Vice versa if the adjustment is negative.

# Defining Customer Options

The definition of a customer is someone (or something) with financial obligations with your company. These obligations ensue because the customer has agreed to purchase goods or services at an agreed price.

You may be surprised to learn that there is no "customer" record in the system. Rather, the system subdivides customer information into the following records:

- **Person.** The person record holds demographic information about your customers and every other individual or business with which your company has contact. For example, in addition to customers, person records also exist for landlords, contractors, accountants at corporate customers, guarantors of customers, energy distributors, collection agencies, etc.
- **Account.** Accounts are the entities for which bills are produced and therefore you must create at least one account for every person who has financial obligations with your company. The account record contains information that controls when the bills are created and how the bills are formatted.
- **Service Agreement.** Think of a service agreement as a contract between your company and the customer. The service agreement contains the terms and conditions controlling how the bill details are created. Every account will have at least one service agreement (otherwise, nothing will appear on the account's bills).

Before you can define persons, accounts, and service agreements, you must set up the control tables defined in this section.

**FASTPATH:**
For more information about how persons, accounts and premises are used by your customer service reps, refer to *Understanding The "V"*.

**NOTE:**
The tables in this section are only some of many tables that must be set up before you can bill your customers for the service(s) they consume. In this section, we limit the discussion to those tables that control basic demographic and financial information. In later sections, we describe the tables that control other billing-related functions like bill creation algorithms, meter reading and rates. It is only after all of these tables are set up that you will be able to generate bills and record payments.

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## Customer Overview

This section describes how the person, account, and service agreement records are used to record your customers' demographic and billing options.

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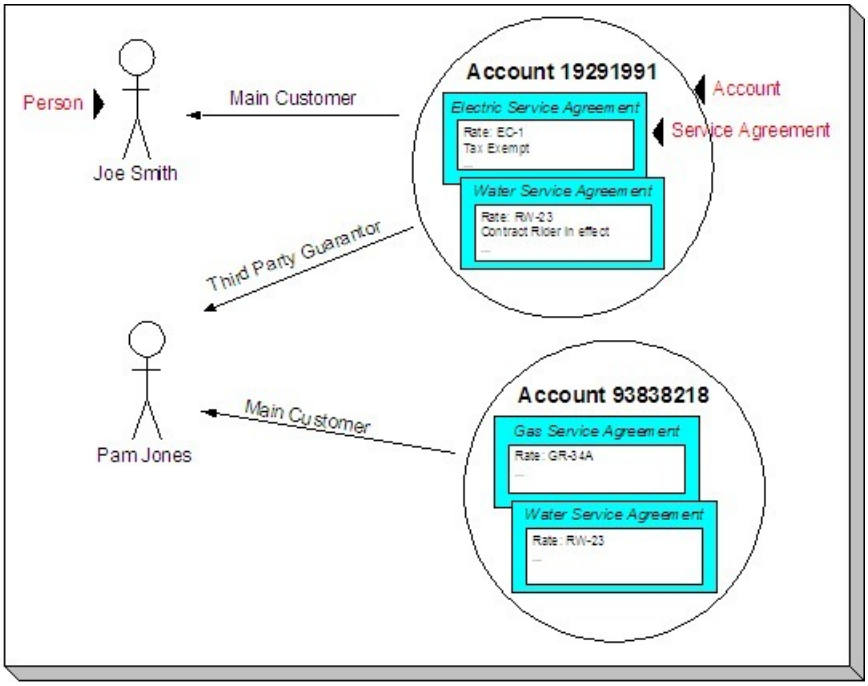
# A Simple Example Of Two Customers

The following picture illustrates two customers: Joe Smith and Pam Jones. Joe is the "main customer" on his account. Pam is the "main customer" on her account. Pam is also the "third party guarantor" on Joe's account.




# Persons

Person records hold demographic information about the individuals and businesses with whom your organization communicates. Demographic information includes phone number(s), names and aliases, identification numbers, life support equipment needs, employment information, etc.

In the above example, 2 person records would be needed; one for Pam Jones and another for Joe Smith.

A new person is added when you first have contact with a person; the person does not have to be a customer before it is added. So, for example, if your company is starting a new marketing campaign, you can add information about potential customers the moment they are identified.

**NOTE:**
**Businesses are persons too.** In addition to humans, you use person records to maintain basic information about the businesses with which your organization has contact.

**FASTPATH:**
For a description of the control tables that must be set up before you can define a person, refer to *Setting Up Person Options* .

# Accounts

An account is analogous to an account at a bank:

- A person or business with no financial dealings with a bank will have no account (but the bank may choose to keep demographic information about the person as part of their marketing efforts). The exact analogy exists in this system.
- Individuals with financial dealings with a bank will have one or more accounts. The number of accounts is up to the customer. The exact analogy exists in this system.

A simple way to determine the number of accounts a customer will have is to ask "how many bills do they want each period?" because a customer receives one bill for each account. For example:

- A residential customer who also owns a small business may choose to receive two bills each month; one for the residence, the other for the business. This way, the charges for their business would be segregated from their personal charges. This customer would have two accounts.
- A conglomerate that owns several factories may want their transportation gas charges to appear on a single bill rather than have a separate bill for each factory. This customer would have a single account.

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## Account ID Is Non-Intelligent

The unique number of an account is referred to as the "account ID". You are probably very comfortable with this concept. You may, however, have difficulty dealing with the fact that the account id in this system has no intelligence built into it (e.g., many systems include the bill cycle and geographic location in the account id). In this system, the account ID is a random, system-assigned value.

Because the account ID contains no meaning, it can remain with a customer for life, regardless of where they live, when they are billed, the type of service they receive, etc. This is important because it means that all of the financial history linked to the account remains with the customer for life.

**NOTE:**
The non-intelligence of the account ID is also important from the perspective of the parallel processing that takes place when the system creates bills. Because the collection of accounts to be billed in any given bill cycle will be randomly distributed through the number spectrum, the system can distribute account number ranges to parallel threads and each thread will process roughly the same number of accounts.

## Account / Person Cross-Reference

A person may be linked to zero or more accounts. A person won't be linked to an account when they have no financial relationship with your organization. A person will be linked to multiple accounts when they have financial relationships with more than one account.

An account must reference at least one person (i.e., the main customer), but may reference an unlimited number of individuals. Multiple persons are linked to an account when several parties have some type of financial relationship with the account (e.g., third party guarantors, account contact, bill copy recipients, etc.).

## When Is An Account Created?

A person can exist without an account until such time as the person formally requests the commencement of service. The moment the customer requests service, an account must be created (and the person must be linked to the account).

## When Is An Account Expired?

Accounts never expire. Once a customer has an account, the account remains in the system forever. Linked to the account are service agreements that define the price and conditions of a service supplied to the customer. When an account has active service agreements, the system produces bills for it. If the account doesn't have active service agreements, the system will not produce a bill for it. You can think of an account without active service agreements as being "dormant", waiting for the day when the customer again starts service. If the customer never restarts, the account (along with its financial history) remains dormant forever.

# Service Agreements

A service agreement is a contract (either formal or implied) between your organization and a customer. Every service agreement contains the price and conditions of a service supplied to a customer.

A service agreement is linked to an account. There is no limit to the number of service agreements that may be linked to an account.

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## When Is A Service Agreement Created?

A service agreement is created when the customer requests service (not when service commences). Typically, service agreements are created in the pending state and field activities are generated to connect service. When the field activities are complete, the service agreement becomes active and the billing process starts generating bill segments for the service agreement.

**FASTPATH:**
For more information about starting service, refer to *The Big Picture Of Starting Service*. For more information about bill segments, refer to *Bill Details*.

## Financial Transactions Are Linked To Service Agreements

**FASTPATH:**
For more information about how financial transactions are linked to service agreements, refer to *The Financial Big Picture*.

## When Is A Service Agreement Expired?

A service agreement is expired when the customer requests service be stopped. At that time, the service agreement is transitioned to the pending stop state and field activities are generated to stop service (these activities might involve simply reading the meter or they could involve disconnecting or removing the meter). When the field activities are complete, the system transitions the service agreement to the stopped state and the billing process generates a final bill for the service agreement. When the customer pays the final bill, the system transitions the service agreement to the closed state

**FASTPATH:**
For more information about stopping service, refer to *The Big Picture Of Stopping Service*.

# Setting Up Person Options

This section describes tables that must be set up before you can define persons.

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# Defining Identifier Types

When you set up a person, you may define the various types of identification associated with the person, e.g., their driver's license number, their tax identity, etc. Every piece of identification associated with a person has an identification type. These identifier type codes are defined using **Admin** > **Identifier Type.**

**NOTE:**
**How are person identifiers used?** The reason why identifiers are defined on a person is so that users you can look for a customer using one of their person identifiers (see *Control Central - Search Facilities* for more information). In addition, person identifiers help prevent duplicate persons from being added to the database. This is because the system warns a user before they add a new person when a person exists with the same identifier.

**Person identifier types are optional.** An *installation option* controls whether at least one identifier type is required on every person.

**Description of Page**

Enter an easily recognizable **ID Type** and **Description** for the Identifier Type.

If the identifier type has a format against which validation can be performed, use **Identifier Format** to define the algorithm. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that validates identifier types. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_ID_TYPE*.

## Defining Person Relationship Types

It is possible to associate persons to other person. For example,

- You might want to define the subsidiaries of a parent corporation
- You might want to define spouses as separate persons and then link each person to another person

When you link a person to another person, you must define in what way the person is related to the other person by using a person relationship type code. These codes are defined using **Admin** > **Person Relationship Type.**

**Description of Page**

Enter the following for each relationship type:

- Enter an easily recognizable **Relationship Type** code.
- Use **Description (Person1=>Person2)** to describe how the first person is related to the second person.
- Use **Description (Person2=>Person1)** to describe how the second person is related to the first person.

> **NOTE:**
> **Person1 versus Person 2.** When you link persons together, you do it in respect of one of the persons (which we call Person 1). For example, if you want to link the subsidiaries to a parent company, you do this in respect of the parent company (i.e., you define the parent company's subsidiaries using the *Person - Persons* transaction.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PER_REL_TYPE*.

## Setting Up Statement Construct Options

This section describes tables that must be set up before a statement construct can be set up for a person to begin receiving financial statements.

> **FASTPATH:**
> For more information, refer to *The Big Picture of Complex Statements*.

## Setting Up Statement Route Types

Statement route types define the method used to route statements to persons. To define a statement route type, open **Admin** > **Statement Route Type.**

**Description of Page**

Enter a unique **Statement Route Type, Description** and **Statement Routing Method** for every statement route type.

> **NOTE:**
> The values for Statement Routing Method are customizable using the Lookup table. This field name is STM_RTG_METH_FLG.

The next two fields control how statements that are routed using this route type are printed (both in batch and online). Refer to *Technical Implementation Of Batch Statement Production* for more information about producing statements in batch. Refer to *Technical Implementation Of Online Statement Production* for more information about online statement production.

- Use **Batch Control** to define the process that creates the flat file that is passed to your statement printing software. If you use an **Extract Algorithm** to construct the downloaded information, you can use the STMDWLD process.
- Use **Extract Algorithm** to define the plug-in component that constructs the "flat file records" that contain the information to be merged onto statements routed using this route type. This algorithm is called when a user requests an online image of a statement on *Statement - Main* and it may also be called by the batch statement extraction process defined above. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_STM_RTE_TY*.

# Setting Up Account Options

This section describes tables that must be set up before an account can receive a bill.

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## Setting Up Account Management Groups

Users are informed that something requires their attention by entries that appear in To Do lists. For example, consider what happens when billing can't find a reading (and it's not allowed to estimate):

- The billing process creates a bill segment that is in error - meter read cannot be found.
- This error bill segment, in turn, triggers the creation of a To Do entry.
- The To Do entry is addressed to a role. A role is one or more users who can "action" the To Do entry.
- When a user views their To Do entries, they see all entries addressed to all roles of which they are part.

You can optionally use account management groups (AMG) to define the respective role to be assigned to To Do entries that are associated with an account and a given To Do type. For example, you can create an AMG called Credit Risks and assign this to accounts with suspect credit. Then, whenever an account-oriented To Do entry is created for such an account, it will be assigned a role based on the Credit Risks AMG. Refer to *Assigning A To Do Role* for more information..

**NOTE:**
**Account management groups are optional.** You need only set up account management groups (and link them to accounts) if you wish to address specific To Do entries associated with specific accounts to specific roles.

Account management groups are defined using **Admin** > **Account Management Group** > **Add.**

**Description of Page**

Enter an easily recognizable **Account Management Group** code and **Description** for each account management group. Use the grid to define the **To Do Role** to be assigned to entries of a given **To Do Type** that are associated with accounts that reference the **Account Management Group**.

**NOTE:**
Only To Do entries that are account-oriented take advantage of the roles defined for an account management group (because only accounts reference an account management group).

**Where Used**

Follow this link to view the tables that reference *CI_ACCT_MGMT_GR* in the data dictionary schema viewer.

## Setting Up Account Relationship Codes

When you link a person to an account, you must define in what way the person is related to the account by using an account relationship code. These codes are defined using **Admin** > **Account Relationship Type.**

**Description of Page**

Enter an easily recognizable **Relationship Type** and **Description** for each relationship type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_ACCT_REL_TYP*.

## Setting Up Alert Types

Account based alerts that appear in control central have an **AlertType**. To define valid alert types, navigate to **Admin** > **Alert Type.**

**Description of Page**

Enter an easily recognizable **Alert Type Code** and **Description** for each alert type. Specify the **Alert Days** to indicate the amount of time that alerts of this type will be effective by default. Specify a value of zero to indicate that alerts of this type will be effective indefinitely by default.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_ALERT_TYPE*.

# Setting Up Bill Messages

There are various informational and warning messages that may appear on an account's bills. Each message is identified with a bill message code. To define a bill message code, open **Admin** > **Bill Message** > **Add.**

**Description of Page**

Enter a unique **Message Code** and **Description** for every bill message.

The following attributes control how and where the bill message appears on the customer's bill:

**Priority** controls the order in which the message appears when multiple messages appear on a bill.

> **NOTE:**
> The values for this field are customizable using the Lookup table. This field name is MSG_PRIORITY_FLG.

**Insert Code** controls whether a document should be inserted into the bill envelope when the bill message appears on a bill.

**Message on Bill** is the actual verbiage that appears on the customer's bill. If the message text is not static (e.g., field values need to be substituted into the body of the message), you can use the % *n* notation within the **Message on Bill** to cause field values to be substituted into a message. Refer to *Substituting Field Values Into A Bill Message* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BILL_MSG*.

# Setting Up Bill Route Types

Bill route types define the method used to route bills to accounts. To define a bill route type, open **Admin** > **Bill Route Type.**

**Description of Page**

Enter a unique **Bill Route Type** and **Description** for every bill route type.

**Bill Routing Method** controls the type of information that may be defined when the respective **Bill Route Type** is selected on *Account - Person Information*. The following options are available:

- Postal . Use this method if the routing is via the postal service.
- Fax . Use this method if the routing is via fax.
- Email . Use this method if the routing is via email.

> **NOTE:**
> The values for **Bill Routing Method** are customizable using the *Lookup* table. This field name is BILL_RTG_METH_FLG.

The next two fields control how bills that are routed using this method are *printed* (both in batch and online).

- Use **Batch Control** to define the background process that performs the actual download of the billing information. Refer to *Technical Implementation of Printing Bills In Batch* for more information about these processes.
- Use **Extract Algorithm** to define the algorithm that constructs the records that contain the information that appears on a printed bill. Refer to *Printing Bills* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BILL_RT_TYPE*.

## Setting Up Bill Cycles

**FASTPATH:**
Refer to *Defining Bill & Service Cycles* for a description of how to set up bill cycles.

## Setting Up Customer Classes

When you set up an account, you must assign it a customer class. The topics in this section describe the customer class control table.

**Contents**



## Customer Class - Main

To set up customer classes, navigate to **Admin** > **Customer Class** > **Add** and use the **Main page** to define your Customer Class.

**Description of Page**

Enter a unique **Customer Class** code and **Description** for every customer class.

Use **Collection Class** to define the collection class that defaults onto new accounts that belong to this customer class. An account's collection class may be subsequently modified if the account has special collection problems or needs.

**FASTPATH:**
For more information about the significance of collection class, refer to *Designing Your Collection Classes*.

Turn on **Business Activity Required** if service agreements linked to accounts with this customer class require a Business Activity description to be entered.

Turn on **Open Item Accounting** if accounts belonging to this customer class are subject to open-item account. Refer to *Open Item Accounting* for a complete explanation of the significance of this switch.

Turn on **Non CIS Payment** if accounts belonging to this customer class are used for payments made to reduce non-CIS debt. For example, assume your company accepts payments for a county assessor and you don't want to set up a separate account for each person who pays their assessment bill. You should set up the following information to accept such payments:

- Create a new customer class called "Non CIS Customer".
- Create a SA type for each type of non-CIS payment that customers can make. Make sure to enter a distribution code on each SA type that references the appropriate revenue (or payable) account. Don't forget to indicate that each SA type is not billed.

**NOTE:**

. Payment Templates can be used for common types of non-CIS payment allocations. These templates are used to default the payment distribution and allow non-CIS payments to be directly allocated to specific distribution codes.

---

**FASTPATH:**
For more information about using Payment Templates to process non-CIS payments, refer to *Non-CIS Payments*.

---

- Create an account to which you'll book such payments. Have this account reference the new customer class. We recommend creating a separate account for each SA type that you created in the previous step.
- Create and activate a service agreement for the new account(s).

When someone pays for non-CIS debt, the operator will add a payment for the above account. On the payment, the operator should record reference information in order to know exactly why the payment was made. Refer to *Payment Event - Main* for more information.

You must define a variety of business rules for every division in which a customer class has customers. For example, if you operate in both California and Nevada AND you have CIS divisions for each state AND you have residential customers in each state, you must define **Customer Class Controls** for each CIS division. You do this on the *Customer Class - Controls* page. The grid that follows simply shows the CIS divisions for which business rules have been set up.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CUST_CL*.

## Customer Class - Bill Messages

When a customer class has bill messages, the system will sweep these messages onto bills created for accounts belonging to the customer class. Use this page to define a customer class's bill messages. Navigate to **Admin** > **Customer Class** > **Search** and then navigate to the **Bill Messages** page to maintain this information.

**Description of Page**

Use the bill messages collection to define **Bill Message** codes that should appear on bills that created for accounts that belong to a given customer class. For each message, also specify the **Start Date** and **End Date** when such a message should appear on the bill (leave **End Date** blank if the message should appear indefinitely).

**Where Used**

The system snaps customer class bill messages on a bill during bill completion. For more information about bill messages, refer to *The Source Of Bill Messages*.

## Customer Class - Controls

You must define a variety of business rules for every division in which a customer class has customers. For example, if you operate in both California and Nevada AND you have CIS divisions for each state AND you have residential customers in each state, you must define **Customer Class Controls** for each CIS division in respect of the residential customer class. Open **Admin** > **Customer Class** > **Search** and then navigate to the **Controls** page to maintain this information.

**Description of Page**

The **Customer Class Controls** scroll contains business rules governing accounts that belong to a **CIS Division** and **Customer Class**. The following fields should be defined for each **CIS Division**:

- Use **Days Till Bill Due** to define the number of days after the bill date that the customer's bill is due. If the due date is a weekend or company holiday, the system will move the due date forward to the next workday (using the workday calendar defined on the account's CIS division).

- Specify the **Budget Plan** that defaults onto new accounts belonging to this customer class. Please note that an account's budget plan may be subsequently modified if the account has special budget processing needs. Refer to *Setting Up Budget Plans* for more information.
- Use **Min Credit Review Freq (Days)** to define the maximum number of days that can elapse between the reviews of an account's debt by the *account debt monitor*. Note, a value of zero ( 0 ) means that accounts in this customer class will be reviewed every day.
- Use **Credit Review Grace Days** to define the number of days after the bill due date that an account should be reviewed by the *account debt monitor*.
- Turn on the **Late Payment Charge** if customers in the class / division combination are eligible for late payment charges.
- Use **LPC Grace Days** to define the number of days after a bill's due date that a late payment charge will be generated (if the various LPC algorithms allow such - refer to *How Late Payment Charges Get Calculated* for the details). If the grace date falls on a weekend or holiday, the system moves the grace date to the next available workday (using the workday calendar defined on the account's CIS division).

The grid that follows contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

**WARNING:**
These algorithms are typically significant system processes. The absence of an algorithm may prevent the system from operating correctly.

You can define algorithms for the following **System Events**:

| System Event | Optional / Required | Description |
|---|---|---|
| Autopay Amount Over Limit | Optional | This algorithm is called to handle the situation when a system-initiated *automatic payment* is created that exceeds the customer's *maximum withdrawal limit*. Specifically, this algorithm is called when:<br>- The account has a maximum withdrawal limit on their *automatic payment options*<br>- The system attempts to create an automatic payment that exceeds this amount<br>- The automatic payment algorithm that's plugged into the *installation record* has logic that invokes this algorithm when the above conditions are true<br>If you do not plug-in this type of algorithm and the above situation is detected, the automatic payment will be created and no error will be issued.<br>Refer to *How To Implement Maximum Withdrawal Limits* for more information.<br>Click *here* to see the algorithm types available for this system event. |

| | | |
|---|---|---|
| Bill Cancel | Optional | This algorithm provides the ability to include additional cancel logic when canceling online.<br><br>Algorithms of this type can be called in two modes: D (Determine Bill Page Buttons) and X (Cancel Bill). Mode 'D' governs whether an action button to cancel the bill will appear on the Bill page and mode 'X' performs the actual cancellation logic.<br><br>Click *here* to see the algorithm types available for this system event. |
| Bill Completion | Optional | When a bill for an account is completed, bill completion algorithms are called to do additional work.<br><br>Refer to the description of the Complete button under *Bill Lifecycle* for a description of when this algorithm is called during the completion process.<br><br>Click *here* to see the algorithm types available for this system event. |
| Bill Eligibility | Optional | Algorithms for this plug-in spot are called when generating a bill in batch billing. It provides the ability to determine if an account is ineligible for billing and should therefore be skipped from further processing.<br><br>If an eligibility algorithm is not used, a bill is created for any account in the open bill cycle and is later deleted by the billing process if it detects that there is no information linked to the bill.<br><br>Click *here* to see the algorithm types available for this system event. |
| Bill Segment Freeze / Cancel | Optional | When a bill segment for an account in this customer class / division is frozen or canceled, an algorithm of this type may be called to do additional work.<br><br>Refer to *Bill Segment Lifecycle* for more information about freezing and canceling bill segments.<br><br>Click *here* to see the algorithm types available for this system event. |
| FT Freeze | Optional | When an FT is frozen, this algorithm is called to do additional work.<br><br>For example, if you practice *Open Item Accounting*, you will need such an algorithm to handle the cancellation of match events when a financial transaction is canceled that appears on a match event. Refer to *How Are Match Events Cancelled?* for more information about cancellation. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Late Payment Charge Eligibility | Required if the customer class / division is eligible for late payment charges | This algorithm is called by the late payment process to determine eligibility for late payments.<br>**Just because an account's customer class allows late payment charges to be calculated doesn't mean the account's delinquent service agreements will be levied late payment charges. In addition, a delinquent service agreement's SA type must reference a late payment charge algorithm. Refer to***SA Type - Main*for more information **about SA type late payment charge issues. Refer to *How Late Payment Charges Get Calculated*** for more information **about late payment charges in general.**<br>**NOTE:**<br>**Only One Algorithm**. Only one late payment charge eligibility algorithm may be defined for a customer class / CIS division combination.<br>Click *here* to see the algorithm types available for this system event. |
| Levy an NSF Charge | Optional | This algorithm is called when a payment is canceled with a cancellation reason that indicates an NSF.<br>Refer to *NSF Cancellations* for more information about what happens when a payment is canceled due to non-sufficient funds.<br>**NOTE:**<br>**Only One Algorithm**. Only one algorithm to levy an NSF charge may be defined for a customer class / CIS division combination.<br>Click *here* to see the algorithm types available for this system event. |
| Order Completion | Optional | When an *order* is completed for a customer linked to this customer class, this algorithm is called to do additional work (e.g., create a customer contact). You need only specify this type of algorithm if you require additional work to be performed when an order is completed for customers who belong to this customer class.<br>Click *here* to see the algorithm types available for this system event. |

| | | |
|---|---|---|
| Overpayment Distribution | Required | When a customer pays more than they owe, this algorithm is called to determine what to do with the excess funds. Refer to *Overpayment Segmentation* for a description on how to configure the system to handle your overpayment requirements.<br><br>**NOTE:**<br>**Only One Algorithm**. Only one overpayment distribution algorithm may be defined for a customer class / CIS division combination.<br><br>Click *here* to see the algorithm types available for this system event. |
| Override Due Date | Optional | An account's bill due date will be equal to the bill date plus its customer class' Days Till Due. If you need to override this method for accounts in a specific customer class, specify the appropriate algorithm here.<br><br>**NOTE:**<br>**Only One Algorithm**. Only one due date override algorithm may be defined for a customer class / CIS division combination.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Cancellation | Optional | Algorithms of this type are called when a payment is canceled.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Distribution | Required | This algorithm is called to distribute a payment amongst an account's service agreements. Refer to *Payment Distribution* for more information about how payment distribution works.<br><br>**NOTE:**<br>**Only One Algorithm**. Only one payment distribution algorithm may be defined for a customer class / CIS division combination.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Freeze | Optional | When a payment is frozen, this algorithm is called to do additional work. If you practice *Open Item Accounting*, you will need such an algorithm to link the payment's financial transactions to the match event that was originally created when the payment was distributed. Refer to *Payments and Match Events* for more information. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Post Bill Completion | Optional | When a customer class has algorithms of this type, they are called after the completion of a bill for an account linked to this customer class.<br><br>Refer to the description of the Complete button under *Bill Lifecycle* for a description of when this algorithm is called during the completion process.<br><br>Click *here* to see the algorithm types available for this system event. |
| Pre Bill Completion | Optional | When a customer class has algorithms of this type, they are called immediately before completion starts for an account linked to this customer class. These algorithms have the potential of:<br><br>• Deleting a bill. You might want a pre completion algorithm to delete a bill if a condition is detected that should inhibit the sending of a bill to a customer (e.g., the bill just contains information about recent payments).<br><br>• Aborting the completion process and creating a bill exception. If the algorithm indicates this should be done, the bill is left in the pending state and a bill exception is created describing why completion was aborted. You might want a pre completion algorithm to do this if, for example, integrity checks detect there is something wrong with the account or its service agreements. If the integrity check fails, the bill can be left in the pending state and a bill exception created describing why.<br><br>Refer to the description of the Complete button under *Bill Lifecycle* for a description of when this algorithm is called during the completion process.<br><br>Click *here* to see the algorithm types available for this system event. |
| Quote Completion | Optional | When a *quote* is completed for a customer linked to this customer class, this algorithm is called to do additional work (e.g., create a customer contact). You need only specify this type of algorithm if you require additional work to be performed when a quote is completed for customers who belong to this customer class. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Write Off Method | Required if you allow users to write-off debt real time using the *write off transaction* | When a user presses the create button on the *write off transaction*, this algorithm is executed to write-off the selected debt. Refer to *The Ramifications of Write Offs in the General Ledger* for more information.<br>Click *here* to see the algorithm types available for this system event. |

# Setting Up Collection Classes

**FASTPATH:**
Refer to *Setting Up Collection Classes* for a description of how to set up collection classes.

# Setting Up Customer Information Options

This section describes the configuration options available for the Customer Information Options feature configuration.

When you add a new person, the system is set up by default to add an account for the person and go to the Start Service page when you save the new person information. You can change this functionality by configuring the following option types on the Customer Information Options feature configuration:

- **Add Account and Start Service Default:** Indicates whether the Add Account and Start Service option is selected on the person page, by default. If this option is not configured, the Add Account and Start Service option is selected by default.
- **Post Add Person BPA Script:** Indicates a BPA script to invoke when a user successfully adds or changes a person on the person page.

When you use control central to search for accounts, the system limits your search results based on your access rights. You can change this functionality by configuring the following option type.

- **Search All Accounts:** Indicates whether a Control Central search should allow a user to search all accounts without validating the user's access rights. If the user tries to select an account without having the required access, they will not be able to navigate to the Account Information tab on Control Central for the selected account.

For more information about Feature Configurations, see *Defining Feature Configurations*.

# Setting Up Customer Contact Options

This section describes tables that must be set up before you can define customer contacts.

**FASTPATH:**
Refer to *The Big Picture Of Customer Contacts* for more information about customer contacts.

**Contents**

# Setting Up Letter Templates

You can set up a customer contact type to generate a form letter whenever a customer contact of this type is added. In fact, this is the only way to generate a letter in the system.

**FASTPATH:**
Refer to *Printing Letters* for more information about how letters are produced.

Every customer contact that causes a letter to be sent must reference a unique letter template. To define a letter template, open **Admin** > **Letter Template.**

**NOTE:**
**Document composition application users.** If you use the document composition software to produce letters, there will be a template in the software associated with each letter. The name of the template must be the same as the code associated with the letter template set up in the system.

**Description of Page**

The following fields are required for each letter template:

- **Letter Template** is the unique identifier of the letter template.
- Use **Description** to enter a brief description of the letter.
- Turn on **Special Extract** if this type of letter should only be created via a system generated event such as a collection letter. Turning on this switch is what prevents a user from adding a customer contact that references this type of letter template (because you don't want a user to be able to request a letter associated with a system generate event by adding a customer contact, rather, they must execute the appropriate process and it will generate the customer contact).
- The next two fields control how letters of this type are printed (both in batch and online). Refer to *Technical Implementation Of Batch Letter Production* for more information about producing letters in batch. Refer to *Technical Implementation Of Online Letter Production* for more information about online letter production.
  - Use **Batch Control** to define the process that creates the flat file that is passed to your letter printing software. If you use an **Extract Algorithm** to construct the downloaded information, you can use the LTRPRT process.
  - Use **Extract Algorithm** to define the plug-in component that constructs the "flat file records" that contain the information to be merged onto letters of this type. This algorithm is called when a user requests an online image of a letter on *Customer Contact - Main* and it may also be called by the batch letter extraction process defined above. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_LETTER_TMPL*.

# Setting Up Customer Contact Classes

Every customer contact record has a contact type that classifies the record for reporting purposes. And every contact type, in turn, references a customer contact "class". The class categorizes customer contacts into larger groupings for reporting purposes.

Open **Admin** > **Customer Contact Class** to define your customer contact classes.

**Description of Page**

Enter a unique **Contact Class** and **Description** for each customer contact class.

After you have created your customer contact classes, you'll be ready to setup your *customer contact types*.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CC_CL*.

## Setting Up Customer Contact Types

Every customer contact record has a contact type that controls the behavior of the customer contact.

> **FASTPATH:**
> Refer to *The Big Picture Of Customer Contacts* for more information about customer contacts.

Open **Admin** > **Customer Contact Type** > **Add** to define your customer contact types.

**Description of Page**

Every customer contact type is identified by a unique combination of **Contact Class** and **Contact Type**.

Enter a brief **Description** of the customer contact type.

Only specify a **Contact Shorthand** if customer contacts of this type can be added in the *Customer Contact Zone*. The value you specify in this field is what the user selects to add a customer contact in this zone.

Use **Contact Action** if something should be triggered when customer contacts of this type are added. The only valid value in this release is Send Letter . If you select this option, you must also specify a **Letter Template**. Refer to *Printing Letters* for more information about how letters are produced.

Use the **Customer Contact Type Characteristics** collection to define characteristics that can be defined for contacts of a given type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on customer contacts of a given type. Turn on the **Default** switch to default the **Characteristic Type** when customer contacts of the given type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CC_TYPE*.

## Setting Up Service Agreement Options

This section describes tables that must be set up before you can define service agreements.

**Contents**



## Setting Up Standard Industry Codes (SIC)

A service agreement for non-residential service should reference a standard industry code (SIC). This code is used to categorize service agreements for reporting purposes. To define a SIC, open **Admin** > **SIC Code.**

**Description of Page**

Enter a unique **SIC Code** and **Description** for the SIC.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SIC*.

## Setting Up Tax Exempt Types

Your rates will probably have provisions for the calculation of taxes of one type or another. Frequently you will have customers who are completely or partially exempt from these taxes. The service agreements for these customers will need to have tax exemption information in order for them to be billed properly. Tax Exempt Type is used to define the precise nature of the applicable exemption. To define the Tax Exempt Types you will use, open **Admin** > **Tax Exempt Type.**

**Description of Page**

Enter a unique **Tax Exempt Type** and **Description** for each type of tax exemption.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TAX_EX_TYPE*.

## Setting Up Contract Quantity Types

You may have customers whose contracts (service agreements) have contractual consumption limits. The service agreements for these customers must have information regarding this quantity in order to be billed properly. Contract Quantity Type is used to precisely define the nature of the quantity. To define the Contract Quantity Types, open **Admin** > **Contract Quantity Type.**

**Description of Page**

Enter a unique **Contract Quantity Type** and **Description** for each type of contract quantity.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CONT_QTY_TYP*.

## SA Type Controls Everything

Every service agreement references a SA type. The SA type controls all aspects of a service agreement's behavior including how service is started, how bills are created, how its financial transactions are booked in the general ledger, and much more. We don't explain how to set up SA types in this section because it's only after you have set up all of the control tables in this manual that you'll be able to finally define your SA types.

**FASTPATH:**
For more information about SA types, refer to *Defining Service Agreement Types* .

## Financial Controls

**FASTPATH:**
There are also a number of control tables that must be set up to control the bills, payments, and adjustments that are linked to a service agreement. For more information about these tables, please refer to *Defining Financial Transaction Options* .

# Setting Up Order Options

This section describes tables that must be set up before orders can be used to start service.

**FASTPATH:**
For more information, refer to *The Big Picture of Campaigns, Packages and Orders*.

**Contents**



# Setting Up Column References

A column reference must be created for each miscellaneous field that's captured on an order that doesn't reside in a characteristic. Refer to *Determine The Properties Of Every Miscellaneous Field* for more information.

Open **Admin** > **Column Reference** > **Add** to define your column references.

**Description of Page**

Enter an easily recognizable **Column Reference** code and **Description** for each column reference.

Specify the **FK Reference** to use if this column reference uses field values from another table. Use **Long Description** to describe the data that fields using this column reference capture.

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated. You can define algorithms for the following system events: Post when order completed, Retrieve current value, Validate field value, Service task order processing, and Pre-process field value. Refer to *Extract Column References* for a description of these events.
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

**WARNING:**
These algorithms are typically significant processes. The absence of an algorithm may prevent the system from operating correctly.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COL_REF*.

## Setting Up Order Cancellation Reasons

An order cancellation reason must be supplied when an order is cancelled. Open **Admin** > **Order Cancel Reason** to define your reason codes.

**Description of Page**

Enter an easily recognizable **Order Cancel Reason** and **Description** for each order cancellation reason.

**Where Used**

Cancellation reasons are used when an *order is canceled*.

## Setting Up Order Hold Reasons

An order hold reason must be supplied when an order is held. Open **Admin** > **Order Hold Reason** to define your reason codes.

**Description of Page**

Enter an easily recognizable **Order Hold Reason** and **Description** for each order hold reason.

**Where Used**

Hold reasons are used when an *order is held*.

## Setting Up Order Feature Configurations

Defining a *feature configuration* with a feature type of Order Configuration can increase performance of the Order page when campaigns have a large number of packages or criteria. Open **Admin** > **Feature Configuration** > **Add** to define a configuration for the feature type Order Configuration .

**NOTE:**
**Only one**. The system expects only one order configuration feature configuration to be defined.

**Description of Page**

The following points describe the various **Option Types** that may be defined:

- Eligibility Tree - Suppress Error Packages node. Select this option type and define a value if you would like the *Order Eligibility Tree* to suppress the node that contains packages with errors in their eligibility criteria. This is an optional setting. If the option type is not defined, the error packages node is displayed, if applicable.
- Eligibility Tree - Suppress Ineligible Packages node. Select this option type and define a value if you would like the *Order Eligibility Tree* to suppress the node that contains packages that are not applicable to the customer based on the eligibility criteria. This is an optional setting. If the option type is not defined, the ineligible packages node is displayed, if applicable.
- Eligibility Tree - Suppress Other Campaigns node. Select this option type and define a value if you would like the *Order Eligibility Tree* to suppress the node that contains other eligible campaigns. This is an optional setting. If the option type is not defined, the other campaigns node is displayed, if applicable.

# Setting Up Program Management

This section describes how to set up the system for program management.

For more information about program management, see *The Big Picture of Program Management*

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## About Lead Event Types

Each initiative can define a structured marketing effort for the events or actions that should take place during the life of a lead to encourage a customer to participate in a program. Each event in a marketing effort is defined by a Lead Event Type. For example, one event could be that a letter or an email is sent to a customer.

You must configure lead event types to define any events that occur for an initiative's leads. The initiative may then reference one or more of the lead event types to define the sequence of events (if any) that will occur to encourage customers to participate in an initiative. The lead event types are displayed and maintained on the Initiative portal.

Refer to *The Big Picture of Initiatives, Leads and Sales Representatives* for more information.

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## Creating Lead Event Types

Use this procedure to create a new lead event type.

1. Select **Admin** > **Lead Event Type** > **Add**.
2. Select the business object for your Lead Event Type and click **OK**.

   The C1-owned base package provides a business objects for lead event types including:

| Lead Event Type Business Object | Description |
|---|---|
| Create CSS Notification | Defines the behavior of a lead event type that routes customer lead notifications to Oracle Utilities Customer Self Service.<br>Refer to C1-LECNTFCSS for an example of an algorithm that performs the above. |
| Create Lead Bill Message | Defines the behavior of a lead event type that creates a bill message to inform a customer about an initiative.<br>Refer to C1-LECCREBI for an example of an algorithm that attempts to perform the above. |
| Create Lead Customer Contact | Defines the behavior of a lead event type that creates a customer contact to inform a customer about an initiative.<br>Refer to C1-LETCRECC for an example of an algorithm that attempts to perform the above. |
| Create Lead Email | Defines the behavior of a lead event type that creates an email to inform a customer about an initiative.<br>Refer to C1-LECINCUSE for an example of an algorithm that attempts to perform the above. |

| | |
|---|---|
| Create Lead SMS | Defines the behavior of a lead event type that creates an SMS (or text message) to inform a customer about an initiative.<br>Refer to C1-LETCRESMS for an example of an algorithm that attempts to perform the above. |
| Create Sales Representative Email | Defines the behavior of a lead event type that creates an email to inform a sales representative about an initiative lead assigned to them.<br>Refer to C1-LECINREPE for an example of an algorithm that attempts to perform the above. |
| Customer Communication Preference Notification | Defines the behavior of a lead event type that attempts to inform a customer of an initiative using the customer's preferred communication method.<br>Refer to C1-LECMRKPF for an example of an algorithm that attempts to perform the above. |
| Discard Lead | Defines the behavior of a lead event type used to discard pending leads for an initiative. Such an event gives an end user more visibility to the lead's auto discard date. The system will cancel pending lead events and discard the lead when such an event is completed.<br>Refer to C1-LECDISCLD for an example of an algorithm that performs the above. |

3. Enter a **Lead Event Type** identifier and detailed description for the lead event type.
4. The remaining fields vary, depending on the type of lead event type business object that you selected.

| Lead Event Type Business Object | Fields to Populate |
|---|---|
| Create CSS Notification | Select the **Notification Type** as **Marketing Communication Preference** |
| Create Lead Bill Message | Specify **Bill Message**<br>Specify **Lead Discard Reason** in case a bill message cannot be created |
| Create Lead Customer Contact | Specify **Contact Class** and **Contact Type** for the customer contact to be created<br>Specify **Lead Discard Reason** in case a customer contact cannot be created |
| Create Lead Email | Specify **Environment URL** to provide the email recipient with a hyperlink to the appropriate page for the reference.<br>Specify **Lead Discard Reason** in case an email cannot be created<br>Specify / search for and select **Message Category** and **Message Number** to use when constructing the email text. |
| Create Lead SMS | Specify **Environment URL** to provide the SMS recipient with a hyperlink to the appropriate page for the reference.<br>Specify **Lead Discard Reason** in case a SMS cannot be created<br>Specify / search for and select **Message Category** and **Message Number** to use when constructing the SMS. |
| Create Sales Representative Email | Specify **Environment URL** to provide the email recipient with a hyperlink to the appropriate page for the reference.<br>Specify / search for and select **Message Category** and **Message Number** to use when constructing the email text. |
| Customer Communication Preference Notification | **Self Service Lead Event Type** – Search for and select lead event type to attempt to create lead event if a customer has a preferred communication method defined.<br>If the customer does not have a preferred communication method defined, the following describes the configuration to notify the customer through other means:<br>• **Email Lead Event Type** – Search for and select lead event type to create lead event if No Preference Option is set to |

| | |
|---|---|
| | **Create email or customer contact** and the customer has an email address specified<br>• **Customer Contact Lead Event Type** – Search for and select lead event type to create lead event if No Preference Option is set to **Create email or customer contact** or **Create customer contact**<br>• **No Preference Option** – Specify the action to take if no preferred communication method is defined for the customer.<br>• **Lead Discard Reason** - If the No Preference Option is set to **Do nothing**, the lead's pending events are canceled and the lead discarded using the **Lead Discard Reason** defined. |
| Discard Lead | Specify **Auto Discard Days** to define the period that must elapse after the lead activation date for discard the lead.<br>Select **Lead Discard Reason** defines the reason to use when the lead is discarded. |

5. Click **Save.**

## Maintaining Lead Event Types

Use this procedure to maintain lead event types.

1. Select **Admin** > **Lead Event Type** > **Search.**
2. Click the appropriate record action button for the lead event type:
   - **Edit** - Click the **Edit** icon to allow you to edit the main attributes of a lead event type. When you click **Save**, the system updates the record
   - **Duplicate** - Click the **Duplicate** icon to create a duplicate of the lead event type being selected. Before the new object is added to the database, a window appears asking you to enter the unique identifier of the new object. When you click **OK**, the system creates the record by copying the original record
   - **Delete** - Click the **Delete** icon and click **OK** to delete the lead event type from the database. Before you delete a lead event type, the system verifies that the lead event type is not referenced anywhere in the system. If it is, you cannot delete it. For example, if you attempt to delete a lead event type, the system ensures the lead event type is not referenced on an initiative, etc.

# About Program Management Master Configuration

The master configuration captures general configuration details for the program management functionality.

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## Setting Up the Program Management Master Configuration

Use this procedure to create a master configuration for program management.

1. Select **Admin** > **Master Configuration.**
2. Select the **Add** action icon for the Program Management Configuration master configuration.

3. The **Graph Options** section allows an implementation to customize the graphs displayed on the initiative and sales representative portals. The color dropdown is rendered using characteristic values defined for characteristic type C1-COLOR.
   - Specify **Number of Months to Graph** to specify the number of months to display on the initiative monthly statistics zone. Default value is set to 12 months.
   - For each applicable **Lead Status**, specify the color to use for each state in the leads lifecycle. This is used on various statistics graphs on the initiative portal, e.g., lead outcome and lead statistics by state charts.
   - For each applicable **Lead Event Status**, specify the color to use for each state in the lead events lifecycle. This is used on the sales representative portal's Initiative Lead Event Type Summary zone when rendering the event status bar.
   - For each applicable **Discard Reason**, specify the color to use on the initiative portal's Discarded Leads by Reason graph.
   - For the **Sales Representative** list, specify the colors to use on the initiative portal's Active Leads by Representative graph. The graph shows the top 5 individual representatives for the initiative. The color assigned to Representative 1 will be used when graphing the representative with the largest number of active leads assigned to them, color assigned to Representative 2 will be used when graphing the representative with the second largest number of active leads assigned to them, and so on.
4. Click **Save**.

## Maintaining the Program Management Master Configuration

Use this procedure to maintain the master configuration for program management.

1. Select **Admin** > **Master Configuration.**
2. Select the **Edit** action icon for the Program Management Configuration master configuration.
3. The **Graph Options** section allows an implementation to customize the graphs displayed on the initiative and sales representative portals. The color dropdown is rendered using characteristic values defined for characteristic type C1-COLOR.
   - Specify **Number of Months to Graph** to specify the number of months to display on the initiative monthly statistics zone. Default value is set to 12 months.
   - For each applicable **Lead Status**, specify the color to use for each state in the leads lifecycle. This is used on various statistics graphs on the initiative portal, i.e. lead outcome and lead statistics by state charts.
   - For each applicable **Lead Event Status**, specify the color to use for each state in the lead event's lifecycle. This is used on the sales representative portal's **Initiative Lead Event Type Summary** zone when rendering the event status bar.
   - For each applicable **Discard Reason**, specify the color to use on the initiative portal's Discarded Leads by Reason graph.
   - For the **Sales Representative** list, specify the colors to use on the initiative portal's Active Leads by Representative graph. The graph shows the top 5 individual representatives for the initiative. The color assigned to Representative 1 will be used when graphing the representative with the largest number of active leads assigned to them, color assigned to Representative 2 will be used when graphing the representative with the second largest number of active leads assigned to them, and so on.
4. Click **Save**.

# Defining Field Order Options

A field order is a group of field activities that take place at a premise's service point(s). These activities can range from the simple (e.g., read a meter) to the complex (e.g., install both the power line and a new meter). Before you can issue field orders, you must establish the control data defined in this section.

**NOTE:**
**Appointments.** Refer to *The Big Picture of Appointments* for information about how appointments can be scheduled for field activities.

**WARNING:**
Setting up the tables that control your field activities will be as complicated as the fieldwork your organization performs. If your company doesn't do fieldwork, then you won't have to set up any of these tables. If your company has a single service and the fieldwork you perform is straightforward, this setup process will be straightforward. If your company performs sophisticated fieldwork (e.g., utilizing multiple crews and multiple dispatch locations), this setup process will require careful analysis.

**FASTPATH:**
For more information about field orders and how they use the information described in this chapter, refer to *The Big Picture Of Field Orders*.

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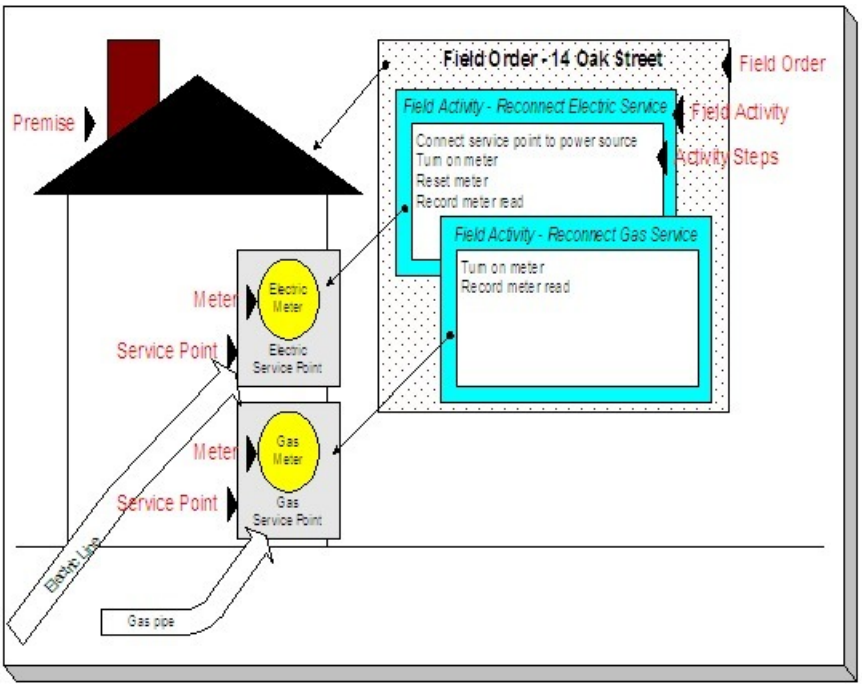
# An Example Of A Field Order

The following picture illustrates a field order that controls the work to be performed at a premise with 2 service points.




The following field order-related concepts are illustrated above:

**Field Order** A field order is a group of field activities performed by one person (or crew) at a premise. Refer to *How Are Field Orders Created And Dispatched* for information about how field orders are created.

**Field Activity** A field activity is a task that takes place at a service point. Examples of field activities include reconnect service, exchange meter, disconnect service, cut for nonpayment, investigate trouble order.

The system automatically creates field activities when specific events happen. Refer to *Designing Your Field Activity Profiles* for a discussion of how the system does this.

When a field activity is first added, its state is pending . If the activity is not done (for whatever reason), the activity is canceled . After the activity is done, the results of the activity are recorded in the system and its state becomes complete .

**Activity Step** A field activity has one or more steps. For example, the field activity to exchange a meter would have the following activity steps: Remove existing meter, Test meter, Install new meter.

The number and types of steps involved with a field activity are controlled by the activity's activity type. Refer to *Setting Up Field Activity Types* for more information.

**Premise** See *An Illustration Of A Premise* for a description.

**Service Point** See *An Illustration Of A Premise* for a description.

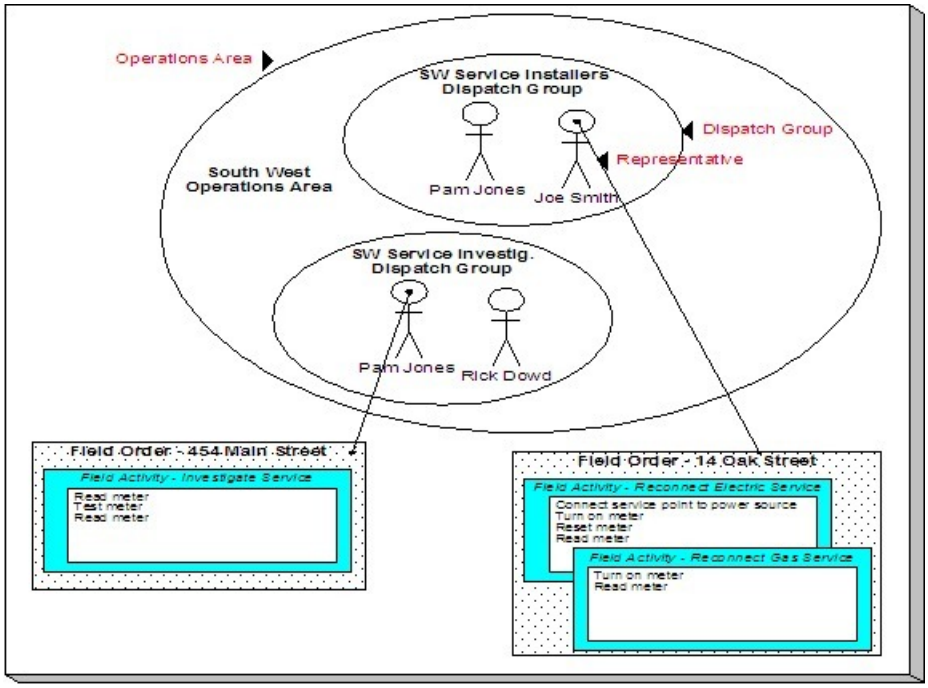
**Meter** See *An Illustration Of A Premise* for a description.

**NOTE:**

**More than just meters.** While the above diagram illustrates field order concepts in respect of meters, the field orders system has been designed to handle meters, lamps, and any other type of device located at a service point (e.g., a cable box).

## An Example Of The Entities Involved In Field Order Dispatch

The following picture illustrates two field orders that are dispatched from the same operations area where each field order is assigned to a different representative.




The following dispatch-related concepts are illustrated above:

**Representative** A representative is the individual (or crew) that performs a field order's activities. A representative may work in any number of dispatch groups. Refer to *Setting Up Representatives* for more information.

**Operations Area** An operation area is a physical or logical location from which field orders are dispatched. Every service point references the operation area(s) responsible for its service. Refer to *Setting Up Operations Areas* for more information.

**Dispatch Group** A dispatch group is a logical group of representatives located at an operations area. For example, in the South West Operations Area you may have the dispatch groups of SW Service Installers, SW Service Investigators, SW Meter Exchangers, etc. Within each dispatch group are representatives with interchangeable skills (i.e., you can assign a field activity to any representative within a dispatch group). Refer to *Setting Up Dispatch Groups* for more information.

The system automatically assigns a field activity a dispatch group when it's first created. It does this based on: 1) the type of field activity, 2) the service point's SP type, and 3) the operation area on the service point that's linked to the field activity type's field service classification. Refer to *Designing Who Does Your Field Activities* for more information.

## Setting Up Representatives

A representative is the individual (or equipment) that performs a field order's activities. At dispatch time, a representative may be assigned to a field order. To define your organization's representatives, open **Admin** > **Representative**.

**Description of Page**

Enter an easily recognizable **Representative** and **Description** for each representative.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_REP*.

# Setting Up Operations Areas

When you set up a service point, you must define the operation areas that manage its fieldwork.

> **NOTE:**
> **How a service point gets its operation area(s).** A service point's operation areas default based on its service type and its premise's postal code. See *Setting Up Premise & Service Point Postal Defaults* for more information.

To define your organization's operation areas, open **Admin** > **Operations Area.**

> **NOTE:**
> **A service point may have multiple operation areas.** For example, a service point may have one operations area for installs and removals, a separate operation area for trouble orders, and yet a third operation area for meter exchanges. Refer to *Setting Up Field Service Classifications* for more information about how different types of fieldwork can be classified.

**Description of Page**

Enter an easily recognizable **Operations Area** and **Description** for each operation area.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_OP_AREA*.

# Setting Up Dispatch Groups

A dispatch group is a logical group of representatives located at an operations area. When a field activity is created, the system assigns it to a dispatch group based on the type of activity, the type of service point, and the operations area that manages the service point. The topics in this section describe the pages used to maintain a dispatch group.

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## Dispatch Group - Main

To define your organization's dispatch groups, open **Admin** > **Dispatch Group** > **Add**.

**Description of Page**

Enter an easily recognizable **Dispatch Group** ID and **Description** for each dispatch group.

Turn on **Allow Dispatch** if orders allocated to this dispatch group are "dispatchable".

> **NOTE:**
> **Trouble orders without a premise.** The only example we can think of where Allow Dispatch is off would be for the dispatch group associated with trouble orders without a premise. These trouble orders are associated with a "dummy" service point, and the dummy service point's operations area should reference the unknown dispatch group. Someone would need to periodically look at the unknown dispatch group and associate its field activities with the appropriate service point and dispatch group.

If this dispatch group is "dispatchable" and work for this dispatch group is interfaced to an external system, indicate the appropriate external system *feature configuration* or outage management feature configuration for the dispatch group.

> **NOTE:**
> **Separate module.** Functionality related to integrating with an *external system* or an outage system is associated with separate function modules. The feature configuration field is not available if these modules are *turned off*.

**Batch Control** along with the Field Order Extract algorithm defined on the **Algorithms** tab control how field orders that reference this dispatch group are printed (both in batch and online). Refer to *Technical Implementation Of Batch Field Order Production* for more information about producing field orders in batch. Refer to *Technical Implementation Of Online Field Order Production* for more information about online field order production.

- Use **Batch Control** to define the process that creates the flat file that is passed to your field order printing software. If you use an **Extract Algorithm** to construct the downloaded information, you can use the either the *FODL* or the *DSGPFODL*.
- Use the Field Order Extract algorithm defined on the **Algorithms** tab to define the plug-in component that constructs the "flat file records" that contain the information to be merged onto field orders that reference this dispatch group. This algorithm is called when a user requests an online image of a field order on *Field Order - Main* and it may also be called by the batch field order extraction process defined above. Please be aware that the system comes with a sample algorithm type - *FOEX-OX* - that should be used as a sample if you have to write a new plug-in *algorithm*.

Use **Alternative Dispatch Group** to define the dispatch group that can do everything that this dispatch group can do. This field is used when the system attempts to find a common dispatch group for all field activities associated with a premise (when such field activities don't have the same dispatch group) during the appointment scheduling process. Refer to *Using Alternate Dispatch Groups To Find The Lowest Common Denominator* for more information.

The **Representative** collection shows the representatives who may be assigned to field orders performed by a dispatch group.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_DISP_GRP*.

## Dispatch Group - Field Activity Type Review

Open **Admin** > **Dispatch Group** > **Search** and navigate to the **FA Type Review** page to review the field activities that can be performed by the dispatch group. For each field activity in the tree, you can view the SP types associated with the activity.

> **NOTE:**
> **Four dimensions.** For every **field activity type**, you define the **dispatch group** that performs the activity at every **SP type** located in every **operations area**. This information is maintained on the Field Activity Type page. This is a rather complex relationship because it involves the four dimensions highlighted in bold. Due to this complexity, we

have provided review trees on the SP Type, Dispatch Group, and Field Activity Type pages to help you understand what you've set up.

**Description of Page**

This page is dedicated to a tree that shows the field activity types performed by the dispatch group. And for each field activity and operations area, you can view the applicable SP types.

# Dispatch Group - Algorithm

Open **Admin** > **Dispatch Group** > **Search** and navigate to the **Algorithm** page to define the algorithms that should be executed for field activities / field orders associated with a given dispatch group.

**Description of Page**

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (descriptions of all possible events are provided below).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

**WARNING:**
These algorithms are typically significant processes. The absence of an algorithm may prevent the system from operating correctly.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Available Appointments | Required if you use base appointment scheduling functions (and not external system integration) | The algorithm plugged into this spot is responsible for determining which appointment periods may be linked to a field activity.<br>Refer to *Appointment Maintenance* for a description of the transaction that's used to setup an appointment.<br>Refer to *The Big Picture Of Appointments* for general information about appointments.<br>Click *here* to see the algorithm types available for this system event. |
| FA Integration | Required if dispatch group interfaces with an external system. | The algorithm plugged into this spot is responsible for creating appropriate notification download staging records used to interface field activity information to an external system.<br>This algorithm is not allowed if the dispatch group does not interface with an external system.<br>Refer to *Algorithms Control FA Integration* for more information. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Field Order Extract | Required if dispatch group is "dispatchable" (refer to the description of **Allow Dispatch** on the **Main** page for more information) | Refer to the description of **Batch Control** on the **Main** tab for a description of this system event.<br>Click *here* to see the algorithm types available for this system event. |
| Validate Appointments | Optional if you use base appointment scheduling functions | The algorithm plugged into this spot is responsible for determining if a field activity can be linked to an appointment period. If you don't plug-in a Validate Appointments algorithm, the system will allow any appointment period that's displayed on the *Appointment Maintenance* transaction to be linked to a field activity.<br>Refer to *Appointment Maintenance* for a description of the transaction that's used to setup an appointment.<br>Refer to *The Big Picture Of Appointments* for general information about appointments.<br>Click *here* to see the algorithm types available for this system event. |

# Defining Disconnect Locations

When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed. It also controls the type of field activity generated to reconnect service.

> **NOTE:**
> A service point's disconnect location is updated as part of the service disconnection process. This location is used to determine the appropriate crew to send out when it's time to reconnect service.

To define disconnect location codes, open **Disconnect Location** page.

**Description of Page**

Enter a **Disconnect Location** and **Description** for every disconnect location.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_DISCON_LOC*.

# Designing Your Field Activity Profiles and Types

A field activity is a task that takes place at a service point. Every field activity references a field activity type. The field activity type defines the steps involved in the execution of the activity.

Most field activities are created:

- When a customer service representative starts or stops service at a premise, the system automatically creates field activities to perform the necessary fieldwork based on the type and state of the service point.
- When service is cut due to lack of payment.

If you set the system up correctly, your CSR's won't have to create these field activities. Rather, the system creates field activities based on the information you set up in your field activity type profiles. You typically have a different field activity profile for every major category of service point. We recommend that you familiarize yourself with the following documentation before you set up your field activity type profiles:

- Refer to *Starting Service & Field Activities* for a description of how field activities are created to start service.
- Refer to *Stopping Service & Field Activities* for a description of how field activities are created to stop service.
- Field activities used to cut service due to non-payment are created by two modules:
  - If you use severance process to stop a service agreement due to nonpayment, refer to *Field Events And Their Activities* for a description of how these field activities are created.
  - If you use cut processes to stop a service agreement due to nonpayment, refer to *Field Activities To Cut and Reconnect Service* for a description of how these field activities are created.

The topics in this section describe how to design your field activity profiles and field activity types.

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## How Does A Field Activity Type Profile Get Used?

A field activity type profile contains:

- A list of field activity types that can be performed at service points.
- Matrices defining the specific activity type(s) to generate in order to start service, stop service, or disconnect due to non-payment.

You may wonder how field activity type profiles get related to your service points. It's a little indirect, but the indirection provides a great deal of flexibility:

- Every service point references an SP type.
- Every SP type references the specific field activity type profile used by the start/stop and credit and collections process to generate field activities.

An example will help illustrate how this works:

- When you start service at a specific service point, the system extracts the service point's SP type.
- Then, the system determines the field activity type profile that is to be used on this SP type.
- Then, the system determines the state of the service point (e.g., connected, no meter).
- And finally, it generates the appropriate field activity.

# Designing Field Activity Type Profiles

The number of field activity type profiles is dependent on a variety of factors:

- If your field crews (i.e., dispatch groups) are highly specialized, you'll need more profiles than when your crews can perform a variety of activities. For example, if you have electric installers who just install electric service and gas installers who just install gas service, you'll need a different profile for electricity versus gas.
- If the field activities you perform differ based on the type of service point, you'll need more profiles than if you have standard activities. For example, if you turn off residential service differently than you turn off commercial service, you'll need a profile for each type of customer.
- If you have meters and item-based service, you'll need a separate profile to distinguish the field activities for these two types of service.
- If more than one of the above points applies to your organization, you'll need a separate profile for the superset.

The easiest way to design your profiles is to pick an SP type and design its profile by filling in matrices similar to those defined below (choose either meter or item-based as per the SP type). After you've designed the profile, determine how many other SP types on which it can be used. Then design the next SP type's profile and determine where it can be reused. Repeat this process until all your SP types have a profile.

**FASTPATH:**
In order to design your field activity type matrices, you must have a good understanding of field activity types and how they control the actions performed by your field crews. Refer to *Setting Up Field Activity Types***for more information**.

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## Typical Metered Service Matrix

In this section, we provide a sample of how the activity type matrix would look for metered service. The topics show two matrices; one for start/stop field activities, the other for credit & collections activities. In reality, there is a separate matrix for every column in the matrices.

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### Starting and Stopping Metered Service Matrix

The following matrix is representative of how a metered SP type's field activity type profile would look. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three start and stop events that may take place at the service point.

- Start service is the event that takes place when a service point is to be started and the system has no knowledge of a related stop event.
- Stop service is the event that takes place when a service point is to be stopped and the system has no knowledge of a related start event.
- Start/stop service is the event that takes place when a service point is to be stopped for one customer and started for another at the same time.

- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - A device (the meter) is either installed or not installed.
  - The installed device is either turned on or off.
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| **SP Condition** | **Customer Event:** Start Service | **Customer Event:** Stop Service | **Customer Event:** Start/Stop Service |
|---|---|---|---|
| No Device / SP Disconnected at meter | Install meter and connect line | N/A - no field work is necessary because the meter should have been read when it was removed | N/A |
| No Device / SP Disconnected at pole | Install meter and connect line | N/A - no field work is necessary because the meter should have been read when it was removed | N/A |
| No Device / SP Connected | Install meter | N/A - no field work is necessary because the meter should have been read when it was removed | N/A |
| Device Installed / Device Off / SP Disconnected at meter | Connect line and turn on meter | N/A - no field work is necessary because the meter should have been read when the service was severed | N/A |
| Device Installed / Device Off / SP Disconnected at pole | Connect line and turn on meter | N/A - no field work is necessary because the meter should have been read when the service was severed | N/A |
| Device Installed / Device Off / SP Connected | Turn on meter | N/A - no field work is necessary because the meter should have been read when the meter was turned off | N/A |
| Device Installed / Device On / SP Connected | Read meter | Turn off meter | Read meter |
| Device Installed / Device On / SP Disconnected at meter | Connect line and read meter | N/A - no field work is necessary because the meter should have been read when the line was disconnected | N/A |
| Device Installed / Device On / SP Disconnected at pole | Connect line and read meter | N/A - no field work is necessary because the meter should have | N/A |

| | | been read when the line was disconnected |
|---|---|---|

## Cutting Metered Service Due To Nonpayment

The following matrix is representative of how a metered SP type's field activity type profile might look. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three C&C-oriented field activities that may take place at the service point.
  - Disconnect warning is the event that warns the customer of imminent severance if payment is not received.
  - Cut for non-payment is the event that causes service to be severed due to non-payment.
  - Reconnect is the event that takes place when a service point is reconnected because payment was received after service was cut.
- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - A device (the meter) is either installed or not installed.
  - The installed device is either turned on or off.
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| **SP Condition** | **Customer Event:** Disconnect Warning | **Customer Event:** Cut For Non-Payment | **Customer Event:** Reconnect |
|---|---|---|---|
| Device Installed / Device On / SP Connected | Leave disconnection warning | Cut metered serviced | N/A |
| Device Installed / Device Off / SP Connected | N/A - service is off | N/A - service is off | Turn on meter |
| Device Installed / Device On / SP Disconnected at pole | N/A - service is off | N/A - service is off | Connect line |
| Device Installed / Device Off / SP Disconnected at pole | N/A - service is off | N/A - service is off | Connect line and turn on meter |
| No Device / SP Connected | N/A - service is off | N/A - service is off | Install meter |
| No Device / SP Disconnected at pole | N/A - service is off | N/A - service is off | Install meter and connect line |

## Meter Testing Activities

While the field activity types associated with meter testing should not appear in the above matrixes, these field activity types must be defined in the metered service points' field activity type profiles (under Valid Activity Types). Refer to *Examples of Device Testing Activity Types and their Steps* for example of these field activity types.

# Typical Badged Item Service Matrix

In this section, we provide a sample of how the activity type matrix would look for BADGED item-based service (e.g., badged lamps). The topics show two matrices; one for start/stop field activities, the other for credit & collections activities. In reality, there is a separate matrix for every column in the matrices.

**FASTPATH:**
Refer to *Service Points (SPs)***for more information** about the difference between badged and non-badged items.

**Contents**



## Starting and Stopping Badged Item Service Matrix

The following matrix is representative of how a lamp SP type's field activity type profile would look. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three start and stop events that may take place at the service point.
  - Start service is the event that takes place when a service point is to be started and the system has no knowledge of a related stop event.
  - Stop service is the event that takes place when a service point is to be stopped and the system has no knowledge of a related start event.
  - Start/stop service is the event that takes place when a service point is to be stopped for one customer and started for another at the same time.
- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - A device (the item) is either installed or not installed.
  - The installed device is either turned on or off.
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| SP Condition | Customer Event: Start Service | Customer Event: Stop Service | Customer Event: Start/Stop Service |
|---|---|---|---|
| No Device / SP Disconnected at pole | Install lamp and connect line | N/A - no field work is necessary because there is no lamp | N/A |
| No Device / SP Connected | Install lamp | N/A - no field work is necessary because there is no lamp | N/A |
| Device Installed / Device Off / SP Disconnected at pole | Connect line and install eye | N/A - no field work is necessary because the lamp is off | N/A |

| | | | |
|---|---|---|---|
| Device Installed / Device Off / SP Connected | Install eye | N/A - no field work is necessary because the lamp is off | N/A |
| Device Installed / Device On / SP Disconnected at pole | Connect line | N/A - no field work is necessary because the lamp is off | N/A |
| Device Installed / Device On / SP Connected | No field work necessary | Turn off lamp | No field work necessary |

## Cutting Badged Item Service Due To Nonpayment

The following matrix is representative of how an item-based SP type's field activity type profile would look. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three C&C-oriented field activities that may take place at the service point.
  - Disconnect warning is the event that warns the customer of imminent severance if payment is not received.
  - Cut for non-payment is the event that causes service to be severed due to non-payment.
  - Reconnect is the event that takes place when a service point is reconnected because payment was received after service was cut.
- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - A device (the item) is either installed or not installed.
  - The installed device is either turned on or off.
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| **SP Condition** | **Customer Event:** Disconnect Warning | **Customer Event:** Cut For Non-Payment | **Customer Event:** Reconnect |
|---|---|---|---|
| Device Installed / Device On / SP Connected | Leave disconnect warning | Cut lamp service | N/A |
| Device Installed / Device Off / SP Connected | N/A - service is off | N/A - service is off | Turn on item |
| Device Installed / Device On / SP Disconnected at pole | N/A - service is off | N/A - service is off | Connect line |
| Device Installed / Device Off / SP Disconnected at pole | N/A - service is off | N/A - service is off | Connect line and turn on item |
| No Device / SP Connected | N/A - service is off | N/A - service is off | Install item |
| No Device / SP Disconnected at pole | N/A - service is off | N/A - service is off | Install item and connect line |

## Item Testing Activities

While the field activity types associated with item testing should not appear in the above matrixes, these field activity types must be defined in the item-based service points' field activity type profiles (under Valid Activity Types).

## Typical Unbadged Item Service Matrix

In this section, we provide a sample of how the activity type matrix would look for UNBADGED item-based service (e.g., parking lots, sewage service). The topics show two matrices; one for start/stop field activities, the other for credit & collections activities. In reality, there is a separate matrix for every column in the matrices.

**Contents**



### Starting and Stopping Unbadged Item Service Matrix

The following matrix is representative of how a field activity type profile would look for a parking lot's SP type. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three start and stop events that may take place at the service point.
  - Start service is the event that takes place when a service point is to be started and the system has no knowledge of a related stop event.
  - Stop service is the event that takes place when a service point is to be stopped and the system has no knowledge of a related start event.
  - Start/stop service is the event that takes place when a service point is to be stopped for one customer and started for another at the same time.
- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
  - Notice that the SP Conditions always indicate "No Device". This is because a device (i.e., a meter or badged item) cannot be installed at this type of service point.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| **SP Condition** | **Customer Event:** Start Service | **Customer Event:** Stop Service | **Customer Event:** Start/Stop Service |
|---|---|---|---|
| No Device / SP Disconnected at pole | Connect service in parking lot | N/A - no field work is necessary because there is no lamp | N/A |
| No Device / SP Connected | No field activity necessary | Disconnect service in parking lot | No field activity necessary |

### Cutting Unbadged Item Service Due To Nonpayment

The following matrix is representative of how an item-based SP type's field activity type profile would look. The following points describe the rows, columns and cells in the matrix:

- The customer events represent the three C&C-oriented field activities that may take place at the service point.
  - Disconnect warning is the event that warns the customer of imminent severance if payment is not received.
  - Cut for non-payment is the event that causes service to be severed due to non-payment.
  - Reconnect is the event that takes place when a service point is reconnected because payment was received after service was cut.
- The SP conditions represent the state of service at a service point. The following conditions are represented:
  - Notice that the SP Conditions always indicate "No Device". This is because a device (i.e., a meter or badged item) cannot be installed at this type of service point.
  - The source of service (the line or pipe) is either connected to the service point or disconnected.
  - If the source is disconnected, define a field activity for each potential disconnect location.
- Each cell in the matrix represents a field activity to be created by the system for the combination of customer event and service point condition.

| SP Condition | Customer Event: Disconnect Warning | Customer Event: Cut For Non-Payment | Customer Event: Reconnect |
|---|---|---|---|
| No Device / SP Connected | Parking lot disconnect warning | Cut parking lot service | Reconnect parking lot service |
| No Device / SP Disconnected at pole | N/A - service is off | N/A - service is off | Reconnect parking lot service |

# Designing Field Activity Types

The number of activity types you need is related to the different field activities your company performs at your service points. For example, if your company installs and maintains meters, you will set up field activity types for every conceivable meter-related task you assign to your field staff. If your company installs and maintains lamps, you will set up field activity types for every conceivable lamp-related task you assign to your field staff.

The topics in this section describe how to design your field activity types.

**Contents**



## Designing Field Activity Types From Your Field Activity Type Profiles

After designing your field activity type profiles, the resulting matrices will reference every field activity type needed to:

- Start service
- Stop service
- Leave disconnect warnings
- Cut service due to non-payment
- Reconnect service after cut

The topics in this section illustrate every field activity type that would be needed to satisfy the needs of the field activity type profiles illustrated above.

**Contents**



## Examples of Meter-Oriented Activity Types and their Steps

The following table shows several classic meter-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Connect SP and install meter | Connect SP to power source | Connect Service Point |
| | Install meter | Install Meter |
| | Attempt to notify owner - optional | Contact Customer |
| Connect SP | Connect SP to power source | Connect Service Point |
| Disconnect SP | Disconnect SP from power source | Disconnect Service Point |
| Install meter | Install meter | Install Meter |
| Remove meter | Remove meter | Remove Meter |
| Read meter | Read meter | Read Meter |
| Turn on meter | Turn meter on | Turn On Meter |
| Turn off meter | Turn meter off | Turn Off Meter |
| Reconnect meter after payment | Turn meter on - optional | Turn On Meter |
| | Install meter - optional | Install Meter |
| Disconnect warning | Place disconnect warning | Contact Customer |
| Cut meter for non payment | Turn meter off - optional | Turn Off Meter |
| | Remove meter - optional | Remove Meter |
| Remove and disconnect meter | Verify premise is vacant - optional | Contact Customer |
| | Remove meter | Remove Meter |
| | Disconnect SP from power source | Disconnect Service Point |

## Examples of Badged Lamp-Oriented Activity Types and their Steps

The following table shows several classic lamp-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Connect SP and install lamp | Connect SP to power source | Connect Service Point |
| | Install lamp | Install Item |
| | Attempt to notify owner - optional | Contact Customer |
| Connect SP | Connect SP to power source | Connect Service Point |

| | | |
|---|---|---|
| Disconnect SP | Disconnect SP from power source | Disconnect Service Point |
| Install lamp | Install lamp | Install Item |
| Remove lamp and leave connected | Remove lamp | Remove Item |
| Install eye | Install eye | Turn On Item |
| Remove eye | Remove eye | Turn Off Item |
| Remove and disconnect lamp | Verify premise is vacant - optional | Contact Customer |
| | Remove lamp | Remove Item |
| | Disconnect SP from power source | Disconnect Service Point |
| Disconnect warning | Place disconnect warning | Contact Customer |
| Reconnect lamp | Install eye - optional | Turn On Item |
| | Install lamp - optional | Install Item |
| Cut lamp for non payment | Remove eye - optional | Turn Off Item |
| | Remove lamp - optional | Remove Item |

## Examples of Unbadged Service Point Activity Types and their Steps

The following table shows several classic lamp-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Connect lamps in lot | Connect lamps | Reconfigure Multi-Item |
| Disconnect lamps in lot | Disconnect lamps | Reconfigure Multi-Item |
| Reconnect after pay | Reconnect lamps | Reconfigure Multi-Item |
| Disconnect warning | Place disconnect warning | Contact Customer |
| Cut lamps for non payment | Disconnect lamps | Reconfigure Multi-Item |

# Designing Other Field Activity Types

Besides those activity types that are needed to start / stop / cut service, you'll also need some field activity types for ad hoc service investigations and trouble orders.

The topics in this section illustrate these additional field activity types.

**Contents**



## Examples of Meter-Oriented Service Investigation Activity Types and their Steps

The following table shows several classic meter-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Meter exchange | Remove meter | Remove Meter |
| | Define meter's retirement date | Change Meter |
| | Install meter | Install Meter |
| Investigate meter accuracy | Read meter | Read Meter |
| | Verify constant - optional | Change Meter's Configuration |
| | Read meter - optional | Read Meter |
| Meter service investigation order | Read meter - optional | Read Meter |
| | Check service point - optional | Change Service Point |
| | Remove meter - optional | Remove Meter |
| | Check meter attributes - optional | Change Meter |
| | Check constant - optional | Change Meter's Configuration |
| | Install meter - optional | Install Meter |
| | Contact customer - optional | Contact Customer |

## Examples of Lamp-Oriented Service Investigation Activity Types and their Steps

The following table shows several classic lamp-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Retire lamp and install another | Remove lamp | Remove Item |
| | Define lamp's retirement date | Change Item |
| | Install lamp | Install Item |
| Lamp service investigation order | Check service point - optional | Change Service Point |
| | Remove lamp - optional | Remove Item |
| | Check lamp attributes - optional | Change Item |
| | Install lamp - optional | Install Item |
| | Contact customer - optional | Contact Customer |

## Examples of Trouble Order Activity Types and their Steps

The following table shows trouble order-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Contact customer | Contact customer | Contact Customer |

## Examples of Device Testing Activity Types and their Steps

The following table shows device test-oriented activity types and their respective steps:

| Activity Type | Step | Step Type Action |
|---|---|---|
| Bench test meter | Remove existing meter | Remove Meter |
| | Install new meter | Install Meter |
| | Test meter | Test Device |
| Field test meter | Remove existing meter | Remove Meter |
| | Test meter | Test Device |
| | Install new or existing meter | Install Meter |
| Bench test current transformer | Remove existing CT | Remove Item |
| | Install new CT | Install Item |
| | Test CT | Test Device |

## Field Activity Completion Considerations

The *Field Activity Step Upload Staging* table provided by the system supports the completion of the following "standard" step types:

- Connect Service Point
- Disconnect Service Point
- Install Meter
- Turn On Meter
- Turn Off Meter
- Read Meter
- Remove Meter
- Install Item
- Turn On Item
- Turn Off Item
- Remove Item

These step types are supported because the amount of information required to complete the step type is limited and is always the same for every step of that type. For example, to install a meter, the system must know the badge number and the effective date/time and a reading must exist for that date/time. Every Install Meter step requires the same information.

However, there are other step types whose completion information depends on what specifically occurred in the field. For example, if the meter configuration changed, there are several possible fields whose value may have changed such as dial format, read out type, full scale, etc. Because of the large number of possible fields that would need to be available to support completion of these "generic" step types, the field activity step upload staging table does not support capturing this information. The step types included in this category are the following:

- Change Item

- Change Meter
- Change Meter's Configuration
- Change Service Point
- Contact Customer
- Reconfigure Multi-Item
- Test Device

To complete field activities with one of the above step types, the recommendation is to use XAI to upload field activity completion information rather than using the *field order completion upload background processes*. Using XAI, you can design a service to update the appropriate data in the system for the above step types and complete the field activity and all its steps.

**NOTE:**
**Remove Meter.** The system only allows meter reads marked as **Use on Bill** to be specified as removal reads. If your implementation wants to relax this validation and use reads that are not useable on bill as removal reads during FA completion, set the Removal MR Always Useable on Bill **Option Type** on the Meter Management Options *Feature Configuration* to Y .

**FASTPATH:**
Refer to *Field Activity Completion* for a sample service provided with the system to support completion for all step types.

## Designing Field Service Classifications

When you set up a service point, you must define the operation area(s) that manage its fieldwork. If you have service points whose operation area differs based on the type of field activity, you will need multiple field service classifications (otherwise you'll just need 1 - call it All ). For example, a service point may have one operation area for turn on / off field activities, a different operation area for trouble orders, and yet a third operation area for meter exchanges. We refer to each major category of service for which operation area differs as a Field Service Classification. In this example, you would need to define 3 field service classifications - On/Offs , Trouble Order , and Meter Exchanges .

**NOTE:**
**Bottom line:** if all types of activities at a given service point are dispatched from the same field office (i.e., operation area), you will only need one field service classification. If the field office of dispatch differs based on the type of field activity, you will need a field service classification for each category of field activity.

After you define your field service classifications, you need to associate them with your field activities (each field activity references a field service classification). You also need to define the field offices (i.e., operation areas) that perform work for each classification. For example,

- If trouble orders are dispatched from a central location, the Trouble Order service classification would have a single operation area linked to it.
- If turn ons / offs are dispatched from 4 separate operations area, you have the four operation areas linked to the On / Off field service classification.
- Etc.

If you're struggling with this concept, consider why the system needs to know about field service classifications:

- When a field activity is created, the system must associate it with an operation area. Why? Because operation area is one of the elements that controls the dispatch group to be associated with a field activity.
- The system finds the operation area by: a) extracting the field service classification from the field activity's activity type, and b) extracting the operation area for this classification defined on the service point.
- And finally, once the operation area is known, the system can allocate the dispatch group to the field activity. The other components that dictate the dispatch group are field activity type and service point type.
- Each service classification, in turn, would have its operations area defined.

**NOTE:**
**How a service point gets its field service classifications and operation areas.** A service point's field service classifications / operation areas will default based on its service type and its premise's postal code. See *Setting Up Premise & Service Point Postal Defaults***for more information**.

## Designing Who Does Your Field Activities

At this point, you have designed the following:

- Field activity types. These define what you do to your service points.
- SP types. These define the various services that exist at your premises.
- Operations areas. These define the locations from which you dispatch field activities.
- Dispatch groups. These define crews who do your field activities.

Now you have to pull it all together and define which dispatch group performs each field activity at every SP type in every area office. This is a four dimensional matrix that is easier to represent in two dimensions. We'll fill in this matrix for one of our many activity types. You'll need to do this for EVERY activity type:

| Activity Type | SP Type | Operations Area | Dispatch Group |
|---|---|---|---|
| Connect SP and install meter | GAS - RESIDENTIAL | North Area | North - Gas&Water Crew |
| | | South Area | South - Gas&Water Crew |
| | GAS - COMMERCIAL | North Area | North - Gas&Water Crew |
| | | South Area | South - Gas&Water Crew |
| | WATER - RESIDENTIAL | North Area | North - Gas&Water Crew |
| | | South Area | South - Gas&Water Crew |
| | WATER - COMMERCIAL | North Area | North - Gas&Water Crew |
| | | South Area | South - Gas&Water Crew |
| | ELECTRIC - RESIDENTIAL | North Area | North - Electric Res Crew |
| | | South Area | South - Electric Res Crew |
| | ELECTRIC - COMMERCIAL | North Area | North - Electric HV Crew |
| | | South Area | South - Electric HV Crew |

We made the following assumptions when filling in the above table:

- You have two operations areas: North Area and South Area.
  - The North Area handles all service requests in the northern part of your service territory.
  - The South Area handles all service requests in the southern part of your service territory.

- You have the following dispatch groups in the South Area.
  - North - Gas&Water Crew. This crew performs all field activities associated with ALL gas and water service points in the northern area regardless of SP type (i.e., residential and commercial installs are handled by the same group).
  - South - Gas&Water Crew. This crew performs all field activities associated with ALL gas and water service points in the southern area regardless of SP type (i.e., residential and commercial installs are handled by the same group).
  - North - Electric Res Crew. This crew performs all field activities associated with electric residential service points in the northern area.
  - South - Electric Res Crew. This crew performs all field activities associated with electric residential service points in the southern area.
  - North - Electric HV Crew. This crew performs all field activities associated with electric commercial service points in the northern area (the HV stands for high voltage).
  - South - Electric HV Crew. This crew performs all field activities associated with electric commercial service points in the southern area (the HV stands for high voltage).

You must fill in the above matrix for EVERY activity type. We'll give you one more example to show how to set up this information if you have centralized dispatching of some types of field activities. Our example assumes that all cuts for non-payment are handled by a single crew located at the North office.

| Activity Type | SP Type | Operations Area | Dispatch Group |
|---|---|---|---|
| Cut metered service due to nonpayment | GAS - RESIDENTIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |
| | GAS - COMMERCIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |
| | WATER - RESIDENTIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |
| | WATER - COMMERCIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |
| | ELECTRIC - RESIDENTIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |
| | ELECTRIC - COMMERCIAL | North Area | All - C&C crew |
| | | South Area | All - C&C crew |

We understand if you have the above situation, there is some redundancy. But this is the price of the flexible design.

At this point, you're ready to set up your field activity types and field activity type profiles. We recommend first setting up your field activity types. Then set up your field activity type profiles designed earlier.

**NOTE:**
**Don't forget.** A field activity type profile contains a list of ALL field activity types that can be performed at service points that use the profile. This list must include all of the field activity types needed to: start and stop service, cut and reconnect service, investigate service, and record trouble orders for the service. Refer to *Designing Your Field Activity Profiles & Types* for more information.

# Setting Up Field Service Classification

To define your organization's service classifications and the locations at which each classification of service can be performed, open **Admin** > **Field Service Class** > **Add.**

> **FASTPATH:**
> **For more information** about field service classifications, refer to *Designing Field Service Classifications* .

**Description of Page**

Enter an easily recognizable **Field Service Class** and **Description** for each service classification.

The **Operation Area** collection shows the operation areas in which field activities associated with a service classification are dispatched.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_FS_CL*.

# Setting Up Field Activity Types

The topics in this section describe how to set up field activity types.

> **NOTE:**
> **When a new activity type is added.** When you introduce a new field activity type, you must define the field activity type profiles on which the activity can be performed. Refer to *Setting Up Field Activity Type Profiles* for more information. If the field activity type is "dispatchable", you must set up the rules used by the system to default the dispatch group onto field activities of this type. You do this on *Field Service Control*.

> **FASTPATH:**
> **For more information** about field activity types, refer to *Designing Your Field Activity Profiles & Types*.

**Contents**



# Field Activity Type - Main

You begin to define a field activity type by opening **Admin** > **Field Activity Type** > **Add.**

**Description of Page**

Enter an easily recognizable **Activity Type** and **Description** for each field activity type.

Use **Field Activity Priority** to define the priority associated with field activities of a given type. This priority affects the order in which field activities appear on the dispatching inquiries. Important activities (e.g., trouble orders) should have a higher priority than less important activities.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is FA_PRIORITY_FLG.

Use **Field Service Class** to define the field activity's category of service. Refer to *Designing Field Service Classifications* for information about the significance of this field.

If this FA type is for activities that will be synced to service orders from an external system, specify the external system in **Fieldwork Orchestration**.

Turn on **Eligible for Dispatch** if this type of field activity is dispatched to a field crew. This switch will be on for all field activities except the one used to indicate the system should use the next scheduled meter read as the initial or final read on a service agreement. If this switch is on you must set up the rules used by the system to default the dispatch group onto field activities of this type. You do this on *Field Service Classification*.

If your FA type is eligible for dispatch and the *Appointments* module is not *turned off*, indicate if **Appointment Booking** for field activities of this type is Required for Dispatch , Optional or Not Applicable . If eligible for dispatch is checked, this value is defaulted to optional ; otherwise it is defaulted to not applicable .

Turn on **Display as Alert** if Control Central should display an alert if its premise has a completed field activity of this type. If this switch is on,

- Use **Nbr Days Alert Active** to define the number of days the alert should appear on Control Central. The field activity's scheduled date is used as the start date for the alert period.
- Enter the **Alert Information** to appear on Control Central.

**NOTE:**
**Recommendation.** We recommend only using this feature on unusual field activity types (e.g., disconnect warnings, cut for non-payments) so that a CSR is not presented with an alert for every field activity type.

Enter the **Business Object** for this FA Type if the FA type will need access to the BO plug-in spots. If the FA type has a business object specified, the system applies the business object’s rules when the FA is added, changed, or deleted. This includes the business object’s validation algorithms (only executed after the "core validation" specified on the maintenance object is done), post-processing algorithms, and audit algorithms. The maintenance object for the FA should specify an algorithm that finds its business object using its FA Type. Refer to the base package Determine Standard Business Object algorithm for an example of this type of algorithm.

Use the **Field Activity Step** collection to define the discreet actions involved in the execution of the activity. Keep in mind that an activity type's steps are used to:

- Provide guidance to the field staff in respect of the expected steps involved in the execution of the activity.
- Simplify navigation to the page groups used to record what actually took place in the field.

The **Step Sequence** is system-assigned and may not be modified.

Enter the step's **Description**. This information is printed on the field order.

Indicate whether the step is **Optional**. This indicator is used when the user attempts to complete the field activity (after the fieldwork is complete). If an activity contains required steps, the system will not allow the activity to be completed unless every required step has an indication of what happened. For example, if an activity contains a step indicating the meter must be read, the activity cannot be completed until the meter read is referenced on the activity.

Use **FA Step Type Action** to define the activity associated with the step. The action determines the foreign key that must be referenced on the step in order to complete it. For example, the Read Meter action requires a meter read id to be linked to the step in order to complete the activity. The permissible values are defined in the following table.

| Step Type Action | What it's used for |
|---|---|
| Change Item | Used when the activity changes attributes on an item (e.g., the date retired). |
| Change Meter | Used when the activity changes attributes on a meter (e.g., the date retired) |
| Change Meter's Configuration | Used when the activity changes attributes on a meter's registers (e.g., the constant) |
| Change Service Point | Used when the activity changes attributes on service point (e.g., the location) |
| Connect Service Point | Used when the activity connects a service point to its source (e.g., connecting an electric service point to the source of electricity) |
| Contact Customer | Used when the activity involves contact with a customer |
| Disconnect Service Point | Used when the activity disconnects a service point from its source (e.g., disconnecting an electric service point from the source of electricity) |
| Install Item | Used when the activity installs a badged item at a service point |
| Install Meter | Used when the activity installs a meter at a service point |
| Read Meter | Used when the activity reads a meter |
| Reconfigure Multi-Item | Used when the activity changes the number / type of unbadged items at a service point |
| Remove Item | Used when the activity removes a badged item from a service point |
| Remove Meter | Used when the activity removes a meter from a service point |
| Test Device | Used when the activity tests a meter or item. |
| Turn Off Item | Used when the activity turns off a badged item at a service point |
| Turn Off Meter | Used when the activity turns off a meter at a service point |
| Turn On Item | Used when the activity turns on a badged item at a service point |
| Turn On Meter | Used when the activity turns on a meter at a service point |

Use the **Characteristic** collection to define **Characteristic Type**s and their respective **CharacteristicValue**s to describe characteristics that are common to all field activities of this type.

**NOTE:**
You can only choose characteristic types defined as permissible on the field activity type record.

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_FA_TYPE*.

## Field Activity Type - FA Characteristics

To define characteristics that can be defined for field activities of a given type, open **Admin** > **Field Activity Type** > **Search** and then navigate to the **FA Characteristics** page.

### Description of Page

Use the **Characteristics** collection to define characteristics that can be defined for field activities of a given type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on field activities of a given type. Turn on the **Default** switch to default the **Characteristic Type** when field activities of the given type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

> **NOTE:**
> **Field activities created by the system**. When setting the Required switch, remember that most field activities are created by the system. Only turn on the required switch for these types of activities if a default characteristic value can also be indicated

## Field Activity Type - FA Completion Control

Open **Admin** > **Field Activity Type** > **Search** and then navigate to the **FA Completion Control** page to define special functions that should be executed when a field activity is completed.

**Description of Page**

> **NOTE:**
> **These algorithms are optional.** The use of completion algorithms on a field activity type is optional. You would only use them if you have special functions that should be executed when a given field activity type is completed. Read the information below for examples.

The **Field Activity Completion Controls** tab is used when an algorithm should be executed when a field activity is completed. For example, if a charge should be levied when a certain type of activity is completed, you would indicate the "levy adjustment" algorithm should be executed. The type of algorithm may differ based on the CIS division in which the service point's premise is located. The following fields must be defined:

**CIS Division** Defines the division associated for which the algorithm will be executed. The system will only execute the algorithm when a field activity is performed at a service point whose premise is governed by the division.

**FA Completion Algorithm** Defines the algorithm that will be executed when a field activity is performed at a service point whose premise is governed by the associated division. Click *here* to see the algorithm types available for this plug-in spot.

## Field Activity Type - SP Type Review

Open **Admin** > **Field Activity Type** > **Search** and then navigate to the **SP Type Review** page to review the SP types at which the field activity can be performed. And for each SP type, you can view the dispatch group that will perform the activity at every operations area.

> **NOTE:**
> **Four dimensions.** For every **field activity type**, you define the **dispatch group** that performs the activity at every **SP type** located in every **operations area**. This information is maintained on the Field Activity Type page group. This is a rather complex relationship because it involves the four dimensions highlighted in bold. Due to this complexity, we have provided review trees on the SP Type, Dispatch Group, and Field Activity Type pages to help you understand what you've set up.

**Description of Page**

This page is dedicated to a tree that shows the SP types at which the field activity can be performed. And for each SP type, you can view the dispatch group that will perform the activity at your operations areas.

# Setting Up Field Service Control

Open **Admin** > **Field Service Control** > **Add** to define the dispatch group that is responsible to perform a field activity in each operation area for each SP type.

**Description of Page**

> **NOTE:**
> **Eligible for dispatch.** You would only define this information for field activity types that are eligible for dispatch because these are the only ones that need dispatch groups.

If a field activity type is **Eligible for Dispatch**, you must define the **Default Dispatch Group** that will be assigned to field activities. You do this in respect of the **Field Activity Type**, the field activity's service point's **SP Type**, and the service point's **Operation Area.** In addition you must define the following for every combination of **Activity Type**, **SP Type** and **Operation Area** you define the following:

**Priority** The priority controls the order in which the system calls the algorithms that determine the **Dispatch Group** to be assigned to field activities associated with a given **Activity Type**, **SP Type** and **Operation Area**. Higher priorities are used before lower priorities.

**Dispatch Algorithm** Select the algorithm that determines the dispatch group to be assigned to the field activity.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that assigns a dispatch group. Click *here* to see the algorithm types available for this plug-in spot.

> **IMPORTANT:**
> You must have at least one entry in this collection otherwise the system will not assign a dispatch group to a field activity. This entry should have the lowest priority code and should reference a **Dispatch Algorithm** that references the *OFSDGRP DFLT* algorithm type.

**Where Used**

This information is used to default the appropriate dispatch group on new field activities.

# Setting Up Field Activity Type Profiles

The topics in this section describe the pages used to define a field activity type profile.

> **NOTE:**
> **When a new profile is added.** When you introduce a new field activity type profile, you must define the SP types that use it. Refer to *SP Type - Main* for more information.

> **FASTPATH:**
> **For more information** about field activity type profiles, refer to *Designing Your Field Activity Profiles & Types*.

**Contents**

## Field Activity Type Profile - Main

Open **Admin** > **Field Activity Type Profile** > **Search** to maintain a field activity type profile.

**Description of Page**

Enter a unique **Field Activity Type Profile** and **Description** for the activity type profile.

The **FA Type Profile Templates** indicate the templates that exist for this field activity type profile. Use the drill down button to go directly to the desired template. Alternatively, you can go to the **Template** tab and scroll until you find the correct template.

## Field Activity Type Profile - Template

Open **Admin** > **Field Activity Type Profile** > **Search** and then navigate to the **Template** page to define the field activity(s) used for various situations in the system.

**Description of Page**

The information in the **Field Activity Profile Template** collection defines the field activity(s) created for each situation identified by the **Customer Event**. The possible customer events are Cut for Non-payment , Disconnect Warning , Reconnect for Payment , Reread , Stop Service , Start Service and Start/Stop . Other customer events can be defined on the *Look Up* page (search for the CUST_EVT_FLG field name). Refer to the following sections for more detail about customer events included with the base product.

The fields defined for each event are common. You define the field activity(s) to be generated given the condition of the service point and the location at which service was disconnected (when applicable). The following fields display:

**SP Field Condition** Define the condition of the service point associated with the field activity. Valid values correspond to those described under *Typical Metered Service Matrix*, *Typical Badged Item Service Matrix* and *Typical Unbadged Item Service Matrix*.

**Sequence** You will typically have a single field activity for any specific combination of SP Field Condition and Disconnect Location. Therefore you'll just have a single sequence (say 10) for each combination. If you need to generate multiple field activities based on a given combination, use a unique sequence number for each activity.

**No Activity** Turn on this switch if no field activity should be generated for the condition. This is typically off for non-metered (e.g., lamp) starts when the service is already started.

**Disconnect Location** The type of field activity can differ based on where the service point was disconnected from the source of service. For example, if it the SP is disconnected at the pole, you would have a different field activity than if it is disconnected at the meter.

**Activity Type** Define the type of activity to be generated. You should take care to use activity types defined as valid for the SP type (on the last page).

**Where Used**

Refer to the following sections for information about where each template is used.

## Field Activities Initiated To Start Service

Use the customer event Start to define the field activity(s) used to start service at a service point whose SP type references this profile.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

The start service process uses this information to determine the type of field activities to create to start service at a service point.

> **WARNING:**
> Warning. Field activities will only be created for starts if you have defined the appropriate field work creation algorithm on the service agreement's SA type. Refer to *SA Type - Algorithms* for more information.

## Field Activities Initiated To Stop Service

Use the customer event Stop to define the field activity(s) used to stop service at a service point whose SP type uses this profile.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

The stop service process uses this information to determine the type of field activities to create to stop service at a service point.

> **WARNING:**
> Warning. Field activities will only be created for stops if you have defined the appropriate field work creation algorithm on the service agreement's SA type. Refer to *SA Type - Algorithms* for more information.

## Field Activities Initiated For Back-to-Back Service

Use the customer event Start/Stop to define the field activity(s) used to stop service for one customer and start service for another at a service point whose SP type uses this profile.

> **NOTE:**

**Terminology.** We use the term **back-to-back** to describe the situation when a single field activity supports both the stop and start service requests. The system sets up a back-to-back situation by default when it is aware of both the start and stop customers at a premise.

---

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

The start/stop service process uses this information to determine the type of field activities to create to start service at a service point.

## Field Activities Initiated To Cut Service Due To Non-Payment

Use the customer event Cut for Non-Payment to define the field activity(s) used to cut service at a service point whose SP type uses this profile.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

Severance and cut events use this information to determine the type of field activities to create to cut service at a service point.

## Field Activities Initiated To Place A Disconnect Warning At A Service Point

Use the customer event Disconnect Warning to define the field activity(s) used to place a disconnect warning at a service point whose SP type uses this profile.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

Severance and cut events use this information to determine the type of field activities to create to leave a disconnect warning at a service point.

## Field Activities Initiated To Reconnect Service At A Service Point

Use the customer event Reconnect for Payment to define the field activity(s) used to reconnect service (after being cut) at a service point whose SP type uses this profile.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

Severance and cut events use this information to determine the type of field activities to create to reconnect service at a service point.

## Field Activities Initiated To Reread A Meter At A Service Point

Use the customer event Reread to define the field activity(s) used to reread a meter located at a service point whose SP type uses this profile.

The field activity type, M-REREAD, is used by the *meter read* page to create a field activity when a user requests a meter to be reread.

**Description of Page**

See *Field Activity Type Profile - Template* for a description of the fields.

**Where Used**

The *meter read* page uses this information to determine the type of field activity to create to reread a meter.

## Defining A Profile's Valid Field Activity Types

Open **Admin** > **Field Activity Type Profile** > **Search** and choose the **Type** page to define the superset of field activity types that may be performed on service points whose SP type uses this profile.

**Description of Page**

The **Field Activity Type** collection shows the field activities that may be performed at service points whose SP type references the field activity type profile.

**Where Used**

This information is used to control the types of field activities that may be performed at a service point.

## Setting Up Fieldwork Cancellation Reasons

When you cancel a field activity, you must supply a cancellation reason. To define fieldwork cancellation reasons, open **Admin** > **Fieldwork Cancel Reason.**

**Description of Page**

Enter a **Cancel Reason** and **Description** for every field activity/field order cancellation reason.

Only use **System Default** on those reason codes that are placed on field activities that are automatically canceled by the system. The following table lists the valid values and the condition where this cancel reason is used.

| System Default | System Condition |
|---|---|
| Cut Process canceled | Placed on field activities that are canceled when a *Cut Process* is canceled. |
| Device Test Selection canceled | Placed on field activities that are canceled when a *Device Test Selection* is canceled. |
| Near MR FA Completion canceled | Placed on field activities that use a scheduled meter read to start / stop service when they are canceled. Refer to *How To Start Service Using A Scheduled Meter Read* for more information about these special field activities and how they may be canceled. |
| SA Start/Stop canceled | Placed on field activities that are canceled when a pending start / stop is canceled. |

| | |
|---|---|
| Severance Process canceled | Placed on field activities that are canceled when a *severance process is canceled* . |

**NOTE:**
**Required values.** You must have one reason code defined for each of the System Default values that corresponds to an event that may occur in your implementation.

**Feature Configuration.** Some organizations require a cancel reason to be specified when a field order is cancelled. To achieve this, you must set up a fieldwork options *feature configuration* and ensure that the Cancel Reason Required option is set to Y .

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_FA_CAN_RSN*.

# Fieldwork Reschedule Reason

Some organizations require a reschedule reason to be specified when a field activity or field order's schedule date/time is changed. To achieve this, you must set up a fieldwork options *feature configuration* and ensure that the Reschedule Reason Required option is set to Y . The Default Reschedule Reason option should also be specified. This option value will be used when the system updates a field activity's schedule date/time behind the scenes. To define reschedule reasons, open **Admin** > **Fieldwork Reschedule Reason.**

**Description of Page**

Enter a **Reschedule Reason** and **Description** for every field activity/field order reschedule reason.

**FASTPATH:**
For more information on how to audit changes to a field activity or field order's schedule date/time, refer to the Field Activity Rescheduling - Audit and Field Order Rescheduling - Audit business objects.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_FA_RESCHED_RSN*.

# Setting Up Field Activity Remarks

You may link remarks to a field activity using remark codes. To define field activity remark codes, open **Admin** > **Field Activity Remark** > **Add.**

**Description of Page**

Enter a unique **Field Activity Remark** and a **Description** for every field activity remark.

Turn on **Eligible for Processing** if field activities marked with a given remark code should cause one or more algorithm to execute.

The grid contains **Algorithms** associated with the field activity remark. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).

- Specify the **Sequence Number** and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Field Activity Remark Activation | Optional | These algorithms are executed when there are pending FA remarks linked to a field activity and the *FACT* (Field activity remark activation) background process runs.<br>Refer to *Field Activity - Characteristics/ Remarks* for more information.<br>Click *here* to see the algorithm types available for this system event. |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_FA_REM_CD*.

# Setting Up Outage Call Types

When you create an outage call, you must supply an outage call type. Outage call types contain a great deal of information that is defaulted onto the outage call, including the outage category group codes or trouble codes. To set up outage call types, open **Admin** > **Outage Call Type** > **Add**.

**FASTPATH:**
Refer to *The Big Picture of Outage System Integration* for a detailed description of how trouble calls are created and sent to NMS.

The topics in this section describe the base-package zones that appear on the Outage Call Type portal.

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# Outage Call Type List

The Outage Call Type *List zone* lists every outage call type, i.e. every service task type that has a service task type class of Outage Call . The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent outage call type.
- Click the Add link in the zone's title bar to add a new outage call type.

# Outage Call Type

The Outage Call Type zone contains display-only information about an outage call type. This zone appears when an outage call type has been broadcast from the Outage Call Type *List zone* or if this portal is opened via a drill down from another page. The following functions are available:

- **Edit**: to start a business process that updates the outage call type.
- **Delete**: start a business process that deletes the outage call type.
- **Duplicate**: to start a business process that duplicates the outage call type.

Please see the zone's help text for information about this zone's fields.

# External System Integration

The following section describes functionality provided for integrating your field activities with an external system.

> **NOTE:**
> **Separate module.** Field activity integration functionality is associated with separate Field Activity Integration module. If this module is not applicable to your business you may turn it off. Refer to *Turn Off A Function Module* for more information.

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## The Big Picture of External System Integration

Many utilities use other systems to coordinate work that goes out to the field. The following are examples of functionality provided by fieldwork management systems:

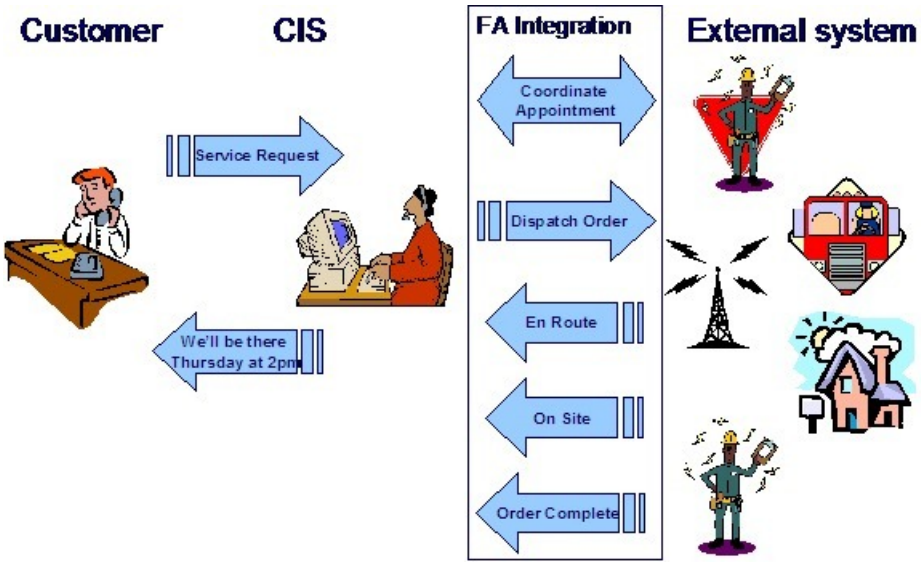
- Defining crews, skills, availability for work
- Scheduling appointments
- Tracking individual field activities, usually utilizing handheld devices to get up-to-the-minute status
- Balancing the workload

Since Oracle Utilities Customer Care and Billing can generate many work orders, you can integrate it with your external systems. The most common type of external system used to coordinate fieldwork is a Workforce Management (WFM) system. However, some companies may set up their business such that certain field activities should be sent to other types of systems. For example,

- Maybe new meter installations are the responsibility of the Asset Management system. A field activity of this type originated in Oracle Utilities Customer Care and Billing should be sent to the asset management system. That type of system may support its own crew dispatching logic or perhaps it performs some simple processing for the field activity and then interfaces the field activity to the WFM system.

- Outage related field activities are typically sent to an outage management system. The outage management system uses information from several outage calls to determine the source of the outage problem. The outage system may support its own crew dispatching logic or it may integrate with a WFM system to dispatch a crew.

The following diagram illustrates the typical integration with an external system:




The following points describe the diagram:

- While speaking with the customer and entering information into the system, information about available appointments may be accessed from an external system and displayed on an Oracle Utilities Customer Care and Billing user interface. Information about the appointment that is booked with the customer is sent to the external system.
- Information about new field activities created in Oracle Utilities Customer Care and Billing is sent to the appropriate external system using XAI. The external system performs the dispatching and tracking for the field activity.
- Intermediate field activity states may be interfaced from the external system to Oracle Utilities Customer Care and Billing.
- Completion information is interfaced from the external system to Oracle Utilities Customer Care and Billing.

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## Mapping Field Activity Types to an External System

When integrating with an external system, you must determine how to map your field activity types in Oracle Utilities Customer Care and Billing to your related task identifier in the external system.

Decide whether Oracle Utilities Customer Care and Billing provides information on its field activity types that map to the task in the external system. For more information, see *Designing Your Field Activity Profiles & Types*. You can leverage Oracle Utilities Customer Care and Billing field activity types and the messages sent from Oracle Utilities Customer Care and Billing to indicate the appropriate task in the external system. If tasks in the external system already have the information that maps to the field activity types in Oracle Utilities Customer Care and Billing, then the messages in Oracle

Utilities Customer Care and Billing can pass the field activity types to the external system. You need to determine where your mappings will exist to decide how to map the field activity types and where.

In the sample integrations provided, it is assumed that the Oracle Utilities Customer Care and Billing field activity types map to the external system tasks using characteristics on the field activity type. You can use one or more characteristics on the field activity type to map it to the task in the external system.

## Cancelling a Field Activity

Various business processes in the system create field activities (for example, start/stop, severance or cut process, device test selection). If the process that creates a field activity is canceled, the system attempts to automatically cancel the related field activity. If an implementation integrates with an external system, typically messages can be sent real-time to the external system AND to a field worker dispatched to work on the field activity to indicate that an FA is being canceled.

However, it's possible that there are situations where it is known ahead of time that a message cannot be successfully sent real-time. (For example, some field workers do not have real time communication with the dispatcher while in the field).

If this situation exists, you may configure the *external system feature configuration* to identify intermediate status values that should prevent a field activity from automatically completing. All processes that attempt to automatically cancel a field activity whose dispatch group references an external system will first check to see if it's in an intermediate status that should prevent auto-cancellation.

**NOTE:**
Each business process must define what should occur when a field activity is not allowed to be auto-canceled.

## Field Activities Not Related to a Premise

There are often field activities generated that do not relate to a specific premise. Because Oracle Utilities Customer Care and Billing requires a service point for every field activity, implementations must define one or more premises to represent the "no address premise" to use for one of these field activities. The decision as to whether to use one premise or more than one premise depends on how you plan to interface this information to an external system. For example

- Maybe the external system expects the user to use the field activity instructions to describe the location of the problem. In this case only one "no address" premise is needed
- You may decide that the operations area on a field activity's service point is interfaced to the external system and that you want to create a different "no address" premise for each of your operations areas.

Regardless of how many "no address" premises you decide to define, you must create at least one service point to be able to create a field activity. You may choose to create a service point for each service type you support. You must also be sure that your users know how to find the correct premise and service point in the search when creating the field activity.

We recommend that you create a special *premise type* to use for these premises and reference that premise type in the No Address Premise Type option on the *feature configuration*. The base product *Extract FA Information* service resets the Address fields if the premise linked to the field activity's service point is a "no address" premise type.

## Override Phone Number

When entering field activity information for a customer, you may want to capture a specific contact phone number to interface to the external system. We recommend that you create a field activity characteristic type to capture the contact phone number and reference that characteristic type in the Phone Number Characteristic Type option on the *feature*

*configuration*. The base product *Extract FA Information* service overrides the Account's phone number if it finds a characteristic on the field activity with this characteristic type.

# Integration Through XAI

The integration between Oracle Utilities Customer Care and Billing and the various external systems is through XAI.

- The XAI *real time outgoing message* engine is used to retrieve appointment information and book appointments.
- Information about field activities is interfaced to the external system using *near real time NDS messages*.
- When the system receives messages from the external system, records are received as *inbound messages*.

## External System Feature Configuration Refers to a Service Provider

In order to communicate to the external system using XAI, the system must be able to identify a service provider related to the external system. The service provider associated with an external system is defined as an option on the *external system's feature configuration*.

# Dispatching Field Activities

When your implementation integrates with an external system, field activities are created in Oracle Utilities Customer Care and Billing and interfaced to the external system. The external system manages the assigning and dispatching of work associated with this field activity.

If your external system can supply interim status information, this can be passed to our system and logged with the field activity. For example, if the external system can indicate that the field worker is en route or on site, this can be logged for the field activity so that if the customer calls to inquire about the status, the user is able to communicate the information.

When work is completed, full completion information related to the field activities is interfaced from the external system back to the system.

**NOTE:**
that field activities are interfaced to the external system, not field orders. Field orders are not necessary because they are used to bundle field activities together, an activity now managed by the external system. You may still choose to create field orders for these types of field activities if you want to group field activities for your own purposes.

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## Integration with Multiple External Systems

Some organizations use more than one external system to manage different types of field activities. For example, line work may be handled in one system and meter service work in another. To achieve this the *external system's feature*

*configuration* is defined at the dispatch group level. Field activities are interfaced to an external system based on their dispatch group information.

## Algorithms Control FA Integration

The interaction between Oracle Utilities Customer Care and Billing and your external systems is handled entirely via algorithms that are plugged into the appropriate dispatch group. If your dispatch group indicates that it should interface with an external system, then you must specify one or more FA Integration algorithms. These algorithms are called when the following system events occur

- A field activity linked to the dispatch group is created, whether online or in batch
- A field activity linked to the dispatch group is canceled, whether online or in batch
- The "header" information for a field activity linked to the dispatch group is changed, whether online or in batch

> **NOTE:**
> **Header information**. "Header" information for a field activity refers to information on the field activity record. It does NOT include steps, characteristics, remarks or log records.

- The characteristics collection for a field activity changes online. Changing the characteristics via a batch routine will not trigger the FA integration algorithms.

## Sample FA Integration Algorithm

The system provides a sample algorithm for FA integration called *FWFM-FA-INT*. This algorithm creates XAI outbound messages (by creating NDS records) to notify an external system if any field activities are created or if any changes are made to existing FAs so that their corresponding orders are created or updated respectively. Refer to the algorithm type description for more detail about the algorithm's logic.

> **NOTE:**
> **Alert For Problems With Message**. The base product provides an alert algorithm ( *CCAL-FAERMSG*) that may be plugged in to the *installation options*. This algorithm displays an alert if there is an error associated with an outbound message for the field activity or if a response has not been received within a specified time limit.

## Extract FA Information

When XAI processes the outgoing messages generated by the sample FA integration algorithm, it builds the XML request by calling the service referenced on the NDS type's XAI inbound service.

The base product provides a service, called CIPOEFIP, which extracts field activity information along with information related to the service point, meter, item, premise and account for the field activity (if applicable). If this service does not provide the functionality required by your implementation, you may create your own version using this one as a basis.

Note that this service defines an input parameter to exclude Financial Information. You can set this to Yes to avoid the account financial information (see below).

The following tables list the data that is extracted.

| FA Type information |
| --- |
| All fields in the main FA Type table and the corresponding language table |

| |
|---|
| FA Type Characteristics |
| FA Information |
| All fields in the main Field Activity table |
| Status description |
| Cancellation Reason description |
| FA Steps collection |
| FA Characteristics. Note the service limits the number of field activity characteristics that it extracts. It only extracts the first 100. |
| Appointment information |
| SP Type information |
| All fields in the main SP Type table and the corresponding language table |
| SP Type Characteristics |
| SP Information |
| All fields in the main Service Point table |
| Status description |
| Source Status description |
| Disconnect Location description |
| SP Location description |
| Facility Level 1, 2 and 3 descriptions |
| SP Operation Area and Description for the FA type's field service class |
| SP Multi-Item collection |
| SP Equipment collection |
| SP Characteristics |
| SP Geographic Data |
| SP Operation Area collection |
| Premise Information |
| All fields in the main Premise table |
| Premise Type description |
| MR Warning description |
| MR Instructions description |
| Life Support/Sensitive Load flag description |
| Alternate Address collection |
| Landlord Agreement Description |
| Name of Landlord's main person |
| Phone Number collection of Landlord's main person |
| Premise Characteristics |
| Premise Geographic Data |
| **Meter Information** for the meter currently installed at the Service Point (if applicable) |
| All fields in the main Meter table |
| Meter Type description |

| |
|---|
| Meter Status description |
| Manufacturer description |
| Model description |
| Meter Id collection |
| Meter Characteristics |
| Meter Equipment collection |
| **Meter Configuration Information** for the meter currently installed at the Service Point (if applicable) |
| All fields in the main Meter Configuration table |
| Meter Installation Date/Time |
| Calculated High / Low limit for the meter on the FA schedule date |
| **Item Information** for the badged item currently installed at the Service Point (if applicable) |
| All fields in the main Item table |
| Item Type description |
| Item Status description |
| Manufacturer description |
| Model description |
| Item Characteristics |
| Item Equipment collection |
| **SA Information** for the first two Service Agreements found for the service point |
| SA ID |
| CIS Division / SA Type |
| Account ID |
| SA Status |
| Start Date / End Date |
| Customer Read Flag |
| Rate Schedule |
| SA / SP collection |
| **Customer Information** for the account(s) linked to the above service agreements |
| All fields in the main Account table |
| Person ID of the main person |
| Name of the main person |
| Person / Business flag for the main person |
| Life Support / Sensitive Load flag, flag Description and Description for the main person |
| Phone Number collection for main person. Note, this information may be *overridden* if a phone number is entered on the field activity. |
| The following financial information is not extracted if the input Exclude Financial Information is set to Yes. |
| Credit Rating Points. Calculated from the Credit Rating Base Score on the Installation Table and CR_RATING_PTS from CI_ACCT_CR_R_VW |
| Cash Only Points. Calculated from the Cash Only Base Score on the Installation Table and CASH_ONLY_PTS from CI_ACCT_CR_R_VW |
| Current Amount (calculated from FT information) |
| Payoff Amount (calculated from FT information) |

| |
|---|
| Disputed Amount (calculated from FT information) |
| Arrears Information: Disputed Amount, New Charges, 30 days old, 60 days old, 90 days old |
| Count of the number of bills generated in the last 6 Months |
| For each bill: |
| Bill ID |
| Bill Date |
| Bill Amount |
| Meter Read information for the last Bill |
| All fields in the main Meter Read table |
| Register Read collection |
| Count of the number of payments generated in the last 6 Months |
| For each payment: |
| Payment ID |
| Payment Event ID |
| Payment Date |
| Payment Amount |
| Cancel Reason and its Description |

## Incoming Messages from the External System

If your implementation requires general updates to the field activity from your external system, for example, updating the priority based on a change to the priority in the external system, the XAI Inbound Service that processes this message may reference the standard field activity service.

The base product supplies two additional services to handle special incoming messages from your external system.

- One service processes responses to outgoing messages initiated by Oracle Utilities Customer Care and Billing.
- One service processes field activity completion information.

**Contents**



## FA Response

The sample integration is designed to expect a response, whether positive or negative, from the external system when an outgoing message is sent.

The base product provides a service, called CIPORFAP, which processes this response. Note that we also provide an XAI Inbound Service, FA Response, defined to invoke this service. This service provides the ability to do the following for positive responses:

- Update information about the field activity (refer to *Populating FA Response* for details)

- Create a *field activity log* entry

If the incoming message is a negative response to a message originally sent by Oracle Utilities Customer Care and Billing, the service supports the following functionality:

- Create a *field activity log* entry.
- Create a To Do Entry

For both the log entry and the To Do entry, if the external system has provided an external message category and code in the message that have been mapped to an internal message category and code on the feature configuration table, the system looks up the message text and includes it in the log message. Refer to *FA Log Entry Events* for more information.

The following topics provide some additional information.

**Contents**



## Create a Log Entry

In order to create a log entry, the system needs to know the log type to use. The service accepts a log type as input and your XSL that maps data to this service may assign an appropriate log type.

If a log type is not provided, the system can try to default one of the base sample log types if information is provided about the type of base sample message that this is a response to. To do this, the service needs to identify the notification download condition of the original message.

**FASTPATH:**
Refer to *Sample FA Integration Algorithm* for information about the notification download conditions used for the sample integration.

Your XSL may provide

- The notification download condition flag.
- The notification download type. Using the NDS type, the system can find the appropriate notification download condition flag.
- The external system and the message id that the system generated and sent to the external system. Using that information, the original outbound (NDS) message can be retrieved and the NDS type and its corresponding notification download condition flag can be determined.

**FASTPATH:**
Refer to *Sample FA Integration Algorithm* for more information about creating the message ID.

Refer to *Field Activity Log* for a list of the base sample log types and the type of message they are generated for.

## Create a To Do Entry

In order to create a To Do entry, the system needs to know the To Do type to use. The service accepts a To Do type as input and your XSL that maps data to this service may assign an appropriate To Do type. If you don't pass in a To Do type the system looks up the **To Do Type for FA Response** indicated on your *external system's feature configuration*.

## Populating FA Response

The following table lists the fields to populate for an FA response message.

| |
|---|
| General information |
| FA ID |
| Positive Switch (Y if response is positive, N if response is negative) |
| **Outbound Message Information** (used to identify the original outgoing message that this is a response to) |
| External System |
| Message ID |
| Notification Download Condition flag |
| NDS Type |
| **Error Message Information** Refer to *FA Response* for more information |
| Message Category |
| Message Number |
| FA Log Information |
| Create Log Switch (Y, N) |
| FA Log Type (Refer to *Create a Log Entry* for more information) |
| To Do Information |
| Create To Do Switch (Y, N) |
| To Do Type (Refer to *Create a To Do Entry* for more information) |
| FA Information |
| Schedule Date/Time |
| Dispatch Group |
| Instructions |
| Comments |
| External ID |
| FA Intermediate Status |
| Appointment Information |
| Field Activity Characteristics |

## Intermediate Status Updates

Oracle Utilities Customer Care and Billing supports receipt of intermediate status updates for a field activity from an external system. To process messages from the external system regarding status update changes, the system call the standard Field Activity service with a change action updating the intermediate status as provided.

If your organization's external system supports different intermediate status values for a *field activity*, your implementers must customize the lookup value that defines the list of valid intermediate status values.

## Field Activity Completion

The system provides a staging table to use to upload and complete field activities. However, this staging table has limitations as described in *field activity completion considerations*. For these reasons and to enable to support *integration through XAI*, the base product provides a sample service (called CIPOASTP) that can be invoked by XAI to support completion of the all step types, including the "generic" step types and the "standard" step types. We provide an XAI Inbound Service, C1FACompletionWithSteps , defined to invoke this service. The sample service:

- Creates field activity upload staging and FA step upload staging records
- If meter read information has been provided, it creates a meter read record and its corresponding register reads.
- For any of the "generic" steps, the process updates or creates the appropriate record(s) and populates the id of the record updated as the foreign key for the FA step record. For example, for the Change Meter step type, the process updates the meter record with the information provided through XAI and links the meter id to the FA step record.
- The process then performs the standard "complete step" logic. For the "generic" step types, the FA step should simply be marked as complete because the foreign key is already linked. For the "standard" step types, the completion logic described in *FACOMPL - Upload and Complete Field Activities* is performed.

**FASTPATH:**
Refer to *Field Activity Completion Considerations* for the list of "generic" and "standard" step types.

- Creates an FA log entry with a log type of Order Completion to indicate that the field activity has been completed by an external system.
- Standard FA completion logic is also performed. For example, completion algorithms are executed, etc.

**NOTE:**
The sample service provided by the system may not provide all the functionality your implementation requires for completing every "generic" step. For example, not all service point, meter or item fields are included in the list of fields that may be updated. If the sample process does not satisfy your needs, your implementers should copy the sample process and modify the new process as needed.

**Characteristic limitation**. The sample service limits the number of field activity characteristics that may be uploaded to 100.

**Error Handling**. If any error is found during step completion, this sample service backs out all changes and issues an error indicating the problem.

## Populating Field Activity Completion

The following table lists the fields to populate for a Field Activity Completion.

| |
|---|
| FA Upload Staging Information |
| FA ID |
| All fields in the FA Upload Staging table, FA upload characteristics, FA upload remarks and FA upload staging steps |
| "Generic" Step Type Information |
| Step Sequence Number |
| Customer Contact Info |
| Customer Contact Date / Time |

Customer Contact Class

Customer Contact Type

Customer Contact Comments

Meter Information

Meter Type

Meter Status

Manufacturer

Model

Serial Number

Receive Date

Retirement Date

Comments

Retire Reason Code

Meter ID Collection

Meter Characteristics

Meter Configuration Information

Effective Date / Time

Meter Configuration Type

Register Collection

Item Information

Item Type

Item Status

Manufacturer

Model

Serial Number

Receive Date

Retirement Date

Comments

Retire Reason Code

Item Characteristics

SP Information

SP Type

SP Status

Installation Date

Abolish Date

SP Source Status

Disconnect Location Code

Service cycle

Service Route

| |
|---|
| Service cycle / Route Sequence |
| Meter Location Code |
| Meter Location Details |
| Comments |
| SP Characteristics |
| SP Multi-Item Information |
| Effective Date for new collection |
| Count of Items |
| Item Type Code |
| Item Count |
| Item Difference. Used to indicate only changes to the existing item count collection. |
| Device Test Information |
| All fields for main Device Test table |
| External System. Used to record a test done by a third party. |
| Device Test Component / Result Extra Information.<br>This additional information is used to identify the meter readings that should be associated with component test results that are meter readings. Note. This FA completion service supports providing information for a single meter reading (in the FA upload staging info above). If your device test produces multiple readings, the assumption is that the readings are entered separately prior to this upload of completion information. |
| Component sequence. Indicate the sequence of the Device Test Component |
| Read Sequence for the register for that component. This should correspond to the register's relative sequence within the meter configuration. |
| Component Result sequence. Indicate the sequence of the Component Result |
| Read Date/Time. For each result that is related to a meter read, indicate the read date / time so that the system can find the associated meter read for this result. |

# Booking Appointments Via An External System

If your field activity requires an appointment, the user navigates to the *appointment* page to book the appointment. If the dispatch group for your field activity is associated with an *external system's feature configuration*, the appointment page includes a user exit to provide the ability to communicate with the external system for the following actions:

- Display available appointments
- Book an appointment
- Cancel an appointment

**NOTE:**
**Implementation specific behavior**. The actual behavior of your appointment integration is dependent on your external system behavior. For example, some systems store appointment booking, which may be done real time, independently from storing field activities, which are interfaced in near real time. Other systems may display available appointments real time but may book appointments as part of storing the field activity, which is near real time.

This section describes the tools provided to interface with your external system along with a description of sample integration of real time appointment interaction provided with the system.

**NOTE:**
**Oracle Utilities Mobile Workforce Management integration**. In addition to general FA integration logic, the system provides integration with Oracle Utilities Mobile Workforce Management. Refer to the documentation for integration for more information.

**Contents**



# Configuring Appointment Options

There are several configuration options available to customize the interaction with your external system for appointments.

**Contents**



## Manual Appointments

If your external system books appointment in real time, it's possible that there is a problem with the communication to the external system while the user is attempting to book an appointment. You may configure your *external system's feature configuration* options to allow manual booking of appointments so that the user is able to book appointments even if the system is down. If you set the option Allow Manual Appointments to Y ,

- If the communication is available to show appointments, but the connection is down when you attempt to book one of the displayed appointments, you can click OK to book the appointment using a "near real time" message. This is applicable for systems that book appointments real-time via the appointment page.
- If the communication is unavailable while you are attempting to show appointments, you may add your own appointment period. When you click OK, a "near real time" message is created.

**FASTPATH:**
Refer to *Book Appointment* for more information about the creation of "near real time" messages.

**NOTE:**
If the user has created an appointment or has chosen an appointment that is not available in the external system, it is possible that the manual appointment is not accepted and a negative response is received. You may configure your system to allow *forced appointments* to force the external system to accept the chosen appointment.

If there is a problem with the communication to your external system while attempting to cancel an appointment, you may configure your *external system's feature configuration* options to Allow Manual Appointment Cancellation . If this option is set to Y and the communication is unavailable while you are attempting to cancel an appointment, you can click OK to cancel the appointment using a "near real time" message.

## Narrowing Appointment Window

If you have set the *external system's feature configuration* option Allow Narrowing Of Appointment Window to Y , then your users are able to enter a more granular appointment time than what is displayed. For example, if the list of available appointments shows an appointment period of 1pm to 4pm and this option is turned on, the user could enter an appointment period of 2pm to 2:30pm.

## Forced Appointments

If your external system allows the user to choose appointment periods that are not available in the system, set the *external system's feature configuration* option Allow Forced Appointments to Y . When this option is turned on a Forced checkbox is visible on the search for an appointment page. The user should check this if the desired appointment is not available.

---

**NOTE:**
**Forcing manual appointments**. If your system allows *manual appointments* and allows forced appointments, the *book appointment* logic provided with the system automatically flags manual appointments as forced to ensure that they are accepted by the external system.

---

If an appointment is forced, the system populates a field activity characteristic indicating this. The characteristic type to use is defined as a *feature configuration* option.

## User Defined Search and Result Fields

It is possible that your external system allows the user to provide additional information prior to searching for available appointments. For example, imagine that your customer wants the appointment to be in the afternoon and your external system allows you to request "afternoon" appointments only. To enable this functionality, you define a User Defined Search Criteria field on the *external system's feature configuration* options.

You may define up to 10 user defined search criteria fields. The information is passed to the message engine to *get available appointments*. It is assumed that your XSL scripts correctly map the information into a format understood by the external system to determine the desired appointment periods.

The result grid for the available appointments displays the start date / time and end date / time. If your external system provides additional information for each appointment period that would help the user choose the best appointment, you may define a User Defined Result Field on the *external system's feature configuration* options.

You may define up to 10 user defined result fields. If you have configured the external system to define extra result fields, it is assumed that your response XSL correctly maps the information from the external system to the appropriate column in the available appointments collection so that it can be displayed to the user.

For any custom field that you want to include in the search or the results, you must define a *field* in the system to indicate the type of data and the label for this field.

# Appointment Periods vs Reservations

When an external system is used for appointments, it is not necessary to set up *appointment period* records in Oracle Utilities Customer Care and Billing ahead of time. The external system is responsible for providing the available appointment periods. When a user books an appointment with an external system, Oracle Utilities Customer Care and

Billing creates an appointment period as an audit. This enables the user to view the appointment information when viewing the field activity in the system.

If the external system creates a reservation record for the appointment in its system, the unique identifier of that reservation may be stored with the field activity in Oracle Utilities Customer Care and Billing as a characteristic. The characteristic type to use is defined as a *feature configuration* option. The sample integration provided with the system populates the field activity characteristic with a reservation number received.

## Real Time Appointment Interaction

The appointment page communicates with the external system for appointments via the *XAI real time outgoing message* engine. This section describes some technical information related to the logic delivered with the system.

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### Appointment Page User Exit

The base product appointment page provides java user exit code that is invoked when the dispatch group is associated with an external system (i.e., it references a *feature configuration*). The user exit code does the following:

- It determines the *service provider*
- It finds the NDS types that are associated with the following notification download condition flags:
  - Get Available Appointments . This is passed to the engine to retrieve the available appointments
  - Appointment Book . This is passed to the engine to book an appointment real time.
  - Appointment Book - Near Real Time . This is passed to the engine to book an appointment in near real time.
  - Appointment Cancel . This is passed to the engine to cancel an appointment real time.
  - Appointment Cancel - Near Real Time . This is passed to the engine to cancel an appointment in near real time.
- It invokes the Appointment Java Class Interface defined on the *external system's feature configuration* options passing all the data available on the page service.

**NOTE:**
**Implementation specific business logic.** The intention is that any unique business logic required to interact with your implementation's external system is encapsulated in the appointment java class interface plugged in on your feature configuration options. However, if your implementation has unique logic that must be coded in the java user exit on the appointment page, that code may also be replaced by implementation specific appointment page user exit code.

### Sample Appointment Java Class

The Appointment Java Class Interface referenced on your external system's feature configuration is responsible for interaction with the XAI real time outbound message engine to communicate with the external system for appointment logic.

The base product provides a default java class (called com.splwg.wfmi.workforce.DefaultWFMSystem) for appointment integration that may be used if it provides the logic your implementation needs.

**NOTE:**
**Oracle Utilities Mobile Workforce Management**. Refer to documentation on integration for information about the java class provided for integration with Oracle Utilities Mobile Workforce Management.

The default java class provided with the base product does the following:

- Extracts additional field activity information not provided by the appointment page service
- Converts the data in the page service and the additional FA information into an XML document
- Invokes the *real time outgoing message* engine.

Responses received from the engine are in the form of an XML document. The java class transforms the information into a format recognized by the page data model and sends it back to the user exit.

**NOTE:**
The CILOAPTP.xml found on the xmlMetaInfo directory describes the base structure of the Show Appointment, Book Appointment and Cancel Appointment request XML. The selected field activity to be booked or canceled has an additional faExtraInfo element. The faExtraInfo element follows the structure described by CILOEFIP.xml.

The following sections describe more detail about the logic provided by the sample base product appointment java class interface.

**Contents**



Get Available Appointments

For obtaining available appointments, the user exit passes the NDS type that references the Get Available Appointments condition flag. All the data available on the page service is passed to the engine as an XML document including any *user defined search fields*.

The user exit expects a response to this message to return a collection of records to display in the available appointments grid on the appointment page, including any *user defined result fields*. Any errors received are communicated to the user.

**NOTE:**
**Translate Message**. Any error message received from the external system is translated from an external message to an appropriate system error message using the message information on the *external system's feature configuration*.

Book Appointment

Once the user has confirmed the desired appointment with the customer, the user attempts to book the appointment. The generic appointment integration java class provided with the system sends a message to books appointments real time. The user exit passes the NDS type that references the Appointment Book condition flag.

**NOTE:**
**One FA at a time**. The sample user exit provided by the system only supports booking appointments for one field activity at a time. As a result, if you want to use the sample user exit, your external systems should be configured with the option Allow Multiple Reservations set to N. If your organization would like to support booking appointments for multiple field activities at once, you may create your own user exit to provide this capability.

The sample user exit provided with the product expects either a positive or negative response to this message.

- If a positive response is received, the user exit expects to be passed a reservation number and an indication of whether or not the appointment was forced. It populates the field activity characteristics collection with these values using the **Reservation Characteristic Type** and **Appointment Forced Characteristic Type** defined as options on the *external system's feature configuration*.
- If a negative response is received, an error message is displayed to the user.

**NOTE:**
**Translate Message**. Any error message received from the external system is translated from an external message to an appropriate system error message using the message information on the *external system's feature configuration*.

If the message engine cannot communicate with the external system, it returns an indication to the user exit. The user exit proceeds as follows:

- If the external system indicates that Allow Manual Appointments is set to false an error is displayed to the user.
- If manual appointments are allowed, the user exit issues a warning to the user asking if the message should be logged and sent when the communication is up again. If the user agrees, the user exit invokes the java class asking it to post a *near real time message*.
  - The user exit calculates a unique outgoing message ID for the external system. The message id is calculated using a database sequence whose name is referenced in the option **Message ID Database Sequence Name** on the *external system's feature configuration*. This message id is passed to the real time message engine to be populated as an NDS context entry to support an *asynchronous response to the message*.
  - The user exit passes the NDS type that references the Appointment Book - Near Real Time condition flag. The FA Id is also passed to the real time message engine to be posted as an NDS context entry. The system expects that the response to this message will create an XAI upload staging record and that this record will update the field activity's characteristics with the reservation and forced appointment information (if applicable). Refer to *Near Real Time NDS Messages* for more information about responses to near real time messages and XAI upload staging.
  - If the external system's configuration indicates that *forced appointments* are allowed, the message is sent to the external system with the forced indication set. If the external system does not allow forced appointments, it's possible that this manual appointment could be rejected by the external system.

If no error is received, the appointment page continues with the "change" action. An appointment period is created for the chosen appointment time if one doesn't already exist and the appointment period is linked to the field activity.

**NOTE:**
that the appointment period is created and linked to the field activity even if the message is sent to the external system in near real time and no confirmation has been received. This was done to record the requested appointment in our system to cater for the situations when the customer wants to change or cancel the appointment prior to receiving the acknowledgement from the external system.

Cancel Appointment

If the customer wants to cancel the appointment, the user navigates to the appointment page. The generic appointment integration java class provided with the system sends a message to cancel an appointment real time. The user exit passes the NDS type that references the Appointment Cancel condition flag. The user exit expects either a positive or negative response to this message.

- If a positive response is received, the appointment page continues with the change action. (See below).
- If a negative response is received, an error message is displayed to the user.

**NOTE:**

**Translate Message**. Any error message received from the external system is translated from an external message to an appropriate system error message using the message information on the *external system's feature configuration*.

If the message engine cannot communicate with the external system, it returns an indication to the user exit. The user exit proceeds as follows:

- If the external system indicates that Allow Manual Appointment Cancellation is set to false an error is displayed to the user.
- If manual appointments are allowed, the user exit issues a warning to the user asking if the message should be logged and sent when the communication is up again. If the user agrees, the user exit invokes the java class asking it to post a *near real time message*.
  - The user exit calculates a unique outgoing message ID for the external system. The message id is calculated using a database sequence whose name is referenced in the external option **Message ID Database Sequence Name** on the external system table. This message id is passed to the real time message engine to be populated as an NDS context entry to support an *asynchronous response to the message*.
  - The user exit passes the NDS type that references the Appointment Cancel - Near Real Time condition flag. The FA Id is also passed to the real time message engine to be posted as an NDS context entry. A response to this message will be an acknowledgement. No further updates to field activity data are expected.

If no error is received, the appointment page continues with the "change" action. The appointment period is unlinked from the field activity and if no other field activities are linked to this appointment period, the appointment period is deleted. In addition, the field activity characteristics for the reservation number and forced appointments are removed from the FA.

**NOTE:**
The above updates are performed even if the message is sent near real time and no response has been received. This was done to cancel the appointment in our system to cater for the situations when the customer wants to rebook the appointment prior to receiving the acknowledgement from the external system.

# Validating Meter / Item Installations

**Contents**



## Incoming Validate Meter / Item Message

When Oracle Utilities Customer Care and Billing receives the incoming message to validate a meter or item, the service, called CIPOVMIP, which processes the message, creates a pending notification download staging record (using the NDS type whose notification download condition is Validate Meter/Item ). It creates context records for the Badge Number being validated along with an indication of whether the badge number is for a Meter or an Item.

**FASTPATH:**
For more information about NDS types available in product integrations, refer to Oracle Utilities Mobile Workforce Management NDS Types and Oracle Utilities Work and Asset Management NDS Types listed in the documentation on integration.

The system provides an XAI Inbound Service, ValidateMeterItemRequest, defined to invoke this service. The following table lists the fields to populate for this service.

| |
|---|
| General Information |
| Message ID |
| FA ID |
| FA External ID |
| Meter / Item Flag (M or I) |
| Badge Number |

## Outgoing Validate Meter / Item Message

The service provided with the product that processes the Validate Meter / Item notification download staging record does the work of validating the badge number. The service, called CIPOVRSP, does the following:

- Finds a unique device (meter or item) corresponding to the badge number provided.

  **NOTE:**
  The validation is only possible if the badge number is unique for a meter or item. If multiple values are found, a negative acknowledgement is returned.

- Verifies that the device is not retired
- Verifies that the Meter type or Item type of the device being verified is defined as valid for the SP Type associated with the field activity's service point.
- It verifies that the device is not already installed somewhere else.
- If the device is a meter, it verifies that there is an effective Meter Configuration for the meter on or before the message date/time.

  **NOTE:**
  **Return Meter Configuration Type**. The meter configuration type and the collection of the meter's registers are included in the output record returned to Oracle Utilities Mobile Workforce Management/Oracle Utilities Work and Asset Management.

- If the device is an item, it verifies that the item's receive date is on or before the message date.

The system provides an XAI Inbound Service, ValidateMeterItemResponse , defined to invoke this service. The following table lists the fields populated by this service.

| |
|---|
| General Information |
| Message ID |
| FA ID |
| FA External ID |
| Meter / Item Flag (M or I) |
| Badge Number |
| StatusFlag (Y - positive acknowledgement, F - negative acknowledgement.) |
| Meter Config Type (populated only for meters) |
| Collection of registers (populated only for meters) |

| |
|---|
| ErrorCode (populated only for negative acknowledgement) |
| Error Message (populated only for negative acknowledgement) |

# Setting Up The System To Enable FA Integration

The following section provides an overview of how to enable FA integration with an external system.

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## Service Provider Setup

In order to use XAI to interface with an external system, you must define a service provider. Once the service provider is defined, you must design your outbound messages.

## Defining Characteristic Types For FA Integration

The following characteristic types must be defined to facilitate FA integration.

External System Task Characteristic Type

If you have decided to map the tasks on your external system to the Oracle Utilities Customer Care and Billing field activity types, then you need to define the characteristic types based on your decisions. It is possible to map a combination of fields from the external system to a field activity type in Oracle Utilities Customer Care and Billing.

- Refer to the following topics in the documentation on integration for more information about how you should define characteristics in product integrations:
  - Oracle Utilities Mobile Workforce Management Characteristic Types
  - Oracle Utilities Work and Asset Management Characteristic Types
- Include Field Activity Type in the characteristic entity collection

Forced Appointments Characteristic Type

If your implementation supports *forced appointments*, the appointment booking logic attempts to store a characteristic on a field activity with a forced appointment.

- Create an ad hoc *characteristic type*.
- Include Field Activity in the characteristic entity collection

Reservation Characteristic Type

If your external system defines a separate reservation ID for appointments, the appointment booking logic attempts to store a characteristic on a field activity with the appointment reservation number.

- Create an ad hoc *characteristic type*.
- Include Field Activity in the characteristic entity collection

Override Phone Characteristic Type

Create a characteristic type for override phone if your implementation supports capturing a contact phone number on the field activity.

- Create an ad hoc *characteristic type*.
- Include Field Activity in the characteristic entity collection

Field Activity ID Characteristic Type

The sample FA integration algorithm may be configured to populate the field activity ID as a characteristic on any NDS records it creates. This facilitate in drilling down from the NDS record to the field activity. To support this logic,

- Create a foreign key *characteristic type* (if you don't already have one defined for Field Activity Id).
- Include Notification Download Staging in the characteristic entity collection

## Setting Up Outbound Messages

The sample integration provided with the base product includes a predefined list of messages that are sent to an external system under various conditions. The messages are generated either from the sample FA integration algorithm or the sample real time appointment interaction. In each case, an NDS type is required to define properties of the message. Rather than hard-coding an NDS type, the integration algorithm and the user exit that manages the real time appointment interaction use a Notification Download Condition to reference the NDS type.

At implementation time, you should define an appropriate NDS type for each notification download condition listed below if it is applicable to your business.

The following download conditions are used in the *sample FA integration algorithm*:

- FA Cancellation
- FA Creation
- FA Changed
- FA Rescheduled
- Appointment Cancel via FA Cancel

For each of the above NDS types, you must reference the following context types: Field Activity ID , Message ID . They should also reference an XAI inbound service that has been defined for the *Extract FA Info* service. The system provides an XAI inbound service called ExtractFAInfo, which you may use.

**NOTE:**
You can refer to the demonstration data provided with the system to view samples for pre-configured NDS types and their condition flags.

The following download conditions are used in the sample *real time appointment interaction*:

- Get Available Appointments
- Appointment Book
- Appointment Cancel

The above NDS types do not need to reference a real XAI inbound service because the real time appointment interface is responsible for building the XML request.

**NOTE:**
You can refer to the demonstration data provided with the system to view samples for pre-configured NDS types and their associated XAI inbound services.

The following download conditions are used to send *real time appointment messages in near real time*.

- Appointment Book - Near Real Time
- Appointment Cancel - Near Real Time

Because the XML request is built by the appointment interface prior to the creation of the NDS, these NDS types should reference a special XAI inbound service called CDxProcessXDS . This service basically tells the download staging sender that the XDS already exists and doesn't need to be created.

## Designing Your External System Feature Configuration

For each external system, you must define a *feature configuration* with a feature type of FA Integration.

Note that it is also possible for you to define multiple entries in the feature configuration table for a single external system. You would do this if your external system may be configured in multiples ways for different dispatch groups. For example, maybe your service territory includes urban areas and rural areas. Perhaps your rules for scheduling appointments differ based on the location of the premise. You could define two separate feature configurations and define the appropriate appointment options for each one. When defining your dispatch groups, be sure to define separate dispatch groups based on the operations area and link the appropriate feature configuration accordingly.

If you define multiple feature configurations, consider whether they should all reference the same service provider. One consideration is whether or not the method of communication with the external system is the same for all feature configurations.

Configure the options for your external system interaction.

**NOTE:**
Your implementation may define additional options types. You do this by add new lookup values to the lookup field WFM_OPT_TYP_FLG.

| Option | Description |
|---|---|
| Account Rel. Type - Company Contact | Identify the *account relationship type* used to define a company's contact person. |
| Allow Forced Appointments | Use this option to indicate if *forced appointments* are supported. Possible values are Y and N. |
| Allow Manual Appointment | Use this option to indicate if a user is allowed to *manually set up an appointment*. Possible values are Y and N. |
| Allow Manual Appointment Cancellation | Use this option to indicate if a user is allowed to *manually cancel an appointment*. Possible values are Y and N. |
| Allow Multiple Reservations | Use this option to indicate if booking appointments for multiple field activities is allowed. Possible values are Y and N. |
| Allow Narrowing Of Appointment Window | Use this option to indicate if the user is allowed to further *narrow down a selected appointment window*. Possible values are Y and N. |

| | |
|---|---|
| Appointment Forced Characteristic Type | When an appointment reservation is forced, a *characteristic* of this type is added to the field activity. Note that the field activity's FA type must also define this as a valid characteristic type. |
| Appointment Java Class Interface | This is the java class implementation used to interface with the external system to support *real time appointment interaction*. |
| Default Days of Available Appointment | This option is used to determine the end date of the search period when choosing a dispatch group on the appointment page. |
| Hi-Low Review | Use this option to indicate if meter reads coming from the external system should be reviewed for Hi-Low failures and trended. Possible values are Y and N. |
| Intermediate Status to Prevent FA Cancel | This option is used to identify Intermediate Status values that should prevent the system from *automatically canceling a Field Activity*. The value entered here should correspond to a valid lookup value for the field FA_INT_STATUS_FLG. |
| Intermediate Status to Skip Message | This option is used to identify FA Intermediate Status value used when a Field Activity is created by an external system or when other information for a field activity is updated by an external system. The base FA integration algorithm uses this information to ensure that messages sent to the external system to highlight new field activities or changes to field activities are only triggered when additions / changes are initiated in our system. The value entered here should correspond to a valid lookup value for the field FA_INT_STATUS_FLG. |
| Message ID Database Sequence Name | The name of the database sequence to be used to get the next unique message ID for this external system. This is used to facilitate an *asynchronous response to the message*.<br><br>If you interface with more than one external system, you may choose to use the same sequence name for all external systems or to define a separate sequence name for each external system. If you choose to define multiple feature configuration records for the same service provider, be sure that each feature configuration references the same sequence name because generated message IDs must be unique for the service provider.<br><br>The base product provides the database sequence CI_WFM_MSGID_SEQ, which may be referenced here. |
| No Address Premise Type | Indicate the premise type used to identify a premise that is used for *field activities that are not related to a specific premise*. |
| Phone Number Characteristic Type | Indicate the characteristic type used to identify an *override phone number* on the field activity. |
| Phone Type - Business | Indicate the phone type used to identify a business phone number. |
| Phone Type - Fax | Indicate the phone type used to identify a fax number. |
| Phone Type - Home | Indicate the phone type used to identify a home phone number. |
| Plant Source | Some external systems require a reference to a Plant in our system. There are several options for where an implementation may define this value. This option is used to identify where the Plant is defined. - enter FECO if the plant field is defined in Feature Configuration - enter OPAR if the plant field is defined in the SP Operations Area - enter SPCH if the plant field is defined in the SP Characteristic |

| | |
|---|---|
| Plant Value | If the Plant Source is FECO enter the value of the Plant. If the Plant Source is OPAR enter the field service class used to identify the plant value on the SP operations area. If the Plant Source is SPCH enter the characteristic type used to identify the plant value on SP characteristic. Only one option value may be defined for a given feature configuration. |
| Reservation Characteristic Type | When an appointment is successfully booked for the field activity, the external system often assigns a unique reservation number to the appointment. This reservation number is linked to the field activity as a characteristic using this *characteristic type*. Note that the field activity's FA type must also define this as a valid characteristic type. |
| Service Provider | This is the service provider defined for your external system. |
| To Do Type for FA Response | Indicate the To Do type to use to *create a To Do entry*. The system supplies the To Do type *TD-FARSP* that may be plugged-in here. The program populates the To Do Entry with the sort keys, drill keys and message parameters as shown in this base package To Do. If you want to create your own To Do Type, you must set up the values to match those in the base To Do Type. |
| User Defined Criteria Field | This is used on the appointment page to add specific appointment *selection criteria*. The value of this option should reference a *Field* defined in the system metadata.<br>The appointment page allows up to 10 user defined criteria fields. |
| User Defined Result Field | This is used on the appointment page to add specific appointment *selection result information*. The value of this option should reference a *Field* defined in the system metadata.<br>The appointment page allows up to 10 user defined result fields. |

For each message that may be received from an external system, map the external system message to an internal system message. Refer to *Feature Configuration - Messages* for more information.

## Designing Your External System Field Activity Types

For each type of field activity that is interfaced to an external system, create an appropriate FA type.

- Indicate that the FA type is eligible for dispatch .
- Configure the appropriate value for Appointment Booking based on your business requirements.
  - If you have decided to map your external system tasks to the Oracle Utilities Customer Care and Billing field activity type, then for each field activity type, create one or more characteristics to identify how it is mapped to the equivalent task in the external system.
- Indicate the FA characteristics that are valid for field activities of this type
  - If your external system allows *forced appointments*, define the forced appointment characteristic type created above and referenced on your external system feature configuration.
  - If your external system defines a separate reservation ID for appointments and this FA type allows appointments, define the reservation characteristic type created above and referenced on your external system feature configuration.

Refer to the following topics in the documentation on integration for more information about how you should use characteristics in product integrations:

- Oracle Utilities Mobile Workforce Management Characteristic Types

- Oracle Utilities Work and Asset Management Characteristic Types

## Designing Your Dispatch Groups

When a field activity is created, the system uses the *Field Service Control* to assign the field activity to a dispatch group based on the type of activity, the type of service point and the operations area that manages the service point. If the dispatching for this service point is managed by an external system, the *dispatch group* should be configured to interface with the external system:

- The dispatch group references the appropriate external system feature configuration.
- You must indicate an appropriate *FA integration* algorithm.

## Considerations When Switching To External System Integration

If your implementation is currently using the field order functionality and is planning to switch to interface field activities to an external system, here are some considerations.

Field orders are not required when integrating field activities to an external system. As a result you may choose to disable the field order related functionality:

- The automatic dispatch background process ( FOD ) and download field order background processes ( FDS ) no longer need to be scheduled. In addition, the printing processes FODL and DSGPFODL no longer need to be scheduled.
- The menu items *Field Order*, *Group Premise FAs* and *Field Order Search* are no longer applicable. Consider disabling security for these pages.

When switching over to begin using an external system, you will undoubtedly have pending field activities that need to be interfaced to the external system. If you change the field activity's dispatch group from one that does not reference an external system to one that does, the sample *field activity integration algorithm* will generate an FA Creation message to the external system.

It is possible that your pending field activities are already linked to field orders. If that is the case, you will not be able to change the dispatch group on the field activity. The recommendation for switching to an external system for dispatching is to change your pending field activities to remove the link between the field activity and the field order. As mentioned above, the field order is no longer needed. Once you remove the link then you are able to change the dispatch group on the field activity.

If you prefer to leave the field order / field activity link in place then you must change the dispatch group on your field order to one that references the new external system.

# System Integration

The following section describes functionality provided for the integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System.

**Contents**

# The Big Picture of Outage System Integration

Oracle Utilities Customer Care and Billing is the central repository for customer information; for example, name, address, phone number, etc. Oracle Utilities Network Management System is the central repository for outage information; for example, outage calls, affected supply nodes, expected restoration time, etc.

In an integrated environment, each system provides information to the other system so that they can operate together seamlessly.

- The outage system uses the set of current customers to determine and manage outages to minimize their impact
- The outage system is informed of outages captured in Oracle Utilities Customer Care and Billing
- Oracle Utilities Customer Care and Billing uses the current status of an outage at a given premise for customer service

**Contents**



## Customer Information Integration

The outage system needs information about current customers to determine and manage outages to minimize their impact. The current customer information in Oracle Utilities Customer Care and Billing must be made available in Oracle Utilities Network Management System. This can be done via data synchronization.

**FASTPATH:**
Refer to *The Big Picture of Sync Requests* for more information about synchronizing data.

## Interfacing Outage Calls

The following points describe the integration:

- Oracle Utilities Customer Care and Billing is able to record trouble calls for a particular service point that exists in the system, as well as for an unknown service point, i.e. a fuzzy call. For a fuzzy call, the caller must provide either a street intersection, or a street segment.
- When an outage call is created and sent to the external system, an algorithm on the outage call business object is responsible for creating an outbound message that's sent to the external system. This is a real-time synchronous interface between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System.
- Oracle Utilities Network Management System processes the Calls table and creates Incidents.

**FASTPATH:**
Refer to the *Oracle Utilities Customer Care and Billing - Network Management System Integration Implementation Guide* for information about outage call integration.

## Outage Inquiry

Oracle Utilities Customer Care and Billing provides query transactions that can be used to make real-time synchronous calls to NMS and inquire on one of the following:

- Job History for a particular customer, service point, location or call identifier
- Call History for a particular customer, service point, location or call identifier
- Planned Outage Jobs for a particular service point

**FASTPATH:**
Refer to the *Oracle Utilities Customer Care and Billing - Network Management System Integration Implementation Guide* for information about outage query integration.

## Setting Up The System To Enable Outage Integration

The following section provides an overview of how to enable the integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System.

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## External System Setup

An external system must be setup in order integrate Oracle Utilities Network Management System. Once the external system is defined, specify this on the one NMS Integration feature configuration so the system knows which external system to use for outage queries.

## Define Outbound Message Types

The following outbound message types are required for the integration:

- An outbound message type is required for each of the outage queries available
  - Job History
  - Call History
  - Planned Outages
- Once the outbound message types are defined, specify this on the one NMS Integration feature configuration so the system knows which outbound message types to use for outage queries.

- In addition, an outage call outbound message type is required for sending outage calls to Oracle Utilities Network Management System. This outbound message type must be referenced on your outage call types.

## Define Characteristic Types

The following characteristic types must be defined to facilitate Outage integration:

**Outage Group Code Characteristic Type**

These characteristics are used to describe the outage problem.

- Create at least one pre-defined characteristic type
- For each characteristic type, define its list of valid values
- Include Service Task Type in the characteristic entity collection

---

**NOTE:**
**Characteristic Type Prefix**. The system attempts to build a dropdown list of your valid outage group codes when maintaining outage group types. To achieve this, all outage group code characteristic types must use the same prefix. This prefix must be defined on the NMS Integration feature configuration.

**Integration with Outage Management**. The outage codes must be defined in both Oracle Utilities Customer Care and Billing and the outage management system. Refer to your Oracle Utilities Network Management System documentation for information about defining the outage codes there.

---

**Contact Name Characteristic Type**

This is used to link the contact name of the caller associated with an outage call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Contact Name Characteristic Type feature option

**Contact Number Characteristic Type**

This is used to link the contact number of the caller associated with an outage call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Contact Number Characteristic Type feature option

**Call Identifier Characteristic Type**

This is used to link the call identifier supplied by the caller associated with an outage call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Identifier Characteristic Type feature option

**Street Name Characteristic Type**

This is used to link location information supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Street Name Characteristic Type feature option

**Cross Street Name Characteristic Type**

This is used to link location information supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Cross Street Name Characteristic Type feature option

**Block Number Characteristic Type**

This is used to link location information supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call Block Number Characteristic Type feature option

**City Characteristic Type**

This is used to link location information supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call City Characteristic Type feature option

**State Characteristic Type**

This is used to link location information supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call.

- Create an ad-hoc *characteristic type*
- Include Service Task Type in the characteristic entity collection
- Specify this characteristic type on the one NMS Integration feature configuration using the Outage Call State Characteristic Type feature option

## NMS Integration - Feature Configuration

Create a *feature configuration* with the type NMS Integration . Populate entries for all the options.

**NOTE:**
**Only one**. The system expects only one NMS Integration feature configuration to be defined.

Configure the options for your interaction with the outage system.

**NOTE:**

Your implementation may define additional options types. You do this by adding new lookup values to the lookup field NMS_OPT_TYP_FLG .

| Option | Description |
| --- | --- |
| External System | This defines the external system used on outbound messages created when querying outage information in NMS from the outage management information portal page. Refer to *External System Setup* for more information.<br>Only one value is allowed for this option. |
| Outbound Message Type - Call History | This defines the outbound message type used on outbound messages created when querying outage call history in NMS from the outage management information portal page. Refer to *Define Outbound Message Types* for more information.<br>Only one value is allowed for this option. |
| Outbound Message Type - Job History | This defines the outbound message type used on outbound messages created when querying outage job history in NMS from the outage management information portal page. Refer to *Define Outbound Message Types* for more information.<br>Only one value is allowed for this option. |
| Outbound Message Type - Planned Outages | This defines the outbound message type used on outbound messages created when querying planned outages in NMS from the outage management information portal page. Refer to *Define Outbound Message Types* for more information.<br>Only one value is allowed for this option. |
| Outage Group Code Characteristic Type Prefix | The system uses this prefix to populate the outage group code dropdown list during trouble call processing . Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |

## Schema Constants - Feature Configuration

Create a *feature configuration* with the type Schema Constants . Populate entries for all the options listed below.

**NOTE:**
**Only one**. The system expects only one Schema Constants feature configuration to be defined.

Configure the options for your interaction with the outage system.

**NOTE:**
Your implementation may define additional options types. You do this by adding new lookup values to the lookup field F1CN_OPT_TYP_FLG .

| Option | Description |
| --- | --- |

| | |
|---|---|
| **Outage Call Contact Name Characteristic Type** | This is used to link the contact name of the caller associated with an outage call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call Contact Number Characteristic Type** | This is used to link the contact number of the caller associated with an outage call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call Identifier Characteristic Type** | This is used to link the call identifier supplied by the caller associated with an outage call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call Street Name Characteristic Type** | This is used to link the street name supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call Cross Street Name Characteristic Type** | This is used to link the cross street name supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call Block Number Characteristic Type** | This is used to link the block number supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call City Characteristic Type** | This is used to link the city supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |
| **Outage Call State Characteristic Type** | This is used to link the state supplied by the caller associated with a fuzzy trouble call as a characteristic on the outage call. Refer to *Define Characteristic Types* for more information.<br>Only one value is allowed for this option. |

# Defining Credit & Collections Options

**NOTE:**
The functionality described in this section is meant to handle the collection of unpaid balances. If your organization practices *open-item accounting* and collects on unpaid bills, you will not use this functionality. Rather, you will use the functionality described under *Defining Overdue Processing Options*.

The system periodically monitors how much your customers owe to ensure they haven't violated your collection criteria. When a violation is detected, the system generates the appropriate responses (e.g., letters, disconnect notices, collection agency referrals, and eventually write off). This section describes how to set up the tables that control your credit & collections processing.

**WARNING:**
Setting up the credit & collections control tables is as challenging as your organization's collection rules. If you have simple rules then your setup process will be straightforward. If your collection rules are complicated (e.g., they differ based on the type of customer, the type of debt, the age of debt, the type of service, etc.), then your setup process will be more challenging.

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# The Big Picture Of Credit & Collections

This section provides an overview of important C&C concepts with which you should be familiar before you set up your C&C control tables.

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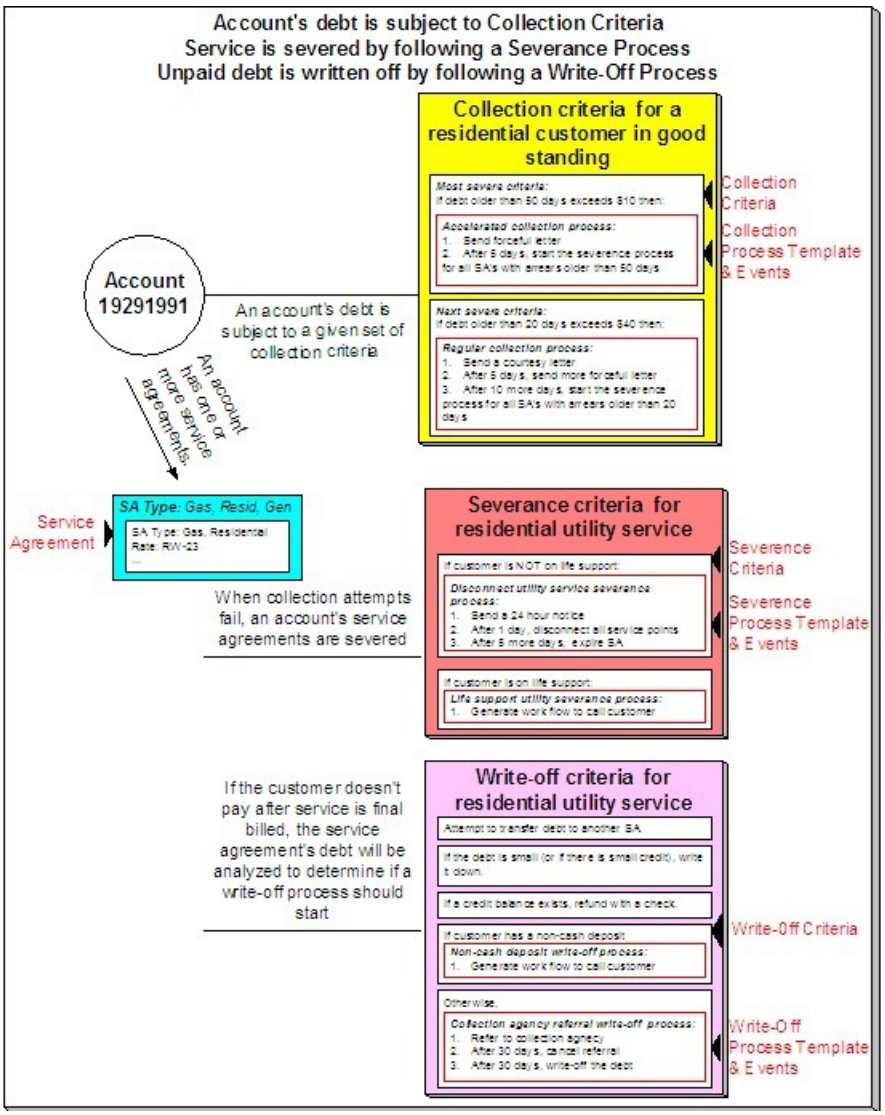
## Collection Criteria vs. Severance Criteria vs. Write Off Criteria

The following diagram introduces important concepts related to the C&C processes:




There are many important concepts illustrated above:

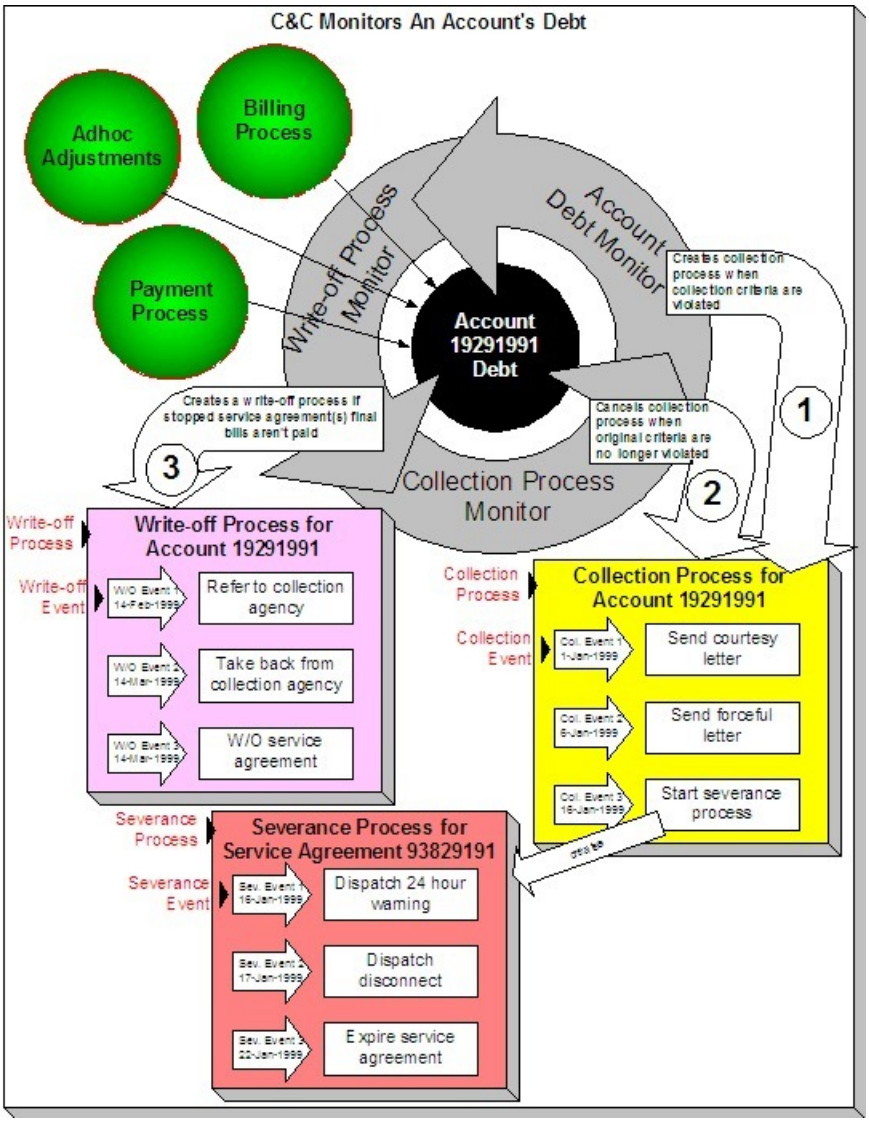
| | |
|---|---|
| An account's debt comes from its service agreements | An account's debt is managed at the service agreement level, i.e., the system keeps track of how much a customer owes in respect of each service agreement. In order to determine an account's balance, the system must add up the debt on each of the account's service agreements. |
| Collection criteria define intolerable debt | Collection criteria are control data that define intolerable debt. Most criteria are defined using a combination of number of days in arrears and a dollar amount. |
| Collection criteria may be compared to an account's total debt or to subsets of debt | If your organization has simple collection procedures, you will probably target collection criteria at an account's total debt. However, you have the option of segregating an account's debt into debt classes and targeting the collection criteria at each class. For more information about debt classes, see *Different Collection Criteria For Different Customers And Different Debt* . |

| | |
|---|---|
| Collection criteria also define what to do when the level of intolerable debt is exceeded | When you define collection criteria, you also define how the system should respond if an account violates your criteria. These collection events are defined in respect of a "collection process template". |
| There are usually several collection events that take place when criteria are violated | A collection process template usually has several collection events. Each event is meant to prod the customer to pay. The initial collection events are typically letters. If payment is not received after several such attempts, the last collection event typically starts a severance process for each service agreement in arrears. |
| A severance process template defines how to sever a service agreement | A "severance process template" defines how to sever a given type of service agreement. A severance process template usually contains several severance events. These events are a series of letters and / or disconnection field activities that eventually result in the expiration of a service agreement if payment is not received. |
| Severance criteria define how to sever service agreements | Severance criteria define the severance process to be executed for service agreements of a given SA type. The severance process may differ depending on some attribute of the customer (or premise). For example, you may have a different severance process if the customer has life support equipment. |
| After a service agreement is severed, it will be final billed | When the last active service agreement linked to an account is stopped, the system changes the account's bill cycle to bill that evening. If only one of many SAs is stopped, the SA will only be final billed as per the account's original bill cycle schedule. |
| If a customer doesn't pay their final bill, the account's debt will be analyzed to determine if the system can reduce the debt to zero using a variety of mechanisms | The system will look at an account's finaled debt on its next scheduled credit review date (typically a few days after the bill's due date). The system will attempt to reduce the service agreement's debt to zero using all of the following methods:<br>• If the account has active service agreements, it will transfer the finaled debt to an active service agreement.<br>  • If the debt or credit amount on the service agreement is small, the system will generate an adjustment to 'write it down' (or up in the case of a small credit).<br>  • If the service agreement has a large credit amount, the system will generate an A/P adjustment (resulting in a check being sent to the customer). |
| If a customer's finaled debt cannot be reduced via any of the previous methods, the system creates a write-off process | A write-off process contains one or more write-off events. These events can generate a letter, send a To Do entry to a CSR, send a referral to a collection agency, etc.<br>When you set up the system, you define the type of write-off process to use for every collection class / write-off debt class combination. In addition, you can also indicate when the type of write-off process should differ depending on some attribute of the customer (or premise). For example, you may have a different write-off process if the customer has a non-cash deposit. |
| The last write-off event typically causes the debt to be written off | Ultimately, if the write-off events fail, the debt will have to be written off. When debt is written-off, the system creates a write-off service agreement and transfers the outstanding debt to it. This means the debt stays with the account for life and will have to be paid off if the customer ever returns. |

**NOTE:**
**Checkpoint.** At this point, you should be familiar with the concept that an account's debt is compared to user-defined collection criteria. If the account violates the criteria, a series of events will ensue that prod the customer to pay. If the customer doesn't respond, every service agreement in arrears will be severed (i.e., disconnected). If lack of service doesn't inspire payment, the service agreement will be expired and a write-off process will be created to manage the write-off activities.

## The C&C Monitors

Your collection, severance and write-off criteria described in the previous section exist to support the processes that manage the collection activities. The following diagram illustrates, at a high level, the major processes that manage the collection of overdue debt:




There are many important concepts illustrated above:

| | |
|---|---|
| Bills, payments and adjustments affect an account's debt | An account's debt is the accumulation of all bills, payments and adjustments. |
| The Account Debt Monitor creates a collection process when an account violates collection criteria | Periodically, a background process referred to as the Account Debt Monitor (ADM and ADM2) determines if an account's debt violates your collection criteria. If so, a collection process is created using the violated criteria's collection process template. Refer to *When Is An Account's Debt Monitored?* for a description of when an account's debt is compared against collection criteria. |
| A collection process contains one or more collection events | The collection process contains a series of collection events. These events correspond with the collection event types associated with the collection process template. The initial collection events are typically letters. If payment is not received after several such communications, the last collection event typically starts a severance process for each service agreement in arrears. |
| The Collection Process Monitor cancels a collection process when warranted | The Collection Process Monitor cancels a collection process when its service agreements satisfy your cancellation criteria (e.g., when the service agreements have less than $10 of debt older than 20 days). Refer to *How Are Collection Processes Cancelled* for more information about the cancellation process. |
| The last collection event starts one or more severance processes | The last collection event typically starts one or more severance processes. A severance process contains the activities necessary to sever a service agreement. The service agreement(s) that are severed may be all SAs that are associated with the collection process. Alternatively, you can nominate a service agreement to act as the primary service to cut (you'd do this if you cut electricity when the customer doesn't pay for their gas). The algorithm on the collection event that starts severance will control which service agreement(s) are severed. Refer to *How To Nominate A Single Service Agreement To Sever* for more information. |
| Each service agreement has its own severance process | Every service agreement that is severed has a severance process. The type of process is dependent on the severance criteria linked to the service agreement's SA type. |
| A severance process contains one or more severance events | The severance process contains a series of severance events. The events correspond with the severance process template's severance events. |
| The system cancels a severance process when warranted | The system cancels a severance process when its service agreement satisfies your cancellation criteria (note, it is possible to set up the system so that all service agreements in the debt class must satisfy your cancellation criteria before a severance process is cancelled).<br><br>It's important to point out that the cancellation is real time (as opposed to the cancellation of collection processes, which happens in a background process). Refer to *How Are Severance Events Canceled?* for more information. |
| The last severance event should expire the service agreement | The last severance event typically expires its service agreement. When the last service agreement linked to an account is expired, the system will schedule the account for billing (outside of its normal bill cycle schedule). |
| If you nominate a single SA to sever when multiple SAs are in arrears... | Earlier we indicated that you can nominate a service agreement to act as the primary service to cut (you'd do this if you cut electricity when the customer doesn't pay for their gas). If you do this, you also need |

| | |
|---|---|
| | a severance event that will sever all other service agreements in the debt class if the severance of the nominated service agreement doesn't inspire payment. A severance event algorithm to do such is supplied with the base package. Refer to *How To Nominate A Single Service Agreement To Sever* for more information. |
| The Write-Off Monitor creates a write off process to collect stopped, unpaid debt | The Write-Off Monitor reviews stopped and reactivated service agreements after their closing bill's due date (plus grace period). The Write-Off Monitor attempts to reduce the service agreement's debt to zero using all of the following methods:<br>• If the account has active service agreements, it will transfer the finaled debt to an active service agreement.<br>  • If the debt or credit amount on the service agreement is small, the system will generate an adjustment to 'write it down' (or up in the case of a small credit).<br>  • If the service agreement has a large credit amount, the system will generate an A/P adjustment (resulting in a check being sent to the customer).<br>  If the system is unsuccessful in reducing the account's debt to zero, a write-off process will be created using the appropriate write-off process template. Refer to *The Big Picture Of Write Off Processing* for more information about the write-off process. |
| A write-off process contains one or more write-off events | The write-off process contains a series of write-off events. These events correspond with the write-off event types associated with the write-off process template. The initial write-off events are typically collection agency referrals and/or letters. If payment is not received as a result of such efforts, the last write-off event typically writes off the customer's debt. |
| The system cancels a write-off process when warranted | The system cancels a write-off process when its service agreements no longer have debt (i.e., they become closed). |
| Another write-off process will be created if a closed service agreement ever reactivates | If a service agreement becomes reactivated (e.g., because the final payment bounces), the service agreement will be processed by the Write-Off Monitor and the whole write-off process starts again. |

**NOTE:**
**Checkpoint.** At this point, you should be familiar with the concept that a collection process will be created for an account that violates collection criteria. The collection process consists of a series of events that typically generate letters and / or To Do entries. If the customer doesn't respond, a severance process will be started for one or more service agreements. A severance process consists of a series of events that typically generate letters and/or disconnection field activities. If lack of service doesn't inspire payment, the last severance event expires the service agreement (and a final bill will be scheduled when the last service agreement is expired). If the customer doesn't pay the final bill, a write-off process will be created for each type of unpaid debt. The write-off process consists of a series of events that ultimately result in the write-off of the customer's debt. When debt is written-off, the system creates a write-off service agreement and transfers the outstanding debt to it. This means the debt stays with the account for life (because the write-off service agreement is linked to the account) and will have to be paid off if the customer ever returns.

# The Big Picture Of Collection Processes

The topics in this section describe how collection processes are created and cancelled.

**FASTPATH:**
For more information refer to *The Lifecycle Of A Collection Process And Its Events* .

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## How Does The Account Debt Monitor Work?

This section describes how the Account Debt Monitor uses your collection criteria and collection process templates to collect overdue debt.

**Contents**



### Different Collection Criteria For Different Customers And Different Debt

Consider the following:

- You probably have different collection criteria for different jurisdictions (i.e., CIS Divisions). For example, if you have customers in different states / provinces, you may have different regulator-imposed criteria applied to each state's debt. You differentiate your debt in respect of the collection process via the **CIS division code on each customer's account**.
- You probably have different collection criteria for different customer segments. For example, customers with large bills probably have strict criteria, whereas you're probably more lenient with small customers (or vice versa). You differentiate your customers in respect of the collection process via a **collection class code on the customers' accounts**. An account's initial collection class is defaulted from its customer class. You may override an account's collection class at will.
- You probably have different collection criteria for different classes of debt. For example, if a single customer has both regulated and unregulated debt, you probably have commission-imposed criteria to be applied to the regulated debt, but you have the freedom to apply stricter criteria to the unregulated debt. You differentiate your debt in respect of the collection process via a **debt class code on the customers' service agreements** (note: the debt class is actually defined on the service agreement's SA type).
- You will have different criteria for every currency in which you work because the monitoring process always compares a customer's debt against some value and this value must be denominated in the customer's currency. A customer's currency is defined using a **currency code on the account**.

Given the above, you should understand that different collection criteria will exist for every combination of CIS division, collection class, debt class, and currency code. If you're confused, consider the following matrix (where we assume you have a single currency and division and therefore avoid the third and fourth dimensions):

| SA's Debt Class | Account's Collection Class: | Account's Collection Class: |
|---|---|---|

| | Commercial Customer | Residential Customer |
|---|---|---|
| Regulated | N/A - there is no regulated, commercial customer debt. | Highest Priority: If > $5 in arrears by more than 50 days, create the accelerated collection process for residential customers.<br>Lower Priority: If > $25 in arrears by more than 25 days, create the courtesy reminder collection process for residential customers. |
| Unregulated | Highest Priority: If > $10 in arrears by more than 50 days, create the accelerated collection process for commercial customers.<br>Lower Priority: If > $1000 in arrears by more than 25 days, create the normal collection process for commercial customers. | Highest Priority: If > $10 in arrears by more than 25 days, create the normal collection process for residential customers. |
| Charitable Contribution | Highest Priority: If > $10 in arrears by more than 50 days, create the charitable collection process. | Highest Priority: If > $10 in arrears by more than 50 days, create the charitable collection process. |

Also, notice that there can be multiple criteria for each cell in the matrix. What differentiates one collection criteria from another is its priority. The higher priority criteria will be compared first. If the debt meets the criteria, the collection process is initiated and no further comparisons are performed.

**FASTPATH:**
For more information about maintaining this matrix, refer to *Setting Up Collection Class Controls*. For more information about how the system handles an element in this matrix that has multiple criteria, see *How Is An Account's Debt Monitored?*.

## Override Conditions

**WARNING:**
Your credit & collection requirements may not require any overrides and therefore this section may not be relevant for your organization.

The matrix presented in the previous section showed:

- You can have different collection criteria for different categories of debt and customers.
- When a collection criteria is violated, the system generates a specific collection process.

This works great for many organizations, but if your organization has other factors that affect either the collection criteria OR the collection process that is initiated when the criteria is violated, you may need to use override collection criteria. For example,

- If you have a different collection process for regulated, residential debt during the winter months, you'll need to use override collection criteria (where the override criteria is "if it's winter").
- If you have different collection criteria for customers with a poor credit score, you'll need to use override collection criteria (where the override criteria is "if the customer's credit rating is poor").

**FASTPATH:**
Refer to *Designing Your Collection Class Control Overrides* for more information.

This section describes how and when the Account Debt Monitor analyzes an account's debt.

## When Is An Account's Debt Monitored?

The account debt monitor (ADM) analyzes an account's debt at least every X days, where X is defined on the *customer class control* associated with the account's customer class and division (in the field Min Credit Review Freq (Days)).

In addition, an account's debt will also be monitored as follows:

- The ADM looks at an account's debt X days after an account's bill due date (X is defined on the account's customer class in the field Collection Grace Days).
- The ADM looks at an account's debt after a payment is canceled when the cancellation reason indicates NSF (non-sufficient funds).
- The ADM looks at an account's debt after a payment arrangement is broken (assuming you use the base package's break payment arrangement plug-in). Refer to *Monitoring Payment Arrangements* for more information.
- The ADM looks at an account's debt after a pay plan is broken. Refer to *The Pay Plan Monitor* for more information.

## How Is An Account's Debt Monitored?

Assume the following collection control matrix exists for your organization:

| SA's Debt Class | Account's Collection Class: Commercial Customer | Account's Collection Class: Residential Customer |
|---|---|---|
| Regulated | N/A - there is no regulated, large customer debt | Highest Priority: If > $5 in arrears by more than 50 days, create the accelerated collection process for residential customers.<br>Lower Priority: If > $25 in arrears by more than 25 days, create the courtesy reminder collection process for residential customers. |
| Unregulated | Highest Priority: If > $10 in arrears by more than 50 days, create the accelerated collection process for commercial customers.<br>Lower Priority: If > $1000 in arrears by more than 25 days, create the normal collection process for commercial customers. | Highest Priority: If > $10 in arrears by more than 25 days, create the normal collection process for residential customers. |

This matrix contains the information used by the Account Debt Monitor.

> **FASTPATH:**
> For more information about the information in this matrix, refer to *Different Collection Criteria For Different Customers And Different Debt*.

This matrix can be overwhelming when viewed as a whole. So let's consider how to use it for a specific account's debt and things will become clearer.

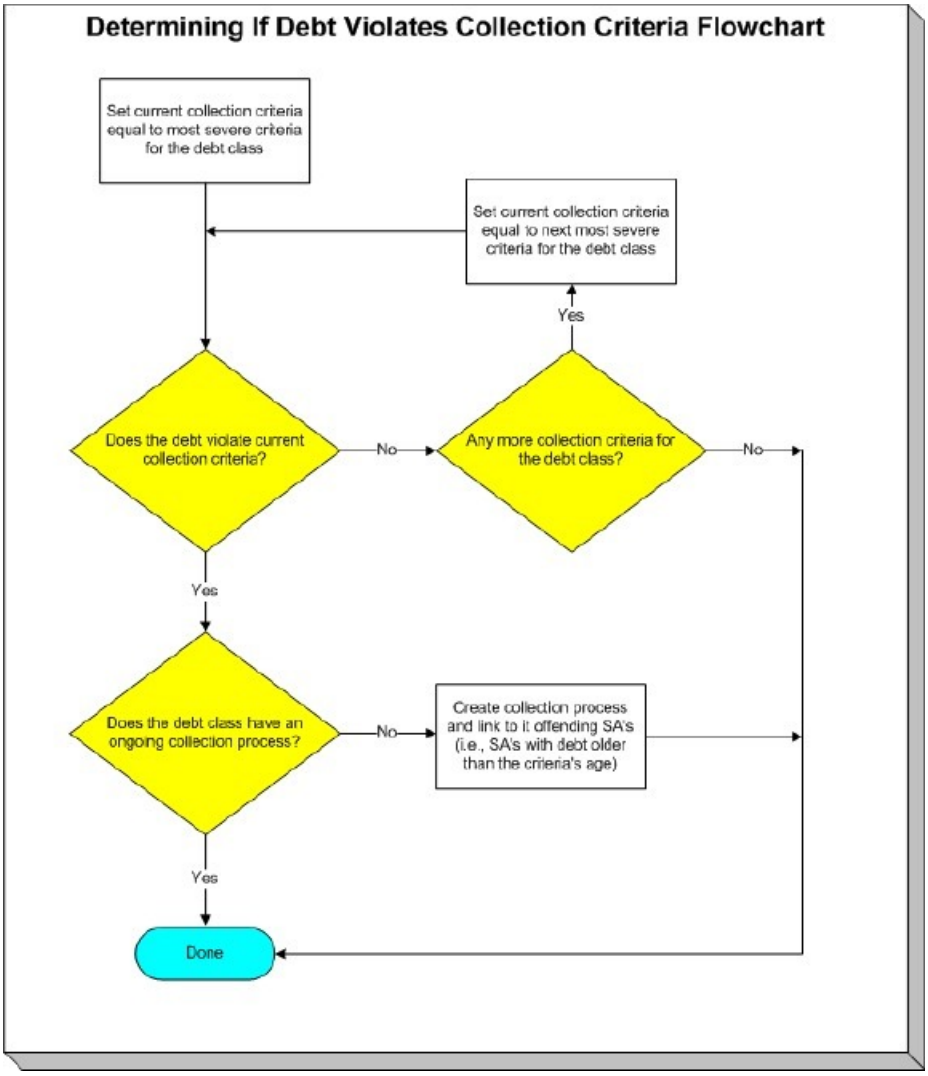
First, because an account belongs to a unique collection class, we only have to worry about a single column in the matrix when monitoring an account's debt.

Next, we accumulate the total amount of aged debt for each unique debt class associated with the account's service agreements.

Next, we subject the accumulated aged debt to the override aged debt algorithm (plugged in on the debt class). This algorithm can cause aged debt to be reduced. This is an optional algorithm and is only used if you set up pay plans for customers. Refer to *How Pay Plans Affect The ADM* for more information.

Next, we determine if the debt for the debt class violates the collection criteria in the respective matrix element. If so, we kick off a collection process and link the offending service agreements to it. The logic associated with the determination of whether to kick off a collection process is rather sophisticated. The following flowchart explains the exact details.

**NOTE:**
**Important.** If a service agreement is part of an ongoing severance process, it will NOT be considered by the Account Debt Monitor (it's already being severed). If a service agreement is stopped, closed, or reactivated, it also will NOT be considered by the Account Debt Monitor (it's already severed).




**NOTE:**
**Multiple collection processes may be kicked off.** It's important to be aware that if an account's service agreements reference multiple debt classes, a collection process will be started for each offending debt class.

**One collection process per debt class.** A given debt class for an account may only have one ongoing collection process at any point in time.

## What Happens When A Collection Process Is Started?

When you define collection criteria, you must define the collection process template to use if the criteria are violated. The system uses this template to create the account-specific collection process.

Every service agreement that is part of the offending debt class that has debt older than X days will be linked to the collection process (where X is the debt age on the collection criteria).

Also linked to the collection process will be one or more collection events. These events are typically a series of letters meant to prod the customer (you can also create an event that sends a To Do entry to a user to highlight the offensive debt). You define exactly which letters are generated and when they are generated when you set up the events on your collection process templates.

It's important to note that all of the collection events will be created when the collection process is created. Each of these collection events contains a trigger date. The trigger date of the first event(s) will typically be the current date. The trigger date of the other events will be in the future. Refer to *Calendar vs Work Days* for information that describes how the trigger date is set.

A separate process, Activate Collection Events, is responsible for activating collection events whose date is on or before the current date. Activation of an event causes the system to do whatever the event indicates (e.g., send a letter, send a To Do entry to a user, start a severance processes, etc.)

If adequate payments / credits are recorded in the system, the collection process will be cancelled.

**FASTPATH:**
For more information about collection process templates, see *Setting Up Collection Process Templates* . For more information about collection events, see *The Big Picture Of Collection Events*. For more information about how a collection process is cancelled, see *How Are Collection Processes Cancelled*.

## Experimenting With Alternative Collection Process Templates

The system allows you to determine the efficacy of proposed collection process templates using a small subset of customers before implementing the templates on the entire customer base. We use the term "champion / challenger" to reference this functionality.

We'll use an example to explain. Let's assume your prevailing collection process template for residential customers starts with a "gentle reminder" letter followed 10 days later by a letter threatening collection agency referral if payment is not received. You may want to experiment with the impact of a change to this template. For example, you may want to change the "gentle reminder" to something more assertive and follow this up 5 days later with an even sterner warning. You can use the "champion / challenger" functionality to perform this experiment.

The following points describe how to implement "champion / challenger" functionality:

- Set up a "challenger" collection process template for each template that you want to experiment with.
- Insert a new **Champion/Challenger** option on the Collection Processing *Feature Configuration* for every champion template. Each option's value defines:
  - the "champion" collection process template code
  - the "challenger" collection process template code
  - the percentage of the time the system should use the "challenger" template
- Keep in mind that you can only experiment with one challenger template per champion template. For example, let's assume you have two prevailing collection process templates - one for residential customers and another for commercial customers. You can experiment with different challenger templates for the residential and commercial templates.

However, you cannot experiment with two different challenger templates for the residential champion template (i.e., a champion template can have 0 or 1 challenger template).

After setting up the above, the *Account Debt Monitor* will use the challenger template X% of the time rather than the champion template.

If you are using the Oracle Utilities Business Intelligence product, you can configure analytic zones in innumerable ways to compare the efficacy of the champion versus the challenger. For example,

- You can set up a graph to show the average duration of each type of process.
- You can set up a graph to show the average dollars that were successfully collected.
- You can set up a dimensional scorecard to show how each template performed in different regions (or customer classes or ...).
- Etc (the list is limited by your imagination.

## How Are Collection Processes Cancelled?

A collection process may be cancelled via the mechanisms described in this section.

**Contents**



### The Collection Process Monitor Can Cancel A Collection Process

The Collection Process Monitor (CPM) is a background process that reviews a collection process when the debt associated with one of its service agreements is reduced. Financial events that can cause service agreement debt to be reduced are:

- The cancellation of a bill segment.
- The creation of a payment segment.
- The creation of an adjustment that credits a service agreement.

The review performed by the CPM occurs as follows:

- **Debt class cancel criteria.** In general, the sum of all debt associated with the collection process's debt class must be less than a given threshold amount for a collection process to be cancelled. If so, the collection process is cancelled.
- Please be aware that, if a *Pay Plan* exists for the account and debt class, the customer's debt will be temporarily reduced by the amount of the pay plan's scheduled payments before it is compared to the threshold amount. Please be aware that this temporary reduction will only occur if you have plugged in the appropriate pay plan debt reduction algorithm on the debt class.

**NOTE:**
**The above logic is not "hard coded".** The CPM calls the *Collection Process Cancel Criteria Algorithm* defined on the debt class that is associated with the collection process. This algorithm will cancel a collection process if the sum of ALL service agreements in the debt class have debt less than a given threshold amount. However, because it's an algorithm, you can introduce whatever cancellation criteria you please.

- **Service agreement cancel criteria.** You can optionally introduce a special quirk to the cancellation logic. This quirk is a bit difficult to understand. To understand it, you should recall:
  - All service agreements that are in arrears in a given debt class are linked to the collection process.
  - The collection event called Start Severance creates a severance process for every service agreement that is in arrears on the collection process (the alternative is to *Nominate A Single Service Agreement To Sever*).
  - If you use the Start Severance collection event, you would want to remove a service agreement from a collection process when it no longer has intolerable debt (regardless of the state of the debt class's entire debt). You'd want to do this because, if you don't, the system would start a severance process for the paid up service agreement and if it's paid up, you wouldn't want a severance process created for it.
- To "remove" service agreements from a collection process when they no longer have intolerable debt, you should plug-in a *Service Agreement-Oriented Cancel Criteria Algorithm* on your collection process templates. The CPM will call this algorithm if you've plugged it in.

**NOTE:**
When all service agreements are "removed" from a collection process, the CPM cancels all pending collection events and cancels the collection process.

**WARNING:**
Checking if individual service agreements should be removed from a collection process is optional (meaning that you don't have to plug one in on the collection process template).

## A New Payment Plan Can Cancel A Collection Process

Refer to *Collection Process / Severance Process Cancellation When A Pay Plan Is Created* for the details.

**NOTE:**
**Real time cancellation.** Please be aware that the system will cancel a collection process real time when a pay plan is created (if the pay plan's scheduled payments are enough to pay-off the customer's outstanding debt).

## A User May Cancel A Collection Process At Their Discretion

A user may cancel a collection process at their discretion.

## Stopping A Service Agreement May Cancel A Collection Process

The system will "remove" a service agreement from a collection process when it is stopped (i.e., when the service agreement's status becomes Stopped ). When the last service agreement is "removed" from the collection process, the collection process will be cancelled.

# The Big Picture Of Collection Events

This section describes the various types of collection events and their lifecycle.

**Contents**

## How Are Collection Events Created?

Collection events may be created as follows:

- The Account Debt Monitor creates a collection process when an account violates collection criteria. The collection process has one or more collection event(s). The number and type of events is controlled by the collection process template associated with the collection process.
- Collection events are created when a user creates an ad hoc collection process. The number and type of events is controlled by the collection process template defined when the collection process is created.
- An ad hoc collection event may be created and linked to an existing collection process by a user at their discretion.

**NOTE:**
**Bottom line.** Most collection events are created by the system when it creates a collection process for delinquent accounts. If you need to create an ad hoc collection event, you can either create a collection process whose template contains the desired event OR link the desired event to an existing collection process.

**FASTPATH:**
For more information about the creation of events by the Account Debt Monitor refer to *What Happens When A Collection Process Is Started?*. For more information about creating ad hoc collection processes, refer to *Collection Process Maintenance*. For more information about creating ad hoc events, refer to *Collection Process - Events*.

## Types Of Collection Events

The following table describes the various types of collection events and what happens when they are completed:

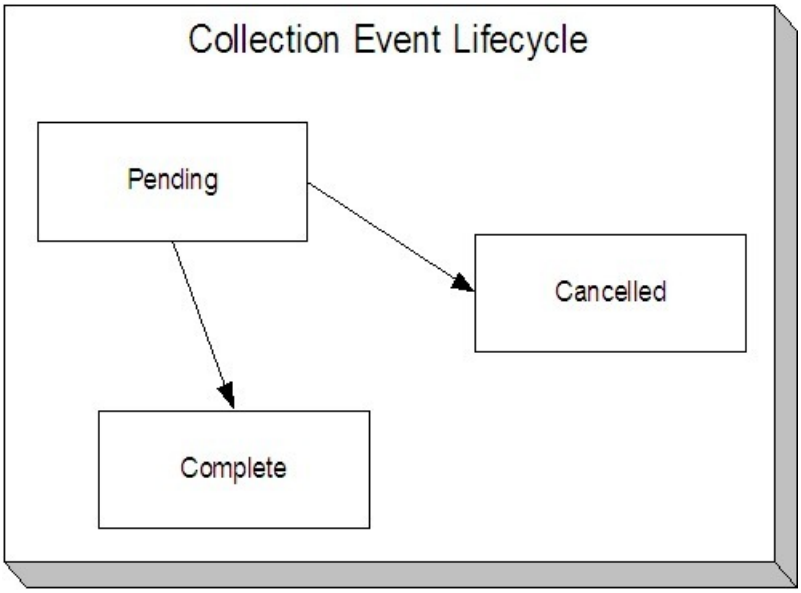
| Type Of Collection Event | What Happens In The System |
|---|---|
| Send Letter | A customer contact is created for every financially responsible person linked to the account. The customer contact causes a letter to be produced.<br>The type of letter is defined on the customer contact's contact type.<br>The recipient of each letter is defined on *Account / Person* (those persons marked as **Receiving Notifications**). |
| Create To Do Entry | A To Do entry is created. Refer to *The Big Picture of To Do Entries* for more information about To Do entries. |
| Affect Credit Rating/Cash-Only | An account credit rating demerit record is created. The number of demerits is defined on the collection event type. |

| | |
|---|---|
| Cancel Budget | Every service agreement linked to the account that is on a budget is "removed" from the budget (i.e., the recurring charge amount for the service agreement is set to zero). In addition, a syncing adjustment is issued to cause each SA's current balance to be set equal to their payoff balance (the adjustment type is defined on the SA's SA type). Also, the Budget Plan field on the Account - Budget page is cleared. |
| Generic Algorithm | The algorithm defined on the event's event type is executed. |
| Start Severance Process | A severance process is created for every service agreement linked to the collection process. The type of severance process is defined on the SA type table (every service agreement references an SA type). |

**FASTPATH:**
Refer to *Setting Up Collection Event Types* for more information.

## Collection Event Lifecycle

The following diagram shows the possible lifecycle of a collection event:




Collection events are initially created in the pending state.

When the system sees a pending event with a trigger date on or before the current date, the system executes the event's activity and completes the event.

**FASTPATH:**
For more information about a collection event's trigger date, see *Collection Event Trigger Date*.

A pending event will be cancelled automatically by the system when the account's debt no longer violates the collection criteria that sparked the event's collection process. A pending event may also be cancelled by a user at their discretion. Refer to *How Are Collection Processes Cancelled* for more information about how the system will cancel a collection process (and its events).

## Collection Event Trigger Date

When a collection event is created by the system, its trigger date is set in accordance with your date arithmetic preferences. Refer to *Calendar vs. Work Days* for more information.

## How Are Collection Events Completed

A background process runs periodically (at least daily) that looks for collection events with a trigger date on or before the current date. For each triggered event, the system executes its activity and then completes it. Refer to *Collection Event Activator* for more information.

## The Last Collection Event Should Kick Off Severance Process(es)

The last collection event will typically kick off the severance process for every service agreement linked to the collection process. This will only happen if you set up the collection process template accordingly (i.e., the last event type in the process template is the kind that starts a severance process for every service agreement linked to the collection process).

**NOTE:**
**Nominating a service agreement to sever.** Many organizations that have multiple services in arrears will NOT sever every service agreement that's in arrears. Rather, they will nominate one service agreement and use it to encourage the customer to pay for the other services. If your organization works this way, then your last collection event should call the *Nominate A Service Agreement To Sever Algorithm*.

## How Are Collection Events Canceled?

Users can cancel a collection event at their discretion. In addition, the system can cancel a collection event when it automatically cancels a collection process. Refer to *How Are Collection Processes Cancelled* for the details.

# The Big Picture Of Severance Process Cancellation

The topics in this section provide high level information about the cancellation of severance processes.

**FASTPATH:**
For more information refer to *The Lifecycle Of A Severance Process And Its Events*.

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## How Are Severance Processes Cancelled?

A severance process may be cancelled via the mechanisms described in this section.

**FASTPATH:**
Refer to *What Happens When A Severance Process Is Cancelled?* for what happens when a severance process is cancelled.

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## The Freezing Of Certain Financial Transactions Can Cancel A Severance Process

**NOTE:**
The system will only cancel a severance process if its severance process template indicates that **Auto Cancel** is allowed. Typically, this switch is set on all severance process templates except for the odd ones that are used to *reconnect service*.

The system reviews a severance process real-time whenever its service agreement's debt is reduced. Financial events that can cause service agreement debt to be reduced are:

- The cancellation of a bill segment.
- The creation of a payment segment.
- The creation of an adjustment that credits a service agreement.

**NOTE:**
**Real time cancellation.** Unlike collection processes, the system cancels severance processes real time (i.e., there is no background process that monitors severance processes). Why are severance processes canceled real time? Because a severance process may have events that create field activities to sever service. These events need to be canceled the moment the FT is frozen, we can't wait until a background process runs. This means that if a customer pays in person for a service agreement that is pending severance, the system will cancel the process and its field activities (if any) the moment the payment is entered.

The review takes place as follows:

- **Debt class cancel criteria.** In general, the sum of all debt associated with the severance process's debt class must be less than or equal to a given threshold amount for a severance process to be cancelled. If so, the severance process is cancelled.
- Please be aware that, if a *Pay Plan* exists for the account and debt class, the actual debt will be temporarily reduced by the amount of the pay plan's scheduled payments before it is compared to the threshold amount. Note: this temporary reduction will only occur if you have plugged in the appropriate pay plan debt reduction algorithm on the debt class.

**NOTE:**
**The above logic is not "hard coded".** The system calls the Severance Process Cancel Criteria Algorithm defined on the *debt class* that is associated with the severance process. This algorithm cancels a severance process if the sum of ALL

service agreements in the debt class have debt less than or equal to a given threshold amount. However, because it's an algorithm, you can introduce whatever cancellation criteria you please.

- **Service agreement cancel criteria.** You can optionally introduce a special quirk to the cancellation logic. This quirk is a bit difficult to understand. To understand it, you should recall:
  - The collection event called Start Severance creates a severance process for every service agreement that is in arrears. Note: you would only use this type of collection event if you do not *Nominate A Single Service Agreement To Sever*.
  - If you use the Start Severance collection event, then you would want to cancel a severance process when its service agreement no longer has intolerable debt (regardless of the state of the debt class's entire debt).
- To cancel a severance process when its related service agreement no longer has intolerable debt, you should plug-in a Cancel Criteria Algorithm on your *severance process templates*. The system will call this algorithm if you've plugged it in.

**NOTE:**
**Manual Creation**. A user can create a severance process for an account that does not qualify to be on severance according to the cancel criteria algorithm. For example, perhaps your cancel criteria algorithm cancels a severance process when the account's debt falls below a threshold amount. A user can create a severance process for an account whose debt is already below this threshold. Because cancellation is real time, there is no action that will cause this severance process to be canceled. When a manual severance process is created, the system executes the appropriate cancellation criteria algorithm. If the algorithm indicates that the system would have canceled this severance process, a warning is issued.

## A New Payment Plan Can Cancel A Severance Process

Refer to *Collection Process / Severance Process Cancellation When A Pay Plan Is Created* for the details.

**NOTE:**
**Real time cancellation.** Please be aware that the system will cancel a severance process real time when a pay plan is created that pays off enough debt.

## A User May Cancel A Severance Process At Their Discretion

A user may cancel a severance process at their discretion.

## Stopping A Service Agreement Will Cancel A Severance Process

The system will cancel a severance process if its service agreement is stopped (i.e., when the service agreement's status becomes Stopped).

## What Happens When A Severance Process Is Cancelled?

The following takes place when a severance process is canceled by the system:

- The system cancels all pending severance events and deactivates the severance process.

- If there are any field activities linked to the severance process, an optional plug-in spot defined on the installation record allows you to plug in an algorithm to cancel these field activities.
  - The base package *Severance Process Cancellation Algorithm* will cancel all pending field activities that were created as a result of the severance process that are not linked to a dispatched field order.
- If there are any pending field activities left associated with the severance process, it is marked to trigger the creation of a To Do entry to highlight that field activities exist for a canceled severance process. (This happens if you have not plugged in an algorithm to perform the cancellation or if the algorithm detected a condition that prevented cancellation.) To create the To Do entry, you must run the background process *TD-SPRO*.
- There is an optional plug-in spot defined on the severance process' template. If an algorithm is plugged-in, it is called. The base package algorithm will create a reconnect process if there are completed field activities for a cut for nonpayment severance event associated with the severance process. Refer to *Severance Post Cancellation Algorithm* for more information about this algorithm.

## The Big Picture Of Severance Events

This section describes the various types of severance events and their lifecycle:

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## How Are Severance Events Created?

Severance events may be created as follows:

- The process that completes (i.e., executes) collection events creates a severance process when it completes a "start severance process" collection event. The severance process has one or more severance event(s). The number and type of events is controlled by the severance process template associated with the severance process. Refer to *The Collection Event Activator* for more information about this process.
- Severance events will be created when a user creates an ad hoc severance process. The number and type of severance events is controlled by the severance process template associated with the severance process.
- An ad hoc severance event may be created and linked to an existing severance process by a user at their discretion.

**NOTE:**
**Bottom line.** Most severance events are created by the system when it creates a severance process for delinquent service agreements. If you need to create an ad hoc severance event, you can either create a severance process whose template contains the desired event OR link the desired event to an existing severance process.

**FASTPATH:**

For more information about creating ad hoc severance processes and events, refer to *How To Perform Common Severance Process Functions*.

## Types Of Severance Events

The following table describes the various types of severance events and what happens when they are completed:

| Type Of Severance Event | What Happens In The System |
|---|---|
| Send Letter | A customer contact is created for every financially responsible person linked to the service agreement's account. It is the customer contact that causes a letter to be produced.<br>The type of letter is defined on the customer contact's contact type.<br>The recipient of each letter is defined on *Account / Person* (those persons marked as **Receiving Notifications**). |
| Create To Do Entry | A To Do entry is created. Refer to *The Big Picture of To Do Entries* for more information about To Do entries. |
| Create Field Activities | A field activity is created for each service point associated with the service agreement being severed. The type of activity is defined on the service point's SP type's field activity type profile. |
| Generic Algorithm | The algorithm defined on the event's event type is executed. |
| Expire Service Agreement | The service agreement is expired and, if earlier severance events created "cut for non-payment" field activities, these field activities will be used as the basis for stopping service. Refer to *Finalizing Pending Stops* for how the system use the meter reads on these field activities as the "stop reads" on the service agreement. Note, you can see the field activities that are used to "cut" and "stop" service by viewing the Field Activities grid on *Service Agreement - Service Point*. |
| Affect Credit Rating/Cash-Only | An account credit rating demerit record is created. The number of demerits is defined on the collection event type. |

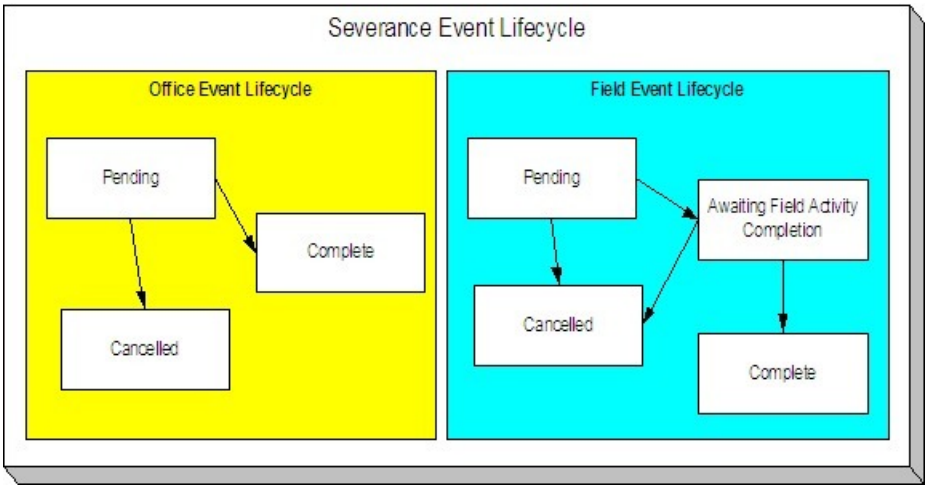
**FASTPATH:**
Refer to *Setting Up Severance Event Types* for more information.

## Field Events Versus Office Events

Severance events are considered either field or office events. Office events are just like collection events in that they don't involve any type of field activity in their completion. Field events, however, are not like collection events because they create one or more field activities. These activities cause these events to have a different lifecycle. Refer to *Severance Event Lifecycle* for more information.

## Severance Event Lifecycle

The following diagram shows the possible lifecycle of a severance event:




The following points explain the lifecycle of severance events of the office variety:

- Office events are initially created in the pending state.
- A pending office event becomes complete when the system sees that its trigger date is on or before the current date. At this time, the system executes the event's activity (e.g., create a letter, create To Do entry).

**FASTPATH:**
For more information about a severance event's trigger date, see *Severance Event Dependencies & Trigger Date*.

- A pending office event will be cancelled automatically by the system when the debt associated with the severance process's service agreement is sufficiently reduced. A pending office event may also be cancelled by a user at their discretion. Refer to *How Are Severance Processes Cancelled* for more information about how the system will cancel a severance process (and its events).

The following points explain the lifecycle of severance events of the field variety:

- Field events are initially created in the pending state.
- A pending field event becomes awaiting field activity completion when the system sees that its trigger date is on or before the current date. At this time, the system creates the field activities associated with the given event (e.g., disconnection warning, disconnect for nonpayment, etc.).

**FASTPATH:**
For more information about a severance event's trigger date, refer to *Severance Event Dependencies & Trigger Date*. For more information about the field activities that are created for a field severance event, refer to *Field Events And Their Activities*.

- An awaiting field activity completion field event becomes complete when the system sees that its field activities are all complete or cancelled .
- A pending field event will be cancelled automatically by the system when the service agreement associated with the severance event's severance process has sufficient credits. A pending field event may also be cancelled by a user at their discretion.
- An awaiting field activity completion field event will be cancelled automatically by the system when the service agreement associated with the severance event's severance process has sufficient credits if the field activity has not been dispatched (refer to *Designing Your Reconnection Procedures* for information on how the system handles the situation if the field activity is completed or dispatched). An awaiting field activity completion event may also be cancelled by a user at their discretion.

## Severance Event Dependencies & Trigger Date

When a severance event is created by the system, its trigger date cannot be set. This is because, unlike collection events, the trigger date on severance events can only be set when ALL of the preceding severance events on which it depends are complete. An example will help explain why this design is necessary. Consider the following example that shows a standard severance process and its events:

| Event Number | Severance Event | Dependent On Event(s) | Trigger Date Set To X Days After Completion Of Preceding Events |
|---|---|---|---|
| 10 | Field activity - Disconnect for non-payment warning | N/A - first event | 0 |
| 20 | Field activity - Disconnect for non-payment | 10 | 2 |
| 30 | Create To Do entry | 20 | 0 |
| 40 | Send letter to customer | 20 | 0 |
| 50 | Expire service agreement | 20 | 10 |

This severance process is meant to execute as follows:

- On the first day, generate a 48-hour warning of impending disconnection. This is a field event as most organizations deliver this warning in person.
- After 2 days (i.e., 48 hours) have passed, create a field activity to disconnect for non-payment.
- When this is completed, generate a To Do entry to let a CSR know about the cutoff. Also, send a letter to the customer.
- If after 10 days from the cutoff, we still don't have payment, expire the service agreement.

As can be seen from the above example, the later events are dependent on the completion of the field activities in the earlier events. This means that when you set up a severance event, you must indicate the events on which it depends (and the number of days after their completion that the event should be triggered).

**NOTE:**
**Bottom line.** The system sets the trigger date on severance events when it detects that all of its dependent events are complete (this is the responsibility of the SED background process). Refer to *Calendar vs Work Days* for a description of your choices in respect of how the trigger date is calculated.

## Field Events And Their Activities

When the system is told to start a severance event that creates field activities (e.g., disconnect for non-payment), it will generate a field activity for every service point linked to the service agreement.

The question is, where does it get the field activity type associated with the field activities? The answer is explained below:

- Every service point has an SP type.
- Every SP type references a field activity type profile.
- A field activity type profile contains a matrix defining activity types to generate under various situations. Some of these situations are those associated with severance.

**FASTPATH:**

For more information, refer to *Setting Up Field Activity Type Profiles*.

## Severance Event Activation & Completion

A background process runs periodically (at least daily) that looks for severance events with a trigger date on or before the current date. This process executes the activity associated with each event. If the event is an office event, the event then becomes complete. If the event is a field event, the event becomes "awaiting field activity completion" until the field activities are complete. At this time, the severance event is completed. Refer to *Severance Event Activator* for more information.

## How Are Severance Events Canceled?

Users can cancel a severance event at their discretion. In addition, the system can cancel a severance event when it automatically cancels a severance process. Refer to *How Are Severance Processes Cancelled* for the details.

# The Big Picture Of Write Off Processing

Before you financially write-off debt, most companies go to some effort to collect the past due funds. You control exactly what happens by setting up the various write-off control tables. The topics in this section provide background information that will help you understand how the information in these control tables is used.

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## How Is Debt Financially Written-Off?

Before debt can be written-off, a write-off service agreement must exist for the account. Why? Because when you write-off a normal service agreement's debt, you are actually transferring its debt to a write-off service agreement.

A write-off service agreement is just like other service agreements in that:

- It holds debt.
- When a payment is received, the service agreement's debt is reduced.

Debt is transferred to a write-off service agreement (WO SA) from the customer's uncollectable service agreements (SAs). The following points highlight important characteristics about the uncollectable SAs and the WO SA:

- The WO SA and the uncollectable SAs should be linked to the same account (note: this isn't a strict rule, it just makes sense because an account's written off funds should be linked to the account).
- Debt may be transferred to a WO SA from any type of service agreement regardless of debt class, i.e., a WO SA can contain debt that originated in any debt class.

- When you transfer debt from the uncollectable SAs to the WO SA, the debt is removed from the uncollectable SAs (and their status becomes closed - assuming their balance becomes zero).
- If you use the system's automated write-off processing, the system will create WO SAs for you. The system's automated write-off processing can write-off revenue in a different manner than is used to write-off liabilities. Refer to *The Ramifications of Write Offs in the General Ledger* for more information.
- WO SAs are immune from the account debt monitor (assuming their debt class is marked as not being subject to collection activities).
- WO SAs are not billed (assuming their SA type is marked as being not billable).
- WO SAs start their life with a non-zero payoff and current balances (i.e., they have debt when first started). This debt is transferred from the normal service agreement(s) whose uncollectable debt necessitated the creation of the WO SA.
- If the customer pays off the write-off debt, the WO SA remains active in case you ever need to write-off debt in the future. If you don't like the WO SA remaining active after it's paid off, you can indicate on the WO SA's SA Type that it is a "one time charge", this will cause the WO SA to be automatically closed when it's paid off.
- You can transfer additional uncollectable debt to the WO SA.

**NOTE:**
**Bankruptcy write-offs.** If you have to write-off debt because a customer declares bankruptcy, everything stated above is true. The only thing you have to do is use a different SA type for bankruptcy write-offs as compared to "normal" write-offs. On the bankruptcy write-off SA type, simply leave the payment segment type blank - this way the system will never distribute a payment to the bankrupt debt (because bankrupt debt is legally uncollectable).

## The Ramifications of Write Offs in the General Ledger

**WARNING:**
If you practice cash accounting, refer to *Cash Accounting and Write-Offs*.

When you write-off unpaid debt, you shouldn't book it all to a write-off expense account. Why? Because the debt that you're writing off typically contains both revenue and liabilities. At write-off time, you typically want to:

- Book the written off revenue to a write-off expense account, and
- Reduce the liabilities (you don't owe the liability if you don't get paid).

Consider the following example of a simple electric service agreement with two financial transactions:

| Event | GL Accounting |
|---|---|
| Customer is billed | A/R 1000 |
| | Revenue <900> |
| | State Tax Payable - Taxing State - California <80> |
| | City Tax Payable - Taxing City - San Francisco <20> |
| Customer is levied a late payment charge | A/R 50 |
| | Late Payment Revenue <50> |

After these two financial transactions are booked, the customer has debt of $1050. Of this $1,050; $950 is revenue and $100 is liability (money you owe the taxing authorities).

If the customer doesn't pay, you will eventually have to write-off this debt. Most organizations would issue the following types of financial transactions to do this:

| Event | GL Accounting |
| --- | --- |
| Write-off the bill | Write-off Expense 900 |
| | State Tax Payable - Taxing State - California 80 |
| | City Tax Payable - Taxing City - San Francisco 20 |
| | A/R <1000> |
| Write-off the late payment charge | Write-off Expense 50 |
| | A/R <50> |

Notice in the above transactions, the two separate revenue accounts are written off by booking to an expense account. However, the liability accounts are reversed. Why is revenue treated differently from liabilities at write-off time? There's a good reason for it (if you're an accountant), for the time being, just accept that this is how it works.

And finally, we need to worry about what happens if the customer eventually pays off his written off debt. If this happens, most organizations would pay off the write-off first, and, if there was still money left, they'd reimburse the taxing authorities. If we assume the customer pays off the entire written off debt, the following financial transactions would be issued:

| Event | GL Accounting |
| --- | --- |
| Pay off the written off debt | Cash 900 |
| | Write-off Expense <900> |
| Reinstate the liabilities | Cash 100 |
| | State Tax Payable - Taxing State - California <80> |
| | City Tax Payable - Taxing City - San Francisco <20> |

While the reinstatement of liabilities at payment time is possible in the system, the ramifications of doing such make this approach impracticable (the ramifications are a) if the check bounces, we would not be able to reduce the liabilities, and b) if there was a partial payment of the liabilities, the remaining unpaid amount could get written down). Therefore, when a write-off is paid the following financial transactions should be issued:

| Event | GL Accounting |
| --- | --- |
| Pay off the written off debt | Cash 900 |
| | Write-off Expense <900> |
| Reinstate the liabilities | Cash 100 |
| | Reinstated liabilities <100> |

Notice that rather than reinstating the individual liabilities, we simply reinstate all liabilities into a single account. This means your accountants will have to distribute this money to the appropriate liabilities manually.

So, how do we achieve the above in the system? This explanation is a little complicated, but it'll make sense if you keep the above financial transactions in mind:

- First of all, you'll need two different SA types - one to hold the written off revenue and another to hold the reduced liabilities.
  - On the SA type that holds written off revenue, indicate that it is not billable, indicate that it cannot have excess credits, and give it a high payment distribution priority. The distribution code on this SA type should reference your Write-off Expense account.
  - On the SA type that holds the reduced liabilities, indicate that it is not billable, indicate that it cannot have excess credits, and give it a high payment distribution priority. The distribution code on this SA type should reference a the "reinstated liabilities" GL account.

Next, you need to understand how the system's standard write-off logic works:

- The system accumulates the distribution codes from GL details associated with recent financial transactions linked to the service agreement being written-off.
- When the system has accumulated enough distribution codes (i.e., where the amount associated with the distribution code equals or exceeds the amount to write off), the debt will be transferred to a new or existing write-off service agreement(s). The number and type of service agreements to which the bad debt is transferred is defined on the distribution codes. Refer to *Setting Up Distribution Codes* for how to define the type of write-off service agreement associated with a distribution code. In our example, we'd need the two SA types described above - one for the revenue accounts, the other for the liability accounts.
- At write-off time, for those distribution codes associated with revenue, the system will create a transfer adjustment from the normal service agreement to the write-off revenue service agreement. This will reduce (credit) the receivable on the normal service agreement and increase (debit) the expense account defined on the write-off revenue service agreement.
- However, if we do the above for the distribution codes associated with liabilities, we have a problem. The problem is a bit hard to explain unless you understand tax accounting, but it basically comes down to this - if we simply transfer the portion of the receivable balance associated with the liabilities to the write-off liability SA, we will always be debiting the distribution code defined on the SA type. This isn't correct because we really want to debit the liability account (and reference the characteristic type and value from the original credit) when we reduce the liability. So how do we do this? For those distribution codes associated with liabilities, you need to indicate that you want to override the distribution code on the "transfer to" side of the transfer adjustment with the distribution code / characteristic type / characteristic value that was originally booked. Refer to *Setting Up Distribution Codes* for how to indicate you want to override the distribution code at write-off time. If you do the above, then at write-off time the transfer adjustment will reduce (credit) the receivable on the normal service agreement and increase (debit) the original liability accounts from the original financial transactions.

If you followed the above, you'll see that we now have everything debited and credited appropriately. And, if a payment materializes for the written off debt, we will simply debit cash and credit the distribution code on the respective SA (either Write Off Expense or Reinstated Liabilities).

**NOTE:**
**Batch and real-time write-offs may use the above processing.** The above logic is executed real time when a user writes off debt using the *write-off transaction* (assuming the base package *write off algorithm* is plugged into the account's *customer class*). The above logic is executed in batch when a write-off event that references a Write Off Using Distribution Codes *event type* is executed. Write-off events are described in detail below.

## Automated versus Manual Write Offs

The system will automatically create write-off SAs and transfer uncollectable debt to them during the automated write-off processing described below.

If necessary, you can write-off debt outside of the automated write-off process using either of the following methods:

- You can transfer bad debt from any service agreement to a write-off service agreement using a transfer adjustment.
- You can use the *write-off transaction* to write-off debt real-time. When this transaction is used, the system executes the logic embedded in the Write Off Method algorithm that's plugged in on the account's *customer class*.

## How Does The Write-Off Monitor Work?

This section describes how the *Write Off Monitor* uses your write-off criteria and write-off process templates to collect overdue debt.

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## Different Write-Off Criteria For Different Customers And Different Debt

Consider the following:

- You probably have different write-off criteria for different customer segments. For example, customers with large bills probably have strict criteria, whereas you're probably more lenient with small customers (or vice versa). You differentiate your customers in respect of the collection process via a **collection class code on the customers' accounts**. An account's initial collection class is defaulted from its customer class. You may override an account's collection class at will.
- You probably have different write-off criteria for different classes of debt. For example, if a customer has both regulated and unregulated debt, you probably have commission-imposed criteria to be applied to the regulated debt, but you have control over how to write-off unregulated debt. You differentiate your debt in respect of the collection process via a write-off **debt class on the customers' service agreements** (note the write-off debt class is actually defined on the SA type and every service agreement has a SA type).

**NOTE:**
**Write Off Debt Class vs. Regular Debt Class.** It's important to be aware that a SA type references both a regular debt class and a write-off debt class. The regular debt class controls the collection criteria applied against an account's service agreements. The regular debt class is also used to segregate an account's outstanding balance on several queries in the system. The write-off debt class controls the write-off criteria applied against an account's stopped service agreements. The reason the system supports two different debt classes is because you may categorize your service agreements differently when you try to collect overdue debt versus when you write-off debt.

Given the above, you should understand that different write-off criteria will exist for every combination of collection class and write-off debt class. If you're confused, then consider the following matrix:

| SA's Write-Off Debt Class | **Account's Collection Class: Commercial Customer** | **Account's Collection Class: Residential Customer** |
|---|---|---|
| Regulated | N/A - there is no regulated, commercial customer debt. | Attempt to reduce the SA's balance to zero using the following methods:<br>Synchronize current balance with payoff balance.<br>Attempt to transfer debt to another active service agreement linked to the account.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment.<br>If the debt is <= $-1, create an A/P adjustment to refund the credit to the customer.<br>If debt remains, create the default write-off process for regulated debt. |
| Unregulated | Attempt to reduce the SA's balance to zero using the following methods: | Attempt to reduce the SA's balance to zero using the following methods: |

| | | |
|---|---|---|
| | Synchronize current balance with payoff balance.<br>Attempt to transfer debt to another active service agreement linked to the account.<br>If the debt / credit is < $10 and > $-10, write down the debt using a write-down adjustment.<br>If the debt / credit is <= $-10, create an A/P adjustment to refund the credit to the customer.<br>If debt still remains:<br>Highest priority: If customer has a non-cash deposit, create the non-cash deposit write-off process.<br>Otherwise, create the default write-off process for unregulated commercial debt. | Synchronize current balance with payoff balance.<br>Attempt to transfer debt to another active service agreement linked to the account.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment.<br>If the debt is <= $-1, create an A/P adjustment to refund the credit to the customer.<br>If debt remains, create the default write-off process for unregulated residential debt. |

Notice that each cell in the matrix has the same pattern:

- The system first attempts to reduce the SA's current and payoff balances to zero using the following methods (assuming you have set up the write-off control appropriately):
  - Sync the current balance with the payoff balance. If the SA's payoff balance is zero, this will cause the current balance to become zero and therefore close the SA.
  - If there's a debit balance, transfer the debt to any pending start or active SA in the same write-off debt class.
  - If there's a credit balance, transfer the debt to any non-closed / non-cancelled SA in the same write-off debt class
  - If the remaining debit / credit balance is within a user-defined tolerance (this is defined on the respective algorithm on the write-off control), create an adjustment to write-down the small balance.
  - If a credit balance remains, create an A/P adjustment to refund the balance with a check (the adjustment type is defined on the respective algorithm on the write-off control).
- All of the above points will cause the SA to close. If debt remains, the system starts some type of write-off process. The type of process is dependent on the respective criteria. What differentiates one write-off criteria from another is its priority. The higher priority criteria will be compared first. If the customer / debt meets the criteria, the write-off process is initiated; no further comparisons are performed.

**FASTPATH:**
For more information about maintaining this matrix, refer to *Setting Up Write-off Control* .

## When Is Debt Monitored For Write Off Purposes?

The write-off monitor only reviews a service agreement when the following conditions are true:

- The service agreement is stopped and reactivated .
- If the service agreement is a "billable charge" SA (as identified on its SA type), all of its billable charges must appear on a bill segment AND the bill segment's bill's due date plus grace period must be on or before the business date.
- If the service agreement is not a "billable charge" SA AND it is billable (as identified on its SA type), the SA must have a closing bill segment (i.e., it must be final billed) and the bill segment's bill's due date plus grace period must be on or before the business date.
- If the service agreement is a sub SA, its master SA must abide by the above conditions.

- If the service agreement is not billable, it is possible that adjustments, which affect the SA's debt, exist. The write-off monitor will only review a non-billable SA if all FTs for this SA that have been marked to include on a bill have been swept onto a bill and the bill for any of these FTs has a bill due date plus grace period on or before the business date.

**NOTE:**
**Postponing write-off processing.** You can prevent the write-off process from processing an eligible service agreement by populating the account's C&C Postpone Date with a future date.

## Attempt To Close The SA Before Creating A Write Off Process

Before the write-off monitor creates a write-off process for a stopped and reactivated service agreement, it attempts to reduce the service agreement's debt to zero using all of the following methods:

- If the account has active service agreements, it will transfer the finaled debt to a pending start or active service agreement.
- If the debt or credit amount on the service agreement is small, the system will generate an adjustment to 'write it down' (or up in the case of a small credit).
- If the service agreement has a large credit amount, the system will generate an A/P adjustment (resulting in a check being sent to the customer).

**NOTE:**
**Plug-in algorithms do the work.** Algorithms that are plugged-in on the *write-off control* responsible for managing the service agreement's debt actually perform the above effort. You can customize these algorithms to behave exactly how your collections staff desires.

If the algorithms responsible for the above effort are successful in reducing the service agreement's debt to zero, then the service agreement closes and will not be subject to write-off processing. If the above algorithms don't result in the service agreement's debt being reduced to zero, a write-off process will be started (as describe below).

## What Happens When A Write-Off Process Is Started?

When you define write-off criteria, you must define the write-off process template to use if the criteria are violated. The system uses this template to create the account-specific write-off process.

Every stopped or reactivated service agreement that is part of the offending write-off debt class will be linked to the write-off process.

Also linked to the write-off process will be one or more write-off events. These events are meant to prod the customer. You define the types of events and when they are generated when you set up your write-off process templates.

It's important to note that all of the write-off events will be created when the write-off process is created. Each of these write-off events contains a trigger date. The trigger date of the first event(s) will typically be the current date. The trigger date of the other events will be in the future. Refer to *Calendar vs Work Days* for a description of how the trigger date is calculated.

A separate process, Activate Write-off events, is responsible for activating write-off events whose date is on or before the current date. Activation of an event causes the system to do whatever the event indicates (e.g., send a letter, send a To Do to an operator, refer debt to a collection agency, etc.)

**NOTE:**

**Multiple write-off processes may be kicked off.** It's important to be aware that if an account's service agreements reference multiple write off debt classes, a write-off process will be started for each offending write off debt class that has stopped or reactivated service agreements.

**FASTPATH:**
For more information about write-off process templates, see *Setting Up Write Off Process Templates* . For more information about write-off events, see *The Big Picture Of Write-off Events* . For more information about how a write-off process is cancelled, see *How Does A Write-Off Process Get Cancelled?* .

## How Does A Write-Off Process Get Cancelled?

The system "removes" a service agreement from a write-off process when its status becomes closed (i.e., when its balance is zero). When all service agreements are removed, the system cancels all pending write-off events and deactivates the write-off process. When the write-off process is deactivated, all collection agency referrals associated with the write-off process are cancelled.

**NOTE:**
**Removing closed service agreements from a write-off process.** Service agreements aren't actually removed from the process. Rather, they are inactivated so a proper audit exists.

## How Do Collection Agency Referrals Work?

The following points describe how collection agency referrals work.

- A write-off process has one or more events. One type of event causes overdue debt to be referred to a collection agency.
- When a referral write-off event is activated, the system marks the event for processing by the event's Collection Agency Referral Algorithm (refer to *Setting Up Write Off Event Types* for more information).
- The next time the Collection Agency Referral process executes (the frequency is dependent on your background process schedule), it will refer the process' debt to a collection agency. The specific agency to which the debt is referred is controlled by the event type's Collection Agency Referral Algorithm. The sample algorithm supplied with the system simply refers debt to the collection agency with the least amount of referred debt. If you prefer different logic, you must write your own algorithm.
- Regardless of the manner in which a collection agency is selected for an account's debt, the referral involves the creation of a collection agency referral history record. Refer to *Collection Referral* for more information.
- A collection agency referral history record is linked to an account. It contains the amount of debt referred to the collection agency. It is the creation of this record that, in turn, triggers the interface of information to the collection agency. The method used to interface the information to the agency is defined on the collection agency's record. Refer to *Setting Up Collection Agencies* for more information.
- If the collection agency is successful in obtaining the funds, simply add a payment. If the payment causes the SA's balance to become zero, the system will automatically close the service agreement. When the system closes a service agreement, it is "removed" from the write-off process. When a write-off process no longer contains active service agreements, the system cancels the write-off process. When a write off process is cancelled, all collection agency referrals are automatically cancelled.
- Collection agency referrals get cancelled by the creation of a new collection agency referral history record (with a type of cancel ). This record will be interfaced to the agency in the same manner used to interface a new referral (see above).

- If the collection agency is not successful in obtaining your funds after a given amount of time, you probably want to cancel the referral and write-off the debt. The cancellation of the referral will happen automatically if you design your write-off process to generate a collection agency cancellation X days after the referral. Refer to *Setting Up Write Off Process Templates* for how to do this. You can cancel a referral manually by simply creating a new collection agency referral history record (with a type of cancel ).

**FASTPATH:**
When you enable the Control Central alert algorithm, *C1-COLL-REF*, an alert displays when an account has an active collection agency referral. This algorithm is plugged-in on the *installation record*.

## The Big Picture Of Write-off Events

This section describes the various types of write-off events and their lifecycle.

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## How Are Write-off Events Created?

Write-off events may be created as follows:

- The Write-Off Monitor creates a write-off process when an account has unpaid, final billed service agreements. The write-off process has one or more write-off event(s). Refer to *How Does The Write-Off Monitor Work?* for more information about how the system creates write-off processes and their events.
- Write-off events are created when an operator creates an ad hoc write-off process. The number and type of events is controlled by the write-off process template defined when the write-off process is created.
- An ad hoc write-off event may be created and linked to an existing write-off process by an operator at their discretion.

**NOTE:**
**Bottom line.** Most write-off events are created by the system when it creates a write-off process for unpaid, finaled service agreements. If you need to create an ad hoc write-off event, you can either create a write-off process using a template that contains the desired event OR link the desired event to an existing write-off process.

**FASTPATH:**
For more information about creating ad hoc write-off processes and events, refer to *How To Perform Common Write-off Maintenance Functions* .

## Types Of Write-off Events

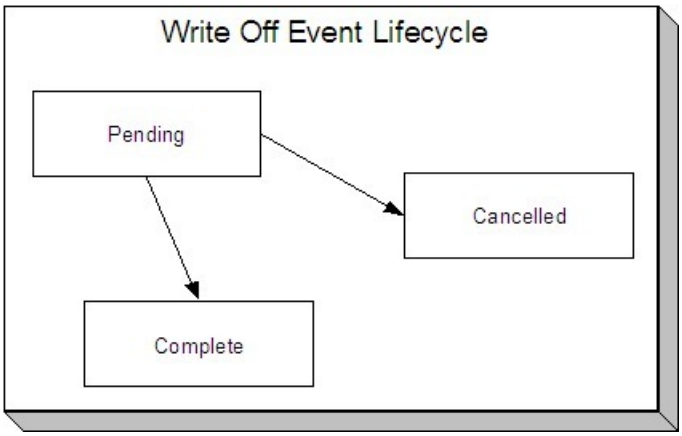
The following table describes the various types of write-off events and what happens when they are completed:

| Type Of Write-off Event | What Happens In The System |
|---|---|
| Affect Credit Rating/Cash-Only | An account credit rating demerit record is created. The number of demerits is defined on the write-off event type. |
| Cancel Agency Referral | All collection agency referrals associated with the write-off process will be cancelled. |
| Refer to Agency | The debt associated with the SAs linked to the write-off process will be referred to a collection agency. |
| Send Letter | A customer contact is created for every financially responsible person linked to the account.<br>The customer contact causes a letter to be produced. The type of letter is defined on the customer contact type control table.<br>The recipient of each letter is defined on *Account / Person* (those persons marked as **Receiving Notifications**). |
| Send To Do | A To Do entry is created. Refer to *The Big Picture of To Do Entries* for more information about To Do entries. |
| Write Off using Distrib Code | This type of event is used to write-off bad debt in accordance with the distribution codes associated with the financial transactions that caused the debt in the first place. You'd use this method for example if you want to write-off revenue differently than you write-off liabilities.<br>The system accumulates the distribution codes from GL details associated with recent financial transactions linked to each write-off service agreement. When the system has accumulated enough distribution codes (i.e., where the amount associated with the distribution code equals or exceeds the amount to write off), the debt will be transferred to a new or existing write-off service agreement. The type of service agreements to which the debt is transferred is defined on the distribution codes. |
| Write Off using SA Type | The service agreements linked to the process will be written-off by transferring their debt to a new or existing write-off service agreement. Note: the SA type of the write-off service agreement is defined on the algorithm defined on events of this type. |
| Generic Algorithm | The system calls the algorithm defined on the write-off event type. This type of event is used when what you need to do isn't handled by one of the above event types. |

**FASTPATH:**
Refer to *Setting Up Write Off Event Types* for more information.

## Write-off Event Lifecycle

The following diagram shows the possible lifecycle of a write-off event:




Write-off events are initially created in the pending state.

When the system sees a pending event with a trigger date on or before the current date, the system executes the event's activity and completes the event.

**FASTPATH:**
For more information about a write-off event's trigger date, see *Write-off Event Trigger Date* .

A pending event will be cancelled automatically by the system when the service agreements linked to the process are all closed (i.e., they no longer have debt - either because it was paid or transferred to a write-off service agreement). A pending event may be cancelled by an operator at their discretion.

## Write-off Event Trigger Date

When a write-off event is created by the system, its trigger date is set in accordance with your date arithmetic preferences. Refer to *Calendar vs. Work Days* for more information.

## How Are Write-off Events Completed

A background process runs periodically (at least daily) that looks for write-off events with a trigger date on or before the current date. For each triggered event, the system executes its activity and then completes it. Refer to *Write Off Event Activator* for more information.

## The Last Write-off Event Should Write Off All Debt Associated With All SAs

The last write-off event will typically transfer all debt from the service agreement's linked to the process to a write off service agreement (linked to the account). This will only happen if you set up the write-off process template accordingly (i.e., the last event in the write-off process template is the kind that writes off debt for every service agreement linked to the write-off process).

## How Are Write-off Events Canceled?

The system removes a service agreement from a write-off process when its status becomes closed (i.e., when its balance is zero). Be aware that any type of financial event could cause an SA's balance to fall to zero (e.g., the creation of an adjustment, the application or cancellation of a payment, the cancellation of a bill, ...). When all service agreements are removed, the system cancels all pending write-off events and deactivates the write-off process.

**NOTE:**
**Real time cancellation.** Unlike collection processes, the system cancels write-off processes real time when the service agreement becomes closed (i.e., there is no background process that monitors write-off processes).

Besides the automated cancellation process, an operator may cancel a write-off event at will.

**NOTE:**
**Removing closed service agreements from a write-off process.** Service agreements aren't actually removed from the process. Rather, they are inactivated so a proper audit exists.

## Calendar vs. Work Days

When you set up your collection, severance and write-off process templates, you supply information that controls how the system determines the trigger date of each event in the related process. There are two different mechanisms for doing this:

- When you set up your severance process templates, you must define the number of days between each event. For example, the second event (send cutoff warning) may need to be triggered 7 days after the first event (send reminder letter).
- When you set up your collection and write-off process templates, you must define the number of days after the start of the process when each event should be triggered. For example, the second event (send cutoff warning) may need to be triggered 7 days after the start of the collection process.

The system uses this information in conjunction with the account's division's work calendar when it allocates a trigger date to the various collection, severance, and write-off events in your processes. The system offers you the following choices in respect of how it calculates an event's trigger date:

- You can indicate that the trigger date should be set to the next possible workday. For example, if you indicate that the second event is triggered 7 days after the first event, the system will add 7 days to the first event's completion date. It then checks if this is a workday (and not a holiday), if so, this is the trigger date of the event; if not, it assigns the trigger date to the next workday.
- You can indicate that the trigger date should be calculated by counting workdays. For example, if you indicate that the second event is triggered 7 days after the first event, the system will count 7 workdays (using the account's division's work calendar), and set the trigger date accordingly.

You must define which of the above methods is used in the following processes:

- Account Debt Monitor (ADM and ADM2). Refer to *The Account Debt Monitor* for more information.
- Collection Event Trigger (CET). Refer to *The Collection Event Activator* for more information.
- Severance Event Set Trigger Date (SED). Refer to *Set Trigger Date* for more information.
- Write-off Monitor (WPM). Refer to *The Write Off Monitor* for more information.

## The Big Picture Of Payment Arrangements and Pay Plans

The topics in this section describe two different mechanisms that allow a customer to payoff overdue debt in installments.

**Contents**



## The Big Picture Of Pay Arrangements

A payment arrangement is an agreement with a customer to payoff severely overdue debt in **billed** installments. Bills sent to customers with payment arrangements contain charges for both their current services and their payment arrangement installment amount.

> **NOTE:**
> **Nomenclature.** Some people refer to payment arrangements as "current bill plus" agreements because the customer's bills contain charges for both their current debt plus their installment amount. After the customer has paid off their overdue debt, the customer's bill only contains charges for their current debt.

The topics in this section describe how to set up a payment arrangement and how the system monitors the ongoing arrangements.

**Contents**



## Creating Payment Arrangements

When you create a payment arrangement, you are actually creating a service agreement. This service agreement is just like other service agreements in that:

- It holds debt.
- It is periodically billed.
- When a payment is received, the service agreement's debt is reduced.
- If the service agreement becomes delinquent, a collection process is initiated to collect the overdue debt.

Debt is transferred to a payment arrangement service agreement (PA SA) from the customer's delinquent service agreements (SAs) at the inception of the payment arrangement.

When you transfer delinquent debt from the delinquent SAs to the PA SA, the debt is removed from the delinquent SAs. If you transfer all debt from the delinquent SAs, the customer will no longer be in arrears in a given debt class (and if the customer is no longer in arrears, active collection and severance processes will be cancelled).

> **NOTE:**
> **Use the Payment Arrangement Transaction.** You could do the above functions by adding a new service agreement and creating transfer adjustments. However, this is tedious. Rather, use the *Payment Arrangement* transaction. This transaction creates the PA SA, transfers debt to it, and sets up the installment amount. This transaction is also used if you need to break or cancel the payment arrangement.

## Installment, Payoff and Current Amounts

**WARNING:**
If you do not understand the difference between payoff balance and current balance, refer to *Current Amount versus Payoff Amount* .

When you set up a payment arrangement service agreement (PA SA), you transfer delinquent debt to the PA SA using transfer adjustments. After moneys are transferred, the system sets the PA SA's current balance to zero. At this point, neither the original service agreements nor the PA SA have delinquent debt. If the customer neglects to pay their payment arrangement, the PA SA will fall into arrears and a collection process will ensue. If the customer neglects to pay their previously delinquent SAs, they will again fall into arrears and a collection process will ensue.

PA SAs start their life with a non-zero payoff balance (i.e., they have debt when first started). This debt is transferred from the normal service agreement(s) whose outstanding debt necessitated the creation of the PA SA.

The installment amount that the customer is billed is determined by the number of installments used to payoff the debt. For example, if the customer owes $500 on their electric and water service agreements and they want to pay this off in 10 installments, you'd set up the installment amount to be $50. The installment amount is saved on the PA SA's recurring charge amount. If the customer again falls into arrears on their normal service agreements, you can transfer additional delinquent debt to the PA SA. You can also change the installment amount as needed.

A PA SA's payoff balance typically differs from its current balance. The payoff balance is the amount of debt remaining to be paid off under the terms of the payment arrangement. The current balance is the installment amount that has been billed but not paid. For example, a customer who is paying off $500 with 10 installments of $50 would have an initial payoff balance of $500 and a current balance of $0. After the first bill, the PA SA would still have a payoff balance of $500, but its current balance would be $50. When the customer pays, the PA SA's payoff balance would fall to $450 and its current balance would return to $0.

The following table contains a financial example of a customer who sets up a payment arrangement to payoff $1,000 of debt in $10 installments.

| Event | Normal SA's GL Accounting | PA SA's GL Accounting | Normal SA's Current Balance | Normal SA's Payoff Balance | PA SA's Current Balance | PA SA's Payoff Balance |
|---|---|---|---|---|---|---|
| Prior to creation of payment arrangement | N/A | N/A | 1000 | 1000 | N/A | N/A |
| Transfer debt from normal SA(s) to PA SA | Xfer 1000<br>A/R <1000> | PA A/R 1000<br>Xfer <1000> | 0 | 0 | 1000 | 1000 |
| Set current balance to zero on PA SA | N/A | N/A | 0 | 0 | 0 | 1000 |
| Customer is billed ($50 for new debt and $10 of payment arrangement debt) | A/R 50<br>Revenue <50> | N/A | 50 | 50 | 10 | 1000 |
| Customer pays $60 | Cash 50<br>A/R <50> | Cash 10<br>PA A/R <10> | 0 | 0 | 0 | 990 |

When the customer pays off the payment arrangement debt, the system automatically closes the PA SA after it final bills (assuming the PA SA's SA type references a bill segment type that has a bill segment creation algorithm of Recurring Charge With Auto Stop ).

## Monitoring Payment Arrangements

The PA SA should belong to its own debt class (let's call it Payment Arrangement Debt) so that you can have stricter collection criteria for payment arrangement debt (as compared to normal SAs). Because there will be a new debt class, there will be a unique collection class control (CCC) for payment arrangements. This CCC will have debt criteria associated with payment arrangement debt. If these criteria are violated, we will kick off a collection process that should have 1 collection event - Start Severance.

The severance process template for PA SAs will have 1 severance event that calls the Break Payment Arrangement Event algorithm. This algorithm does the following:

- Cancels ALL adjustments that were used to transfer the debt to the payment arrangement (identified by the XFER adjustment type on the PA SA's SA type). When these are cancelled, the original arrearage will be reinstated under the original SAs - this debt should be rather old by this point.
- Syncs up current balance with payoff balance on the PA SA.
- Makes the PA SA pending stop (SA activation will stop the SA when it next runs).
- If there is a credit left on the PA SA (because payments were made against the arrangement), the credit will be distributed amongst the account's debt using the standard distribution algorithm. Because the payment arrangement debt that was reinstated should be rather old, it should get relieved first. This relief will occur via transfer adjustments from the PA SA to the original SAs.
- If there is a debit left (e.g., because LPC were issued or some other type of adjustment was created by an operator), the debt will be transferred back to one of the SAs from which the arrangement was originally created.
- Inserts a characteristic under the PA SA to indicate that it has been broken (we need this for the account debt monitor (ADM) a few steps down).
- Inserts a row on the account debt monitor trigger. This trigger will cause the account to be reviewed by the ADM when the ADM next runs.

**NOTE:**
**The PA SA must final bill before it closes.** The PA SA will only close after the PA SA is final billed. This is OK as it won't have any money left on it.

When the ADM next runs, it will analyze the account's reinstated debt. We recommend creating a new override collection criteria for the normal debt class that will return a value of true if the account has a closed payment arrangement that has been broken in the last X days (where X is a parameter of the override collection criteria's algorithm). If this algorithm returns a true, kick off a unique collection process template (that has nasty events). A sample algorithm of this type is supplied in the base package - COLL COND PA .

To complete this discussion, we have to worry about the situation when the final bill of a payment arrangement goes unpaid. In this situation, the payment arrangement is stopped and will therefore not be processed by the ADM. In this case, the write off monitor will process the PA SA after its final bill's due date and a write-off process will start. This write off process will have a single event that calls the Break Payment Arrangement algorithm (described above). After the FT's are issued in this event, the SA will close (because it's been final billed and it's balance will go to zero).

## The Big Picture Of Pay Plans

A pay plan (PP) is an agreement with a customer to make payments on specific dates. Pay plans differ from payment arrangements in that pay plans have user-defined scheduled payment dates, which are independent from the customer's billing dates. In other words, payment arrangements appear on the customer's bills, pay plan scheduled payments do not.

If a customer is in arrears and you want to receive payments on specific dates (as opposed to with the customer's regular bills), you would set up a pay plan and define the dates on which you expect the payments.

The topics in this section describe how pay plans work.

**Contents**



## A Pay Plan Has One Or More Scheduled Payments

When you create a pay plan for an account, you must define the number of scheduled payments and their respective amounts. There is no limit to the number of scheduled payments that may be set up under a pay plan.

## Automatic Payments Can Be Created On The Scheduled Payment Dates

The system will create automatic payments on a pay plan's scheduled payment dates if:

- The account is set up for automatic payment (as described under *How To Set Up A Customer To Pay Automatically*), and
- The payment method defined on the pay plan indicates automatic payment is being used

The background process called PPAPAY is responsible for creating these automatic payments. It does this by calling the automatic payment creation algorithm plugged in on the installation record.

**NOTE:**
If the **Autopay Creation Option** on the *installation record* is set to Create On Extract Date , the automatic payment is NOT distributed and frozen when the automatic payment is initially created. Rather, a separate background process ( *APAYDSFR*) distributes and freezes the automatic payment on the automatic payment GL distribution date (refer to *Automatic Payment Dates* for more information on how this date is calculated). Refer to *Automatic Payments* for more information.

## A Pay Plan Insulates Overdue Debt From The Account Debt Monitor (ADM)

A pay plan's scheduled payments are used by the account debt monitor as "pseudo payments" that relieve the account's debt before it is subjected to the collection criteria (refer to *How Does The Account Debt Monitor Work* for more information about collection criteria).

It's important to understand that a pay plan only insulates the account's debt that belongs to the pay plan's debt class. Therefore, if a customer has debt that belongs to two debt classes (e.g., normal debt and 3 rd party pass through debt), you would need to set up a separate pay plan for each debt class (assuming both types of debt are covered by a pay plan). Refer to *Different Collection Criteria For Different Customers and Different Debt* for more information about debt classes.

## A Pay Plan Must Reference A Pay Plan Type

When you create a pay plan, you must define its pay plan type. The pay plan type controls the following functions:

- The debt class whose debt is insulated by the pay plan.
- The type of algorithm (if any) that is executed when the pay plan is broken. You might use such an algorithm to affect the customer's credit rating when the pay plan is broken.

## A Pay Plan May Reference A Third-Party Payor

In addition to referencing the account whose debt is insulated by the pay plan, the pay plan must also reference the account that is responsible for making the payments. We refer to this second account as the pay plan's "payor".

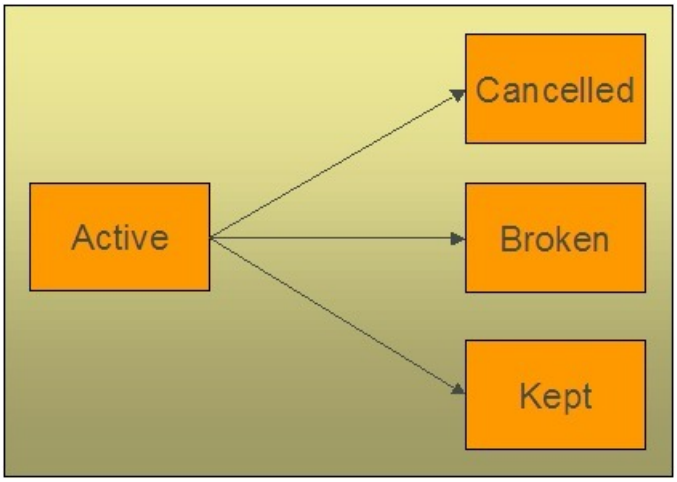
While the payor's account is typically the same as the account whose debt is insulated by the pay plan, you can indicate a third-party payor (e.g., a social service agency) is responsible for making the pay plan's scheduled payments.

If your organization allows third-party payors, you can define each on the third-party payor control table. This control table exists to simplify the data-entry effort when you create a pay plan (as it defines the account associated with the third-party payor).

**NOTE:**
If a pay plan does not reference a third-party payor, any non-third-party payor (i.e., any account that is not defined in the third-party payor control table) can make payments on behalf of the customer. If a pay plan references a third-party payor, only payments made by the third party on behalf of the customer are counted towards the fulfillment of the pay plan.

## The Lifecycle Of A Pay Plan

The following diagram shows the possible lifecycle of a pay plan:




The following points explain this lifecycle:

- Pay plans are initially created in the active state. Active pay plans are monitored for compliance by *The Pay Plan Monitor*.
- A pay plan may be cancelled as follows:
  - A user can cancel a pay plan at will.
  - **When a SA is stopped AND there are no other active SAs in the same debt class, all** active **pay plans associated with the account and debt class will be will be** cancelled**.**
  - The activation of a collection event that calls the "cancel pay plan" algorithm will cancel all active pay plans associated with the collection process's debt class. You may want to use such a collection event if your organization cancels active pay plans when new debt causes a collection process to kick-off. Note, the base package algorithm that performs this function will not cancel the pay plan if it's associated with a 3rd party payor.
- *The Pay Plan Monitor* causes active pay plans to become broken if sufficient payments have not been made to satisfy the pay plan's scheduled payments.
- *The Pay Plan Monitor* causes active pay plans to become kept when it detects that sufficient payments have been made to satisfy the pay plan's scheduled payments.

## Highlighting The Existence Of Broken / Kept / Active and Denied Pay Plans

You can define on the installation record plug-in algorithms that format alert messages. (Refer to *Installation Options - Algorithms* for additional information.) We recommend that you take advantage of the following algorithms to highlight pay plans:

- Highlight pay plans in a given status. This algorithm is used to highlight pay plans in a given state (broken, kept, cancelled) that were started within the last X days.
- Highlight customer contacts of a given type. This algorithm would be used to highlight customer contacts of a given type that were created within the last X days. This would be useful if you create a specific type of customer contact when you deny a pay plan. Some utilities do this to prevent customers from shopping around.

In addition, you can define account-specific alerts to highlight customers that should never be allowed to have a pay plan (for whatever reason).

## A Pay Plan Must Reference A Payment Method

When you create a pay plan, you must define how the customer will make the payments be referencing a payment method. Examples of payment methods include: In Person , Wire Transfer , By Post , Express Mail , etc.

The payment method is more than just documentation as it defines the number of grace days the customer has to make the pay plan's scheduled payments. For example, if you set up the payment method control table to indicate that payments made By Post have 3 grace days, then the customer has up to 3 days after each scheduled payment date to make the payment. If payment is not received by the scheduled payment date plus the grace days, the pay plan will be marked as broken (and the ADM will be triggered).

## The Pay Plan Monitor

**FASTPATH:**
Please understand the concepts described in *The Lifecycle Of A Pay Plan* and *The Tendering Account May Differ From The Account Whose Debt Is Relieved* before reading this section.

The Pay Plan Monitor background process (referred to as PPM ) is responsible for monitoring active payment plans. This process can cause a pay plan (PP) to become kept or broken (or being left as active ).

**NOTE:**
**When is a pay plan marked as broken / kept?** It's important to understand that only the PPM can cause a pay plan to become kept or broken . This means that if a customer makes a payment that satisfies a pay plan, the pay plan will only be marked as kept when the pay plan monitor next runs. Analogously, if a payment is cancelled , nothing will happen to an active pay plan until the PPM next runs. When the PPM next runs, it will see that the scheduled payment was not kept and it will break the pay plan and schedule the ADM to be executed. When the ADM next executes, it will create a collection process (because the customer's debt will no longer be insulated by the pay plan's scheduled payments).

**NSF Cancellations After A Pay Plan Is Kept.** If a payment is cancelled due to non-sufficient funds (NSF) after a pay plan is marked as kept , the pay plan will remain kept . But keep in mind that the pay plan's account is scheduled for review by the ADM when a payment is cancelled due to NSF. When the ADM reviews the account's debt, it will no longer have an active pay plan to insulate it and the account's debt will likely trigger a new collection process. Refer to *How Pay Plans Affect The ADM* for more information.

The following points describe, at a high level, how the PPM monitors a pay plan (PP) for compliance.

- The system selects all frozen , non-cancelled payment segments associated with the PP's account and debt class where:
  - The payment date is after the start date of the pay plan, and
  - The payment's pay event has at least one tender that references the pay plan's payor.
- The system logically reduces / removes past and current scheduled payments (starting with the earliest scheduled payment) until the total amount of payment segments is exhausted (or there are no more historical / current scheduled payments).

**NOTE:**
**Paying pay plans in advance.** Scheduled payments with a future date are not logically removed / reduced. This means that if a customer makes advance payments on a pay plan, it will not be marked as kept until all scheduled payment dates are in the past.

- If all scheduled payments have been logically removed, the pay plan is marked as kept .
- If there exist scheduled payments where the pay date + grace days (grace days are defined on the pay plan's payment method) is before the current date (i.e., a payment doesn't exist for a scheduled payment):
  - The pay plan is marked as broken .

- The PP's break algorithm (if any) is called (note, for European / Australian pay plans, there are scenarios where the break algorithm can cause the pay plan to become unbroken - when there aren't at least two missed, historical scheduled payments).
- An ADM trigger is stored for the PP's account. This will cause the account to be reviewed by the ADM the next time it runs. And because the pay plan is broken, its scheduled payments will no longer insulate the account's arrearage.

**IMPORTANT:**
It's important that you schedule the PPM to run before the ADM so that it can break unpaid payment plans prior to the ADM subjecting the account's debt to collection criteria. Refer to *How Pay Plans Affect The ADM* for more information.

## How Pay Plans Affect The ADM

As described under *A Pay Plan Insulates Overdue Debt*, a pay plan's scheduled payments insulate an account's debt from the ADM. This section describes how this is accomplished.

**WARNING:**
You should understand the concepts in *How Does The Account Debt Monitor Work* and *The Tendering Account May Differ From The Account Whose Debt Is Relieved* before reading the following.

**NOTE:**
**The ADM will be triggered when a pay plan is broken.** Refer to *The Pay Plan Monitor* for an explanation of how the ADM is triggered when a pay plan is broken.

Before the ADM (and ADM2) subjects an account's debt to the collection criteria, it calls the debt's debt class's Override Arrears Algorithm (this is an optional plug-in spot on *Debt Class*). This algorithm is passed the debt class's aged debt and manipulates it as follows:

- First, a list of all past, present and future scheduled payments associated with the account and debt class's active pay plans is constructed.
  - If multiple payors are encountered (because the customer has multiple pay plans and these have different payors), a separate list of scheduled payments is maintained for each payor.
- Next, for each payor, retrieve the total amount of frozen , non-cancelled payment segments made on behalf of the pay plan's account and debt class.
  - Select all frozen, non-cancelled payment segments associated with the pay plan's account and debt class whose pay date is >= pay plan's start date and the pay segment's event has at least one tendering account associated with the pay plan's payor.
- Next, logically reduce / remove past and current scheduled payments (starting with the earliest scheduled payment) until the payor's payment amount is exhausted (or there are no more historical / current scheduled payments). Future scheduled payments cannot be remove / reduced.
- Finally, reduce the passed in aged debt with any unpaid scheduled payments.

**NOTE:**
**This logic is not "hard coded".** Rather, the mechanism used to use a pay plan's scheduled payments to reduce debt is defined in an algorithm defined on the pay plan's debt class. The contents in this section describe how a base package algorithm works. Because it's an algorithm, you can introduce whatever logic you please.

The following is an example of how pay plans affect aged debt.

| Date | Event | SA's Arrears | SA's Balances | Scheduled Payments |
|---|---|---|---|---|
| Prior to creation of the PP 1/18/2000 | | $1,000 - 90 days old<br>$1,600 - 60 days old<br>$1,900 - 30 days old | Current: $4,500<br>Payoff: $4,500 | |
| 1/18/2000 | Pay Plan created. The $4,500 in future scheduled payments offsets the existing $4,500 of aged debt. | $1,000 - 90 days old<br>$1,600 - 60 days old<br>$1,900 - 30 days old<br>**De facto ADM debt: $0** | Current: $4,500<br>Payoff: $4,500 | 1/20/2001 $1,500<br>2/01/2001 $1,500<br>2/07/2001 $1,500 |
| 1/20/2001 | The customer pays $1,500. There exists $3,000 of future scheduled payments that offset the arrears | $1,100 - 62 days old<br>$1,900 - 32 days old<br>**De facto ADM debt: $0** | Current: $3,000<br>Payoff: $3,000 | 1/20/2001 $1,500 "Paid"<br>2/01/2001 $1,500 Future<br>2/07/2001 $1,500 Future |
| 1/20/2001 | ADM runs. The $3000 in future scheduled payments offsets the Current Balance of $3000, so CC events not created. | $1,100 - 62 days old<br>$1,900 - 32 days old<br>**De facto ADM debt: $0** | Current: $3,000<br>Payoff: $3,000 | 1/20/2001 $1,500 "Paid"<br>2/01/2001 $1,500 Future<br>2/07/2001 $1,500 Future |
| 1/24/2001 | A new bill is created for $400 | $1,100 - 62 days old<br>$1,900 - 32 days old<br>$400 - 1 day old<br>**De facto ADM debt: $400 - 1 day old** | Current: $3,400<br>Payoff: $3,400 | 1/20/2001 $1,500 "Paid"<br>2/01/2001 $1,500 Future<br>2/07/2001 $1,500 Future |
| 2/2/2001 | Pay Plan Monitor runs. PP marked as Broken because the 2/1/2001 scheduled payment has not been paid (assuming no grace period on the pay plan's payment method) | $1,100 - 74 days old<br>$1,900 - 44 days old<br>$400 - 8 days old | Current: $3,400<br>Payoff: $3,400 | 1/20/2001 $1,500 "Paid"<br>**2/01/2001 $1,500 "Late"**<br>2/07/2001 $1,500 Future |
| 2/2/2001 | ADM runs. There are no active pay plans and therefore there is nothing to insulate the customer's debt. Therefore the aged debt will be subjected to the collection criteria and an appropriate collection process will be created. | $1,100 - 74 days old<br>$1,900 - 44 days old<br>$400 - 8 days old<br>**De facto ADM debt is the same as above (i.e., rather old)** | Current: $3,400<br>Payoff: $3,400 | **Pay plan is broken and therefore its scheduled payments cannot be used.** |

## Collection Process / Severance Process Cancellation

When a pay plan (PP) is created, the system determines if it can cancel active collection and severance processes associated with the pay plan's account and debt class. It does this because a pay plan's scheduled payments act as "pseudo payments" that relieve the account's debt (temporarily). The following points describe how this works:

- The system attempts to cancel collection processes by calling the *Collection Process Cancel Criteria Algorithm* defined on the debt class that is associated with the collection process. This algorithm is meant to cancel a collection process if the sum of ALL service agreements in the debt class have debt less than a given threshold amount. Because of the existence of the pay plan, the actual debt will be temporarily reduced by the amount of the pay plan's scheduled payments before it is compared to the threshold amount (see *How Pay Plans Affect The ADM* for more information about how debt is reduced). Note: this temporary reduction will only occur if you have plugged in the appropriate pay plan debt reduction algorithm on the debt class.
- It attempts to cancel severance processes by calling the *Severance Process Cancel Criteria Algorithm* defined on the debt class that is associated with the severance process. This algorithm is meant to cancel a severance process if the sum of ALL service agreements in the debt class have debt less than a given threshold amount. Because of the existence of the pay plan, the actual debt will be temporarily reduced by the amount of the pay plan's scheduled payments before it is compared to the threshold amount (see *How Pay Plans Affect The ADM* for more information about how debt is reduced). Note: this temporary reduction will only occur if you have plugged in the appropriate pay plan debt reduction algorithm on the debt class.

If collection / severance processes still exist for the account / debt class associated with the pay plan, a warning is issued.

## Interesting Pay Plan Facts

The following points describe a variety of interesting facts about pay plans (PP):

- An account may have many active pay plans. However, only 1 pay plan may be active for a given account / debt class / payor at any point in time.
- The existence of a pay plan has no impact on payment distribution.
- When a SA is stopped, if the SA's debt class has an active PP AND there are no other active SAs in the same debt class, the PP will be cancelled
  - The cancel reason will be "cancelled by system" (as opposed to "cancelled by user")
- If necessary, different collection / severance processes can be triggered if a broken PP is detected (via the override algorithms on CCC and write-off control - we do NOT provide such algorithms).

# Setting Up Pay Plan Control Tables

This section describes the control tables needed to set up pay plans.

**Contents**



## Setting Up Pay Plan Types

Pay plan types control what is done by a given pay plan. Open **Admin** > **Pay Plan Type** to define your pay plan types.

**FASTPATH:**
For more information refer to *The Big Picture Of Pay Plans* for more information.

**Description of Page**

To modify a pay plan type, simply move to a field and change its value. To add a new pay plan type, press + to insert a row, then fill in the information for each field. The following fields display:

**Pay Plan Type** The name of the pay plan type.

**Description** A meaningful description of the pay plan type.

**Broken Algorithm** This algorithm is called when a pay plan is broken. Refer to *The Pay Plan Monitor* for more information about how pay plans are broken.

If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms*). On this algorithm, reference an Algorithm Type that breaks a pay plan. Click *here* to see the algorithm types available for this plug-in spot.

**Debt Class** The debt class covered by pay plans of this type. Refer to *Setting Up Debt Classes* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PP_TYPE*.

## Setting Up Payment Methods

Payment methods are used to describe how a customer intends to make their pay plan's scheduled payments. Open **Admin** > **Pay Method** to define your payment methods.

**FASTPATH:**
For more information refer to *A Pay Plan Must Reference A Payment Method* for more information.

**Description of Page**

To modify a pay method, simply move to a field and change its value. To add a new pay method, press + to insert a row, then fill in the information for each field. The following fields display:

**Pay Method** The name of the payment method.

**Description** A meaningful description of the payment method.

**Grace Days** The number of days added to the scheduled payment date. The ADM will consider the pay plan to be broken if payment is not made by the scheduled date plus the grace days.

**Auto Pay** If the pay method is marked as being for **Auto Pay**, the PPAPAY background process will automatically create an automatic payment on the pay plan's scheduled payment dates IF the account has been set up for automatic payment.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PAY_METH*.

## Setting Up Third Party Payors

Pay plans support optional third-party payors. Open **Admin** > **Third Party Payor** to define your third-party payors.

**NOTE:**
A third-party payor refers to an account. You must set up the account before you can create a third-party payor.

**FASTPATH:**
Refer to *A Pay Plan May Reference A 3rd Party Payor* for more information.

**Description of Page**

The following fields display for each third party payor:

**Third Party Payor** Provide a meaning id for the third-party payor that can be easily recognized when setting up a pay plan.

**Description** A meaningful description of the payor.

**Account ID** The account that is used for this payor. It is this account that is tracked as the "payee" of any payments made towards a third party payor's pay plan.

**Active** Check this box if the payor is currently available to participate in pay plans.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_THRD_PTY*.

# Creating Collection, Severance & Write-Off Procedures

Your collection procedures define how your organization collects overdue debt. Your severance procedures define how your organization severs service agreements when collection attempts fail. Your write-off procedures define how your organization writes off finaled debt. In this section, we describe how to set up the data that controls these procedures.

**FASTPATH:**
For more information about collection, severance and write-off procedures, see *The Big Picture Of Credit & Collections (C&C)*.

**WARNING:**
There are innumerable ways to design your collection, severance and write-off procedures. Some designs will result in easy long-term maintenance, others will result in maintenance headaches. In this section, we provide information to help you understand the ramifications of the various options. Before you set up your production collection, severance and write-off procedures, we encourage you to gain an intuitive understanding of these options by using the system to prototype the alternatives.

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## Designing Your Collection Procedures

The design of your collection procedures is an iterative process. Over time, you will develop intuitive skills that will allow you to skip some iterations. However, when you're starting out, we recommend you use the following matrix as your guide. When the matrix is complete, you're ready to set up the collection process control tables.

| SA's Debt Class | Account's Collection Class: | Account's Collection Class: |
|---|---|---|
| | | |

The topics discussed below will gradually complete this matrix using a simple case study.

**FASTPATH:**
For more information about how the information in this matrix is used to monitor your customers' debt, refer to *Different Collection Criteria For Different Customers And Different Debt*.

**Contents**



## Designing Your Debt Classes

Multiple debt classes are needed when you have different collection procedures for different types of service agreements. If all service agreement debt is collected the same way, then you'll have just one debt class (call it Generic ). However, if you're like many organizations, you will have multiple debt classes. The following points will help you understand why:

- If you have both regulated and unregulated service, you probably have different debt classes for each type of service. Why? Because your local regulators control how you collect and cutoff overdue, regulated debt. For unregulated debt, your organization controls how overdue debt is collected.
- If your customers make charitable donations, you will have a charitable contribution debt class. Why? Because you probably send a different type of letter when the customer falls into arrears on their charitable contributions. You also can't cut off their water service if they don't make their charitable contributions.
- If you levy deposits, you will probably have a deposit debt class. Why? Because you probably respond differently if the customer doesn't pay their deposit (e.g., you may decide to cut off their electric service until the deposit is paid).
- If you allow customers to make payments on non-billed budgets, you will probably have a non-billed budget debt class. Why? Because you probably respond differently if the customer doesn't pay their non-billed budget (e.g., you may decide to expire the non-billed budget but not affect their other service since the non-billed budget is a way for customers to prepay for upcoming bills).
- If you write-off uncollectable debt, you will need another debt class for write-off service agreements. Why? Because when you write-off debt in the system, you transfer the uncollectable debt from the original service agreement(s) to a write-off service agreement. The write-off service agreement holds this debt forever (or until it is paid). You need to use a different debt class for the write-off service agreements because they aren't subject to collection criteria.
- If you use the system to charge your organization's company usage, you'll need another debt class (we refer to it as the "N/A" debt class below). Why? Because all service agreements must have a debt class, even those that will never have debt.

| SA's Debt Class | Account's Collection Class | Account's Collection Class |
|---|---|---|
| Regulated | | |
| Unregulated | | |

| | | |
|---|---|---|
| Charitable Contribution | | |
| Deposit | | |
| Non-Billed Budget | | |
| Write Off | | |
| N/A | | |

## Designing Your Collection Classes

Multiple collection classes are needed when any debt class has different collection rules depending on the type of customer. If all customers within all debt classes are collected the same way, then you'll just have a single collection class (call it Generic ). However, if you're like many organizations, you will have multiple collection classes.

Consider unregulated debt. For commercial/industrial customers, you probably don't worry until they owe you more than, say, $100 after 20 days. For residential customers, you probably don't worry until they owe you more than, say, $5 after 20 days. In this situation, you will have at least two collection classes: one for large customers, the other for residential customers.

In our example, we are assuming you have two collection classes: Residential and Commercial/Industrial.

| SA's Debt Class | Account's Collection Class: Residential | Account's Collection Class: Commercial/Industrial |
|---|---|---|
| Charitable Contribution | | |
| Regulated | | |
| Unregulated | | |
| Write Off | | |
| Company Usage | | |

## Designing Collection Class Controls

At this point we have the rows and columns defined in our matrix. Now it's time to work on the individual cells.

Each cell should have a "collection class control" that defines its collection criteria and what to do if the criteria are violated. If a cell doesn't have a collection class control, this means you don't have any debt associated with that combination of collection class and debt class. So, we'll mark each cell without debt with "N/A".

| SA's Debt Class | Account's Collection Class: Residential | Account's Collection Class: Commercial/Industrial |
|---|---|---|
| Regulated | | N/A |
| Unregulated | | |
| Charitable Contribution | | N/A |
| Deposit | | |
| Write Off | | |

| |
|---|
| N/A |

Next, we'll mark each cell for debt classes whose debt isn't collectable (i.e., the write-off and N/A debt classes).

| SA's Debt Class | Account's Collection Class: Residential | Account's Collection Class: Commercial/Industrial |
|---|---|---|
| Regulated | | N/A |
| Unregulated | | |
| Charitable Contribution | | N/A |
| Deposit | | |
| Write Off | N/A | N/A |
| N/A | N/A | N/A |

**NOTE:**
If the Account Debt Monitor encounters debt associated with a non-existent collection class control, it will issue an error.

Determining the collection criteria in each remaining cell can be straightforward or complicated; it depends on how your organization works. Our case study assumes the following:

- For charitable debt, if the customer is more than $0 in arrears by more than 20 days, kick off the "charity reminder" collection process. We'll talk more about this collection process later.
- For regulated / residential debt, if the customer is more than $15 in arrears by more than 20 days, kick off the Normal Regulated collection process. We'll talk more about this collection process later.
- For unregulated / residential debt, if the customer is more than $5 in arrears by more than 20 days, kick off the Normal Unregulated collection process. We'll talk more about this collection process later.
- For unregulated / commercial-industrial debt we have multiple criteria:
  - Highest priority. If the customer is more than $10,000 in arrears by more than 20 days, kick off the Large Overdue Debt collection process. We'll talk more about this collection process later.
  - Lower priority. If the customer is more than $100 in arrears by more than 20 days, kick off the Normal Unregulated collection process. We'll talk more about this collection process later.
- For deposit debt (regardless of collection class) we have multiple criteria:
  - Highest priority. If the customer is more than $5 in arrears by more than 50 days, kick off the Deposit Severely Overdue collection process. We'll talk more about this collection process later.
  - Lower priority. If the customer is more than $15 in arrears by more than 20 days, kick off the Deposit collection process. We'll talk more about this collection process later.

Given the above, our matrix will look as follows:

| SA's Debt Class | Account's Collection Class: Residential | Account's Collection Class: Commercial/Industrial |
|---|---|---|
| Charitable Contribution | If > $0 is older than 20 days, start Charity Reminder collection process. | N/A |
| Regulated | If > $15 is older than 20 days, start Normal Regulated collection process. | N/A |

| | | |
|---|---|---|
| Unregulated | If > $5 is older than 20 days, start Normal Unregulated collection process. | Highest priority: If > $10,000 is older than 20 days, start Large Overdue Debt collection process.<br>Lower priority: If > $100 is older than 20 days, start Normal Unregulated collection process. |
| Deposit | Highest priority: If > $5 is older than 50 days, start Deposit Severely Overdue collection process.<br>Lower priority: If > $15 is older than 20 days, start Deposit collection process. | Highest priority: If > $5 is older than 50 days, start Deposit Severely Overdue collection process.<br>Lower priority: If > $15 is older than 20 days, start Deposit collection process. |
| Write Off | N/A | N/A |
| N/A | N/A | N/A |

## Designing Your Collection Class Control Overrides

**WARNING:**
Your collection needs may not require any overrides for your collection class control matrix and therefore this section may not be relevant.

The following matrix will help you design your collection class overrides. When the matrix is complete, you're ready to set up the collection class control tables.

Notice that the matrix has two dimensions: one is dependent on collection condition algorithms; the other is dependent on the collection class controls designed in the previous section. Collection condition algorithms are confusing. Think of them as optional conditions that, if met, will subject the collection class control's debt to different collection criteria.

Each cell in the matrix contains the collection criteria that will be applied to the account's debt when the collection condition is met (i.e., the same type of criteria - dollars and days and collection process - are defined in each cell).

We label the first collection condition as the Default . The collection criteria associated with this column will be used to analyze an account's debt when none of the other conditions applies. We'll start by indicating the Default collection criteria (this was defined in the previous section).

| SA's Debt Class | Account's Collection Class:<br>Default | Account's Collection Class:<br>Credit Rating < Threshold |
|---|---|---|
| Residential Charitable Contribution | See default collection criteria defined in previous section. | |
| Residential Regulated | See default collection criteria defined in previous section. | |
| Residential Unregulated | See default collection criteria defined in previous section. | |
| Commercial-Industrial Unregulated | See default collection criteria defined in previous section. | |
| Residential Deposit | See default collection criteria defined in previous section. | |

| | | |
|---|---|---|
| Commercial-Industrial Deposit | See default collection criteria defined in previous section. | |

If a different collection process OR criteria should be used when other conditions are met, you should indicate such by defining the collection criteria in the cell. For example, if we assume that all unregulated residential debt has a different collection process when the account's credit score is less than the threshold credit rating on the installation record, our matrix will look as follows:

| SA's Debt Class | Account's Collection Class: Default | Account's Collection Class: Credit Rating < Threshold |
|---|---|---|
| Residential Charitable Contribution | See default collection criteria defined in previous section. | |
| Residential Regulated | See default collection criteria defined in previous section. | |
| Residential Unregulated | See default collection criteria defined in previous section. | Override: If Credit Rating is lower than the installation threshold: If > $5 is older than 15 days, start Risky Unregulated collection process. |
| Commercial-Industrial Unregulated | See default collection criteria defined in previous section. | |
| Residential Deposit | See default collection criteria defined in previous section. | |
| Commercial-Industrial Deposit | See default collection criteria defined in previous section. | |

Once the matrix is complete, you're ready to design your collection process and collection event types.

**NOTE:**
**The collection conditions are limited by your imagination (and business requirements).** We have provided the collection conditions you see above as an example; we don't expect you'll be able to use the exact conditions we supply. Your conditions will be based on any number of factors. For example, if you have different collection criteria that apply during winter months, you should add a new collection condition (called Winter Season ). Or if you have different criteria based on years of service, you could have another condition.

**New collection conditions may require programming.** See *How To Add A New Algorithm* for more information.

## Designing Collection Process Templates & Collection Event Types

The following table shows the collection process templates referenced in the previous section's matrix. Adjacent to each process are its events and an indication of when they are triggered.

| Collection Process Template | Collection Event Template | Triggered X Days From Start Of Collection Process |
|---|---|---|
| Charitable Contribution Reminder | Charity courtesy reminder letter | 0 |
| | Start severance | 15 |
| Normal Regulated | Regulated courtesy reminder letter | 0 |
| | Regulated second notice letter | 10 |

| | | |
|---|---|---|
| | Start severance | 15 |
| Large Overdue Debt | Large debt courtesy reminder letter | 0 |
| | To Do for large overdue debt | 3 |
| | Large debt second notice letter | 10 |
| | Start severance | 15 |
| Normal Unregulated | Unregulated courtesy reminder letter | 0 |
| | Unregulated second notice letter | 5 |
| | Start severance | 10 |
| Risky Customer Unregulated | Unregulated risky letter | 0 |
| | Start severance | 5 |
| Deposit | Deposit reminder | 0 |
| Deposit Severely Overdue | Create To Do entry | 0 |

If we extract each unique event type from the above table, we end up with the following:

| Collection Event Type | Event Type |
|---|---|
| Charity courtesy reminder letter | Send Letter - CHARIT REMIN |
| Start severance | Start Severance Process |
| Regulated courtesy reminder letter | Send Letter - REGUL REMIN |
| Regulated second notice letter | Send Letter - REGUL second |
| Large debt courtesy reminder | Send Letter - LARGE REMIN |
| Risky debt courtesy reminder | Send Letter - RISKY REMIN |
| To Do for large overdue debt | Issue To Do |
| Large debt second notice letter | Send Letter - LARGE second |
| Unregulated courtesy reminder letter | Send Letter - UNREG REMIN |
| Unregulated second notice letter | Send Letter - UNREG second |
| Deposit reminder | Send Letter - DEPOS REMIN |
| To Do for deposit severely overdue | Issue To Do |

Now you're (almost) ready to set up your collection procedures.

## Defining Cancellation Process Auto Cancellation Criteria

The topics in the section *How Are Collection Processes Cancelled* describe the two algorithms that play a part in the cancellation of a collection process. It also describes when to use what type of algorithm. Please read this section and then set up the appropriate cancellation criteria on your *Debt Classes*, and optionally, on your *Collection Process Templates*.

## Setting Up Collection Procedures

In the previous section, *Designing Your Collection Procedures*, we presented a case study that illustrated a mythical organization's collection procedures. In this section, we'll explain how to set up the control tables to implement these procedures:

**Contents**



## Setting Up Collection Event Types

Collection event types control what is done by a given collection event. Open **Admin** > **Collection Event Type** > **Add** to define your collection event types.

**Description of Page**

Enter a unique **Collection Event Type** and **Description** for the collection event type.

Enter the **Collection Event Type**. Permissible values are: Affect Credit Rating/Cash-Only , Cancel Budget , Generic Algorithm , Send Letter , Create To Do Entry , Start Severance Process . The following discussion describes the parameters that must be defined for each type of collection event.

The Affect Credit Rating/Cash-Only collection event type causes a credit rating demerit record to be linked to the account. This record is constructed using the following **Parameters**:

- Use **Credit Rating Points** to define this event's affect on the account's credit rating. This should be a negative number. An account's credit rating is equal to the start credit rating amount defined on the installation record plus the sum of credit rating demerits that are currently in effect. When an account's credit rating is less than the credit rating threshold defined on the installation record, the account's credit rating is displayed as an alert on Control Central.
- Use **Cash-Only Points** to define this event's affect on the account's cash-only score. This should be a positive number. When an account's cash-only score exceeds the cash-only threshold score defined on the installation record, the account is flagged as cash-only during payment processing and on Control Central.
- Use **Credit Rating Months** to define the length of time the demerit remains in effect. This information is used to define the effective period of the credit rating demerit record.

**FASTPATH:**
For more information, refer to *Account - Credit Rating* .

The Send Letter collection event type causes a customer contact to be generated that, in turn, generates a letter. Enter the following **Parameters** for this type of event:

- Select the **Contact Class** used to categorize the customer contact.
- Use **Contact Type** to define the type of customer contact to create. The type of customer contact controls the type of letter that is generated.

**NOTE:**
**Letter creation is triggered via a customer contact.** You must set up a customer contact type for each type of letter you generate. You specify the necessary customer contact type on the collection event. Refer to *Setting Up Letter Templates* for more information.

The Cancel Budget collection event type cancel an account's budget plan (if the account is on such a plan). When a budget plan is cancelled, adjustments are issued to synchronize every service agreement's current balance with its payoff balance and each applicable SA's recurring charge amount (i.e., budget amount) is set to zero.

The Generic Algorithm collection event type causes the algorithm defined in the **Collection Event Alg** to be executed. You use this type of algorithm when the standard types of collection events won't do what you need done. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that determines the algorithm that will be called when events of this type of activated. Click *here* to see the algorithm types available for this plug-in spot.

The Create To Do Entry collection event type causes a To Do entry to be issued. A good example of where this is used is when the collection event requires that the customer be called on the phone. Refer to *The Big Picture of To Do Entries* for more information about To Do entries (refer to the To Do type TD-CEVT for the type of To Do entry that's created).

The Start Severance Process type will start a severance process for every service agreement linked to the collection process. No parameters are needed for this type of event.

Enter a **Long Description** to fully describe the collection event type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COLL_EVT_TYP*.

## Setting Up Collection Process Templates

Collection process templates define the collection events that will be executed when a collection criteria rule is violated. Open **Admin** > **Collection Process Template** > **Add** to define your collection process templates.

**Description of Page**

Enter a unique **Collection Process Template** and **Description** for the collection process template.

Select a **Cancel Criteria Algorithm** if your organization allows individual service agreements to be "removed" from a collection process regardless of the debt associated with all service agreements in the debt class. In other words, if your cancel criteria are based on the debt associated with ALL service agreements in a debt class DO NOT SPECIFY THIS ALGORITHM. If this algorithm is specified, it is executed by the collection process monitor when it detects that a credit has been applied to a service agreement linked to an active collection process. This algorithm will indicate if the specific service agreement that has been credited no longer has debt that warrants a collection process. Refer to *How Are Collection Processes Cancelled* for more information. If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms* ). On this algorithm, reference an Algorithm Type that "removes" a service agreement from a collection processes if the service agreement's debt so warrants. Click *here* to see the algorithm types available for this system event.

The **Response** grid contains an entry for every collection event that will be created when a collection process that references this template is created. The following information must be defined for each event:

**Event Sequence** controls the order in which the collection event types appear under the collection process template. The sequence number is system-assigned and cannot be changed. If you have to insert a collection event type between two existing templates, you'll have to remove the latter events, insert the new event, and then re-specify the removed events.

**Collection Event Type** Specify the type of collection event to be generated.

**Days After Process Creation** Specify the number of days after the creation of the collection process that the related collection event will be triggered. Refer to *Calendar vs Work Days* for a description of how this system uses this information to set the trigger date on the respective collection events.

**FASTPATH:**

For more information about collection event types, see *Setting Up Collection Event Types* . For more information about trigger dates, see *Collection Event Trigger Date*.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COLL_PROC_TM*.

## Setting Up Collection Classes

Every account has a collection class. This class is one of several fields that control the collection method applied to the account's debt. Open **Admin** > **Collection Class** to define your collection classes.

**FASTPATH:**
For more information about collection classes, see *Designing Your Collection Classes*.

**Description of Page**

Enter a unique **Collection Class** code and **Description** for each collection class.

Indicate which method is used to monitor the member accounts' unpaid debt:

- If you practice *balance-forward accounting* for accounts belonging to this collection class, select Collection, Severance & Write-Off . This method of collection is described throughout this chapter.
- If you practice *open-item accounting* for accounts belonging to this collection class, select Overdue . This method of collection is described under *Defining Overdue Processing Options*.
- If accounts belonging to this collection class are not subject to either of the above collection methods, select Not Eligible For Collection . Please be aware that these accounts will NOT be reviewed for overdue debt.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COLL_CL*.

## Setting Up Debt Classes

Every SA type has a debt class. This class is one of several fields that control the collection criteria applied to the service agreement's debt. Open **Admin** > **Debt Class** > **Add** to define your debt classes.

**FASTPATH:**
For more information about debt classes, see *Designing Your Debt Classes*.

**Description of Page**

Enter a unique **Debt Class** and **Description** for the debt class.

Turn on **Eligible for Collection** if service agreements belonging to this debt class have their debt monitored by the collection process. This should only be turned off if this debt cannot be collected, e.g., write-off debt.

The grid that follows contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to an arbitrary number as only one algorithm for each system event is allowed in this case.

**WARNING:**
These algorithms are typically significant system processes. The absence of an algorithm may prevent the system from operating correctly.

You can define algorithms for the following **System Events**:

| System Event | Optional / Required | Description |
|---|---|---|
| Collection Process Cancellation Rule | Required if debt class is eligible for collection | This algorithm determines if a collection process can be canceled, and if so, it cancels it. Refer to *How Are Collection Processes Cancelled* for more information.<br>Click *here* to see the algorithm types available for this system event. |
| Severance Process Cancellation Rule | Required if debt class is eligible for collection | This algorithm determines if a severance process can be canceled, and if so, it cancels it. Refer to *How Are Severance Processes Cancelled* for more information.<br>Click *here* to see the algorithm types available for this system event. |
| Override Arrears Due To Pay Plan | Required if you use Pay Plans | This algorithm is called to temporarily override a customer's arrears using a pay plan's scheduled payments when the system looks at an account's debt from a credit & collections perspective (i.e., the ADM calls this algorithm before it subjects a customer's debt to the collection criteria and when a pay plan is created). It does not actually change any data, but overlays the current arrears with the pay plan scheduled payments.<br>This algorithm is also called by the above algorithms when a pay plan is created in order to evaluate if the scheduled payments actually cover the arrears (if so, the collection / severance processes are cancelled). It is also called periodically by the ADM in order to establish if the current state of the pay plan still covers the arrears. Refer to *How Pay Plans Affect The ADM*.<br>Click *here* to see the algorithm types available for this system event. |

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_DEBT_CL*.

## Setting Up Collection Class Controls

The topics in this section describe the windows on which you set up your collection class control information.

**WARNING:**

The information in this page is what controls how the system analyzes your customer's debt. The flexibility of this control information provides you with almost unlimited options. This is very powerful, but it requires careful analysis. Refer to *Designing Your Collection Procedures***for more information**.

**Contents**



## Collection Class Control - Main Information

The information on this transaction defines the conditions that will be checked by the *Account Debt Monitor* when it checks if an account has violated your debt criteria.

Open **Admin** > **Collection Class Control** > **Add** to define this information.

**FASTPATH:**
For more information about collection class control, refer to *Designing Collection Class Controls*.

**Description of Page**

Enter a unique **Collection Class Control** code and **Description** for the collection class control (CCC).

Enter the **CIS Division** to which the CCC's criteria applies.

Enter the **Collection Class** to which the CCC's criteria applies.

Enter the **Debt Class** to which the CCC's criteria applies.

Enter the **Currency Code** in which the CCC's criteria are denominated.

Use **Long Description** to further describe the CCC.

**FASTPATH:**
The information in the following grid is not intuitively obvious. Refer to *Designing Collection Class Controls* and *Designing Your Collection Class Control Overrides* for more information.

The grid which follows contains the conditions that are checked by the *Account Debt Monitor* (ADM) to determine the type of criteria (defined on the next tab) that will be applied against an account's debt. In other words - the ADM will check each condition (from highest to lowest **Priority**). The first condition that returns a value of true will cause the system to compare the account's debt against the debt criteria defined on the next tab.

Multiple conditions may be defined if different conditions result in a different type of debt thresholds (or a different type of collection process). The following fields are required for each condition:

**Collection Condition Priority** The priority controls the order in which the ADM checks if a collection condition applies (the lower the number, the higher the priority). Higher priorities are checked before lower priorities.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is COLL_CAT_PRIO_FLG.

**Condition Algorithm** Define the algorithm used to check if an account should be subject to the collection criteria defined on the next tab. If the algorithm returns a value of true (i.e., the condition is met), the ADM will compare the account's debt against the **Debt Criteria** (defined on the next tab) and start a collection process if the account has debt that violates these criteria.

You must have at least one collection condition; otherwise the system will not have criteria against which to compare the account's debt. This entry should have the lowest priority code and reference the "default" algorithm. If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms* ). On this algorithm, reference an Algorithm Type that references the "default" collection condition algorithm type ( *COLL COND DF*).

If you have other conditions that should be checked before the default condition, you must create an entry for each in this grid. Each entry should have a priority consistent with your business requirements (and this priority should be higher than the default condition's priority). In addition, you should reference an algorithm that contains the conditions that will be checked to determine if the account should be subject to the debt criteria (defined on the next tab). The system is supplied with many additional algorithm types. In order to take advantage of them, you will need to create an algorithm (refer to *Setting Up Algorithms* ). On this algorithm, reference an Algorithm Type that references one of the collection condition algorithm types. Click *here* to see the algorithm types available for this system event.

**Where Used**

Collection class controls contain the data that controls the Account Debt Monitor. Refer to *How Does The Account Debt Monitor Work?* for more information.

## Collection Class Control - Debt Criteria

The information on this page defines the debt and age thresholds used by the *Account Debt Monitor* when it checks if an account has violated your acceptable levels of debt. Open **Admin** > **Collection Class Control** > **Search** and navigate to the **Debt Criteria** page to define this information.

**NOTE:**
**The information on this page is not intuitively obvious.** Refer to *Designing Collection Class Controls* and *Designing Your Collection Class Control Overrides* for more information.

**Description of Page**

The **Debt Criteria** scroll contains an entry for each collection criteria algorithm defined on the **Main** tab. The following information appears

The **Collection Condition Priority** controls the order in which the Account Debt Monitor (ADM) checks if a collection condition applies. Higher priorities are checked before lower priorities.

The **Condition Algorithm** is called by the ADM to determine which collection criteria should be applied to the account's debt. If this algorithm returns a value of true (i.e., the condition is met), the ADM will compare the account's debt against the **Debt Criteria** defined below. If the account violates any criteria, a collection process will be started (using the respective **Collection Process Template**).

The grid that follows contains the debt age and amount of debt that must be violated by the account in order for the ADM to create a collection process template. The following fields should be defined:

**Arrears Priority** controls the order in which the arrears criteria will be checked by the Account Debt Monitor (the lower the number, the higher the priority). The first criteria, if any, that is met will cause a collection process to be created (using the **Collection Process Template**).

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is CRIT_PRIO_FLG. Be aware that this field is used for multiple tables: *Collection Class Control*, *Severance Criteria*, *Write Off Control* and *Workflow Process Profiles*.

**Collection Process Template** If the Account Debt Monitor determines that the account's debt violates the corresponding criteria, it creates a collection process using the specified collection process template.

**Arrears Amount** When the Account Debt Monitor checks an account's debt, it determines if the account has debt older than "> Number of Days" (the next field) AND the debt exceeds "> Arrears Amount". If so, a collection process is started.

**Days** When the Account Debt Monitor checks an account's debt, it determines if the account has debt older than **Days** AND the debt exceeds **Arrears Amount**. If so, a collection process is started.

**Where Used**

Collection class controls contains the data that controls the *Account Debt Monitor*.

# Designing Your Severance Procedures

The following matrix will help you design your severance procedures. When the matrix is complete, you're ready to set up the severance process control tables.

Notice that the matrix has two dimensions: one is dependent on severance criteria algorithms; the other is dependent on the SA type of the service agreement being severed. The number and type of SA types is dependent on how your organization sets up the SA type table (the SA types shown below are characteristic of those used by a simple utility).

| SA Type | Severance Criteria Algorithm: Default | Severance Criteria Algorithm: Customer On Life Support |
|---|---|---|
| Electric Residential | | |
| Electric Commercial | | |
| Gas Residential | | |
| Gas Commercial | | |
| Charitable Contribution | | |

Once you know the values of each dimension, you fill in each cell with its respective severance events. We've completed the sample matrix with some characteristic events.

| SA Type | Severance Criteria Algorithm: Default | Severance Criteria Algorithm: Customer On Life Support |
|---|---|---|
| Electric Residential | Create a 48-hour warning field activity.<br>2 days after completion, create a disconnect service field activity.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection, expire the service agreement. | Create a To Do entry asking a collection rep to call the customer.<br>5 days later, create a 72-hour warning field activity.<br>2 days after completion, create a To Do entry telling collection rep of impending life support cutoff.<br>3 days after completion of warning, create a disconnect service field activity AND generate a To Do entry informing a collection agent of such.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection expire the service agreement. |
| Electric Commercial | Create a 48-hour warning field activity. | N/A |

| | | |
|---|---|---|
| | 2 days after completion, create a disconnect service field activity.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection, expire the service agreement. | |
| Gas Residential | Create a 48-hour warning field activity.<br>2 days after completion, create a disconnect service field activity.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection, expire the service agreement. | Create a 48-hour warning field activity.<br>2 days after completion, create a disconnect service field activity.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection, expire the service agreement. |
| Gas Commercial | Create a 48-hour warning field activity.<br>2 days after completion, create a disconnect service field activity.<br>Immediately after completion of the disconnect field activity, send a letter to the customer.<br>10 days after completion of disconnection, expire the service agreement. | N/A |
| Charitable Contribution | Expire service agreement | Expire service agreement |

Once the matrix is complete, you determine the severance process templates needed to implement your severance procedures. The following table shows the severance process templates referenced in the previous section's matrix. Adjacent to each process are its events and an indication of when they are triggered.

| Severance Process Template | Event Number | Severance Event Template | Dependent On Event(s) | Trigger Date Set To X Days After Completion Of Dependent Events |
|---|---|---|---|---|
| Utility severance - default | 10 | Field activity - 48 hour disconnect for non-payment warning | N/A - first event | 0 |
| | 20 | Field activity - disconnect for non-payment | 10 | 2 |
| | 30 | 'Service has been disconnected' letter | 20 | 0 |
| | 40 | Expire service agreement | 20 | 10 |
| Electric life support residential severance | 10 | Generate delinquent life support customer To Do entry | N/A - first event | 0 |
| | 20 | Field activity - 72 hour disconnect for non-payment warning | 10 | 5 |

| | | | | |
|---|---|---|---|---|
| | 30 | Generate impending life support cutoff To Do entry to C&C rep | 20 | 2 |
| | 40 | Field activity - cut for non-payment | 20 | 3 |
| | 50 | Service has been disconnected letter | 40 | 0 |
| | 60 | Expire service agreement | 40 | 10 |
| Just expire severance | 10 | Expire service agreement | N/A - first event | |

If we extract each unique severance event type from the above table, we end up with the following:

| Severance Event Template | Event Type |
|---|---|
| 48-hour warning | Generate Field Activity - Disconnect Warning |
| 72-hour warning | Generate Field Activity - Disconnect Warning |
| Disconnect for non payment | Generate Field Activity - Cut For Non-Payment |
| Delinquent life support customer | Create To Do Entry - C&C Rep Role |
| Impending life support cutoff | Create To Do Entry - C&C Rep Role |
| Service has been disconnected letter | Send Letter - Customer Contact Type is Disconnect Letter |
| Expire service agreement | Expire Service Agreement |

**WARNING:**
The field activity types are NOT specified directly on the severance event type. Why? Because each service point linked to the service agreement being severed could necessitate a different type of field activity. Therefore, the system uses the type of service point, its state (e.g., connected, meter is off.) and the desired customer event (e.g., Disconnect Warning, Cut For Non-Payment) to determine which field activity type(s) to generate. Refer to *Setting Up Field Activity Type Profiles* for how to set up the specific disconnect field activity types for your various types of service points.

Now you're (almost) ready to set up your severance procedures.

## Defining Severance Process Auto Cancellation Criteria

The topics in the section *How Are Severance Processes Cancelled* describe the two algorithms that play a part in the cancellation of a collection process. It also describes when to use what type of algorithm. Please read this section and then set up the appropriate cancellation criteria on your *Debt Classes*, and optionally, on your *Severance Process Templates*.

## Designing Your Reconnection Procedures

If a customer pays for a service agreement after the service has been cut for non-payment AND BEFORE THE SA HAS BEEN EXPIRED, they need to be reconnected. Counter-intuitively, you must set up a severance process to initiate the field activities to reconnect service.

**NOTE:**

**Why do you use a severance process to reconnect service?** Because a severance process is nothing more than a series of events that take place one after another. Some of the events create field activities, others send letters, others create To Do entries. So, why not use a severance process? You just have to send different letters and perform different field activities.

**WARNING:**
The system will automatically create a reconnection process if a severance process is cancelled as a result of a payment (or other credits). Please note that this will only happen if you plug-in the appropriate post cancellation algorithm on your severance process templates. Refer to *What Happens When A Severance Process Is Cancelled?***for more information**.

While you don't define the reconnect procedures for an SA type, we recommend you think about the reconnection steps for each of your SA types that can be disconnected for nonpayment. We've completed the sample matrix with some characteristic events.

| SA Type | Steps |
|---|---|
| Electric Residential | Create a reconnect service field activity.<br>Immediately after completion of the reconnect, send a letter to the customer. |
| Electric Commercial | Create a reconnect service field activity.<br>Immediately after completion of the reconnect, send a letter to the customer. |
| Gas Residential | Create a reconnect service field activity.<br>Immediately after completion of the reconnect, send a letter to the customer. |
| Gas Commercial | Create a reconnect service field activity.<br>Immediately after completion of the reconnect, send a letter to the customer. |

Once the matrix is complete, you determine the severance process templates needed to implement your reconnection procedures. Notice each SA type has the same reconnection steps. This means you just need one severance process. The following table shows this severance process template and its events.

| Severance Process Template | Event Number | Severance Event Template | Dependent On Event(s) | Trigger Date Set To X Days After Completion Of Dependent Events |
|---|---|---|---|---|
| Reconnect | 10 | Field activity - reconnect service | N/A - first event | 0 |
| | 20 | Service has been reconnected letter | 10 | 0 |

If we extract each unique severance event type from the above table, we end up with the following:

| Severance Event Template | Event Type |
|---|---|
| Reconnect | Generate Field Activity - Reconnect |
| Service has been reconnected letter | Send Letter |

**WARNING:**
The field activity types are NOT specified directly on the severance event type. Why? Because each service point linked to the service agreement being severed could necessitate a different type of field activity. Therefore, the system uses the type of service point, its state (e.g., connected, meter is off.) and the desired customer event (e.g., Disconnect Warning, Cut For Non-Payment) to determine which field activity type(s) to generate. Refer to *Setting Up Field Activity Type Profiles* for how to set up the specific disconnect field activity types for your various types of service points.

**IMPORTANT:**
If you want the system to automatically create a reconnection process if a customer pays after they have been cut, you must specify the appropriate post cancellation algorithm on your severance process templates.

And now you're ready to set up your severance (and reconnection) procedures.

# Setting Up Severance Procedures

In the previous section, *Designing Your Severance Procedures*, we presented a case study that illustrated a mythical organization's severance procedures. In this section, we'll explain how to set up the control tables to implement these procedures:

**Contents**



## Setting Up Severance Event Types

Severance event types control what is done by a given severance event. Open **Admin** > **Severance Event Type** > **Add** to define your severance event types.

**FASTPATH:**
For more information refer to *Designing Your Severance Procedures*.

**Description of Page**

Enter a unique **Severance Event Type** code and **Description** for the severance event type.

Enter the Severance **Event Type**. Permissible values are: Affect Credit Rating/Cash-Only , Send Letter , Generic Algorithm , Create To Do Entry , Create Field Activities , Expire Service Agreement . The following discussion describes the parameters that must be defined for each type of severance event.

The Affect Credit Rating/Cash-Only collection event type causes a credit rating demerit record to be linked to the account. This record is constructed using the following **Parameters**:

- Use **Credit Rating Points** to define this event's affect on the account's credit rating. This should be a negative number. A customer's credit rating is equal to the start credit rating amount defined on the installation record plus the sum of credit rating demerits that are currently in effect. When an account's credit rating is less than the credit rating threshold defined on the installation record, the account's credit rating is displayed as an alert on Control Central.
- Use **Cash-Only Points** to define this event's affect on the account's cash-only score. This should be a positive number. When an account's cash-only score exceeds the cash-only threshold score defined on the installation record, the account is flagged as cash-only during payment processing and on Control Central.

- Use **Credit Rating Months** to define the length of time the demerit remains in effect. This information is used to define the effective period of the credit rating demerit record.

The Send Letter severance event type causes a customer contact to be generated that, in turn, generates a letter. Enter the following **Parameters** for this type of event:

- Select the **Contact Class** used to categorize the customer contact.
- Use **Contact Type** to define the type of customer contact to create. The type of customer contact controls the type of letter that is generated.

The Generic Algorithm severance event type causes the algorithm defined in the **Sev. Event Algorithm** to be executed. You use this type of algorithm when the standard types of severance events won't do what you need done.

The Create To Do Entry severance event type causes a To Do entry to be created. Refer to *The Big Picture of To Do Entries* for more information about To Do entries (refer to the To Do type TD-SEVT for the type of To Do entry that's created).

The Generate Field Activities severance event type causes one or more field activities to be generated. Enter the following **Parameters** for this type of event:

- Select the **Customer Event** associated with the field activity. Valid values are: Cut For Non-Payment (CNP) , Disconnect Warning (Disc Warn) , Reconnect for Payment (Reconn) , Start Service (Start) , Start/Stop Service (Start/Stop) , Stop Service (Stop) , Reread (Reread) .
- The system uses the **Customer Event** to select the appropriate field activity type(s) from the field activity type profile associated with the service points linked to the service agreement.

**WARNING:**
The field activity types are NOT specified directly on the severance event type. Why? Because each service point linked to the service agreement being severed could necessitate a different type of field activity. Therefore, the system uses the type of service point, its state (e.g., connected, meter off) and the desired customer event (e.g., Disconnect Warning, Cut For Non-Payment) to determine which field activity type(s) to generate. Refer to *Setting Up Field Activity Type Profiles* for how to set up the specific disconnect field activity types for your various types of service points.

The Expire Service Agreement severance event type causes the service agreement to be moved to the pending stop state (it also populates the service agreement's stop date). Refer to *Finalizing Pending Stops* for how the system will eventually stop the service agreement (and then final bill it). There are no parameters for this type of event.

**NOTE:**
**Cut for non-payment field activities are special.** The Expire Service Agreement severance event type also makes any "cut for non-payment" field activities created by earlier severance events available to stop service. Specifically, it changes the linkage type of the field activities from Severance Activity to Stop Activity . You can see a service agreement's service points' field activities and their respective linkage type on *Service Agreement - Service Point*.

Enter a **Long Description** to fully describe the severance event type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SEV_EVT_TYPE*.

## Setting Up Severance Process Templates

Severance process templates define the severance events that will be executed when a service agreement is severed. Open **Admin** > **Severance Process Template** > **Add** to define your severance process templates.

**Description of Page**

Enter a unique **Severance Process Template** and **Description** for the severance process template.

If severance processes of this type should be automatically canceled when the customer pays the collection amount on the severance, turn on **Auto Cancel**. This switch would typically only be turned off for severance processes used to reconnect a cut service because you don't want such a reconnection process to be canceled when a payment is made. Refer to *Designing Your Reconnection Procedures* for more information.

In addition to turning on the **Auto Cancel** switch, specify a **Cancel Criteria Algorithm** if your organization allows a severance process to be cancelled regardless of the debt associated with all service agreements in the debt class. In other words, if your cancel criteria are based on the debt associated with ALL service agreements in a debt class DO NOT SPECIFY THIS ALGORITHM.

If the **Cancel Criteria Algorithm** is specified, it is executed when a credit is posted to the service agreement associated with a severance process. This algorithm will indicate if the service agreement no longer has debt that warrants a severance process. Refer to *How Are Severance Processes Cancelled* for more information. If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms*). On this algorithm, reference an Algorithm Type that cancels a severance process if the service agreement's debt so warrants. Click *here* to see the algorithm types available for this plug-in spot.

If you wish to perform any special processes after a severance process is canceled, specify a **Post Cancel Algorithm**. This can be used to start a reconnection in case the severance process was canceled too late to stop the disconnection. If you haven't done so already, you must set up this algorithm in the system. To do this, create a new algorithm (refer to *Setting Up Algorithms*). On this algorithm, reference an Algorithm Type that cancels a severance process if the service agreement's debt so warrants. Click *here* to see the algorithm types available for this plug-in spot.

When a service agreement is to be severed due to non-payment, the system creates a severance process and links to it one or more severance events based on the **Event Types** entered here. The information in the scroll defines these events and the date on which they will be triggered. The following fields are required for each event:

**Event Sequence** controls the order in which the severance event types appear under the severance process template. The sequence number is system-assigned and cannot be changed. If you have to insert a severance event type between two existing templates, you'll have to remove the latter events, insert the new event, and then re-specify the removed events.

**Severance Event Type** Specify the type of severance event to be generated.

**Dependent On Other Events** Turn this indicator on if the trigger date of the event can only be determined after earlier events are complete. For example, you would turn this switch on for the event that initiates the field activity to disconnect service. Why? Because you only want to disconnect service after the preceding event that warned the client of impending disconnection is complete.

**Days After Prev Response** Specify the number of days after the completion / cancellation of the dependent events on which the severance event will be triggered. If this event is not dependent on the completion of other events, this field contains the number of days after the creation of the severance process that the related severance event will be triggered. Refer to *Severance Event Dependencies and Trigger Date* and *Calendar vs Work Days* for a description of how the system uses this information to set the trigger date on the respective severance events.

When the **Dependent On Other Events** switch is on, use the grid to define the events on which this event is dependent. If multiple events are specified in the grid, all such events must be completed or cancelled before the event will be triggered.

**Sequence** is system-assigned and cannot be specified or changed.

**Dependent On Sequence** Specify the sequence number of the severance event on which the above severance event depends.

---

**FASTPATH:**
For more information about severance event types, see *Setting Up Severance Event Types* . For more information about trigger dates, see *Severance Event Dependencies & Trigger Date*.

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### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_SEV_PROC_TMP*.

# Designing Your Write-Off Procedures

The design of your write-off procedures is relatively straightforward. Simply follow the instructions in the following topics.

**Contents**



## Designing Your Write-Off Debt Classes

Multiple write-off debt classes are needed when you have different write-off procedures for different types of service agreements. If all service agreement debt is written-off the same way, then you'll have just one write-off debt class (call it Generic ). However, if you're like many organizations, you will have multiple write-off debt classes. The following points will help you understand why:

- If you bill for 3 rd parties, you probably have different write-off debt classes for the 3 rd party service agreements. Why? Because you probably treat 3 rd party uncollectable debt differently from your own debt.
- You will need a separate write-off debt class for service agreements whose debt cannot be written off. Why? Because there is a switch on the write-off debt class control table that controls if service agreements in the write-off debt class are eligible for write-off processing. Given that you will have some service agreements that hold debt that aren't eligible for write-off processing (e.g., service agreements that hold written-off debt and service agreements that overpayments), you will need at least one other write-off debt class.
- If you use the system to calculate charges for your organization's company usage, you'll need another write-off debt class (we refer to it as the "N/A" write-off debt class below). Why? Because all service agreements must have a write-off debt class, even those that will never have debt.

| SA's Write-Off Debt Class | **Account's Collection Class** | **Account's Collection Class** |
|---|---|---|
| Normal W/O | | |
| N/A | | |

## Designing Write-Off Controls

Set up a matrix using the collection classes you designed when you were designing your collection procedures ( *Designing Your Collection Procedures* ).

| SA's Write-Off Debt Class | **Account's Collection Class** | **Account's Collection Class** |
|---|---|---|
| | **Residential** | **Commercial/Industrial** |
| Normal Write Off | | |
| N/A | | |

Each cell should have a "write-off control" that defines what to do when the system detects finaled debt that hasn't been paid. This is true even of the "N/A" write-off debt class. Why? Because you may want the system to write-down these stopped SAs when they have a small balance. For example, if you have a write-off service agreement that subsequently

receives a partial payment that leaves a small amount owing, you probably want the system to generate a write-down adjustment (so that the write-off service agreement will close). We'll initially fill in the matrix for the "N/A' write-off debt class.

| SA's Write-Off Debt Class | **Account's Collection Class** | **Account's Collection Class** |
|---|---|---|
| | **Residential** | **Commercial/Industrial** |
| Normal Write Off | | |
| N/A | Attempt to reduce the SA's balance to zero using the following methods:<br>Synchronize current balance with payoff balance.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment. | Attempt to reduce the SA's balance to zero using the following methods:<br>Synchronize current balance with payoff balance.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment. |

**NOTE:**
If the Write Off Monitor encounters debt associated with a non-defined collection class and write-off debt class, it will issue an error.

For each cell that isn't designated as N/A, you need to answer the following questions:

- Are you allowed to transfer debt to other non-closed service agreements linked to the account? If so, you need to define the algorithm used to do such. Refer to *Setting Up Write-off Control* for more information about this algorithm.
- Are you allowed to write-down small amounts of debt (or small credits)? If so, you need to define the algorithm used to do such. Refer to *Setting Up Write-off Control* for more information about this algorithm.
- Should you refund credit balances with a check? If so, you need to define the algorithm to do such. Refer to *Setting Up Write-off Control* for more information about this algorithm.
- If debt remains after doing the above, how do you write it off (e.g., do you first refer the debt to a collection agency and only write it off after waiting 30 days)?

We'll fill in the above matrix with our assumptions:

| SA's Write-Off Debt Class | **Account's Collection Class** | **Account's Collection Class** |
|---|---|---|
| | **Residential** | **Commercial/Industrial** |
| Normal Write-Off | Attempt to reduce the SA's balance to zero using the following methods:<br>Attempt to transfer debt to another active service agreement linked to the account.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment.<br>If the debt is <= $-1, create an A/P adjustment to refund the credit to the customer.<br>If debt remains:<br>Highest priority: If customer has a non-cash deposit, create the non-cash deposit write-off process.<br>Otherwise, create the default write-off process for residential debt. | Attempt to reduce the SA's balance to zero using the following methods:<br>Attempt to transfer debt to another active service agreement linked to the account.<br>If the debt / credit is < $10 and > $-10, write down the debt using a write-down adjustment.<br>If the debt / credit is <= $-10, create an A/P adjustment to refund the credit to the customer.<br>If debt remains:<br>Highest priority: If customer has a non-cash deposit, create the non-cash deposit write-off process.<br>Otherwise, create the default write-off process for commercial debt. |

| | | |
|---|---|---|
| N/A | Attempt to reduce the SA's balance to zero using the following methods:<br>Synchronize current balance with payoff balance.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment.<br>Because this debt class isn't eligible for further write-off processing, criteria used to process debt are not necessary. | Attempt to reduce the SA's balance to zero using the following methods:<br>Synchronize current balance with payoff balance.<br>If the debt is < $10 and > $-1, write down the debt using a write-down adjustment.<br>Because this debt class isn't eligible for further write-off processing, criteria used to process debt are not necessary. |

We can now use the information in the above matrix to design the necessary Write Off Process Templates and Write Off Event Types.

## Designing Write Off Process Templates & Write Off Event Types

The following table shows the write-off process templates referenced in the previous section's matrix. Adjacent to each process are its events and an indication of when they are triggered.

| Write Off Process Template | Write Off Event Type | Triggered X Days From Start Of Write Off Process |
|---|---|---|
| Residential | Refer to collection agency | 0 |
| | Letter notifying customer of referral | 0 |
| | Cancel collection agency referral | 60 |
| | Write off | 60 |
| Non-Cash Deposit Exists | To Do for non-cash deposit redemption | 0 |
| | To Do to highlight unpaid SA(s) still exist (and they will be reconsidered for write-off processing) | 10 |
| Commercial | Refer to collection agency | 0 |
| | Letter notifying customer of referral | 0 |
| | To Do to check up on collection agency's efforts | 30 |
| | Cancel collection agency referral | 60 |
| | Write off | 60 |

If we extract each unique event type from the above table, we end up with the following:

| Write Off Event Type | Event Type |
|---|---|
| Notification of write-off referral | Send letter - Debt referred to a collection agency |
| Refer to collection agency | Refer to collection agency |
| Cancel collection agency referral | Cancel collection agency referral |
| Write off | Write off |
| To Do for non-cash deposit redemption | Generate To Do - Redeem non-cash deposit |

| | |
|---|---|
| To Do to highlight unpaid SA(s) still exist | Generate To Do - SA(s) linked to a non-cash deposit remain unpaid (and will be reconsidered for write-off processing) |
| To Do to check up on collection agency's efforts | Generate To Do - Check up on collection agency's efforts |

And now you're ready to set up your write-off procedures.

# Setting Up Write-Off Procedures

In the previous section, *Designing Your Write-Off Procedures* , we presented a case study that illustrated a mythical organization's write off procedures. In this section, we'll explain how to set up the control tables to implement these procedures:

**Contents**



## Setting Up Write Off Debt Classes

Every SA type has a write-off debt class. This class is one of several fields that control the write off criteria applied to the service agreement's debt. Select **Admin** > **Write Off Debt Class** to define your debt classes.

> **FASTPATH:**
> For more information about debt classes, see *Designing Your Write-Off Debt Classes* .

**Panel controls**

To modify a write-off debt class, simply move to a field and change its value. To add a new write-off debt class, click + to insert a row, then fill in the information for each field. The following fields display:

**Write Off Debt Class Code** The unique identifier of the write off debt class.

**Eligible for Write Off** Indicates if service agreements belonging to this write off debt class are eligible for write-off processing. This should only be turned off if this debt cannot be written off, e.g., write off debt.

**Description** The description of the write off debt class.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_WO_DEBT_CL*.

## Setting Up Write Off Event Types

Write-off event types control what is done by a given write-off event. Select **Admin** > **Write Off Event Type** > **Add** to define your write-off event types.

**Description of Page**

Enter a unique **Write Off Event Type Code** and **Description** for the write-off event type.

Enter the **Write Off Event Type**. Permissible values are: Affect Credit Rating/Cash-Only , Cancel Agency Referral , Generic Algorithm , Refer to Agency , Send Letter , Create To Do Entry , Write Off using Distrib Code , Write Off using SA Type . The following discussion describes the parameters that must be defined for each type of write-off event.

The Affect Credit Rating/Cash-Only write-off event type causes a credit rating demerit record to be linked to the account. This record is constructed using the following **Parameters**:

- Use **Affect Credit Rating By** to define this event's affect on the account's credit rating. This should be a negative number. An account's credit rating is equal to the start credit rating amount defined on the installation record plus the sum of credit rating demerits that are currently in effect. When an account's credit rating is less than the credit rating threshold defined on the installation record, the account's credit rating is displayed as an alert on Control Central.
- Use **Affect Cash-Only Score By** to define this event's affect on the account's cash-only score. This should be a positive number. When an account's cash-only score exceeds the cash-only threshold score defined on the installation record, the account is flagged as cash-only during payment processing and on Control Central.
- Use **Months Affecting Credit Rating** to define the length of time the demerit remains in effect. This information is used to define the effective period of the credit rating demerit record.

**FASTPATH:**
For more information, refer to *Account - Credit Rating*.

The Cancel Agency Referral event type will cancel previous collection agency referrals. No parameters are needed for this type of event.

The Generic Algorithm write-off event type causes the algorithm defined in the **Generic Algorithm** to be executed. You use this type of algorithm when the standard types of write off events won't do what you need done. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that determines the algorithm that will be called when events of this type are activated. Click *here* to see the algorithm types available for this plug-in spot.

The Refer to Agency event type will refer the debt associated with the process' SAs to a collection agency. You must supply the **Agency Selection Algorithm** that is used to determine the collection agency associated with the referral. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that determines the collection agency to which bad debt should be referred. Click *here* to see the algorithm types available for this plug-in spot.

**NOTE:**
**Letters.** You must set up a customer contact type for each type of letter you generate. You specify the necessary customer contact type on the write off event type. Refer to *Setting Up Letter Templates* for more information.

The Send Letter write-off event type causes a customer contact to be generated that, in turn, generates a letter. Enter the following parameters for this type of event:

- Select the **Contact Class** used to categorize the customer contact.
- Use **Contact Type** to define the type of customer contact to create. The type of customer contact controls the type of letter that is generated.

The Create To Do Entry write-off event type causes a To Do entry to be issued. Refer to *The Big Picture of To Do Entries* for more information about To Do entries (refer to the To Do type TD-WOEVT for the type of To Do entry that's created).

The Write Off using Distrib Code event type causes bad debt to be written off in accordance with the distribution codes associated with the financial transactions that caused the debt in the first place. Use this method if, for example, you want to write-off revenue differently than you write-off liabilities. When this type of event is activated, the system accumulates the

distribution codes from GL details associated with recent financial transactions linked to each write-off service agreement. When the system has accumulated enough distribution codes (i.e., where the amount associated with the distribution code equals or exceeds the amount to write off), the debt will be transferred to a new or existing write-off service agreements. The type of service agreements to which the debt is transferred is defined on the distribution codes. Refer to *Setting Up Distribution Codes* for more information.

The Write Off using SA Type event type causes all debt associated with the process' SAs to be transferred to a write-off service agreement linked to the account. Enter the following **Parameters** for this type of event:

- **CIS Division / SA Type** is the type of write-off service agreement to which the debt will be transferred. Note well,
  - The system will reuse an existing service agreement if an active SA of this type is already linked to the account; otherwise the system will create a new service agreement of this type.
  - The adjustment type used to set the offending service agreement's current balance equal to its payoff balance is defined on the write-offable SA Type. Refer to *SA Type - Main Information* for more information.
  - The adjustment type used to transfer the delinquent debt to the write-off service agreement is defined on the write off SA type. Refer to *SA Type - Detail* for more information.

Enter a **Comment** to fully describe the write-off event type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_WO_EVT_TYP*.

## Setting Up Write Off Process Templates

Write-off process templates define the write-off events that will be executed when a write-off criteria rule is violated. Select **Admin** > **Write Off Process Template** > **Add** to define your write-off process templates.

**Description of Page**

Enter a unique **Write Off Process Template** code and **Description** for the write-off process template.

The rows in the following grid define the events that will be created when a write off process is created using this template. The following fields display:

**Event Sequence** controls the order in which the write-off event is executed. The sequence number is system assigned and cannot be changed. If you need to insert a write-off event between two existing events, you must remove the latter events, insert the new event, and then re-enter the removed events.

**Write-off Event Type Code** Specify the type of write-off event to be generated. The event type's description is displayed adjacent.

**Days After Process Creation** Specify the number of days after the creation of the write-off process that the related write-off event will be triggered. Refer to *Calendar vs Work Days* for a description of how this system uses this information to set the trigger date on the respective write-off events.

> **FASTPATH:**
> For more information about write-off event types, see *Setting Up Write Off Event Types* . For more information about trigger dates, see *Write-off Event Trigger Date* .

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_WO_PROC_TMPL*.

## Setting Up Write Off Control

Write-off controls define how the system handles finaled, unpaid debt belonging to a given collection class and write off debt class.

**Contents**



## Write Off Control - Main

Select **Admin** > **Write Off Control** > **Add** to define basic information about a write-off control. After entering basic information, navigate to the **Criteria** tab to define the type of write-off process to start when given criteria are met.

---

**FASTPATH:**
For more information about write-off control, refer to *Designing Write-Off Controls* .

---

**Panel controls**

Enter a **Write Off Control** code and **Description** for the write-off control (WOC).

Enter the **Collection Class** to which the WOC applies.

Enter the **Write Off Debt Class Code** to which the WOC applies.

Enter general **Comments** to further describe the WOC.

Define the **Synch All Algorithm** used by the system to generate adjustments that cause current balance to equal payoff balance on the service agreements to be written off. This type of algorithm is typically issued before you actually start a write-off process as current balance is meaningless at write-off time (the customer owes you the payoff balance). If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that synchronizes current and payoff balances. Click *here* to see the algorithm types available for this plug-in spot.

Define the **Debt Transfer Algorithm** used by the system when it attempts to transfer the unpaid debt to another active service agreement linked to the stopped SA's account. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that transfers unpaid balances. Click *here* to see the algorithm types available for this plug-in spot.

Define the **Write Down Algorithm** used by the system when it attempts to write-down small debt and/or credit balances. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that writes down small amounts. Click *here* to see the algorithm types available for this plug-in spot.

Define the **Credit Refund Algorithm** used by the system when it refunds a credit balance to a customer. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that refunds credit balances. Click *here* to see the algorithm types available for this plug-in spot.

## Write Off Control - Criteria

Select **Admin** > **Write Off Control** > **Search** and navigate to the **Criteria** page to define the type of write-off process to start when given criteria are met.

**FASTPATH:**
The following information is not intuitively obvious. Refer to *Designing Write-Off Controls* for more information.

**Panel controls**

The information in the grid defines the write-off process to be executed for debt belonging to the previously defined collection class and write off debt class. The type of write-off process may differ depending on some condition. For example, you may have a different write-off process if the customer has a non-cash deposit. You must have at least one entry in this collection otherwise the system will not start a write-off process. This entry should have the lowest priority code and should reference a **Write Off Criteria Algorithm** that references the WO CRIT DFLT the algorithm type.

The following fields display:

**Priority** controls the order in which the criteria will be checked by the Write Off Monitor (higher priorities are checked before lower priorities). The first criteria algorithm that is met (i.e., returns a value of *True*) will cause the associated write-off process to be initiated.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is CRIT_PRIO_FLG. Be aware that this field is used for multiple tables: *Collection Class Control*, *Severance Criteria*, *Write Off Control* and *Workflow Process Profiles*.

**Write Off Criteria Algorithm** The Write Off Monitor checks if the condition defined by the W/O Condition Algorithm applies to the account whose debt is being analyzed. If a condition is met, a write-off process is created using the associated write-off process template.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that determines if a customer's bad debt should be processed using the associated **Write Off Process Template**. Click *here* to see the algorithm types available for this plug-in spot.

**IMPORTANT:**
You must have at least one entry in this grid otherwise the system will not start a write-off process. This entry should have the lowest priority code and should reference a **W/O Criteria Algorithm** that references the *WO CRIT DFLT* algorithm type.

**Write Off Process Template** If the Write Off Monitor determines the condition defined by the w/o condition algorithm applies, a write-off process is created using the associated write-off process template.

**Where Used**

Write-off controls contain the data that controls the Write Off Monitor. Refer to *How Does The Write-Off Monitor Work?* for more information.

## Setting Up Collection Agencies

You must set up a collection agency for each such organization to which you refer delinquent debt. To define a collection agency, select **Admin** > **Collection Agency.**

**Description of Page**

Enter an easily recognizable **Collection Agency** code and **Description** for each collection agency.

A collection agency must be associated with a Person. Choose the **Person ID** of the organization from the prompt.

> **FASTPATH:**
> Information about how to set up persons is discussed in *Maintaining Persons* .

Turn on the **Active** switch if the collection agency is actively receiving referrals.

Specify the **Batch Control** that's used to route new and cancelled referrals to the collection agency. The batch control's description is displayed adjacent.

**Where Used**

Collection agencies get assigned to collection agency referrals when the collection agency referral background process executes. Refer to *How Do Collection Agency Referrals Work?* for more information.

## Setting Up Feature Configuration

You must set up a *Feature Configuration* if you use the *champion / challenger* functionality.

The following describes the various **Option Types** that must be defined:

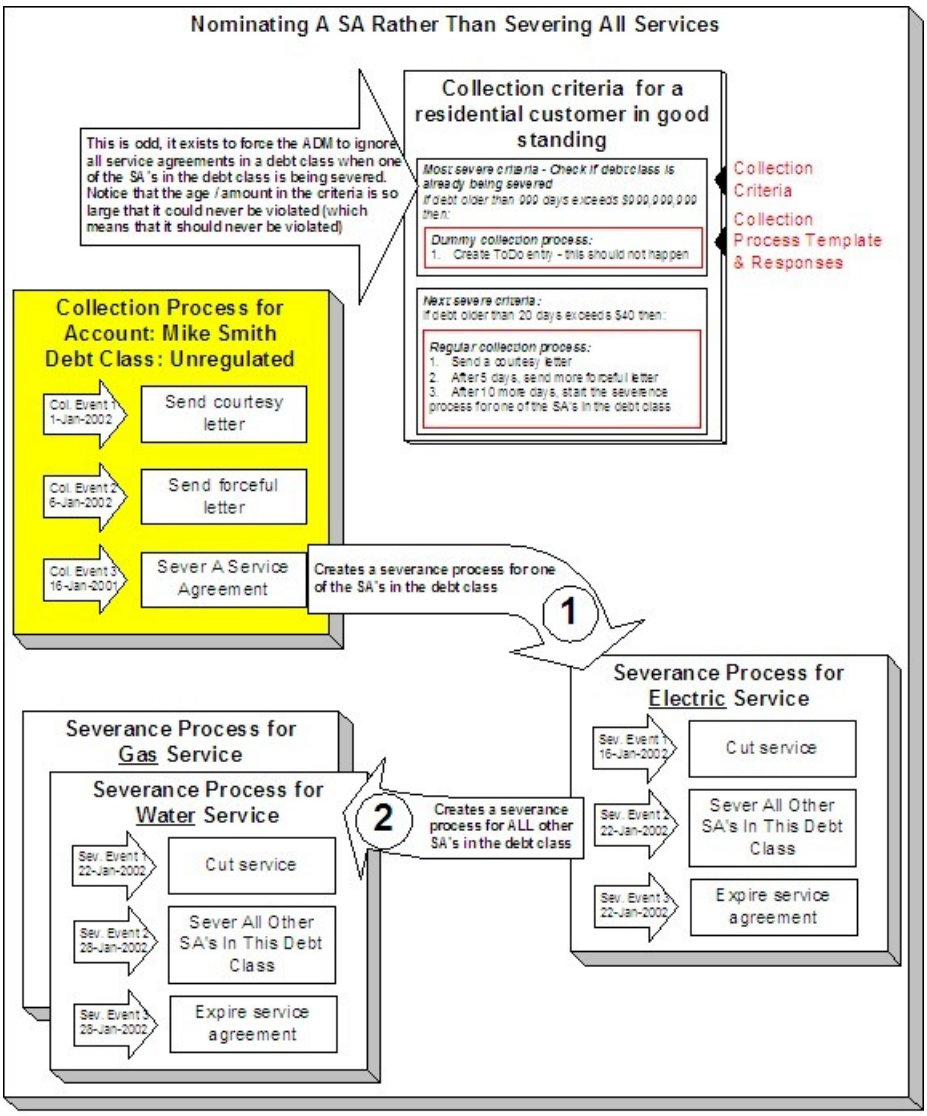
Champion Template$Challenger Template$Percentage(1-100). You need only set up options of this type if your implementation implements *Champion / Challenger* functionality. Options of this type are entered in the format A$B$nnn where A is the collection process template of the champion template, B is the collection process template of the challenger template, and C is the percent of the time that the system should create the challenger template. The collection monitor uses this option to override the champion collection process template X% of the time with the challenger template. You may enter any number of these options (but only one per Champion Template).

# How To

The contents of this section describe how to set up various credit and collections scenarios.

## How To Nominate A Single Service To Sever (Rather Than Sever Everything That's In Arrears)

Some organizations that offer multiple services do not sever all services when the customer falls into arrears. Rather, they nominate a single service agreement to sever in the hopes that the lack of service will cause the customer to remit payment. The following diagram illustrates the control tables values required to implement this type of requirement.




The following important concepts are illustrated above:

- The collection process's last event does NOT sever all services. Rather, it calls an algorithm that selects a single service to sever. A base package algorithm allows you to define the primary service to sever and a secondary service to sever (if the customer does not have the primary service). If you sold electricity and gas, you would probably define the primary service as electricity and the secondary as gas (because electricity is easier to cutoff than gas).
- The severance process that is started for the primary service cuts service. If the customer doesn't remit what is owed, the second severance event calls an algorithm that severs all other service agreements in the debt class.
- Because you are nominating a single service to sever, you must set up a special value in collection class control to force the ADM to ignore all service agreements in a debt class when one of the SAs in the debt class is being severed. Notice that the age / amount in the criteria is so large that it could never be violated.
- In addition, because the entire debt class must no longer be in arrears to stop the collection and severance processes, you must plug-in the appropriate collection process and severance process cancellation criteria on the debt class. Refer to *How Are Collection Processes Cancelled* and *How Are Severance Processes Cancelled* for more information about how these algorithms are used. Also note, you do not need service agreement cancellation criteria defined on your collection process templates and severance process templates (because cancellation is controlled at the debt class level).

# Defining Meter & Item Options

Located at a premise's service points are the various meters, items and equipment that regulate and measure consumption. Before you can define meters, items and equipment you must set up the control tables defined in this section.

**FASTPATH:**
Refer to *An Illustration Of A Premise* for an illustration of how meters, items and equipment are related to the service points.

**Contents**



## The Big Picture of Meters, Items and Equipment

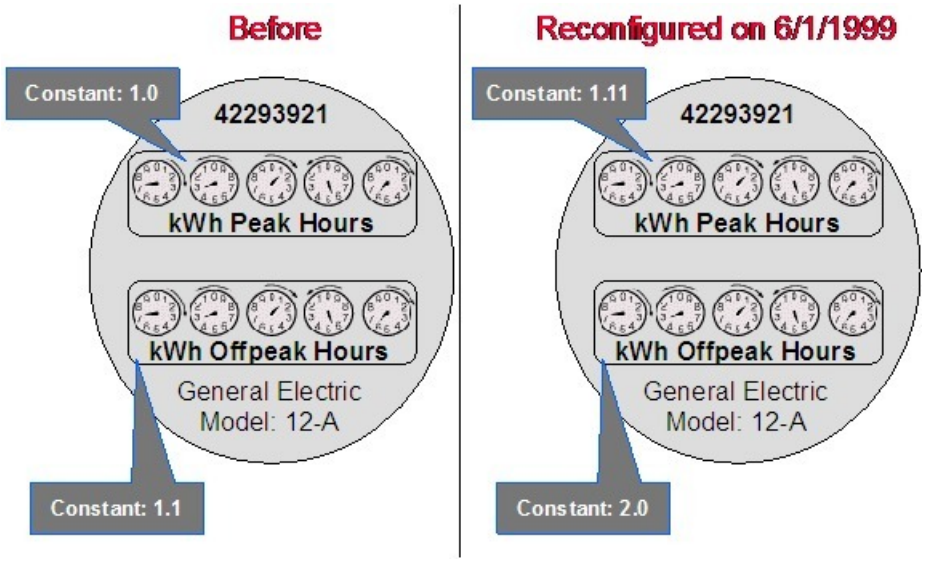
The topics in this section provide background information about meters, items and equipment.

**Contents**



## The Structure Of A Meter

A customer's consumption is measured using a meter. What a meter measures and how it measures it can change over time. The following example illustrates a simple meter before and after a reconfiguration.




The system maintains how a meter looks over time so that it can reproduce bills using historical consumption. Information about this meter is recorded in the following tables:

- Every meter has a single **meter** record that contains information about the meter that doesn't change over time. For example, its meter number and manufacturer.
- A **meter configuration** record is required whenever something changes about what the meter measures. The meter shown above has two configurations - the original and the one effective on 1-June-1999.
- Every meter configuration contains one or more **registers**. Each register references the unit being measured and how the measured quantity is manipulated before it is billed.

**FASTPATH:**
Information about how to set up meters is discussed in *Maintaining Meters*.

## Items Are Used For Other Devices Associated With A Customer's Service

In addition to meters, there are many other devices that can be involved with a customer's service. We refer to these other devices as "items".

We purposefully use the ambiguous term *item* because items are used for many different devices including lamps, poles, current transformers, backflow devices, pulse initiators, etc. Refer to the diagram in *An Illustration Of A Premise* for an example of the various items that could be associated with a customer's service.

The topics in this section provide more information about items.

**Contents**

*Billing and Items*

*Generic Equipment*

## Equipment versus Badged Items

This is a rather confusing subject, but there are two notional types of items:

- **Equipment.** An item that is considered to be "equipment" is a physical device that regulates consumption; it does NOT measure consumption. You would only define equipment if it is of interest to your organization. For example, if your organization periodically tests the pulse initiators associated with your meters, you will need to set up items for each pulse initiator and link them to their respective meters. Equipment can be linked to either a service point (e.g., a current transformer, a backflow device), a meter (e.g., a pulse initiator), or an item (e.g., the components of an installation).
- **Non Equipment.** An item that is not considered to be "equipment" is a physical device that does NOT measure consumption, but impacts billing in some way (i.e., there are charges in your rates based on the number and type of items installed at a service point). Examples include street lights, light poles, and security cameras. These types of items are related to service points. Refer to *Chargeable Items Must Be Associated With Service Points* for information about the two types of items that may be linked to service points.

The topics that appear below provide more information about both types of items.

## Meters May Have Equipment

If you have physical devices that are intrinsically associated with meters (but aren't meters), you can set up an item for each such device. For example, if you have pulse initiators linked to your meters, you would set up an item for each pulse initiator. After creating these items, you would update each meter's collection of equipment to include the respective pulse initiator.

## Items May Have Equipment

If you have physical devices that are intrinsically associated with other non-metered devices, you can set up an item for each such device. For example, you could set up an item for an "installation" (an installation is a group of devices that work together to regulate electric consumption) and link to it the individual items that do the work. To do this, you would set up items for each individual piece of equipment in the installation. After creating these items, you would update the collection of equipment associated with the installation's item to include each piece of equipment.

## Service Points May Have Equipment

If you have physical devices that don't have line item charges but are intrinsically associated with a service point, you can set up an item for each such device. For example, if you have voltage regulators linked to your service points, you would set up an item for each voltage regulator. After creating these items, you would update each service point's collection of equipment to include the respective voltage regulator.

## Chargeable Items Must Be Associated With Service Points

If there are charges in your rates based on the number and type of items installed at a service point, you can use either of the following techniques:

- If the item is badged (i.e., uniquely identified), you would set up an item and link it to an **item-** ***based*** service point. An item-based service point may have zero or one item installed at any instant in time. Over time, an item-based service point may have many badged items installed and removed. Refer to *Installing / Removing An Item* for more information.
- If the item does not have a unique identifier, you do NOT have to set up phony items for it. Rather, you can use the system's multi-item functionality and simply define the number of each TYPE of item that is installed at a service point. Refer to *Service Points With Multiple Items* for an illustration of such a service point.

## Start / Stop and Items

When a customer start or stops service at an **item-** ***based*** service point, it takes into account whether an item is currently installed at the SP and whether the item is on or off. Start / Stop does not concern itself with equipment.

## Billing and Items

It's important to note that billing ignores equipment relationships when it constructs the snapshot of number and types of items associated with a service agreement's service points. In other words, billing constructs the item snapshot as follows:

- It inserts an entry into the item snapshot for every item type referenced in the service agreement's service points' multi-item collection.
- It inserts an entry into the item snapshot for every badged item linked to service points with an SP type of Item .

**FASTPATH:**
Refer to *Item Snapshot* for more information.

**NOTE:**
**Equipment and billing.** Be aware that the only way equipment can impact billing would be if you develop a pre-processing calculation group that analyzed the equipment associated with a service point (directly or indirectly via the meters and items) and manipulated billed consumption accordingly. Refer to *All Calculation Rule-Based Rates Share a Common Structure* for more information about pre-processing calculation groups.

## Generic Equipment

Some companies do not badge their equipment, but they still need to keep track of the type of equipment that is linked to service points, meters and badged-items. For example,

- You may want to keep track of the type of modem linked to a meter, but you don't care about the individual modem or pulse-initiator
- You may want to keep track of the type of backflow device linked to a water meter

**NOTE:**
**Why is generic equipment recorded in the system?** Generic equipment gets linked to SP's / meters / items when the type of equipment linked to an SP / meter / item affects bill calculations. For example, some water companies charge extra if a backflow device is present at a service point.

If you encounter the need for generic equipment, do the following:

- Create an Item Type for each type of unbadged equipment. On this item type, indicate that items of this type may be linked to multiple SP's / meters / items. Note: we recommend suffixing the description of the item type with the word "generic".
- Update the relevant meter type(s) / SP type(s) / item type(s) to indicate that they may use equipment associated with the generic item type.
- Create one (1) item for each type of unbadged equipment. Note: we recommend suffixing the description of the item type with the word "generic".
- Link the generic item to the relevant SP's / meters / items.

# Setting Up Meter Options

This section describes tables that must be set up before you can define meters.

**Contents**



# Setting Up Meter Configuration Types

Every meter configuration must reference a meter configuration type. The meter configuration type indicates the valid (required or optional) unit of measure and time of use registers for the configuration.

Navigate to **Admin** > **Meter Configuration Type** > **Add** to set up valid meter configuration types.

**Description of Page**

Enter an easily recognizable **Meter Configuration Type** and **Description** for the meter configuration type.

Choose the **Service Type** associated with the meter configuration type. Refer to *Setting Up Service Types* for more information.

Use **Prepaid Meter** to indicate whether or not the meter configuration is used to record prepaid usage.

If you have set up a **TOU Group** to indicate your collection of time of use codes for the meter configuration, enter it here. Use the **Default TOU Registers** button to have the system build the collection of registers for you based on the TOU codes linked to the TOU group. Refer to *Setting Up TOU Groups* for more information

In the grid, specify the attributes of the collection of valid registers. If the register is **Interval**, put a check in the checkbox. For any register, indicate the valid **UOM**. For interval registers, indicate the **Interval Register Type**. If a **TOU** is applicable for the register, enter the TOU code. Finally, specify a **Validation** for each register. The register pair can be Optional or Required .

**NOTE:**
In certain markets, registers with the same **UOM** and **TOU** combination or, for **Interval** meters, the same **UOM** and **Interval Register Type** combination may need to be defined under a single meter configuration. If your implementation is in one of these markets, add the Allow Duplicate UOM/TOU Combination **Option Type** on the Meter Management Options *Feature Configuration* and set its value to Y .

**Attributes related to interval registers may not appear**. These attributes are suppressed if Meter Data Management module is *turned off*.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MTR_CONFIG_TY*.

# Setting Up Meter Types

Every meter references a meter type. The meter type defines the type of service and common characteristics shared by its meters. The meter type also controls the characteristics that may be specified on meters of a given type.

**NOTE:**
**When a new meter type is added.** After adding a new meter type, you must define the SP types at which meters of this type can be installed.

The topics in this section describe how to maintain your meter types.

**Contents**



## Meter Type - Main

To define a meter type, open **Admin** > **Meter Type** > **Add.**

**Description of Page**

Enter an easily recognizable **Meter Type** and **Description** for the meter type.

Choose the **Service Type** associated with all meters of this type. Refer to *Setting Up Service Types* for more information.

Turn on **Allow Duplicate Meter Badges** if more than one meter of this type may have the same badge number.

Turn on **Prepaid-Capable** if meters of this type are used to record prepaid usage.

Turn on **Allow Interval Registers** if meters of this type may contain interval registers. Refer to *The Big Picture of Raw Data Collection and Aggregation* for more information.

Indicate in **Track Location** whether you Track or Do Not Track the location of meters of this type. Refer to *The Big Picture of Asset Inventory* for more information.

Use the **Characteristic Values** collection to define **Characteristic Type**s and their respective **CharacteristicValue**s and **Adhoc Value**s to describe characteristics common to all meters of this type.

**NOTE:**
You can only choose characteristic types defined as permissible on the meter type record.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MTR_TYPE*.

## Meter Type - Meter Characteristics

To define characteristics that can be defined for meters of a given type, open **Admin** > **Meter Type** > **Search** and then navigate to the **Meter Characteristic** page.

**Description of Page**

Use the **Meter Characteristics** collection to define characteristics that can be defined for meters of a given type. Turn on the **Required** switch if the **Characteristic Type** must be defined on meters of a given type. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on. Use **Sequence** to control the order in which characteristics are defaulted.

## Meter Type - Equipment Types

Open **Admin** > **Meter Type** > **Search** and then navigate to the **Equipment Types** page to define the types of equipment that can be linked to meters of a given type. Refer to *Equipment versus Badged Items* for more information about equipment.

**Description of Page**

Use the collection to define the item types of **Equipment** that can be linked to meters of this type.

**NOTE:**
**Item types are being specified.** There is no equipment type control table. Rather, items are used to define equipment and therefore you are actually defining item types rather than equipment types. Refer to *Equipment versus Badged Items* for more information about equipment.

## Meter Type - Test Types

Open **Admin** > **Meter Type** > **Search** and then navigate to the **Test Types** page to define the types of device tests that can be performed on meters of a given type. Refer to *The Big Picture Of Device Testing* for more information about device tests.

**Description of Page**

Use the **Device Test Type** collection to define the types of *device tests* that can be performed on meters of a given type.

## Meter Type - Meter Configuration Type

Open **Admin** > **Meter Type** > **Search** and then navigate to the **Meter Configuration Type** page to define the types of meter configurations that are allowed for this type of meter.

**Description of Page**

Use the **Meter Configuration Type** collection to define the types of meter configurations that can be used for this type of meter.

## Setting Up Manufacturers & Their Models

When you set up a meter (or an item) you must define the manufacturer and model number of the meter / item. To define a manufacturer and its models, open **Admin** > **Manufacturer** > **Add.**

**Description of Page**

Enter an easily recognizable **Manufacturer** and **Description** for the manufacturer.

Enter a **Model** and **Description** for every model supplied by the manufacturer. Enter the **Service Type** with which the model is associated. Refer to *Setting Up Service Types* for more information.

If the model is associated with a meter, turn on **Use On Meter**. If the model is associated with an item, turn on **Use On Item**.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MFG*.

## Setting Up Meter ID Types

A meter may have alternate ID's other than its badge number. If so, it will reference one or more meter ID types (one for each alternate form of ID). To define meter ID types, open **Admin** > **Meter ID Type.**

**Description of Page**

Enter a unique **Meter ID Type** and **Description** for every meter ID type.

**Where Used**

A meter may have alternate ID's other than its badge number. If so, it will reference one or more meter ID types (one for each alternate form of ID). Refer to *Meter - Meter ID Information* for more information.

## Setting Up Read Out Types

Every register has a read out type that defines how the register's measurements are physically displayed (e.g., circular dials, digital, n/a-electronic transmission, and so on). To define read out types, open **Admin** > **Read Out Type.**

**Description of Page**

Enter a unique **Read Out Type** code and a **Description** for every read out type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_READ_OUT_TYP*.

## Setting Up Protocol Codes

Every register has a protocol code that defines the method used to record the register's measurements (e.g., visual, probe, AMR, modem). To define protocol codes, open **Admin** > **Protocol.**

**Description of Page**

Enter a unique **Protocol** and **Description** for every protocol.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PROTOCOL*.

# Setting Up Unit Of Measure Codes

You must create a unit of measure (UOM) for:

- Every UOM that is measured by your meters' registers.
- Every UOM in which your rates' prices are expressed.
- Every UOM in which your items' estimated consumption is expressed.

**NOTE:**
Typically, the measured UOM is the same as the UOM in which the prices are expressed. However, there are instances where the UOM of the price is not measured by a meter's registers. Natural gas is a good example - the prices are expressed in an amount per therm, but the gas meters measure some volume (e.g., cubic feet, cubic meters).

**FASTPATH:**
For more information about UOM's, refer to *UOM versus TOU versus SQI* .

To define unit of measure codes, open **Admin** > **Unit of Measure**.

**Description of Page**

The following fields display for each unit of measure:

**UOM** The unique identifier of the unit of measure.

**Description** The full description of the UOM.

**Service Type** The type of service (e.g., electric, gas, water, and so on.) associated with this UOM. This value controls the UOMs that may be referenced on meters belonging to a given service type. Refer to *Setting Up Service Types* for more information.

**Decimal Positions** The number of decimal positions that appear on bill lines that show consumption.

**NOTE:**
**Suppression of trailing zeroes.** If you wish to suppress trailing zeroes in the consumption that appears on bill lines, you must set up the Allow Zero Suppression Of Consumption In Bill Description option type on the Financial Transaction Options *Feature Configuration*.

**Allowed on Register** Turn on this switch if the UOM can be referenced on a meter's register. A unit of measure may not be allowed on a register when it exists purely because there is a price in a rate expressed in this UOM. (For example, prices of natural gas are frequently express in therms, but it is rare to find a meter that measures gas in therms.)

**Measures Peak Quantity** Turn on this switch for UOMs that exist to record the peak amount of consumption, e.g., kW and kVar. Peak UOMs are treated differently by billing when determining the amount of consumption. They are also treated differently if rating has to prorate consumption.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_UOM*.

# Setting Up Time-Of-Use Codes

You will only create time of use (TOU) codes if your meters measure consumption in respect of broad time bands. For example, some electric meters measure consumption in respect of WHEN the power was used - peak period, off peak period, or partial peak period.

If you have "time of use" meters, then you must create TOU codes for:

- every TOU that is measured by your meters, and
- every TOU in which your rates' prices are expressed.

**NOTE:**
Typically the measured TOU is the same as that in which the prices are expressed. However, there are instances where the TOU of the price is not measured directly by a meter's registers. A simple example is where the meter measures peak hours consumption and total consumption but there are prices in the rate for off peak consumption. In this situation, the peak hours consumption would have to be subtracted from the total consumption to derive off peak consumption. In this situation, you would need TOU codes for both peak (measured) and off-peak (derived) periods.

**FASTPATH:**
For more information about TOU's, refer to *UOM versus TOU versus SQI* .

Time-of-use codes will also be needed if your company offers interval billing with TOU mapping. Refer to *Designing Your Time of Use Options* for more information.

To define time-of-use codes, open **Admin** > **Time of Use.**

**Description of Page**

Enter a unique **TOU** code and **Description** for every time of use code.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TOU*.

# Setting Up TOU Groups

TOU Groups may be used to group together time of use codes, which are included in a meter configuration. It is also used in TOU mapping and pricing functionality.

**FASTPATH:**
Refer to *Grouping of TOU Codes* for more information about the TOU group's role in TOU mapping and pricing.

Open **Admin** > **TOU Group** > **Add** to define your TOU Groups.

**Description of Page**

Enter a unique **TOU Group** and **Description** for the TOU group.

Enter the Collection **Time of Use** codes. This is a list of time of use codes that define the time of use periods to be used for certain TOU maps. For each time of use code, you may indicate a **TOU Sequence** to indicate the relative order or relative priority of each TOU for the TOU group. Refer to *Grouping of TOU Codes* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TOU_GRP*.

## Setting Up Retirement Reasons

When you change a meter or item's status to Retired , you must supply a retirement reason. To define retirement reasons, open **Admin** > **Retire Reason.**

**Description of Page**

Enter a **Retire ReasonCode** and **Description** for every retirement reason.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_RETIRE_RSN*.

## Setting Up Metered Service Point Options

This section describes tables that must be set up before you can define metered service points.

**Contents**



## Defining Meter Location Codes

When you set up a metered service point you must define where the meter's service point is located on the property.

> **NOTE:**
> The meter location code is provided to meter readers and field workers to help locate the meter.

To define meter location codes, open **Admin** > **Meter Location.**

**Description of Page**

Enter a unique **Meter Location** and **Description** for every meter location.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MTR_LOC*.

## Setting Up Service Cycles And Routes

> **FASTPATH:**
> Refer to *Designing Service Cycles, Routes, And Schedules* for more information.

## Setting Up Metered Premise Options

This section describes tables that must be set up before you can define premises.

**Contents**



## Setting Up Meter Read Instructions

When you set up a premise you may define instructions to be supplied to the individuals who read the meters located at the premise. To define meter read instruction codes, open **Admin** > **Meter Read Instruction.**

**Description of Page**

Enter a unique **Meter Read InstructionCode** and **Description** for every meter read instruction.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MR_INSTR*.

## Setting Up Meter Read Warnings

When you set up a premise you may define warnings to be supplied to the individuals who read the meters located at the premise. To define meter read warning codes, open **Admin** > **Meter Read Warning.**

**Description of Page**

Enter a unique **Meter Read Warning** and a **Description** for every meter read warning.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MR_WARN*.

## Setting Up Consumption Estimation Parameters

The system estimates consumption under the following situations:

- At billing time, when "real" consumption cannot be computed due to the lack of a meter read, the system estimates how much the customer used assuming the following conditions are true:
  - The service agreement allows estimation.
  - The rate schedule allows estimation.
  - The bill cycle schedule (if one is being used) allows estimation.
  - The register is not a peak register (this is an artificial constraint, but most organizations do not estimate peak consumption). Note that the base product estimation algorithms may attempt to estimate peak registers.
  - The register is subtractive. This is because only subtractive registers are self-correcting. For example, assume we estimate a reading of 100 and the next real read is 102, the customer will only be charged for 2 units. But consider what would happen if we estimated a consumptive register, the consumption associated with the next real read will be billed in its entirety.
- When a meter read is added, the system verifies that the resultant consumption is congruous with historical consumption trends (i.e., high / low checks are performed).

This section describes the tables that must be set up to estimate consumption.

**Contents**



# Estimating Consumption

How the system generates estimated consumption is up to you because a plug-in algorithm is called when it's time to estimate consumption. The identity of the plug-in algorithm is defined on the *trend area* of the premise at which the meter is installed.

The base package is supplied with two algorithm types that you may use to estimate consumption:

- The *TSMRE-LA* algorithm type first tries to estimate consumption using historical data for the account and service point. If this is unsuccessful, it uses trend data to estimate consumption.
- The *MR EST TREND* algorithm type uses trend data to estimate consumption.

If neither of these algorithms works for your organization, you will need to write a new algorithm and plug it in on your trend areas.

The following discussion explains how the sample estimation plug-ins work.

**Contents**



## Estimating Using Historical Consumption

One of the sample estimation algorithms provided with the base package attempts to estimate consumption using historical data for the account and service point.

When you estimate consumption using historical data, you assume that the customer will have current consumption that is similar to their historical usage. For example, if you need to estimate consumption for the month of February of the current year, you could assume that the customer has similar consumption during the month of February of the previous year or that they have similar consumption to the previous month.

The base package algorithm type that uses a customer's historical data to estimate consumption is called *TSMRE-LA* (three-step meter read estimation). It makes three attempts to estimate consumption stopping at the first successful attempt.

First, it tries to estimate consumption using a bill segment for the service point from the previous year that covers a similar period to the one being estimated. The year-old bill segment can be used for estimation if it is for the same account AND the bill segment's end read is not a system estimate AND there are enough days in the bill segment for estimation (as defined by the algorithm).

If the year-old bill segment cannot be used for estimation, the system attempts to use the bill segment for the account and service point that immediately precedes the start date of the estimation period. Again, this bill segment must not have an estimated end read and it must have a sufficient number of days for estimation.

Once a historical bill segment that can be used for estimation is located (using one of the above methods), the estimation occurs as follows:

- If the register is non-peak, the system calculates the average amount of consumption per day on the historical bill segment and multiplies this by the number of days in the current estimation period. For example, if the customer averaged 30.350877 kWh per day in the historical bill period and there are 30 days in the current period, the estimated consumption is: 911 kWh.
- If the register is peak, the estimation amount is the same as the peak amount on the historical bill segment.

If the system is unsuccessful in estimating consumption using the historical data for the previous year or the previous bill period, the system estimates consumption *using trends* .

## Estimating Using Trends

**WARNING:**
The topics that appear below explain how the *MR EST TREND* sample estimation algorithm works. Another algorithm is also available in the base package. It attempts to estimate consumption using the customer's historical consumption; if historical consumption does not exist, it estimates using the logic described below (refer to *Estimating Using Historical Consumption* for the information about this algorithm).

**Contents**



## The Theory Behind Consumption Estimation Using Trends

The following discussion explains how the sample estimation plug-ins use trend data. If you decide to create your own version of one of these plug-ins, you still have to set up trend areas and trend classes as these are required fields on premises and SP types.

The standard estimation plug-ins assume that if a customer historically used, say, twice as much as customers of a similar profile, then the customer should use twice as much in the current period. Therefore, to estimate consumption for any period of time the system needs to know:

A. How much the specific customer used in the previous consumption period.

B. How much the average customer in the customer's trend profile used in the previous consumption period.

C. How much the average customer in the customer's trend profile used in the period being estimated.

Once the above are known, estimated consumption for the specific customer equals (A/B) * C.

Knowing how much the specific customer used in the previous consumption period simply involves looking at the customer's previous readings (or reading, in the case of consumptive meters).

Knowing how much the average customer used requires consumption trend data. Consumption trend information is continuously updated behind-the-scenes using meter reads. A consumption trend is identified by a unique combination of:

- **Trend area.** Trend areas are used to differentiate consumption trends in different geographic areas. If your service territory doesn't have appreciable differences based on geography, then you will have just one trend area.

- **Trend class.** Trend classes are used to differentiate consumption trends based on the type of service and the type of property. At a minimum, you would probably have a trend class to differentiate between residential, commercial, and industrial usage.
- **Unit of Measure and Time of Use.** All consumption in the system is identified using a unit of measure code and, optionally, a time-of-use code.

**FASTPATH:**
For more information about unit of measure codes, see *Setting Up Unit Of Measure Codes* . For more information about time-of-use codes, see *Setting Up Time-Of-Use Codes* . Trend areas, trend classes, and consumption trends are described later in this section.

**NOTE:**
**Bottom line.** A separate consumption trend is maintained behind-the-scenes for every combination of trend area, trend class, unit of measure and time of use.

## Consumptive Register Where UOM Does Not Measure Peak Quantity

The algorithm used to estimate consumption for a consumptive, non peak unit of measure is identical to *Subtractive Register Where UOM Doesn't Measure Peak Quantity*; the only difference is that we don't have to find the previous, previous read in order to determine the customer's usage in the previous period.

## Subtractive Register Where UOM Does Not Measure Peak Quantity

Assume the following read history exists for a subtractive register (i.e., one where you have to subtract the previous read from the current read in order to derive consumption) where the register's unit of measure doesn't measure a peak quantity.

| Read Date | Reading | Derived Consumption |
|---|---|---|
| 15-Jan- 1999 | 1000 | N/A (first read) |
| 15-Feb-1999 | 3000 | 2000 |
| 15-Mar-1999 | 4500 | 1500 |

Next, assume the meter's trend profile looks as follows:

| Read Date | Total Qty (Assume kWh) | No of Units (Total Days) | Number of Reads | Average Consumption (Per Day) |
|---|---|---|---|---|
| 13-Mar-1999 | 6,000,000 | 135,000 | 4,500 | 44.444444 |
| 14-Mar-1999 | 900,000 | 15,000 | 500 | 60 |
| 15-Mar-1999 | 5,000,000 | 137,750 | 4,750 | 36.297641 |
| ... | | | | |
| 13-Apr-1999 | 4,000,000 | 135,000 | 4,500 | 29.629630 |
| 14-Apr-1999 | 4,650,000 | 155,000 | 5,000 | 30 |

**NOTE:**

The system keeps a separate trend for every combination of trend area, trend class, unit of measure and time of use code. Trend area comes from the premise at which a meter is installed. Trend class comes from the SP type of the service point at which a meter is installed. Unit of measure and time of use come from the register read's register.

Next, assume a new register read is recorded on 15-Apr-1999 with a value of 5000.

In order to calculate estimated consumption for this register read, we have to calculate average daily consumption using the following formula:

$$\frac{\text{This customer's usage in previous period}}{\text{Avg customer's usage in previous period}} \times \text{Avg customer's usage in current period}$$

The following points describe exactly how the system calculates each variable in this formula:

- Determine **Average Customer's Usage In Current Period**:
  - Extract the number of reads from the meter's service point's SP type's trend class. We'll assume this is set to 7,500 reads.
  - Read trend records in reverse chronological order from the read date (assuming there is no trend record on 15-Apr-1999, we'll start amassing trends from 14-Apr-1999).
  - Read enough trend records until the number of reads is greater than or equal to the trend class' number of reads. We will have to read 2 trends records to amass this value (the ones on 14-Apr-1999 and 13-Apr-1999). We remember how many reads we extracted from the trend table for use a little later. In this case, we used 9,500 reads.
  - Divide **Total Qty** by **No of Units**. Using our example, we'd divide 8,650,000 kWh by 290,000 days to get 29.827586 kWh per day.
- Determine **This Customer's Usage In Previous, Non-Estimated Period**:
- Find the consumption associated with the previous, non-estimated read for the register's unit of measure / time of use codes at the service point. In this case, we'd find the read on 15-Mar-1999. Because this register is subtractive, we'd also need to find the previous, previous non-estimated read in order to calculate consumption. In this case, we'd find the read on 15-Feb-1999.

**NOTE:**
**Minimum Days Between Readings**. The algorithm parameter Minimum Days Between Readings controls the minimum number of days needed between the previous non-estimated read and the "previous, previous" non-estimated read.

- Divide the total consumption by the number of days. Using our example, we'd divide 1,500 kWh by 28 days to get 53.571429 kWh per day.
- Note: if the customer doesn't have consumption in the previous, non-estimated period, e.g., if it's a meter at a new premise, the system assumes the customer uses the same as the average customer's usage in the previous period (see next point).
- Determine **Average Customer's Usage In Previous Period**:
- Read trend records in reverse chronological order from the read date of the previous reading (15-Mar-1999).

- Read enough trend records until the number of reads is greater than or equal to the number of reads amassed when determining the Average Customer's Usage In The Current Period (the first point). Using our example, we'd have to read 3 trends records (the ones on 15-Mar-1999, 14-Mar-1999 and 13-Mar-1999).
- Divide **Total Qty** by **No of Units**. Using our example, we'd divide 11,900,000 kWh by 287,750 days to get 41.355343 kWh per day.
- Next, determine the number of days of estimated consumption. This will be equal the number of days between the estimation date and the prior reading (note, the prior reading could have been estimated). Using our example, we'd have 31 days (the number of days between 15-Apr-1999 and 15-Mar-1999).
- At this point, we have everything we need to estimate consumption. This will equal ((53.571429 / 41.355343) * 29.827586) * 31 days. This is equal to 1,198 kWh.
- If we need to calculate high and low boundaries, we multiply 1,198 kWh by the high and low values defined for the register's unit of measure, the service point's service type and the read's read type.

## Consumptive Register Where UOM Measures A Peak Quantity

The algorithm used to estimate consumption for a consumptive, peak unit of measure is identical to *Subtractive Register Where UOM Measures A Peak Quantity* with the exception that we don't have to find the previous, previous read in order to determine the customer's usage in the previous period.

## Subtractive Register Where UOM Measures A Peak Quantity

The algorithm used to estimate consumption for a subtractive, peak unit of measure is identical to *Subtractive Register Where UOM Doesn't Measure Peak Quantity* the previous example except:

- The No of Units on the trend table is not the number of days. Rather, it's the number of reads that contributed to the trend.
- Because we don't care about number of days, we don't have to multiply final estimated consumption by the number of days in the estimation period.

# Tips for Consumption Estimation Using Trends

The quality of the trend information and setup impacts your estimation results (depending on your estimation algorithm) and this in turn impacts any estimated bills you send your customers. When you are setting up consumption estimation parameters keep the following guidelines in mind.

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## Make Sure the Number of Reads on Trend Class Is Large Enough

You should make the Number of Reads on the *trend class* is large enough that individual reads do not cause statistical anomalies. For example, assume that a "normal" read in a trend class is 500 kWh and, that within the trend class, there is one "abnormal" customer using 500 percent of normal:

- If the number of reads in the class is 10, the average read is calculated to be 700 kWh. The abnormal read causes a 40 percent increase in the average.
- If the number of reads in the class is 100, the average read is calculated to be 520 kWh. The abnormal read causes a 4 percent increase in the average.
- If the number of reads in the class is 1000, the average read is calculated to be 502 kWh. The abnormal read causes a 0.4 percent increase in the average.

By sizing the number of reads in a trend class appropriately, you can reduce the impact of statistical anomalies.

**NOTE:**
**Example Values.** The example above is meant to illustrate the importance of using an appropriate number of reads in a trend class. The numbers used in the example should not be viewed as recommended values when setting up your trend classes.

## Trend Classes and Trend Areas Should be Defined Appropriately

In addition to defining a large enough number of reads on the trend class, you want to make sure that the system can collect the number of reads in a relatively short period of time or the benefit of trends is diluted. For example, if the system collects the number or reads over a period of two days as opposed to two months, the seasonal trend information is better represented in your estimates.

Consider the following example. Assume the number of reads required in the trend sample is 1000 and your system collects the following trend information for the area/class:

| Month | Number of Reads | Average |
|---|---|---|
| March | 400 | 200 kWh |
| April | 400 | 300 kWh |
| May | 400 | 500 kWh |

The trended average in May is 333.33 kWh ((80000 + 120000 + 200000) / 1200).

However, if the number of reads required in the trend sample is 1000 and your system collects the following trend information for the area/class:

| Month | Number of Reads | Average |
|---|---|---|
| March | 1100 | 200 kWh |
| April | 1100 | 300 kWh |
| May | 1100 | 500 kWh |

The trended average in May is 500 kWh (550000/1100), which is a more accurate representation of the trend in May.

**NOTE:**
**Example Values.** The examples above are meant to illustrate the importance of ensuring that the system collects enough reads in a short enough time span to accurately capture trends. The values are summarized by month and do not represent actual records in a trend profile.

The collection of an appropriate number of reads is a function of the number of reads defined for a trend class and the number of customers who are in each trend class/trend area combination. Make sure that the number of reads is not too large for the number of customers who are in each trend class/trend area combination and that the trend class/trend area combinations do not create groups of customers that are too small to calculate accurate trends.

## Customers Should Be Classified Into Appropriate Trend Classes and Areas

Make sure that your customers are classified into appropriate trend area/trend class categories. If a customer's actual usage does not follow the trend (within a certain percentage) for the area/class in which the customer is classified, the consumption estimates for that customer may be inaccurate. For example, a residential customer should not be in a trend class with industrial customers.

A customer's premise references the trend area in which the customer is classified. A customer's service point type references the trend class in which the customer is classified.

# Estimation and Negative Consumption

In some cases, a service point may be fitted with its own renewable energy source such as wind turbines or solar panels. The energy generated at this service point, as well as any energy used, could possibly be measured by a single meter, with the energy generated being netted against the energy used (a situation also referred to as net-metering). When the energy generated exceeds the energy used, negative consumption can result.

The possibility of negative consumption occurring at a particular SP/meter combination is indicated by the presence of a characteristic on the SP that identifies it as one that has generation capacity, as well as a characteristic on the meter type that identifies the meter as one capable of rolling backwards. Both characteristics must be present before negative consumption is allowed for that SP/meter combination. These characteristic types and values are defined on the Meter Management Options *Feature Configuration*. The following points describe the various **Option Types** that must be defined if negative consumption is allowed by your implementation:

- Negative Consumption SP Characteristic Type. This option indicates the characteristic type used on service points to denote generation capacity.
- Negative Consumption SP Characteristic Value. This option indicates the characteristic value used on service points to denote generation capacity.
- Negative Consumption Meter Type Characteristic Type. This option indicates the characteristic type used on meter types to identify meters capable of rolling backwards.
- Negative Consumption Meter Type Characteristic Value. This option indicates the characteristic value used on meter types to identify meters capable of rolling backwards.

Because the factors that cause a meter to roll forward are very different from the factors that cause it to roll backward, it is impracticable for the estimation algorithms to try to derive an estimate in situations where negative consumption is allowed. The estimation rules simply cannot combine the effects of all these disparate factors into one meaningful figure. By extension, the same issue applies to the determination of high/low factors. Besides the fact that high/low validation is impossible without first obtaining an estimate, a meaningful set of high/low factors cannot be determined when it is not known how energy generated at the service point may have affected the consumption in the first place. Therefore, no estimation is done by the system for SP/meter combinations that allow negative consumption. Reads that belong to these SP/meter combinations are also excluded from the trending process so as not to skew the rest of the estimates for a certain trend area and trend class.

# Setting Up Trend Areas

When you set up a premise, you must define the consumption trend area in which it is located. This categorization matters when consumption trends differ across your service territory AND you want the system to estimate consumption in different areas differently.

This categorization does not have to be done in respect of classic geographic boundaries like cities and counties. Rather, trend areas may be based on economic factors, climatic conditions, or anything else related to geography that affects consumption.

**NOTE:**
A premise's trend area will default based on its postal code. See *Setting Up Premise & Service Point Postal Defaults* for more information.

To define trend areas, open **Admin** > **Trend Area.**

**Description of Page**

Enter a unique **Trend Area** and **Description** for every trend area.

Define the **Meter Read Estimate Algorithm** that is used to estimate consumption for meters installed at premises associated with this trend area. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that performs meter read estimation. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TREND_AREA*.

## Setting Up Trend Classes

When you set up an SP type, you must define the consumption estimation trend class in which its consumption will be categorized. This categorization matters when consumption differs based on the type of property AND you want the system to estimate consumption in different classes differently.

These categories could be the classic divisions of residential versus commercial versus industrial consumers. Alternatively, they could be finer-grained divisions: single family residence, versus duplex, versus triplex, versus medical office, versus grocery store.

To define trend classes, open **Admin** > **Trend Class.**

**Description of Page**

Enter a unique **Trend Class** and a **Description** for every trend class.

Enter the **Number of Reads** that must be amalgamated to create a statistically significant sample when amassing the average customer's consumption. The system uses this number to determine the number of consumption trend records to amalgamate.

**NOTE:**
**Don't worry.** The Number of Reads is not the number of rows that will be read when the system estimates consumption. This is because the total consumption from many reads is stored on a single consumption trend record.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TREND_CL*.

## Setting Up High / Low Factors

When consumption estimation is done for the purpose of meter read validity, the system checks if the meter read's consumption is reasonable. The High / Low Meter Read algorithm type ( *HILO-FACTBL*) supplied with the base package uses the factors defined in this table to calculate the high / low values.

High and low factors are defined for every measurable unit of measure (UOM) and read type combination. The word measurable was underlined because some UOMs exist purely for pricing purposes and are never measured by a meter (e.g., a therm of gas).

**FASTPATH:**
For more information, refer to *High / Low Checks*.

To define high / low factors, open **Admin** > **High Low Factor.**

**Description of Page**

Enter the **Unit of Measure** (UOM) for which the high / low factors are used.

Enter the **Read Type** for which the high / low factors are used. Valid values are: Billing Force , Customer Read , Office Estimate , No Read , Service Provider Estimate , System Estimate , Regular , and Verified .

Enter the **Low Factor** for the UOM and Read Type. This value will be multiplied by estimated consumption to derive the acceptable low value of a meter read with this UOM and read type.

Enter the **High Factor** for the UOM and Read Type. This value will be multiplied by estimated consumption to derive the acceptable high value of a meter read with this UOM and read type.

**Where Used**

This information is used by the High / Low Meter Read algorithm type ( *HILO-FACTBL*) when the system calculates the low and high consumption amounts against which a meter read's consumption is compared when the read is added to the system.

**NOTE:**
**Detecting Theft Of Service.** When the status of a meter is Off , the system sets the high and low read values equal to the previous register read. This catches any consumption activity at the service point after a meter has been turned off. However, for some implementations, a small amount of consumption trickle at the service point is acceptable. In this case, you would want to relax the high/low thresholds so that the reads are not constantly flagged to have failed high/low validation. To do this, you can add the Always Estimate And Apply High/Low Factors **Option Type** under Meter Management Options *Feature Configuration* and set its value to Y .

# Setting Up Trends

**FASTPATH:**
Refer to *Setting Up Trends* for more information.

# Setting Up Meter Read Options

This section describes tables that must be set up before you can enter a meter read.

**Contents**

# Setting Up Meter Reader Remarks

When you enter a meter read, you may define remarks using remark codes. The topics in this section describe how to set up meter reader remark codes.

**Contents**



## Meter Reader Remark - Main

To define meter read remark codes, open **Admin** > **Meter Reader Remark** > **Add.**

**Description of Page**

Enter a unique **Meter Reader Remark** and a **Description** for every meter read remark.

Turn on **Eligible for Processing** if meter reads marked with a given remark code should cause one or more **Action Algorithm**s to execute. For example, if you need a "reread" field activity to be created when a "high bill" remark is uploaded, you'd create an algorithm called "reread" and associate it with the "high bill" remark code. Then, whenever such a meter read with a "high bill" remark is recorded in the database, the system will execute the algorithm (and generate the field activity). If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that is associated with a meter read remark special activity. Click *here* to see the algorithm types available for this plug-in spot.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_READER_REM*.

## Meter Reader Remark - Bill Messages

To define bill messages to appear on bills that use a meter read that references a given meter reader remark code, open **Admin** > **Meter Reader Remark** > **Search** and navigate to the **Bill Messages** tab.

**Description of Page**

Use the **Bill Messages** collection to define **Bill Message** codes that should appear on bills that use a meter read that references a given meter reader remark code. For each message, also specify the **Start Date** and **End Date** when such a message should appear on the bill (leave **End Date** blank if the message should appear indefinitely).

**Where Used**

The system snaps bill messages on a bill during bill completion. Refer to *The Source Of Bill Messages* for more information.

# Setting Up Meter Read Sources

When you add or upload a meter read, you may define the source of the meter read. The source could reference a specific reader, a meter reading agency, or any other possible source. To define meter read sources, open **Admin** > **Meter Read Source.**

**Description of Page**

Enter a **Meter Read Source** code and **Description** for every meter read source.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MR_SOURCE*.

# Setting Up Items

This section describes tables that must be set up before you can define items.

**Contents**



# Setting Up Item Types

Every item has an item type that defines characteristics common to all items with this type. The topics in this section describe how to set up your item types.

**Contents**



## Item Type - Main

To define item types, open **Admin** > **Item Type** > **Add.**

**NOTE:**
**When a new item type is added.** After adding a new item type, you must define the SP types at which items of this type can be installed.

**FASTPATH:**
Refer to *Service Points (SPs)* for information about the difference between badged and non-badged items. Refer to *Items Are Used For Other Devices Associated With A Customer's Service* for more information about items in general.

**Description of Page**

Enter an easily recognizable **Item Type** and **Description** for the item type.

Choose the **Service Type** associated with all items of this type. Refer to *Setting Up Service Types* for more information.

Turn on **Use Estimates** if estimated consumption is recorded for this type of item (e.g., lamps have estimated consumption that is used to calculate billable charges for these types of items). When this switch is turned on, also define the **Unit Of Measure** in which the estimated consumption is expressed.

**FASTPATH:**
For more information about estimated consumption, refer to *Setting Up Estimated Consumption For Items* .

Turn on **Summarize For Billing** if billing is supposed to summarize all items of this type on a customer's bill. If billing is supposed to show a separate bill line for every individual item of this type, turn this switch off.

**WARNING:**
The Summarize For Billing switch is only pertinent if badged items are linked to the service points being billed. If unbadged items are linked to the service points, the bill will contain a summary of items by item type regardless of the value of this switch. Refer to *Metered versus Item-Based versus Non-Badged Service Points***for more information**.

Turn on **Multiple Equipment Assignment** if equipment of this type can be linked with more than one service point / meter / item at any instant in time.

Turn on **Billable** if billing should amalgamate items of this type when it calculates a bill segment. This switch would typically only be turned-off for items used to describe *equipment* and other non-billable items linked to a service point.

**WARNING:**
If this switch is turned on, rates linked to service agreements used to bill for items of this type must include an *Item Type Calculation Rule* that references this item type. Why? Because we assume that a bill line should be produced for "billable" items (and bill lines are produced for items using "item type" calculation rules). If you neglect to have such a calculation rule, a bill segment error will be produced.

If your organization bills for items of this type using *Estimated Consumption* rather than on a "per item" basis, you'll still need an "item type" calculation rule in these rates (otherwise billing will generate an error). In order to prevent the system from calculating a charge for such an "item type", make sure to indicate the calculation rule is "for calculation purposes only" (FCPO). Refer to *Common Parameters* for Calculation Rules for more information about FCPO's. Also note that you might also want to indicate that the calculation rule is not printable if you want to suppress the item type's description on the printed bill. Refer to *How to Use Description on Bill* for more information about printable calculation rules.

Indicate in **Track Location** whether you Track or Do Not Track the location of items of this type. Refer to *The Big Picture of Asset Inventory* for more information.

Use the **Characteristic Values** collection to define **Characteristic Type**s and their respective **CharacteristicValue**s to describe characteristics common to all items of this type.

**NOTE:**
You can only choose characteristic types defined as permissible on the item type record.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_ITEM_TYPE*.

## Item Type - Item Characteristics

To define characteristics that may be defined for items of a given type, open **Admin** > **Item Type** > **Search** and navigate to the **Item Characteristics** page.

**Description of Page**

Use the **Item Characteristics** collection to define characteristics that can be defined for items of a given type. Turn on the **Required** switch if the **Characteristic Type** must be defined on items of a given type. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on. Use **Sequence** to control the order in which characteristics are defaulted.

## Item Type - Equipment Types

Open **Admin** > **Item Type** > **Search** and navigate to the **Equipment Types** page to define the types of equipment that can be linked to items of a given type. Refer to *Equipment versus Badged Items* for more information about equipment.

**Description of Page**

Use the collection to define the item types of **Equipment** that can be linked to items of this type.

> **NOTE:**
> **Item types are being specified.** There is no equipment type control table. Items are used to define equipment; therefore, you define item types instead of equipment types. Refer to *Equipment versus Badged Items* for more information about equipment.

## Item Type - Test Types

Open **Admin** > **Item Type** > **Searcb** and navigate to the **Test Types** page to define the types of device tests that can be performed on items of a given type. Refer to *The Big Picture Of Device Testing* for more information about device tests.

**Description of Page**

Use the collection to define the types of **Device Tests** that can be performed on items of a given type.

## Setting Up Manufacturers and Models

When you set up an item (or a meter) you must define the manufacturer and model number of the meter / item.

> **FASTPATH:**
> Refer to *Setting Up Manufacturers & Their Models* for more information.

# The Big Picture Of Device Testing

The topics in this section describe meter and item (i.e., device) testing at a high level.

We strongly recommend examining the demo data to see how the concepts explained in this section could be used in real life.

> **WARNING:**
> Setting up the device testing control tables is as challenging as your organization's business rules. If you don't test your devices, you don't have to setup anything. If you have sophisticated testing requirements, your setup process will be more challenging.

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## The Level of Complexity Depends On What You Test and Your Record Keeping Requirements

Every organization's device testing requirements are different. Consider the following:

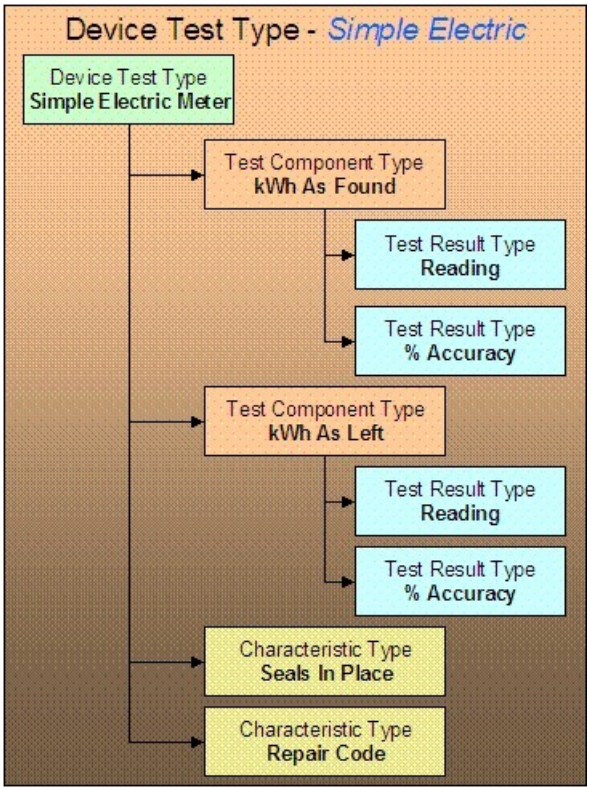
- Some organizations simply use the CIS system to create and dispatch field activities when it's time to test devices. After the field activities are dispatched, the test results are maintained in a separate system. You can set up the system to work this way for you.
- Some organizations maintain very detailed test result records, others don't. For example, some organizations record both "as found" and "as left" test results, i.e., they test the meter in its "as found" state, then they recalibrate it and test it again and record the "as left" state. You can set up the system to work this way for you.
- Some organizations maintain separate test results for every individual register on a meter. For example, they might record 3 separate test results for an electric meter with kWh, kW, and kVar registers (and, if they recorded both "as found" and "as left" results, they would have 6 separate test results, at least, for this meter). You can set up the system to work this way for you.
- The type of information that can be recorded in respect of a test varies widely. Some organizations simply record if the test passed or failed. Other organizations keep track of a great deal of information about the test results. Consider the following examples:
  - Most organizations record who performed the test, the state of the seals on the meter, and whether or not a repair is necessary.
  - A company with gas meters might record the ambient air temperature, the temperature of the oil used in the test, the test spin time, the actual meter reading, the "chart" (should be) reading and the percent accuracy.
  - A company with electric meters might record the following information: meter reading at full capacity, meter reading a light capacity, meter reading with a power factor of 50%, and the percent accuracy.
- You can set up the system to work this way for you.

Given that the system supports the above disparate requirements, you can understand why the set up process is either straightforward or challenging. The remaining topics in this section provide some guidelines to help you through this setup process.

## A Device Test Records Test Results

You create a device test each time you test a meter or item. The device test keeps track of when the test was conducted, who conducted it, and the results of the test. Every device test references a *device test type*.

When you design your device test types, you are actually defining the type of information that can / must be recorded when such a device test is saved in the system. The following picture illustrates a device test type used for tests of simple electric meters.




Notice that the above device test type example uses two different mechanisms to record test results:

- **Component tests.** If your organization maintains the test results from individual registers, you will use component tests. In the above example, two different types of component tests can be recorded for this type of device test: one is used to record a register's accuracy before calibration (the "as found" component test), another is used to record the register's accuracy after calibration (the "as left" component test).
- The component test type controls the type of information that is recorded for a component test. In the above example, each component test type requires the same result types - a register reading and a percent accuracy. Note, the fact that these two test types require the same results is coincidental.

You have to set up a component test types and test result types to satisfy your organization record keeping requirements.

- **Characteristics.** If your organization doesn't keep register-specific test results, you don't have to use component tests. Rather, you can simply use characteristics to record test results. In the above device test type, characteristics are used to record whether the seals were in placed and a repair code (if the test results in a repair). Refer to *Setting Up Characteristic Types & Their Values* for more information about characteristics.

## Field Activities And Device Testing

Most device tests occur as a result of a field activity. The field activity is associated with the service point at which the device is currently installed. Refer to *Examples of Device Testing Activity Types and their Steps* for an overview of how these types of field activities look.

You can create device testing field activities manually OR you can take advantage of the *Device Test Selection* page. This page will generate field activities to test meters and items based on a user-defined Test Selection Algorithm. The system comes with a sample Test Selection Algorithm type that selects meters of a given manufacturer / model that haven't been test for a given number of months. In all likelihood, you or your implementer will have to develop other algorithms to meet the test selection requirements of your organization. For example, if you test all meters that generate more than $100,000 of revenue per annum every 6 months, you will have to write a new Test Selection Algorithm Type.

After defining which test selection algorithm types you need, you must set up Test Selection Algorithms that make use of them (these algorithms are specified by the operator on the *Device Test Selection* page). To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that is associated with a device test selection. Click *here* to see the algorithm types available for this plug-in spot.

## Device Test Validation

After entering the test results for a device test, some organizations want the system to analyze the test results and determine if the meter / item passed or failed the test. If your organization does this, you will have to determine the characteristic values and test result values associated with "passing the test". You will then have to design an algorithm that contains logic that determines if a device test contains the appropriate characteristic and test result values.

After developing your device test algorithms, you associate them with the appropriate device test types. The system invokes the respective algorithm when an operator pushes the Validate Device Test button on the device test page.

# Setting Up Device Test Options

The topics in this section describe how to set up the control tables that must exist before a device test can be recorded.

**Contents**



## Setting Up Component Test Types

If you organization records component test results, you must set up a component test type for each type of component test. Refer to *A Device Test Records Test Results* for more information about component test types.

Open **Admin** > **Device Test Component Type** > **Add** to define the type of information that must be recorded on a component test of a given type.

> **NOTE:**
> **When a new component test type is added.** After adding a new component test type, you must define the device test types that make use of it.

**Description of Page**

Enter an easily recognizable **Test Component Type** and **Description**.

Turn on **Meter Test** if this type of component test is associated with a meter. If this type of component test is associated with an item, this switch should be off.

If **Meter Test** is on, turn on **Register Required** if a register must be referenced on component tests of this type. You would require a register if a) you keep component tests for individual registers, or b) if your component tests require the entry of register readings (as defined in the following grid).

The grid that follows defines the type of test results that are recorded.

**Result Seq** Result sequence controls the order in which the test results are captured.

**Description** Enter the prompt that is displayed for this type of test result.

**Result Required** Turn this switch on if a result must be specified on a test component of this type.

**Validation Algorithm** The validation algorithm controls how the test result is validated. Leave this field blank if no validation should be imposed.

**Prompt For Read** Turn on this switch if a user can enter a register read for this type of test result.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TST_COMP_TYP*.

# Setting Up Device Test Types

Every device test references a device test type. The device test type controls business rules associated its device tests. The topics in this section describe how to set up your device test types.

**Contents**



# Device Test Type - Main

Open **Admin** > **Device Test Type** > **Add** to define general business rules shared by device tests of a given type.

> **NOTE:**
> **When a new device test type is added.** After defining your device test types, you must update your meter and item types to define their valid test types. This is what prevents a gas test from being performed on an electric meter.

**Description of Page**

Enter an easily recognizable **Test Type** and **Description**.

Turn on **Meter Test** if this type of test is associated with a meter. If this type of test is associated with an item, this switch should be off.

Turn on **Validation Required** if tests of this type use a **Validation Algorithm** to determine if the test results (and therefore the device test) are of a passing grade. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that is associated with a device test validation algorithm. Click *here* to see the algorithm types available for this plug-in spot.

Define **Characteristic Types** and their respective **CharacteristicValue**s to describe characteristics common to all tests of this type. Note that you can also define characteristic types for which values are required to be entered when the device test is created (see *Device Test Type - Characteristics*).

> **NOTE:**
> You can only choose characteristic types defined as permissible on a device test type record.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_DV_TEST_TYPE*.

## Device Test Type - Component Types

Open **Admin** > **Device Test Type** > **Search** and navigate to the **Component Types** page to define the types of component tests (if any) that can be performed for device tests of a given type.

**Description of Page**

Use **Sequence** to define the relative order of each **Test Component Type** that can be performed during device tests of a given type.

## Device Test Type - Characteristics

Open **Admin** > **Device Test Type** > **Search** and navigate to the **Characteristics** page to define required and optional characteristics for device tests of a given type.

**Description of Page**

Define **Characteristic Types** to describe characteristics that might be entered for all tests of this type. Turn on **Required** if this type of characteristics must be specified on tests of this type, otherwise, the characteristic will be optional. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on. Use **Sequence** to control the order in which characteristics are defaulted.

**NOTE:**
You can only choose characteristic types defined as permissible on a device test type record.

# Usage Administration

This section describes concepts and common tasks related to usage administration.

**Contents**



## The Big Picture Of Usage Requests

Some organizations use a meter data management (MDM) system to record meter reading information. Since meter reads are not available in Oracle Utilities Customer Care and Billing to calculate consumption, during the billing process usage (or bill determinants) must be requested from the MDM system.

The following sections describe how the base-package usage request process works.

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## Requesting Bill Determinants

The term bill determinant request is another way to refer to a usage request. These usage requests are created during the batch billing process, and also when a user generates an online bill segment or performs cancel / rebill. The get consumption algorithm specified on the SA Type's Bill Segment Type is responsible for creating the usage request.

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### Batch Billing Usage Requests

Batch billing usage requests are created and held in the initial pending state. A separate batch process is responsible for transitioning these requests and sending them to the MDM system. Here's how this works:

- The get consumption algorithm specified on the SA Type's Bill Segment Type is responsible for creating the usage request. These batch billing usage requests are held in the Pending state until the batch Usage Scheduled Monitor Process is executed
- Similarly, once a response is received from MDM, the usage request will not transition to the Bill Determinants Processed state until the batch Usage Scheduled Monitor Process is executed
- In addition to the standard MDM usage request elements, the system captures the bill cycle and window start date.

### Online Billing Usage Requests

- Usage requests created from an online billing request are not held in the initial state. These usage requests are transitioned through their lifecycle resulting in the request being sent to MDM and, once a response is received, the bill segment is regenerated.
- The bill segment remains in the Freezable state until the user freezes the bill segment and completes the bill. If however, the freezable bill segment is regenerated, the system cancels the usage request and creates another usage request for the bill segment.
- In addition to the standard MDM usage request elements, the system captures the responsible user id.

**NOTE:**
**External Reference ID.** When creating a usage request, the external reference id is populated based on the version of MDM that your implementation integrates with. This is defined as the MDM Version MO option on the Usage maintenance object. If integrating with MDM 1, the system populates the external reference id using the batch run thread scheduler id to facilitate processing in the external system. Otherwise, the external reference id is left blank and may be updated on the response from the external system.

## Usage Request Lifecycle

The usage request business object (BO) contains the rules that govern the processing of a usage request. The base product provides the BO C1-UsageRequest which serves as a parent BO and contains the following lifecycle:

- All usage requests are created in the initial Pending state. If the usage request was created from the batch billing process, the batch Usage Scheduled Monitor Process must be executed to transition the usage request.
- If there are pending sync requests for the usage request's service agreement, the usage request is held in the Awaiting Data Sync state until the sync is processed.
- Once all pending sync requests related to the usage request have been processed, the usage request transitions to the Send Request state. An enter algorithm on this transitory state is responsible for sending the usage request to MDM. The base algorithm creates a JMS Queue outbound message. This outbound message is configured to not persist on the database.
- Once the outbound message has been successfully sent, the usage request sits in the Awaiting Bill Determinants state until a response is received from MDM, or a time out is encountered.
- When a response is received from the external system, the usage request is transitioned to either the Bill Determinants Received state, or the Error state. In the case of an error, the following occurs:
  - If the usage request was created from the batch billing process and the billing window is still open, a new usage request will be created the next time billing runs and the process is repeated. If however, the billing window is no longer open, a to do entry is created for manual follow up.
  - If the usage request was created from an online billing process, the user will be notified. The bill segment remains in the error state and the user can either delete the bill segment, or attempt to generate it again. If the bill segment is regenerated, a new usage request is created and the process is repeated.
  - The system transitions usage requests in the Bill Determinants Received state to the Bill Determinants Processed state. An enter algorithm on this final state is responsible for generating the bill segment. If the usage request was created from the batch billing process, the bill segment is frozen and the bill is completed. For online billing usage requests, the user is responsible for freezing the bill segment and completing the bill.

## Summary Billed Accounts and Usage Requests

A "summary" account refers to an account with service agreements that cover more than one premise. If these premises are linked to service points that span different service cycle routes scheduled for reading on different dates, there's no guarantee that all the account's SAs will be billed at the same time. This is because batch billing for manually read meters is based on the meter's scheduled reading date.

For example, assume a summary account has two SAs each linked to a different premise. One is on route X, scheduled for reading every first of the month and the other is on route Y, scheduled for reading every 20th$^{th}$ of the month. Assume that the account’s bill cycle is cycle X (which matches the schedule of premise/SP on route X). When billing runs on the first of the month, the service agreements tied to route Y won’t have any reads. And because route Y is not scheduled for reading, the system will not estimate the consumption. Instead, it will skip billing the route Y SAs until the next month. This means some SAs are always one billing cycle behind.

If your implementation maintains meters and meter reads in CCB, then the base get consumption algorithm called ***Get Consumption From SP's Linked To SA*** handles the skipping of a summary billed account's service agreements based on bill cycle and service cycle schedules. The remainder of this section describes how this works in a CCB-MDM integrated environment.

### Requesting Bill Determinants for Summary Billed Accounts

Usage requests for summary billed accounts are handled as follows:

- Assuming MDM owns meter read schedules; when batch billing executes CCB cannot determine whether a summary account's service agreement should be included on the bill or not.
- On the first night of the billing window usage requests are created for each SA and sent to MDM. MDM then checks what the next schedule read date is for each service point.
- If MDM determines that an SA/usage subscription should be skipped from billing, it notifies CCB by including a skip indicator and reason on the usage response, as well as the SA's next scheduled read date. This date is captured as a ***MDM Next Scheduled Read Date*** characteristic on the SA, and the usage request is cancelled. The system still attempts to complete the bill since this might be the last outstanding usage request for the bill
- When billing next runs, the base ***Get bill segment consumption using a usage request*** algorithm first checks if the SA should be skipped as follows (Note that this check is also performed in first billing run):
- Get the ***MDM Next Scheduled Read Date*** characteristic on the SA. If this date is after the bill segment end date, we'll skip the SA from billing

If your implementation would like to wait until the bill cycle window end date before attempting to complete summary account's bills, ensure that the ***Complete Summary Bill at End of Bill Cycle*** pre-bill completion algorithm is defined on customer class. This is useful if scheduled reads are expected in the bill cycle window, but not necessarily on the window start date.

## Corrected Read Notifications

If a read that was used for bill determinant calculations is modified in the MDM system, notification is sent to Oracle Utilities Customer Care and Billing. This results in the creation of an off cycle bill generator. The system uses the business object defined as the OCBG Corrected Read BO MO option on the Off Cycle Bill Generator maintenance object to create the OCBG. If any errors are encountered while attempting to create the OCBG, the system sends a message to the external system using the Outbound Message Type and External System defined as BO options on the OCBG Corrected Read BO

What happens next depends on the lifecycle that your implementation has configured for the OCBG Corrected Read BO. Here are examples of what might occur:

- Create a to do entry for manual follow up.
- Find any frozen bill segments that might be affected by the corrected read and perform cancel / rebill.

## Configuring The System For Usage Request Integration

Oracle Utilities Customer Care and Billing sends usage requests to MDM in the form of an xml message. These messages are transformed by the integration layer and then sent to MDM. Similarly, MDM sends responses to the integration layer so that the data can be transformed and sent to Oracle Utilities Customer Care and Billing.

The following sections describe at a high level the data setup required to send usage requests to an MDM system.

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### Define the Outbound Message Type

An outbound message type is required for the batch billing usage request outbound message. This outbound message type must reference the base C1-CyclicalUsgReqOutMsg business object. The outbound message type must also be specified as

a BO option on the base C1-CyclicalUsgReqOutMsg business object so the system knows which outbound message type to use when sending usage requests to MDM.

An outbound message type is required for the online billing usage request outbound message. This outbound message type must reference the base C1-NonCyclicalUsgReqOutMsg business object. The outbound message type must also be specified as a BO option on the base C1-NonCyclicalUsgReqOutMsg business object so the system knows which outbound message type to use when sending usage requests to MDM.

**NOTE:**
**Defining the Usage Business Objects.** The business objects used by the get consumption algorithm when creating a batch or online billing usage request are defined as MO options on the Usage maintenance object.

### Define the Message Sender

A Message Sender is required to define how to send usage requests to MDM. Use the context of the Message Sender to define the web service interface.

### Define the External System and Configure the Messages

Define an external system and configure the valid outbound message types and the method of communication for each. You will also need to select the appropriate XSLs to format the request for usage. The external system must also be specified as a BO option on the base C1-CyclicalUsgReqOutMsg and C1-NonCyclicalUsgReqOutMsg business objects so the system knows which external system to use when sending usage requests to MDM.

**FASTPATH:**
Refer to the *Oracle Utilities Customer Care and Billing - Meter Data Management Integration Implementation Guide* for more information.

## Designing Your SA Types For Usage Requests

SA Types used to bill service agreements that require bill determinants from a meter data management system must have the following characteristics:

- The SA Type must have a special role flag of Bill Determinants Required
- Bill segment type:
  - Reference the bill segment creation algorithm that creates a bill segment from a usage request.
  - Reference the bill segment get consumption algorithm that gets bill segment consumption using a usage request.

## Start And End Times For Billing

As you know, there is logic in billing to determine the start date and end date for a bill segment. Refer to *Ways to Control The End Date Of A Bill* for more information. When billing for a customer with interval data, the system also needs to know the time.

The time used by billing, referred to as the cutoff time, is stored on the service agreement. There is also a control on the service agreement called Start Day Option that determines which day to use for the start time. Billing uses the billing date, the cutoff time, and the start day option to determine the correct interval data to process.

When integrating with a meter data management system, Oracle Utilities Customer Care and Billing lacks knowledge of the type of meter installed at a service point. Thus, both interval processing period as well as scalar processing information is captured on a usage request. MDM then uses the appropriate period to calculate bill determinants based on the type of meter installed.

MDM returns the true usage period used to calculate bill determinants on the usage response. This usage period is captured on the bill segment.

**FASTPATH:**
Refer to *Start and End Times for Billing* for more information.

## Navigating To MDM

It might be necessary for Oracle Utilities Customer Care and Billing users to navigate to MDM to view detailed read information for a service point. For example, a user may want to see the unbilled consumption that's available in MDM. The following is required to implement this:

- Add a menu entry to the service point context menu. This menu item must reference the base Go To MDM From SP navigation option
- Add a menu entry to the service agreement context menu. This menu item must reference the base Go To MDM From SA navigation option
- Set up the MDM URL option type on the General System Configuration *Feature Configuration*. The MDM URL option must contain the URL for the MDM application.

Once configured, users should be able to launch the MDM system from these context menus with either a service point or service agreement id in context.

# The Big Picture of Time of Use Mapping and Pricing

This section provides an overview of the concepts related to setting up your control tables to support time of use mapping and pricing with the rates.

**NOTE:** Time of use mapping is supported to enable low volume interval data manipulation (for example, for mapping electric vehicle charging events into time of use quantities). A meter data management application, such as Oracle Utilities Meter Data Management, must be used to manipulate high volumes of interval data and calculating bill determinants for billing purposes.

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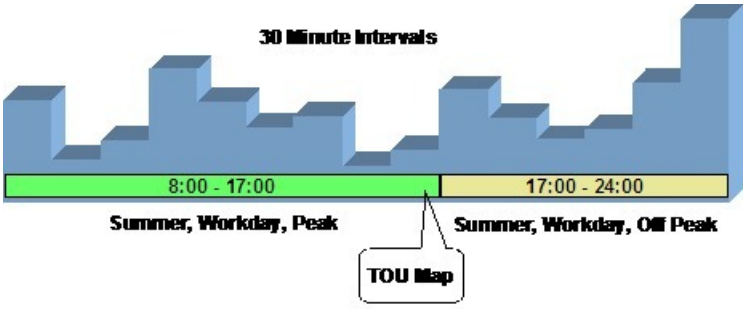
## Mapping to Time of Use (TOU) Periods

Many customers choose not to price their interval data using interval prices. Customers may choose for their interval data to be mapped into time of use (TOU) periods. This option for interval data might be preferred because:

- Typically it involves fixed prices for the use periods
- It is more manageable than direct billing
- It is easier for a customer to forecast and budget




A TOU map's purpose is to define the TOU codes for a collection of time period definitions (i.e. given dates and times). The TOU Map has a TOU Map Type, which defines the interval size between TOU map data rows.

Time of use periods can (and often do) change during the year.

| Map #123 (TOU Group 2) | |
|---|---|
| Effective 1 Jan 2000 | |
| Interval Date/Time | |
| 30/Apr/00 16:30 | On Peak/Winter |
| 30/Apr/00 16:45 | On Peak/Winter |
| 30/Apr/00 17:00 | Off Peak/Winter |
| 30/Apr/00 17:15 | Off Peak/Winter |
| --- | |
| 01/May/00 7:45 | Off Peak/Summer |
| 02/May/00 8:00 | On Peak/Summer |
| 02/May/00 8:15 | On Peak/Summer |
| --- | |

All the possible TOU codes for a given map are grouped together in a TOU group. Refer to *Grouping of TOU Codes for TOU Mapping* for more information.

## Grouping of TOU Codes for TOU Mapping

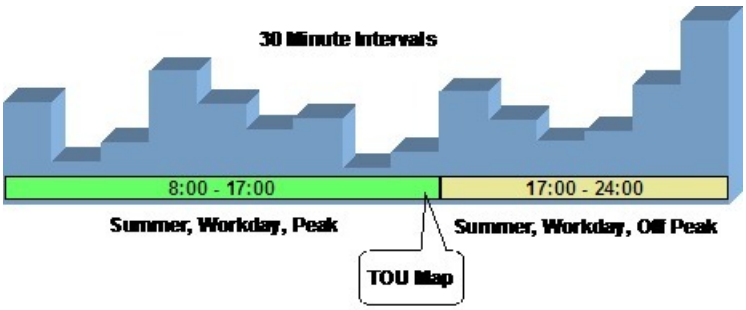
This section describes the relationship between TOU Codes and TOU Mapping.

**Contents**

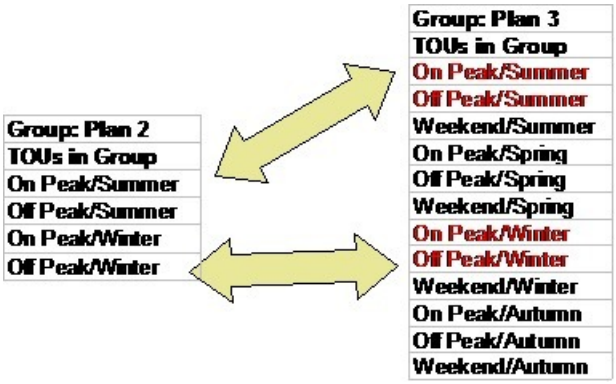


## Overview of TOU Codes and TOU Mapping

A TOU map's purpose is to define the TOU codes for a collection of time period definitions (i.e. given dates and times).




Time of use codes or TOU codes (for example, "Off Peak/Winter", "Off Peak/Summer") are user-defined. Refer to *Setting Up Time-Of-Use Codes* for more information.



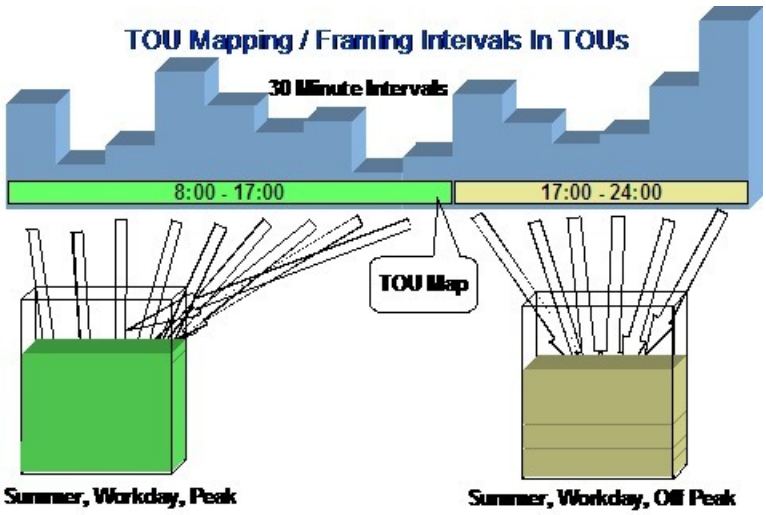

## TOU Sequence for TOU Mapping and Pricing

If desired, you may use sequence number to indicate the relative position or relative priority of each TOU code within a TOU group. This sequence number is not used by any system functionality, but is available for you to use in a plug-in algorithm.

# Time of Use (TOU) Mapping and Pricing

The following section describes the logic used by the system to map an interval data curve to TOU periods using a TOU map, and subsequently apply prices to these mapped quantities.

At some point during billing, the system will take an interval data curve and will map the interval values to TOU periods based on a TOU Map. The interval data curve is retrieved from either a specific usage request or from the new rate engine buffer populated prior to calling the rate engine.




This type of data manipulation is typically handled using a calculation rule based on the 'math' calculation rule type.

Once the interval data curve values have been mapped to TOU periods, prices can be applied to the time of use period quantities using calculation rules based on the 'service quantity' calculation rule type.

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## Calculation Rules for TOU Mapping & Pricing

Calculation Rules are used to perform time of use mapping and time of use pricing.

## Time of Use Mapping

Time of use mapping will be typically handled using a calculation rule based on the 'math' calculation rule type. Calculation rules of this type can perform many functions. Two examples include:

- Applying a TOU map to an interval data curve to produce service quantities that will be added to the bill segment's SQ collection.
- Applying a TOU map to a derived interval data curve. For example, after deriving the power factor curve, perform TOU mapping on the resultant curve.

For further details on the 'math' calculation rule type, refer to *Base Package Math Calculation Rule* for more information.

## Time of Use Pricing

Time of use pricing will be typically handled using calculation rules based on the 'service quantity' calculation rule type. Calculation rules of this type can perform many functions. For example:

- Add or update a service quantity in the bill segments SQ collection
- Create bill calculations lines that levy charges based on some type of consumption. For example, applying a price to a specific service quantity in the bill segment's SQ collection

For further details on the 'service quantity' calculation rule type, refer to *Base Package Service Quantity Calculation Rule* for further information.

**NOTE:** Calculation rules are implemented using algorithms that contain the logic to be performed. If your implementation requires a new type of calculation rule, you can configure a new calculation rule type and reference the appropriate algorithm on it.

## TOU Map Used For Mapping

An interval data curve is mapped into time-of-use periods using a TOU map. The TOU map used by the calculation rule for mapping interval data curve values to time of use periods is defined directly on the calculation rule.

## Attributes of TOU Maps

TOU map types define attributes shared by TOU maps of a given type. The essential attributes of any TOU Map Type are the interval sizes between TOU map data rows, associated TOU map template(s) to use, and whether the TOU data will follow any seasonal time shifting.

# Designing Your Time of Use (TOU) Mapping and Pricing Options

This section provides an overview for designing your control tables to support time of use (TOU) mapping and pricing with the new rating engine.

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## Designing Your Time Of Use (TOU) Mapping and Pricing Calculation Rules

As you know from the rates chapter, the system can handle mapping of interval data curve values into different time of use periods and pricing these quantities using the 'math' and 'service quantity' calculation rule types respectively. Refer to *Base Package Calculation Rule Descriptions* for more information.

The following guidelines provides a high level outline on how you should go about designing a rate schedule that involves time of use mapping and pricing.

- Obtain copies of existing bills that use the rate in question. If the rate is new, then write up exactly how the information should appear on the customers' printed bills.
- Identify all the lines that represent charges for individual time of use periods.
- Determine how the quantities for the time of use periods are calculated. Which time of use map is used to define the time periods?
- In order to perform time of use mapping and pricing, calculation rules need to be designed
  - A calculation rule based on the 'math' calculation rule type may be used to map an interval data curve into time of use periods. This calculation rule must know the TOU map to apply to the interval data curve to map into the relevant time of use periods. The time of use period quantities are populated in the bill segments SQ collection.
  - Calculation rules based on the 'service quantity' calculation rule type may be used to apply prices to each mapped time of use period quantity. These calculation rules each require either a price or regular bill factor for pricing each time of use period quantity. The bill factor may contain the price directly, or may indicate that the price is customer specific and can be found as contract quantities for the service agreement.

Once you have your calculation rules designed, you will be able to design the other control tables needed to set up your time of use billing customer.

## Designing Your TOU Codes for TOU Mapping

The next most logical step in designing your time of use mapping controls is to define your time of use codes. To do this, look at the time of use periods to which your usage needs to be mapped. These values will likely correspond to the time of use quantities that your rate bills for. It should be noted that it's possible that will not bill for every time of use period.

For more information about time of use, refer to *UOM versus TOU versus SQI*.

## Designing Your TOU Groups for TOU Mapping

To further aid in designing time of use mapping, the TOU Group enables you to group together all the time of use codes that are available to be used in a single map. You must also decide if you want to use a sequence number to define the relative order of a TOU code within a TOU group.

When TOU data is created for a TOU map, only TOU periods defined on a specified TOU group can be specified.

## Designing Your New Style TOU Map Types for TOU Mapping

Now that you have your TOU groups defined, you can begin defining TOU map types. Recall that the TOU map type defines the attributes that may be shared by TOU maps of the same type.

The essential attributes of any TOU Map Type are the interval sizes between TOU map data rows, associated TOU map template(s) to use, and whether the TOU data will follow any seasonal time shifting. Refer to *Designing Your Time Options* for more information.

## TOU Map Type Interval Size

The interval size of a TOU map must divide evenly into the interval size of the interval data curve that uses the map (because the system joins the date/time of the interval data curve values to the date/time of the TOU data). This means that it is possible to use a 15 minute TOU map with a 60 minute interval data curve. However, it is not OK to have a 60 minute TOU map used with a 15 minute interval data curve because the join will miss 3 out of 4 interval data curve values.

## TOU Map Type Override Template

While most TOU maps will use the TOU map template defined on the TOU map type, TOU maps also support override templates. Refer to *Designing Your New Style TOU Map Templates* for TOU Mapping for more information.

- A TOU map's TOU map type defines the default TOU map template that's used to generate its TOU data.
- A TOU map's type defines the TOU map templates that can be referenced on individual TOU maps to override the default template.
- An individual TOU map can have override templates. If the TOU map doesn't have an override template, the default template defined on the TOU map type is used to generate the map's TOU data.

Refer to *Creating New Style TOU Map Types* for further information.

## Designing Your New Style TOU Map Templates for TOU Mapping

In order to help your users to create and maintain data for TOU maps, you may define TOU map templates, which can be used to generate data for a TOU map. The templates may be used to define standard data for a TOU map as well as data for special periods, such as holidays. TOU map types reference TOU map templates.

Every TOU map references a TOU map template that defines the rules for generating TOU data from that TOU map. Specifically, TOU map templates define:

- The TOU group (defines the valid TOU periods for the template) used for the TOU map
- The default TOU period used for periods not explicitly defined. (This means you don't have to specify dates and times for all periods. For example, if your default TOU period is "Off Peak" you only need to define dates and days and times for On Peak or other TOU periods.)
- The specific date ranges, days of the week, and time periods designated for each TOU period. The system periodically generates TOU map data for TOU maps by interpreting the rules defined in the template.

## Holidays

Many utilities categorize consumption on holidays differently than on the day of week on which the holiday falls. For example, holiday consumption might be categorized as Off-Peak regardless of the day it falls on. TOU map templates can define rules for different TOU periods for holidays by specifying the following:

- A Work Calendar that defines when holidays start and end
- Either:
  - A Holiday TOU period for consumption on holiday
  - A Holiday TOU Map Template that defines the TOU codes to use for different times in the year

## TOU Map Template Interval Size

TOU map templates can also specify an interval size. This value specifies the duration of the individual TOU map data records, and also controls the values allowed in the Start and End Times. For example, if a TOU map template sets the interval size at 15 minutes, Start and End times must be in units of the interval size (10:00, 10:15, 10:30, etc.).

A TOU map template can be used to generate TOU map data for TOU maps whose interval size is divisible by the template's interval size. For example, a 60 minute template can be used to generate TOU data for TOU maps with an interval size of 60 minutes, 15 minutes, 5 minutes, etc. This means separate map templates are not needed for every interval size.

Refer to *Creating New Style TOU Map Templates* for further information.

# Setting Up Time of Use (TOU) Mapping and Pricing Control Tables

This section provides an overview of setting up your control tables to support time of use mapping and pricing with rates.

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## TOU Codes

Refer to *Setting Up Time of Use Codes* for further information

## TOU Groups

Refer to *Setting Up TOU Groups* for further information

## Creating New Style TOU Map Templates

TOU map templates may be used to define standard data for a TOU map as well as data for special periods, such as holidays. TOU map types reference TOU map templates and used for TOU map data generation.

**Prerequisites**: You must define TOU groups and work calendars before you can create TOU map templates. Refer to the Oracle Utilities Application Framework online help for more information about creating work calendars.

To maintain existing TOU map templates, select **Admin** > **TOU Map Template** > **Search** then use standard actions to edit, duplicate, or delete a TOU map template.

To define a new TOU map template, follow these steps:

1. Select **Admin** > **TOU Map Template** > **Add** . If your system supports more than one TOU map template business object, you will be prompted to select a business object for this TOU map template.
2. Enter a name and a meaningful description for the TOU map template.
3. Select the TOU group to be used by the TOU map template.
4. Select the default TOU for the TOU map template (from the TOU Group). This is the TOU used when creating TOU map data for dates not accounted for in the TOU Schedules section.
5. Select the work calendar for the TOU map template. Work calendars define the days of the week on which work is performed, and specify holidays.
6. Select the holiday TOU for the TOU map template (from the TOU Group).
7. Select the TOU map template used for holidays (if applicable).
8. Specify the interval size for TOU map data created from the map template. Interval size is designated as hours:minutes:seconds (HH:MM:SS)
9. To specify TOU schedule's date ranges and which TOUs should be used for this TOU map template, click the + or - sign in the TOU Schedule Section and enter or select the following:
   - Start and End Dates for a specific date range
   - Start and End Days of the Week: To add or remove Start and End Days of the Week pairs, click the + or - sign and select the appropriate weekdays
   - Start and End Times: To add or remove Start and End Times within a Start and End Days of the Week pair, click the + or - sign and enter the appropriate times
   - TOU
10. Click **Save.**

Now you can use the TOU map template when creating TOU types.

## Creating New Style TOU Map Types

An interval data curve is mapped into time-of-use periods using a TOU map. The TOU map used by the calculation rule for mapping interval data curve values to time of use periods is defined directly on the calculation rule. TOU map types define attributes shared by TOU maps of a given type.

**Prerequisites**: You must define TOU map templates and time zones before you can create TOU map types. Refer to the Oracle Utilities Application Framework online help for more information about creating time zones.

To maintain existing TOU map types, select **Admin** > **TOU Map Type** > **Search** then use standard actions to edit, duplicate, or delete a TOU map type.

To define a new TOU map type, follow these steps:

1. Select **Admin** > **TOU Map Type** > **Add.**

   **NOTE:** If your system supports more than one TOU map type business object, you will be prompted to elect a business object for this TOU map type.

2. Enter a name and a meaningful description for the TOU map type.
3. Select the business object to use when creating TOU maps of this type
4. Select the time zone for the TOU map type.
5. Specify the interval size for TOU map data created from the map type. Interval size is designated as hours:minutes:seconds (HH:MM:SS)
6. Select the default TOU map template for the TOU map type
7. To add or remove override TOU map templates for this TOU type, click the + or - sign in the Override TOU Map Templates section and select the TOU map template.
8. Click **Save**.

Now you can use the TOU map type when creating TOU maps.

# Defining Premise & Service Point Options

A premise is where a customer consumes the services supplied by your company. Located at a premise are the various devices that consume energy and measure consumption. Before you can define premises and devices, you must set up the control tables defined in this section.

**WARNING:**
The topics in this section do not describe every table that must exist in order to set up premises and service points. Many premise and service point control tables are described in *Defining Meter & Item Options* , and *Defining Field Order Options*. The tables described in this section are those that must be set up regardless of the type of service.

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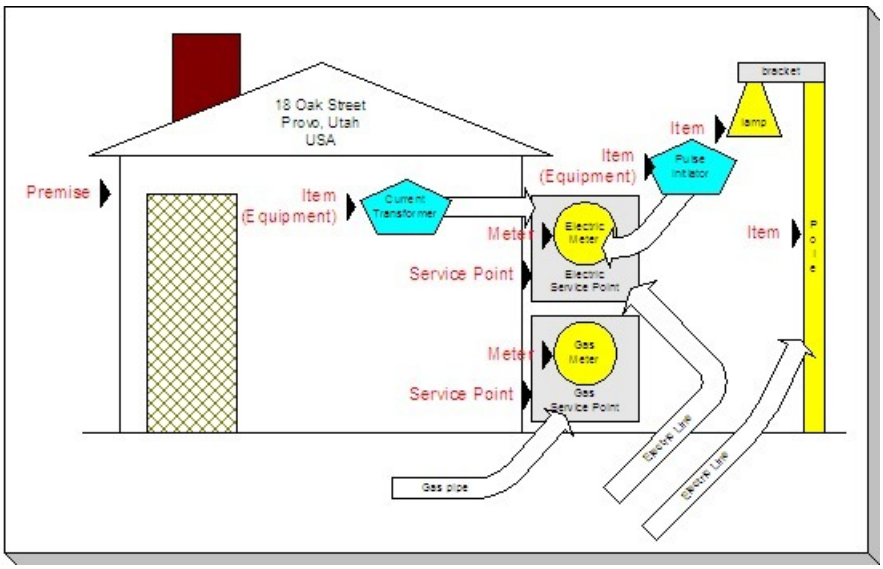
## An Illustration Of A Premise

The following picture illustrates a premise with 2 service points, 2 meters, and 2 badged items:




The following concepts are illustrated above:

**Premise** A premise describes a location at which your company supplies some type of service. In addition to the obvious address information, a premise also contains geographic coordinates, meter read instructions, and taxation jurisdiction information.

**FASTPATH:**
For more information about the control tables that must be set up before you can define a premise see *Setting Up Premise Options*.

**Service Point** A service point (SP) is a geographic location at which service(s) are delivered to a premise. The SP record maintains information about the type of service, the service cycle (if the service is metered), the field office responsible for maintaining the service, the distribution company that supplies the service, etc.

There are three major categories of service points:

- Those where the rate of consumption and the total amount of consumption is measured (e.g., electricity, gas, water) by a meter. You can think of this type of service point as a "socket" into which a meter can be plugged. Over time, many meters may be plugged into the socket. We refer to these types of service points as metered.
- Those that hold badged items. A badged item is a physical device with a unique identity (e.g., a specific street light, a specific hydrant). You can think of this type of service point as a "socket" into which a badged item can be plugged. Over time, many items may be plugged into the socket. We refer to these types of service points as item-based.
- Those used to hold one or more non-badged items. For example, if your organization doesn't badge street lamps, you can use a single service point to hold an infinite number of lamps. We refer to these types of service points as non-badged.

**FASTPATH:**
Refer to *Service Points (SPs)* for more information about non-badged items.

An unlimited number of SP's may exist at a premise. However in reality, the number of SP's is related to the number of services supplied by your company. For example, an electric and gas company will typically have 2 SP's per premise.

**FASTPATH:**
For more information about the control tables that must be set up before you can define service points refer to *Setting Up Generic Service Point Options*, *Defining Meter & Item Options*.

Field activities may be dispatched to all types of service points.

**Meter** A meter is a physical device used to measure the amount of gas, water, or electricity used by a customer. While most meters measure consumption in a single unit of measure (e.g., gallons, cubic feet, kilowatt-hours), some electric meters are extremely sophisticated and measure several different factors. For example, some electric meters measure how much was used, when it was used, the efficiency of consumption, the maximum amount used, and a few other unusual things.

**FASTPATH:**
For more information about the control tables that must be set up before you can define a meter, refer to *Setting Up Meter Options*, and *Setting Up Consumption Estimation Parameters*.

**Item (Equipment)** An item that is considered to be "equipment" is a physical device that regulates consumption; it does NOT measure consumption. You would only define equipment if it is of interest to your organization. For example, if your organization periodically tests the pulse initiators associated with your meters, you will need to set up items for each pulse initiator and link them to their respective meters. Equipment can be linked to either a service point (e.g., a current transformer, a backflow device), a meter (e.g., a pulse initiator), or an item (e.g., the components of an installation).

**NOTE:**
**Equipment and billing.** Be aware that the only way equipment can impact billing would be if you developed pre-processing calculation groups that analyzed the equipment associated with a service point (directly or indirectly via the meters and items) and manipulated billed consumption accordingly. Refer to *Understanding Calculation Groups and Rules* for more information.

**Item (NOT Equipment)** An item that is not consider to be "equipment" is a physical device that does NOT measure consumption, but impacts billing in some way (i.e., there are charges in your rates based on the number and type of items installed at a service point). Examples include street lights, light poles, and security cameras. Items are related to service points and a service point can have one or more items linked to it.

**FASTPATH:**
For more information about the control tables that must be set up before you can define an item, refer to *Setting Up Item*.

For more information about premises and service points, refer to *Understanding The "V"*.

# Setting Up Premise Options

This section describes tables that must be set up before you can define premises.

# Defining Premise Types

Open **Admin** > **Premise Type** to define the premise types used to categorize your premises.

**Description of Page**

Enter a unique **Premise Type** and a **Description** for every premise type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_PREM_TYPE*.

## Implementing Address Validation

In order to set up address validation, you must ensure that the following Option Types are defined with their corresponding values on the General System Configuration – Feature Configuration page:

| Option Type | Description |
|---|---|
| Address Validation Script | Indicates the name of the BPA script to invoke when a user clicks on the validate address button. This option is required if the Allow Address Validation option is set to Y. The base product includes sample script C1-ValAddr that uses Oracle Spatial procedures and functions to geocode an address and return its matching quality code. |
| Allow Address Validation | Indicates whether an integration with address validation software is implemented. If set to Y, the system will render a validate button along with the address fields displayed throughout the application to trigger address validation. Valid values are 'Y' and 'N'. If set to Y, the Address Validation Script to invoke must be specified. |

As described in the above table, the base product includes sample script C1-ValAddr uses Oracle Spatial procedures and functions to geocode an address and return a matching quality code. To use this script, ensure that the Oracle Spatial Geocoding (F1-ORAGEOCD) algorithm is plugged in on installation options for the geocoding service system event. A data source containing the geocoding data must also exist on the database.

If your implementation uses something other than Oracle Spatial for address validation, you'll need to create a new address validation BPA script to specify on the General System Configuration feature configuration. For additional information about creating this script, see the steps descriptions for the C1-ValAddr script in the application. The new script should contain the following move step to update the page:

- If the calling page is an old style page, the move from the BPA to the page can be achieved by specifying a move step from a source field to a User Interface Field.
- If the calling page is a display map, the move from the BPA to the page can be achieved by specifying a step to read the Business Object, modify the values as returned by the validation software, and then update the BO.

# Setting Up Generic Service Point Options

This section describes tables that must be set up before you can define service points.

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## Facility Levels

Every type of service tends to use a different mapping philosophy to designate the facility hierarchy that supplies service to the service point. For example, electric service typically uses a substation / feeder / node facility hierarchy to define how electricity is supplied to a service point (the substation is the highest level in the hierarchy, the feeder comes next, and finally the node). Whereas gas service uses a city gate / main / feeder hierarchy.

If your organization maintains this type of information on service points, you will set up your facilities and their interrelationships using 3 windows. On the first you set up the number and type of facility levels used for every service and you define the valid values for each facility level (you define these when you define your Service Types). On the second and third you define the values that may coexist in each level. After these set up tasks are complete, you're ready to enter facility levels on your service points.

**NOTE:**
A service point's facility levels are used to help pinpoint problems and dispatch service crews during outages.

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## Setting Up Facility Levels 1 & 2 Combinations

To define which values of facility level 2 may be used with a given value of facility level 1, open **Admin** > **Facility Level 1 to 2.**

**Description of Page**

Choose a **Service Type** and **Facility Level**, then use the **Facility Level 2** collection to define the level 2 facility levels that may coexist with the selected level 1 facility level.

## Setting Up Facility Levels 2 & 3 Combinations

To define which values of facility level 3 may be used with a given value of facility level 2, open **Admin** > **Facility Level 2 to 3.**

**Description of Page**

Choose a **Service Type** and **Facility Level 2**, then use the **Facility Level 3** collection to define the level 3 facility levels that may coexist with the selected level 2 facility level.

## Setting Up Service Point Types

Every service point must reference a service point (SP) type. The SP type controls almost all aspects of the service point's behavior (e.g., the type of field activity that may be dispatched to it, the type of service agreement that may be linked to it, the type of meter that may be installed at it).

The topics in this section describe the windows used to set up your SP types.

**WARNING:**
Setting up SP types requires careful analysis of your company's SA types, field activities, and its consumption estimation philosophy. Refer to *Designing SP Types*for more information about this design process.

**Contents**

# SP Type - Main

You begin to define a service point type by selecting **Admin** > **SP Type** > **Add.**

**WARNING:**
You may find that your desire to use some of the more sophisticated control functions in the system will necessitate many SP types. For example, notice that one of the other windows on this group allows you to define the meter types that can be installed in service points of a given type. If you have many different types of meters and many restrictions as to the types of service points in which they can be installed, you will end up with many SP types.

### Description of Page

Enter an easily recognizable **SP Type** for the service point type. This value will appear on many windows throughout your system as a "shorthand" for how the SP is used, so think carefully about the format. We recommend using a consistent format for all of your SP types. You should include the service type, an indication if it's metered or item-based, and the trend classification. For example, you might enter "E-M-RES", for an electric, metered, residential SP type.

Select the **Service Type**. Refer to *Setting Up Service Types* for more information.

Enter a **Description**.

Select the **Sub Type** to indicate the type of device that may be installed at service points of this type: Meter , Item , Unbadged.

Turn on the **Allow Service Route** switch if service points of this type should have a route. This switch would typically be turned on for metered service points.

**Multiple Route Usage** controls whether a service point can reference multiple service routes. Select Allowed if multiple service routes are allowed on service points of this type. Select Not Allowed if multiple service routes are not allowed on service points of this type. This switch would typically be turned on for garbage service points.

If this SP type is for metered service, select the **Trend Class** to define how to categorize this SP type's consumption for estimation and high / low validation purposes. This field will be gray for item-based services because items don't have meter reads that can be estimated or that are subject to high / low validation. Refer to *Setting Up Trend Classes* for more information.

If this SP type is for fieldwork that is managed by an external system, specify the external system in **Fieldwork Orchestration**.

If field activities are created for this SP type's service point, select the **Field Activity Type Profile** that controls which type of field activities may be linked to the service points. This Profile will also control which field activities are automatically generated by the system under various circumstances. Refer to *Setting Up Field Activity Type Profiles* for more information.

If a geographic type is used to identify individual service points of this SP type, select the **Identifying Geographic Type** used. You typically have an identifying geographic type if you refer to a service point using an identifier that is assigned by a third party. Refer to *Defining Geographic Types* for information on setting up geographic types.

Use the **SP Type Characteristic** collection and their respective **Characteristic Value**s to describe characteristics common to all service points of this type.

**NOTE:**
You can only choose characteristic types defined as permissible on an SP Type record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_SP_TYPE*.

## SP Type - Meter Type

Open **Admin** > **SP Type** > **Search** and navigate to the **Meter Types** page to define the types of meters that may be installed at service points belonging to this SP type.

**Description of Page**

The **Meter Types** collection contains the types of meters that may be installed at service points belonging to this SP type. This collection is not relevant if the SP sub type is Item or Unbadged .

> **NOTE:**
> You can connect meters with different service types to your SP Type. For example, a metering device such as a recorder can be used on both gas and electric service points.

## SP Type - SA Type

Open **Admin** > **SP Type** > **Search** and navigate to the **SA Types** page to define the SA types that may be linked to (and therefore pay for) service points belonging to this SP type.

**Description of Page**

The following fields display:

**CIS Division / SA Type** Indicate the type of service agreement that may be linked to service points of this type.

**Initial** Turn on this switch if the Start Service process should default this SA type when service is initially started at a service point of this type. Multiple SA types may be marked as Initial if you want multiple service agreements created when service is initially started. For example, if you have both wastewater and water service agreements linked to the water service point.

## SP Type - Item Type

Open **Admin** > **SP Type** > **Search** and navigate to the **Item Types** page to define the types of items that may be installed at service points belonging to this SP type.

**Description of Page**

The **Item Types** collection contains the types of items that may be installed at service points belonging to this SP type. This collection is not relevant if the SP sub type is Meter or Unbadged .

> **NOTE:**
> You can connect items with different service types to your SP Type. For example, an item like a cell phone can be used on both gas and electric service points.

## SP Type - SP Characteristic

To define characteristics that may be defined for service points of a given type, open **Admin** > **SP Type** > **Search** and navigate to the **SP Characteristic** page.

**Description of Page**

Use the **SP Characteristics** collection to define characteristics that can be defined for service points of a given type. Turn on the **Required** switch if the **Characteristic Type** must be defined on service points of a given type. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on. Use **Sequence** to control the order in which characteristics are defaulted.

## SP Type - Equipment Type

Open **Admin** > **SP Type** > **Search** and navigate to the **Equipment Types** page to define the types of equipment that can be linked to service points of a given type.

**Description of Page**

Use the collection to define the item types of **Equipment** that can be linked to service points of this type.

> **NOTE:**
> **Item types are being specified.** There is no equipment type control table. Rather, items are used to define equipment and therefore you are actually defining item types rather than equipment types. Refer to *Equipment versus Badged Items* for more information about equipment.

## SP Type - FA Type Review

Open **Admin** > **SP Type** > **Search** and navigate to the **FA Type Review** page to review the field activities that are allowed for the SP type.

> **NOTE:**
> **Four dimensions.** For every **field activity type** that is eligible for dispatch, you define the **dispatch group** that performs the activity at every **SP type** located in every **operations area**. This information is maintained on the field service control page. This is a rather complex relationship because it involves the four dimensions highlighted in bold. Due to this complexity, we have provided review trees on the SP Type, Dispatch Group, and Field Activity Type windows to help you understand what you've set up.

**Description of Page**

This window is dedicated to a tree that shows the field activities allowed for this SP type. For each field activity type that is eligible for dispatch, you can view the dispatch group that will perform the activity at every operations area.

# Setting Up Premise & Service Point Postal Defaults

You set up postal defaults if your company is able to default field values onto new premises and service points based on the premise's postal code. The topics in this section describe how to maintain postal defaults.

> **FASTPATH:**
> For more information about where these default values are used, refer to *Maintaining Premises* and *Maintaining Service Points*.

**Contents**

# Postal Defaults - Main

To define premise postal defaults, open **Admin** > **Postal Code Default** > **Add.**

**Description of Page**

Enter the **Country Code** and range of postal codes to which the default values apply using the **From Postal Code** and **To Postal Code**.

> **NOTE:**
> You may not have postal defaults whose from / to postal codes overlap.

Select the **Trend Area** to be defaulted onto new premises located in this postal code range. The trend area is used to categorize premises into geographic areas when consumption estimation is controlled, in part, by where the customer lives. Refer to *Setting Up Trend Areas* for more information.

Enter the **County** to be defaulted onto new premises located in this postal code range.

Enter the **City** to be defaulted onto new premises located in this postal code range.

Enter the **CISDivision** to be defaulted onto new premises located in this postal code range.

Enter the **State** to be defaulted onto new premises located in this postal code range.

Enter the **Time Zone** to be defaulted onto new premises located in this postal code range.

Use the **Characteristic Types and Values** collection to define the **Characteristic Type**s and their respective **CharacteristicValue**s to be defaulted on premises located in this postal code range. In addition to providing interesting information, these characteristics may also determine the prices and tax rates on the bills generated for the services consumed at a premise.

> **FASTPATH:**
> For more information about characteristics, see *Setting Up Characteristic Types & Their Values* and *An Illustration Of A Bill Factor And Its Characteristics* .

Use the **Geographic Types and Values** collection to define the **Geographic Type**s and their respective **Value**s to be defaulted on premises located in this postal code range. In addition to providing interesting information, these values may be used to sort field activities in geographic value order.

**Where Used**

This information is defaulted when a new Premise is added. Characteristics and geographic values are also defaulted when the postal code for a Premise is changed. Refer to *Maintaining Premises* for more information.

# Postal Defaults - Service Default

To define values to be defaulted for a service point located in a postal range, open **Admin** > **Postal Code Default** > **Search** and navigate to the **Service Defaults** page.

> **FASTPATH:**
> For more information about where these default values are used, refer to *Maintaining Service Points*.

**Description of Page**

Use the **Service Defaults** collection to define values to be defaulted on service points located in a given postal code range belonging to a given **Service Type** (note, a service point's Service Type comes from its SP Type).

The following values may be defined per **Service Type**:

- When a meter or item is removed from a service point located in this postal code range, the system assigns it by default to **Stock Location**. Note that this is only used if the meter's meter type or item's item type indicates that stock locations are tracked.

  **FASTPATH:**
  For more information about location history, refer to *Stock Location History Is Created Behind The Scenes* .

- Use the **Field Services** collection to define the **Field Service Classification**s and their respective **Operation Area** to be defaulted on new service points located in this postal range. Refer to *Designing Field Service Classifications* for more information.
- Use the **Characteristic Types and Values** collection to define the **Characteristic Type**s and their respective **CharacteristicValue**s to be defaulted on new service points located in this postal code range. In addition to providing interesting information, these characteristics may also determine the prices and tax rates on the bills generated for the services consumed at a service point.
- Use the **Geographic Types and Values** collection to define the **Geographic Type**s and their respective **Value**s to be defaulted on new service points located in this postal code range. In addition to providing interesting information, these values may be used to sort field activities in geographic value order.

**Where Used**

Information is defaulted when a new Service Point is added to a Premise. Refer to *Service Point - Main Information* for more information.

Stock Location is defaulted when a Meter or an Item is removed from a Service Point. *Refer to SP/Meter Installation* and *SP/Item Installation*.

# Designing SP Types

Every service point must reference an SP type. When you set up an SP type, you define how the system manages many aspects of its service points' behavior.

**NOTE:**
**Perfect foresight.** In a perfect world, the other control tables would have been set up with perfect foresight of setting up your SP types. In reality, setting up your SP types may invalidate some of your earlier decisions. Don't feel bad if this happens, some amount of iteration is natural.

Designing your SP types is an iterative process. To minimize the number of iterations, we recommend using the steps outlined in this section to complete the following table. When the table is complete, you're ready to set up your SP types.

| SP Type | Service Type |
|---|---|

**Contents**

*SA Type Segmentation*

*Meter Type Segmentation*

*Item Type Segmentation*

## Service Segmentation

At a minimum, you will have one SP type for every different type of service that exists at your premises. If we assume that your organization sells gas, water, waste water and electricity services, you will need four SP types.

| SP Type | Service Type |
|---|---|
| **GAS** | Gas service |
| **WATER** | Water service |
| **WASTE WATER** | Waste water service |
| **ELECTRIC** | Electric service |

## Device Segmentation

For each service, determine if there exist meters, badged items, or non-badged items at the service points. For example, if we assume:

- Electric service has service points with meters, badged lamps, and parking lots.
- Gas and water services just use meters.
- Waste water service doesn't actually have a meter installed at it (it uses the water consumption measured by the water service point's meter)

Then your SP types will be:

| SP Type | Service Type | SP Sub Type |
|---|---|---|
| **GAS - METERED** | Gas service | Meter |
| **WATER - METERED** | Water service | Meter |
| **WASTE WATER** | Waste water service | Unbadged |
| **ELECTRIC - METERED** | Electric service | Meter |
| **ELECTRIC - BADGED LAMP** | Electric service | Item |
| **ELECTRIC - PARKING LOT** | Electric service | Unbadged |

## Meter Read Estimation Trend Class Segmentation

When you set up a metered SP type, you must define the consumption estimation trend class in which its consumption will be categorized. This categorization matters when consumption differs based on the type of property AND you want the system to estimate consumption in different classes differently.

These categories could be the classic divisions of residential versus commercial versus industrial consumers. Alternatively, they could be finer-grained divisions: single family residence, versus duplex, versus triplex, versus medical office, versus grocery store.

**FASTPATH:**
Refer to *The Theory Behind Consumption Estimation* for more information about how trend class is used to estimate consumption.

If we assume you differentiate between residential and commercial service for all of your metered services, then your SP types will be:

| SP Type | Service Type | SP Sub Type | Trend Class |
|---|---|---|---|
| **GAS - METERED - RESID** | Gas service | Meter | Residential |
| **GAS - METERED - COMM** | Gas service | Meter | Commercial |
| **WATER - METERED - RESID** | Water service | Meter | Residential |
| **WATER - METERED - COMM** | Water service | Meter | Commercial |
| **WASTE WATER - RESID** | Waste water service | Unbadged | N/A |
| **WASTE WATER - COMM** | Waste water service | Unbadged | N/A |
| **ELECTRIC - METERED - RESID** | Electric service | Meter | Residential |
| **ELECTRIC - METERED - COMM** | Electric service | Meter | Commercial |
| **ELECTRIC - BADGED LAMP** | Electric service | Item | N/A |
| **ELECTRIC - PARKING LOT** | Electric service | Unbadged | N/A |

Notice that the non-metered service points don't use a trend class. This is because they don't have meters (and only meters have estimated consumption).

## Field Activity Type Profile Segmentation

When you set up any type of service point that can have field activities, you must define the field activity type profile. This profile defines:

- The type of field activities that may be dispatched to the service points.
- The type of field activity to be defaulted by the start / stop process given the condition of the service point.

Field activity type profiles should not impact your SP type design as these profiles should be designed after the SP types are designed.

**FASTPATH:**
Refer to *Designing Your Field Activity Profiles & Types* for more information about how field activity profiles are used.

## SA Type Segmentation

Every SP Type whose service points can be linked to a service agreement has one or more SA types. These define which type of service agreements can pay for the service point's service. If different service points have different valid SA types, you will need to split the SP types accordingly.

The SA Type segmentation of SP Types is the most complicated design decision you'll have to make. Unfortunately, the decision making process is subjective and iterative. The iterations are caused by the fact that the number of SA types is dependent on the number of SP types (and vice versa). We recommend the following to help work your way through this conundrum:

- Design your SA types using the information in *Defining Service Agreement Types* .
- Return to your SP types and determine if, given the proposed SA types, you can define a list of valid SA types for each SP type. If you find the population of SA types (and their valid rates) could result in invalid rates paying for service at a service point, divide your SA types further.

## Meter Type Segmentation

Every metered SP Type has one or more meter types. These define which type of meter can be installed at a service point of a given type. If different service points have different valid meter types, you will need to split the SP types accordingly.

For example, if you have 3-phase electric service points and you want to make sure that only 3-phase meters are installed in these service points, you will need to split the electric SP types accordingly.

**FASTPATH:**
Refer to *Setting Up Meter Types* for more information.

## Item Type Segmentation

All SP Types may have item types. These define which type of item can be installed at a service point of a given type. If different service points have different valid item types, you will need to split the SP types accordingly.

**FASTPATH:**
Refer to *Setting Up Item Types* for more information.

# Defining Bill & Meter Read Cycles

This chapter is dedicated to issues related to defining cycles, routes and schedules in the system.

**Contents**



## Defining Bill & Service Cycles

Every account references a bill cycle. An account's bill cycle controls when it is billed.

Every metered service point references a service cycle. A service point's service cycle controls when a service point's meter is read.

The design of your meter read and bill cycles is inextricably linked because you probably want to bill your customers shortly after their meters are read.

In this section, we describe how to design and set up these cycles. In addition, we discuss how to set up bill period schedules. These are used to define the bill segment end date for special types of non-metered service agreements.

**NOTE:**
**Recommendation.** We recommend reading *Bill Frequency - Bill Cycle vs Bill Segment Duration* before setting up this information.

**Contents**



# The Big Picture Of Bill Cycles, Service Cycles and Bill Periods

The topics in this section provide background information about a variety of bill cycle, service cycle, and bill period issues.

# Designing Cycles for Metered Services

The topics in this section provide background information about a variety of service cycle issues.

**Contents**



## A Description Of The Cyclical Meter Read Process

Meter readers using handheld devices record most meter reads in the field. These meter reads are uploaded into the system for use by billing.

A service point's meter is read due to the following data relationships:

- Every metered service point references a service route (henceforth called "route").
- A route references a service cycle.
- A service cycle has service schedules that define when the service points in the cycle are read.
- Every service cycle schedule contains two dates:
  - **Scheduled selection date.** This is the date the system selects the service points in the cycle for download to your handheld software.
  - **Scheduled work date.** This is the date the meter is expected to be read.

**NOTE:**

**Overriding a route within a specific schedule.** Rather than downloading all routes within a cycle, you can set up the system so that only specific routes are downloaded on any given date. This is a very powerful feature. You can use it, for example, to estimate specific cycles every other month or indicate the customer reads the meter every third month. Refer to *Designing Service Cycles, Routes, And Schedules* for more information.

- On the scheduled selection date, the system creates a download file containing information to be sent to your handheld software. This download file contains information about every register on every meter in the routes being downloaded.
- Your handheld software distributes this information to the handheld devices and then your meter readers do their job. When they finish, the resultant meter reads are uploaded into the system for subsequent use by billing.

**WARNING:**
It is very important to create a service cycle schedule for every expected read date regardless of whether the cycle's routes are downloaded. Why do you have to do this? Because billing uses the scheduled work date on the service cycle to know when to look for a reading. If it can't find a reading on or near this date, billing estimates consumption (given estimation is allowed on the service agreement). Without a service cycle schedule, billing wouldn't know when to look for readings. So, for example, if you estimate a given cycle's consumption EVERY OTHER MONTH, you must create a service cycle schedule for EVERY month. On each month's schedule, you must define if the routes should be downloaded.

**FASTPATH:**
For more information about the how to control when a cycle is read, refer to *Setting Up Service Cycle Schedules* .

## Designing Service Cycles, Routes, And Schedules

The topics in this section provide information describing how to design your service cycles, routes, and schedules.

**Contents**



*Designing Service Cycles For Meter Reading*

The criterion that affects the number of service cycles has nothing to do with when meter readers physically read your meters. Rather, the frequency that you bill the meter's consumption (real or estimated) is what controls the number of service cycles.

So, for example, if you bill every month, but read every OTHER month, you'll have 20 service cycles - one for each bill day during the month. If you bill bimonthly, you'll have 40 service cycles. If you bill quarterly, you'll have 60 service cycles. Etc.

**NOTE:**
**Different billing frequencies are possible for different service points.** If you have different billing frequencies for your different types of metered service, you'll need a different set of cycles for each billing frequency. For example, if you bill water quarterly and electricity monthly, you'll have 20 bill cycles (one for each bill day during a month), but you'd need 60 quarterly service cycles for your water service points, and 20 monthly service cycles for your electric service points. This would result in a customer getting billed every month. However, four times a year, their bill would contain a charge for both electricity and water.

Designing Service Routes For Meter Reading

The following points describe the relationship between a meter read, a route and a service cycle:

- A service cycle contains one or more routes.
- A route has one or more service points.
- A service point holds a meter.
- And a meter is what is read.
- Therefore, the number of meters a person can read in a day limits the number of service points in a route.

**WARNING:**
If your company supplies electric service and uses MV90's, you will need to take advantage of "notional" routes. A "notional" route's service points are never actually read by a human. Rather, the service points' consumption is fed to the system by a sophisticated device (e.g., an MV90). These service points still need to be linked to a route because billing is dependent on the route's cycle to determine the expected meter read date.

Designing Metered Service Cycle Schedules

The process of designing your service schedules is either easy or complicated. It will be easy if all routes within a cycle are downloaded when the service cycle is scheduled for download. It will be complicated if you download a subset of routes within a cycle on any given download date. We'll provide a few examples to help explain why.

If you download all cycles in a route whenever the cycle is downloaded, your service cycle schedule will look as follows.

**NOTE:**
**Bill cycles.** We've included each service cycle's related bill cycle to help you understand when the service cycle's consumption will be billed. Bill cycles are discussed in *Bill Cycles*.

| Service Cycle | Download Date | Sched MR Date | Which Routes To Download | Bill Cycle | Bill Window | Estimation Date |
|---|---|---|---|---|---|---|
| 1 | 28-May-99 | 31-May-99 | All | 1 | 31-May-99 to 2-Jun-99 | 2-Jun-99 |
| 2 | 31-May-99 | 1-Jun-99 | All | 2 | 1-Jun-99 to 3-Jun-99 | 3-Jun-99 |
| 3 | 1-Jun-99 | 2-Jun-99 | All | 3 | 2-Jun-99 to 4-Jun-99 | 4-Jun-99 |
| 4 | 2-Jun-99 | 3-Jun-99 | All | 4 | 3-Jun-99 to 7-Jun-99 | 7-Jun-99 |
| Etc. to 20 | | | | | | |

Now let's complicate life. If we assume you physically read your routes every other month (but bill monthly using estimated consumption), then you'll need the following service schedule.

| Service Cycle | Download Date | Sched MR Date | Which Routes | Bill Cycle | Bill Window | Estimation Date |
|---|---|---|---|---|---|---|
| 1 | 30-May-99 | 31-May-99 | 1, 2, 3 - Download<br>4, 5, 6 - Estimate | 1 | 31-May-99 to 2-Jun-99 | 2-Jun-99 |
| 2 | 31-May-99 | 1-Jun-99 | 1, 2, 3 - Download | 2 | 1-Jun-99 to 3-Jun-99 | 3-Jun-99 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4, 5, 6 - Estimate | | | |
| 3 | 1-Jun-99 | 2-Jun-99 | 1, 2, 3 - Download<br>4, 5, 6 - Estimate | 3 | 2-Jun-99 to 4-Jun-99 | 4-Jun-99 |
| 4 | 2-Jun-99 | 3-Jun-99 | 1, 2, 3 - Download<br>4, 5, 6 - Estimate | 4 | 3-Jun-99 to 7-Jun-99 | 7-Jun-99 |
| Etc. to 20 | | | | | | |
| 1 | 29-Jun-99 | 30-Jun-99 | 1, 2, 3 - Estimate<br>4, 5, 6 - Download | 1 | 30-Jun-99 to 2-Jul-99 | 2-July-99 |
| 2 | 30-Jun-99 | 1-July-99 | 1, 2, 3 - Estimate<br>4, 5, 6 - Download | 2 | 1-July-99 to 3-Jul-99 | 3-July-99 |
| 3 | 1-July-99 | 2-July-99 | 1, 2, 3 - Estimate<br>4, 5, 6 - Download | 3 | 2-July-99 to 4-July-99 | 4-July-99 |
| 4 | 2-July-99 | 3-July-99 | 1, 2, 3 - Estimate<br>4, 5, 6 - Download | 4 | 3-July-99 to 7-July-99 | 7-July-99 |
| Etc. to 20 | | | | | | |

Notice the following:

- You still have 20 service cycles even though you only read the meters every other month. Why? Because billing uses the scheduled read date on the service cycle to know when to look for a reading. If it can't find a reading on this date, billing estimates consumption (given estimation is allowed on the service agreement). Without a service cycle schedule, billing wouldn't know when to look for readings.
- Every other month you download half the routes in each cycle and estimate consumption for the other half.
- If you don't download all routes when a service cycle is scheduled, you have to indicate how to handle every route in the cycle.

The above design is infinitely flexible. You can use it to handle any number of requirements:

- Estimate consumption every seventh month.
- Bill every month, but only read once a quarter.
- Etc.

## Designing Cycles for Waste Collection Services

The topics in this section describe how to design service cycles to support your waste collection requirements.

**Contents**



## A Description Of The Cyclical Waste Collection Process

Waste collection equipment (e.g., garbage trucks) travel from service point to service point using a predefined schedule. This schedule defines which groups of service points are collected by a given truck on a given day (we use the term "route" to define a group of service points that are collected by a given truck on a given day).

Waste service points tend to belong to multiple routes because they can be collected in a different order depending on a wide variety of factors:

- A service point may have one truck responsible for collecting recycling and a different truck responsible for collecting non-recyclable waste.
- A service point that is collected on Mondays, Wednesdays and Fridays may be on a different route on each day of the week.
- Etc.

**NOTE:**
Contrary to metered service points, the service schedules linked to your waste collection service cycles / route groups do not affect billing. Why? Because billing doesn't need to look for a read for these types of service points and therefore it doesn't need a schedule to know when to look for a read.

## Bill Cycles

The topics in this section provide background information about a variety of bill cycle features.

**Contents**



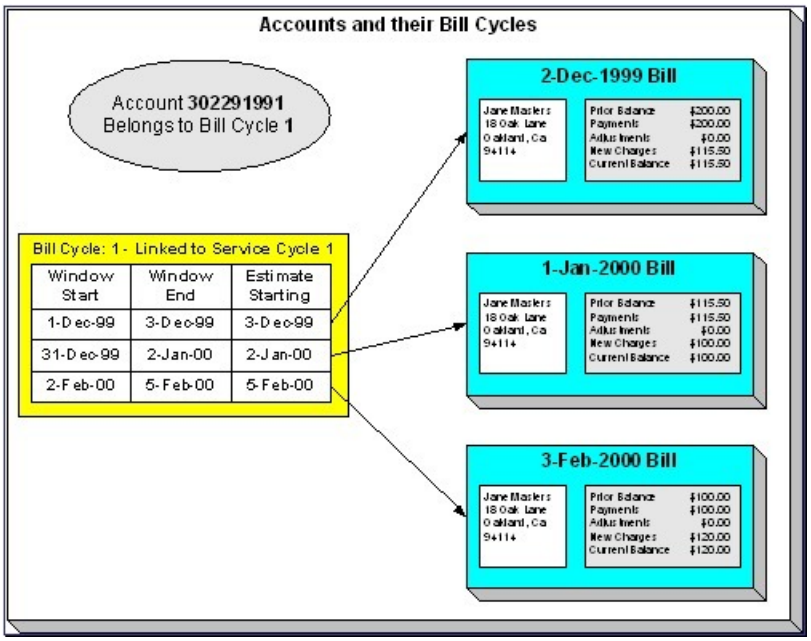
### The Cyclical Billing Process & Window Billing

The cyclical bill creation process creates most bills. This process works as follows:

- Every account references a bill cycle. The bill cycle's schedule controls WHEN the system attempts to create bills for the account.

- Every bill cycle has a bill cycle schedule that defines the dates when a cycle's accounts are to be billed. Rather than attempt to create bills on one evening, most bill cycles use a concept of "window billing" where the system attempts to produce bills for accounts over a few nights. The first night (i.e., the day the window opens) should be the earliest day on which meter reads for the account can enter the system. The last night (i.e., the day the window closes) should be the last possible day in which a meter read can enter the system. This concept of window billing allows you to start billing accounts on the earliest possible day and then bill the stragglers over successive evenings. This results in much better cash flow.
- When the bill cycle creation process runs, it looks for bill cycles with open bill windows. It then attempts to create bills for the accounts in each such cycle. If a bill is created, it will send it out that evening. If a bill cannot be created, the system will create a bill in the "error" state with a message that can be analyzed by your billing staff. The next day, your staff can either correct the problem or not. When the bill cycle creation process next runs, it deletes all "error" bills and attempts to recreate them. It continues this throughout the bill window. If bills are in error at the end of the window, they will remain in this state until a user fixes them. If the bills are still in error when the cycle's next window opens, a billing error will be generated.

The following diagram should help clarify the above.




**FASTPATH:**
For more information about the how to control when bills are produced for a cycle, refer to *Bill Cycle - Bill Cycle Schedule*.

## Designing Your Bill Cycle

The number of bill cycles is determined by the frequency that you bill your customers. So, for example, if you bill every month, you'll have 20 bill cycles - one for each bill day during the month. If you bill bimonthly, you'll have 40 bill cycles. If you bill quarterly, you'll have 60 bill cycles. Etc.

Keep in mind the following:

- You may need additional bill cycles if you allow customers to be billed off-cycle. For example, you could create a bill cycle called "Seniors" and link this to every senior citizen. You would set up this bill cycle's schedule to create bills shortly after social security checks are issued.

- You may need other bill cycles for customers with non-metered services (e.g., land leases, one time invoices).

**IMPORTANT:**
An account's bill cycle should attempt to create bill segments at least as often as the shortest service agreement duration. For example, if an account has both monthly and quarterly service agreements, the account should be placed on a monthly bill cycle. Refer to *Bill Frequency - Bill Cycle vs Bill Segment Duration* for more information.

## The Relationship Between Metered Service Cycles and Bill Cycles

As you can deduce, a service point's service cycle is related to an account's bill cycle.

The following table is an example of how you would set up the various dates on the various schedules that control meter reading and billing.

| Service Cycle | Download Date | Sched MR Date | Bill Cycle | Bill Window | Estimation Date |
|---|---|---|---|---|---|
| 1 | 28-May-99 | 31-May-99 | 1 | 31-May-99 to 2-Jun-99 | 2-Jun-99 |
| 2 | 31-May-99 | 1-Jun-99 | 2 | 1-Jun-99 to 3-Jun-99 | 3-Jun-99 |
| 3 | 1-Jun-99 | 2-Jun-99 | 3 | 2-Jun-99 to 4-Jun-99 | 4-Jun-99 |
| 4 | 2-Jun-99 | 3-Jun-99 | 4 | 3-Jun-99 to 7-Jun-99 | 7-Jun-99 |
| Etc. | | | | | |

Notice the following about this example:

- The bill cycle code is the same as the meter read (MR) cycle. This is not necessary, it's just good practice.
- The bill window starts on the first date on which a meter read could be uploaded.
- The bill window ends on the day after the last possible day a read could be uploaded for the bill cycle.
- Billing is only allowed to estimate consumption on the last day of the bill window.

**FASTPATH:**
For more information about the bill cycle schedule, refer to *Bill Cycle - Bill Cycle Schedule* . For more information about the service cycle schedule, refer to *Setting Up Service Cycle Schedules* .

## How Does An Account Get Its Bill Cycle?

Most accounts are created behind-the-scenes when a user uses the "add account" option on *Person - Main Information* . An account created like this doesn't have a bill cycle. Rather, it sits in limbo awaiting the activation of its first service agreement. When a service agreement is activated, the system populates the account's bill cycle using the following algorithm:

- If an account's bill cycle is protected, the activation of a service agreement will not affect an account's bill cycle. Refer to *Protecting An Account's Bill Cycle* for more information.

- If the service agreement being activated is for metered service, the account is given a bill cycle that will generate bills shortly after the service point is read. The route the system follows to get this bill cycle is a bit indirect:
  - A metered service agreement references one or more metered service points.
  - Every metered service point references a service cycle (the service cycle controls when the meter at the service point is read).
  - Every service cycle references a default bill cycle. It is this bill cycle that is populated on the account paying for service at the service point.
- If the service agreement being activated is not metered, the system cannot populate the account's bill cycle because there is no service cycle from which to default the bill cycle. This means the account's bill cycle will be blank until a user specifies a bill cycle for the account (using the Account page).

**NOTE:**
**A To Do entry highlights accounts without a bill cycle.** A To Do entry highlights those accounts that require a user to specify a bill cycle. This entry is generated for accounts without a bill cycle that have active service agreements.

When the last service agreement linked to an account is stopped , the account's bill cycle will be changed so that the account will be final billed when billing next executes. Refer to *What Happens At Finalization Time?* for more information.

When a service point's service cycle is updated, and the account's bill cycle is not protected, the system automatically updates the account's bill cycle to be in sync with the service cycle. Note that this will only take place if the Allow Bill Cycle Synchronization **Option Type** on the General System Options *Feature Configuration* is set to Y .

## Protecting An Account's Bill Cycle

Over time, as a customer moves from premise to premise, their bill cycle is changed behind-the-scenes to be in sync with the latest service point's service cycle (as described in the previous section). If you do not want the system to change an account's bill cycle when a metered service agreement is activated, you need to turn on the account's **protect bill cycle** flag. You would do this if a customer liked to be billed at the start of the month regardless of when their meter was read.

When the last service agreement for an account is stopped, the protect bill cycle flag is reset. This is to ensure that if the customer returns to start new service again, the bill cycle can be set based on *How Does An Account Get Its Bill Cycle*.

## What Happens If An Account Has Service Agreements Spanning Metered Service Cycles?

A single account can have service agreements that are in several service cycles. The bill cycle on such an account will default based on the last activated metered service agreement.

It's important to be aware that an account will only have bills created when its bill cycle schedule so indicates. This means that the consumption for some service points could remain unbilled for a few weeks.

# Designing Bill Periods

Bill periods are used by non-metered service agreements whose bill end dates need to fall on strict dates. You need only set up this information if you have this type of service agreement.

**FASTPATH:**

Refer to *Ways To Control The End Date Of A Bill Segment* for more information.

Every bill period has a calendar that defines when bill segments are created for service agreements that use the bill period. Examples of bill periods include:

- Quarterly Bill - Last Day Of Quarter
- Quarterly Future Bill - Last Day Of Quarter
- Monthly - 15th Day Of Month.
- Monthly Future Bill - Last Day Of Month.

The Quarterly Bill - Last Day Of Quarter bill period would have a schedule that looked as follows:

| Earliest Date On Which To Create A Bill Segment | Bill End Date |
|---|---|
| 1-Oct-1998 | 30-Sep-1998 |
| 1-Jan-1999 | 31-Dec-1998 |
| 1-Apr-1999 | 31-Mar-1999 |
| 1-Jul-1999 | 30-Jun-1999 |
| ... | |

The Quarterly Future Bill - Last Day Of Quarter bill period would have a schedule that looked as follows:

| Earliest Date On Which To Create A Bill Segment | Bill End Date |
|---|---|
| 15-Dec-1998 | 31-Mar-1999 |
| 15-Mar-1999 | 30-Jun-1999 |
| ... | |

The remainder of this section provides examples using the above calendars.

The following example assumes the following:

- The service agreement starts on 18-Dec-1998.
- The service agreement's SA type references the Quarterly Future Bill - Last Day Of Quarter bill period.

The following table shows when bill segments will be produced (assuming the account's bill cycle attempt to create segments as soon as possible) for several bill periods:

| Earliest Date Segment Will Be Produced | Bill Period |
|---|---|
| 18-Dec-1998 | 18-Dec-1998 thru 31-Mar-1999 |
| 15-Mar-1999 | 1-Apr-1999 thru 30-Jun-1999 |
| ... | |

The following example assumes the following:

- The service agreement starts on 18-Dec-1998.
- The service agreement's SA type references the Quarterly Bill - Last Day Of Quarter bill period.

The following table shows when bill segments will be produced (assuming the account's bill cycle attempts to create segments as soon as possible) for several bill periods:

| Earliest Date Segment Will Be Produced | Bill Period |
|---|---|

| | |
|---|---|
| 1-Jan-1999 | 18-Dec-1998 thru 31-Dec-1998 |
| 1-Apr-1999 | 1-Jan-1999 thru 31-Mar-1999 |
| ... | |

**FASTPATH:**
Refer to *Setting Up Bill Periods* for information about how to define this information.

## Setting Up Bill Cycles

An account references a bill cycle. The bill cycle defines when the account is billed and when the account's debt is checked to determine if it's overdue. To define a bill cycle and its bill cycle schedule, open **Admin** > **Bill Cycle** > **Add.**

**Description of Page**

Enter a unique **Bill Cycle** and **Description** for every bill cycle.

Use the **Bill Cycle Schedule** collection to define when bills are produced for the accounts in a given bill cycle. The following fields are required for each instance:

**Window Start Date** Specify the date on which the system should start trying to create bills for accounts in the cycle.

**Window End Date** Specify the last day on which the system will create bills for accounts in the cycle. This should be the last possible date on which a meter read could be loaded into the system for the account.

**Accounting Date** Specify the financial date associated with the bills' financial transaction. The accounting date defines the financial period(s) to which the bills will be booked in your general ledger.

**Estimate Date** The date on which the system is allowed to start estimating consumption if a real read cannot be found. Leave this date blank to inhibit consumption estimation. When specified, this date is typically on or shortly before the window end date.

The system will only estimate a service agreement's consumption if: 1) the bill cycle schedule allows estimation, and 2) the service agreement allows estimation.

**Freeze and Complete** Turn on this switch if the system should freeze and complete any bill that is created without errors. If this switch is turned off, all bills created by the billing process will be left in the unfinished state. You would only turn this switch off if you want to verify an entire bill run prior to freezing it (e.g., if you are introducing a new version of a rate). If you turn this off, you will need to return to this page after verifying a bill run and turn it back on for the customers to receive bills. When the system next runs, it deletes all unfrozen bills and recreates them as per the instructions on the bill cycle schedule.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BILL_CYC*.

The batch bill creation process uses this schedule to define the bill cycles for which it should create bills.

**NOTE:**
**Don't forget.** After you set up the bill cycles that correspond with service cycles, go to *Setting Up Service Cycle Schedules* and update the service cycles accordingly.

## Setting Up Service Route Types

Every route within a service cycle references a route type. The route type controls:

- The batch process used to download and upload a route's meter reads.
- Whether a route is downloaded as part of the service cycle schedule download process.

Open **Admin** > **Service Route Type** > **Add** to define your route types.

**Description of Page**

The following fields display:

**Route Type** The unique identifier of the route type.

**Description** The description of the route type.

**Batch Control** This defines the batch process used to download the meter reads for routes of this type. If you have multiple meter reading device formats you will have multiple batch processes - one for each format.

**Process Routes In Cycle** Turn this switch on if routes of this type have their meter reads downloaded when their service cycle is downloaded. This switch will be on for most types of routes. A classic example of a type of route where this switch is off would be a route containing translators (a translator sends in reads when it is polled).

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MR_RTE_TYPE*.

# Setting Up Service Cycles And Routes

When you set up a metered service point you must define its service cycle, route and sequence within the route. To define a service cycle and its routes, open **Admin** > **Service Cycle** > **Add.**

---

**NOTE:**
Every service cycle has a calendar that defines when the service points in the cycle are read. For more information about this calendar, see *Setting Up Service Cycle Schedules* .

---

**Description of Page**

Enter a unique **Read Cycle** and **Description** for the service cycle.

Enter the **Bill Cycle** to populate on accounts with service points in this service cycle. The system updates an account's bill cycle when a service agreement is activated (assuming the account's bill cycle is not protected). Refer to *How Does An Account Get Its Bill Cycle?* for more information.

If the service cycle is associated with a **Service Provider** (rather than your own company's), define the owner of the cycle. Refer to *MDMAs And Service Cycles* for more information about service providers and their service cycles.

Use the **Service Routes** collection to define the routes within a given service cycle. The following fields display for each service route:

**Service Route** The unique identifier of the route within the cycle (you can use the same route ID in many cycles).

**Description** The route's description.

**Route Type** The type of route. This controls if and how the route's meter reads are downloaded. Refer to *Setting Up Service Route Types* for more information.

**Characteristics**

The **Characteristics** collection contains information that describes miscellaneous information about the service route.

The following fields display:

**Effective Date** Indicate the effective date for this characteristic.

**Characteristic Type** Controls the order in which characteristics of the same type are displayed.

**Characteristic Value** Indicate the value of the characteristic.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_MR_CYC* and *CI_MR_RTE*.

# Setting Up Service Cycle Schedules

The service cycle schedule defines when the service points in a given cycle are scheduled to be read. Open **Admin** > **Service Schedule** > **Search** to maintain this information.

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**FASTPATH:**
Refer to *Designing Cycles for Metered Services* for more information about service cycle. Refer to *The Relationship Between Metered Service Cycles and Bill Cycles* for more information about how service cycles are linked to bill cycles.

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**Description of Page**

When you want to add a new service cycle schedule, you must specify the following information:

**Service Cycle** Enter the service cycle ID of the cycle whose routes will be downloaded.

**Scheduled Selection Date** Specify the date on which the system is meant to download information about the cycle's meters. This date should be a day or two before the scheduled work date.

Define the date the meters in the route are scheduled to be read using **Scheduled Work Date**. This date is extremely important as billing uses it when it looks for meter reads for service points in this cycle. If billing can't find a reading, consumption will be estimated as of this date (assuming the service agreement allows estimation).

Click **Pre-Generate Routes** if you need to finesse the cycle's routes on this Scheduled Selection Date (e.g., because some of the routes shouldn't be downloaded on a given date because the system is meant to estimate consumption). If you don't click this button, the system will create the routes on the scheduled selection date. It does this by creating a route extract for each downloadable route within the cycle (as defined by the route type). If you click this button, the system shows all routes within the cycle in the grid below. You must then define how the system is supposed to download each route on the scheduled selection date.

Click **Delete Routes** if you have pre-generated the routes and you was to remove them and allow the system to create the routes on the scheduled selection date.

Use the **Service Schedule Routes** to define how individual routes within the cycle should be handled during the download. The following fields are required for each schedule read date:

**Service Route** The unique ID of the service route. The route's route type is displayed adjacent.

**Schedule Type** This defines if and how the system is supposed to download the route's meter reads. Valid values are: Cust Read , Download , Estimate . Only those routes defined as Download will have meter reads downloaded. The other values are used to document why the route won't be downloaded.

**Schedule Status** This defines the download status of the route. Valid values are Pending and Complete . This value is only displayed for routes with a schedule type of Download .

**Where Used**

This information is used by the meter read download process to determine which meter reads to download.

This information is used by the billing process to determine the date on which it expects to find a read. If it cannot find a read on or around this date, and it's OK to estimate consumption, consumption will be estimated as of the scheduled work date. The system uses the service agreement's rate schedule's frequency to determine the period of time around the scheduled work date in which it looks for a read. Refer to *Defining Frequency Codes* for more information.

## Setting Up Bill Periods

Some SA types reference a bill period. The bill period defines when the service agreement's bill segments are produced and the respective end date of each bill segment.

**FASTPATH:**
Refer to *Designing Bill Periods* for more information.

To define a bill period and the bill period schedule, open **Admin** > **Bill Period** > **Add.**

**Description of Page**

Enter a unique **Bill Period** and a **Description** for every bill period.

Use the **Bill Period Schedules** collection when the system should create bill segments for service agreements that use a given bill period. It also defines the end date of each respective bill segment. The following fields are required:

**Bill Date** Specify the earliest date on which the system is allowed to create a bill segment for service agreements using this bill period.

**Bill Seg End Date** Specify the end date of the bill segment. For future bills, this will be after the bill date. For retro bills, this will be before the bill date.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_BILL_PERIOD*.

This information is used by the bill segment creation process to determine the end date of service agreements that use a bill period.

## Defining Statement Cycles

If you have persons set up in the system to receive statements with financial information, you will need to assign them to a statement cycle and define a schedule for the statement cycle.

**FASTPATH:**
Refer to *The Big Picture of Complex Statements* for more information about statements.

**Contents**



## The Big Picture Of Statement Cycles

A statement cycle has a similar purpose to that of a bill cycle. It controls when statements will be produced.

**Contents**

## The Cyclical Statement Process

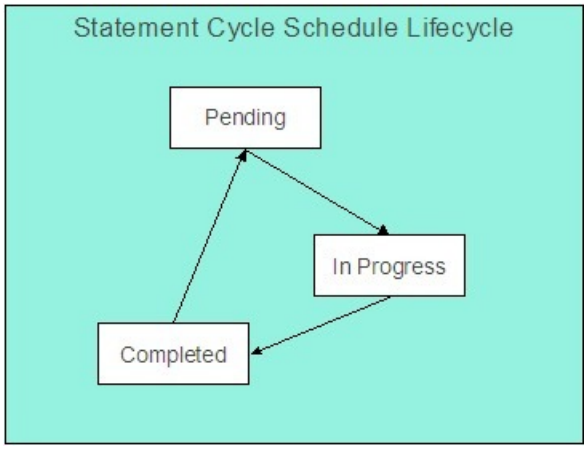
Persons who wish to receive statements will work with you to determine how often these statements should be produced. Some persons may want a monthly statement, some a quarterly and some annually. For each unique schedule that is designed for your various statement persons, you will set up a Statement Cycle and its schedule.

## Designing Your Statement Cycles

The number of statement cycles is determined by a combination of the frequency that you will send statements to the statement persons and how many statement cycles you wish to manage within the same frequency.

So, for example, for all the statement persons who wish to receive a monthly statement, will you create only one monthly Statement Cycle so that all monthly statements are produced the same day? Or will you have several monthly statement cycles scheduled throughout the month? The answer will depend on the volume of statements being produced and on how you want to manage the statement production.

## Lifecycle of a Statement Cycle Schedule




Pending The statement cycle schedule is added in this state. The Create Statements background process find records in this state to process on the appropriate date.

**FASTPATH:**
Refer to *Create Statements Background Process* for more information.

In Progress Records in this state are currently being processed by the Create Statements background process.

Completed Records in this state have already been processed by the Create Statements background process. If a problem occurs with the Create Statements background process and it needs to be rerun, simply change the status back to pending and rerun the process.

## Setting Up Statement Cycles

A Statement Construct references a statement cycle. The statement cycle defines when the statement person will receive statements with financial information related to the accounts and service agreements linked to the statement construct. To define a statement cycle and its statement cycle schedule, open **Admin** > **Statement Cycle** > **Add.**

**Description of Page**

Enter a unique **Statement Cycle** and **Description** for every statement cycle.

Use the **Statement Cycle Schedule** collection to define when statements are produced for the persons with statement construct records in the given statement cycle. The following fields are required for each instance:

**Processing Date** Specify the date on which the system should create statements for persons with statement construct records in the cycle.

**Status** Indicates the status of the cycle schedule. Refer to *Lifecycle of a Statement Cycle Schedule* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_STM_CYC*.

The batch statement creation process uses this schedule to determine which statement cycles for it should create statements for the statement construct records. Refer to *Create Statements Background Process* for more information.

# Defining Service Agreement Type (SA Types)

Every service agreement must reference a SA type. The SA type defines what you sell, how much you sell it for, to whom you sell it, how overdue debt is collected, and how sales will be booked in your general ledger.

> **NOTE:**
> **Perfect foresight.** In a perfect world, the other control tables would have been set up with perfect foresight of setting up your SA types. In reality, setting up your SA types may invalidate some of your earlier decisions. Don't feel bad if this happens, some amount of iteration is natural.

**Contents**



## Designing SA Types For Service Agreements With Service Points

Designing your SA types is an iterative process. To minimize some iterations, we recommend using the steps outlined in this section to complete the following table. When the table is complete, you're ready to set up your SA types.

| Division/SA Type | Service Type |
|---|---|

The topics in this section provide guidelines describing how to fill in this table for SA types associated with service agreements that charge for service point-oriented services.

**Contents**



## CIS Division Segmentation

A CIS division is typically associated with a jurisdiction. The definition of a jurisdiction is a geographic-oriented entity with unique business rules. For example, if you conduct business in California and Nevada, and each state has different collection rules, you will need a separate jurisdiction for each state. You must set up a CIS division for each jurisdiction in which you conduct business.

If we assume that you are located in a single jurisdiction - say California - we will need a single CIS division for all of our SA types.

| CIS Division/SA Type |
|---|
| CA |

## Service Segmentation

At a minimum, you will have one SA type for every different type of utility service offered by your organization. If we assume you sell electricity, gas, water, wastewater and cable; your SA Types will be as follows:

| CIS Division/SA Type | Service Type |
|---|---|
| CA/G | Gas service |
| CA/W | Water service |
| CA/E | Electric service |
| CA/WW | Waste water service |
| CA/CABLE | Cable |

**NOTE:**
**Non Utility Services.** Earlier in this manual, service types are discussed in respect of meters and items. However, you may require additional service types if you have non-utility services. In the above table, we have only shown utility

oriented services and their respective CIS Divisions. Later in this section, we will encounter a few more service types. Refer to *Setting Up Service Types* for more information.

## Receivable Segmentation

Many organizations segregate their receivable balances in the general ledger. For example, the receivable amount associated with gas and water service may be maintained in separate GL accounts.

If your organization does this, you will probably have at least one SA type for each such receivable account because each SA type references a distribution code that typically contains the receivable account.

- The word *probably* is underlined because this is a rule of thumb. There are situations where the number of receivable accounts isn't directly related to the number of SA types. This happens when an organization maintains very detailed receivable accounts in the general ledger and maintaining a one-to-one relationship between SA types and distribution codes would lead to a massive proliferation of SA types (and you don't want this!). If your organization maintains very detailed receivable accounts, please speak to your implementers, they should be able to introduce a small customization to generate the appropriate receivable account rather than extract it from the distribution code.
- The word *typically* is underlined because there are several SA types that don't book to a receivable account when bill segments are generated. For example, company usage and charitable contributions. Refer to *Company Usage Segmentation* and *Charitable Contribution Segmentation* for examples of SA types that don't book to receivable accounts.

We'll simplify our example and assume your organization has one receivable account for all types of utility service. Given this, we won't need additional SA types to support receivable segmentation:

| CIS Division/ SA Type | Service Type | Distribution Code |
|---|---|---|
| CA/G | Gas service | A/R-UTIL |
| CA/W | Water service | A/R-UTIL |
| CA/E | Electric service | A/R-UTIL |
| CA/WW | Waste water service | A/R-UTIL |
| CA/CABLE | Cable service | A/R-UTIL |

## Revenue Segmentation

Look at your rates and determine which rates can be used by each SA type. The following table shows the sample rates that can be used for each service:

| CIS Division/ SA Type | Service Type | Distribution Code | Rates |
|---|---|---|---|
| CA/G | Gas service | A/R-UTIL | GALL-1 |
| CA/W | Water service | A/R-UTIL | WALL-1 |
| CA/E | Electric service | A/R-UTIL | ERES-1, ERES-2, ECOM-1, EIND-1, ELAMP-1 |
| CA/WW | Waste water service | A/R-UTIL | WWALL-1 |

| | | | |
|---|---|---|---|
| CA/CABLE | Cable service | A/R-UTIL | CABLE |

Now, look at the rates' calculation rule GL Distribution window. You're looking for calculation rules whose GL distribution is affected by revenue class. If there are no revenue classes referenced on the calculation rules, this means that the revenue associated with the rate will be booked to a single GL account regardless of the type of customer. If you see revenue classes, this means that the revenue account associated with the calculation rule(s) differs depending on the SA type's revenue class. If revenue classes are used in the rates, you must create a different SA Type for every revenue class.

Let's assume the following:

- The gas rate (GALL-1) references the RESIDENTIAL , COMMERCIAL and INDUSTRIAL revenue classes in order to differentiate revenue based on the type of customer.
- None of the other rates differentiate revenue based on customer class.

Our SA types will now look as follows:

| CIS Division/ SA Type | Service Type | Distribution Code | Revenue Class | Rates |
|---|---|---|---|---|
| **CA/G-RES** | Gas service | A/R-UTIL | R - residential | GALL-1 |
| **CA/G-COM** | Gas service | A/R-UTIL | C - commercial | GALL-1 |
| **CA/G-IND** | Gas service | A/R-UTIL | I - industrial | GALL-1 |
| **CA/W** | Water service | A/R-UTIL | N/A | WALL-1 |
| **CA/E** | Electric service | A/R-UTIL | N/A | ERES-1, ERES-2, ECOM-1, EIND-1, ELAMP-1 |
| **CA/WW** | Waste water service | A/R-UTIL | N/A | WWALL-1 |
| **CA/CABLE** | Cable service | A/R-UTIL | N/A | CABLE |

Notice that we created new SA types for gas in order to specify the respective revenue class. We didn't do this for the other services because it isn't necessary. However, you should feel free to do this if it feels right or if you need it for reporting purposes. For example, if you want to report on all *residential* service agreements, but you differentiate only gas by residential versus commercial, you'll be in trouble.

## Rate Segmentation

Every SA Type whose service agreements have their charges calculated with a rate must have one or more rates linked to it. These define which rates can be linked to the SA type's service agreements. If different service agreements have different valid rate combinations, you will need to split the SA types accordingly.

For example, look at the electric rates. If we assume:

- the RES rates can only be used for residential customer,
- the IND rates can only be used for industrial customers,
- the COM rates can only be used for commercial customers,
- the LAMP rates can only be used for lamp customers

Then you might want to set up a new SA type to indicate such. The advantage of doing this is that you get more control over which rates can be used on a given SA type. The disadvantage is that you proliferate SA types. Unfortunately, it's really a question of taste.

| CIS Division/ SA Type | Service Type | Distribution Code | Revenue Class | Rates |
|---|---|---|---|---|
| **CA/G-RES** | Gas service | A/R-UTIL | R - residential | GALL-1 |
| **CA/G-COM** | Gas service | A/R-UTIL | C - commercial | GALL-1 |
| **CA/G-IND** | Gas service | A/R-UTIL | I - industrial | GALL-1 |
| **CA/W** | Water service | A/R-UTIL | N/A | WALL-1 |
| **CA/E-RES** | Electric service | A/R-UTIL | N/A | ERES-1, ERES-2 |
| **CA/E-COM** | Electric service | A/R-UTIL | N/A | ECOM-1 |
| **CA/E-IND** | Electric service | A/R-UTIL | N/A | EIND-1 |
| **CA/LAMP** | Electric service | A/R-UTIL | N/A | ELAMP-1 |
| **CA/WW** | Waste water service | A/R-UTIL | N/A | WWALL-1 |
| **CA/CABLE** | Cable service | A/R-UTIL | N/A | CABLE |

**WARNING:**
Don't be too specific in your analysis in respect of rate segmentation because you could end up with a separate SA type for every rate (and you don't want this). We understand this is a very subjective warning, but we recommend that you start out with broad bands of rates that can be used on a SA type and narrow it down if you end up unhappy with the results. For example, you don't have to set up a separate SA type for low-income residential gas customers just because they have a special rate. Rather, you can leave your SA types as they are and treat low-income gas customers as a subset of your residential gas customers. **For more information**, refer to *Setting Up Start Options*.

**NOTE:**
**Rate override**. If a service agreement of this type may be linked to a terms of service record, you must also consider whether or not the *rate schedule could be overridden* by a template SA linked to the terms of service record. Refer to *SA Type - Rate* for information about the possible values for this field.

## Service Point (SP) Type Segmentation

Every SA Type whose service agreements exist to bill for service point-oriented service has one or more SP types. These define which type of service points can be linked to the SA type's service agreements. If different service agreements have different valid SP types, you will need to split the SA types accordingly.

For each service point-oriented SA type, determine if there are any restrictions in respect of the types of service points that can use the SA type's rates. For example, if we assume that only commercial SP types can be used by commercial customers, industrial SP types by industrial customers, residential SP types by residential customers, your SA types will be:

| CIS Division/ SA Type | Service Type | Distribution Code | Revenue Class | Rates | SP Type |
|---|---|---|---|---|---|
| **CA/G-RES** | Gas service | A/R-UTIL | R - residential | GALL-1 | G-RES |
| **CA/G-COM** | Gas service | A/R-UTIL | C - commercial | GALL-1 | G-COM |
| **CA/G-IND** | Gas service | A/R-UTIL | I - industrial | GALL-1 | G-IND |
| **CA/W-RES** | Water service | A/R-UTIL | N/A | WALL-1 | W-RES |
| **CA/W-COM** | Water service | A/R-UTIL | N/A | WALL-1 | W-COM |

| | | | | | |
|---|---|---|---|---|---|
| **CA/W-IND** | Water service | A/R-UTIL | N/A | WALL-1 | W-IND |
| **CA/E-RES** | Electric service | A/R-UTIL | N/A | ERES-1, ERES-2 | E-RES |
| **CA/E-COM** | Electric service | A/R-UTIL | N/A | ECOM-1 | E-COM |
| **CA/E-IND** | Electric service | A/R-UTIL | N/A | EIND-1 | E-IND |
| **CA/WW-RES** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-RES, WW-RES |
| **CA/WW-COM** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-COM, WW-COM |
| **CA/WW-IND** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-IND, WW-IND |
| **CA/CABLE** | Cable service | A/R-UTIL | N/A | CABLE | CABLE |

Notice the wastewater SA types reference both water and waste water service points. This is intentional as wastewater service uses the consumption from the water service to calculate some part of the wastewater charge.

## Company Usage Segmentation

Up to now, we've discussed SA types associated with service agreements linked to your customers. The system has also been designed to keep track of the expenses associated with your company's use of power. If you want the system to do this, you must create at least one SA type for each service consumed by your organization.

For example, if we assume your organization consumes electric, gas, and water service; your SA types will now be as follows:

| CIS Division/ SA Type | Service Type | Distribution Code | Revenue Class | Rates | SP Type | Bill Seg Type |
|---|---|---|---|---|---|---|
| **CA/G-RES** | Gas service | A/R-UTIL | R - residential | GALL-1 | G-RES | SP-RATED |
| **CA/G-COM** | Gas service | A/R-UTIL | C - commercial | GALL-1 | G-COM | SP-RATED |
| **CA/G-IND** | Gas service | A/R-UTIL | I - industrial | GALL-1 | G-IND | SP-RATED |
| **CA/W-RES** | Water service | A/R-UTIL | N/A | WALL-1 | W-RES | SP-RATED |
| **CA/W-COM** | Water service | A/R-UTIL | N/A | WALL-1 | W-COM | SP-RATED |
| **CA/W-IND** | Water service | A/R-UTIL | N/A | WALL-1 | W-IND | SP-RATED |
| **CA/E-RES** | Electric service | A/R-UTIL | N/A | ERES-1, ERES-2 | E-RES | SP-RATED |
| **CA/E-COM** | Electric service | A/R-UTIL | N/A | ECOM-1 | E-COM | SP-RATED |
| **CA/E-IND** | Electric service | A/R-UTIL | N/A | EIND-1 | E-IND | SP-RATED |
| **CA/WW-RES** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-RES, WW-RES | SP-RATED |
| **CA/WW-COM** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-COM, WW-COM | SP-RATED |
| **CA/WW-IND** | Wastewater service | A/R-UTIL | N/A | WWALL-1 | W-IND, WW-IND | SP-RATED |
| **CA/CABLE** | Cable service | A/R-UTIL | N/A | CABLE | CABLE | SP-RATED |
| **CA/E-COY** | Electric service | EXP-COMP | N/A | E CO USE | E-CO USE | COMPUSAG |
| **CA/G-COY** | Gas service | EXP-COMP | N/A | G CO USE | G-CO USE | COMPUSAG |
| **CA/W-COY** | Water service | EXP-COMP | N/A | W CO USE | W-CO USE | COMPUSAG |

Notice the three company usage SA types do not reference an A/R account as their distribution code. This is because when bill segments are created for these types of service agreements, the system must debit an expense account (or contra-revenue account) rather than a receivable account.

Also notice we introduced a new column - Bill Segment Type. Notice that the customer-oriented SA types use the SP-RATED bill segment type and the company usage SA types use the COMPUSAG bill segment type. Different bill segment types are necessary because company usage SA types use a different algorithm to calculate their bill segment's financial transaction algorithm because they don't affect either payoff or current balance.

**FASTPATH:**
For more information, refer to *Designing and Defining Bill Segment Types*.

## Debt Class Segmentation

Every SA Type has a debt class. The debt class is used to categorize a service agreement's debt for the purpose of credit and collections (C&C) analysis. If a given SA Type has different categories of debt from C&C's perspective, you will have to split the SA Type.

**FASTPATH:**
For more information about debt class, refer to *Designing Your Collection Procedures*.

If we assume that your residential services are regulated and your commercial and industrial services are deregulated, we won't have to introduce additional SA types.

| CIS Division/ SA Type | Distribution Code | Revenue Class | Rates | SP Type | Bill Seg Type | Debt Class |
|---|---|---|---|---|---|---|
| **CA/G-RES** | A/R-UTIL | R - residential | GALL-1 | G-RES | SP-RATED | REGU |
| **CA/G-COM** | A/R-UTIL | C - commercial | GALL-1 | G-COM | SP-RATED | UNRE |
| **CA/G-IND** | A/R-UTIL | I - industrial | GALL-1 | G-IND | SP-RATED | UNRE |
| **CA/W-RES** | A/R-UTIL | N/A | WALL-1 | W-RES | SP-RATED | REGU |
| **CA/W-COM** | A/R-UTIL | N/A | WALL-1 | W-COM | SP-RATED | UNRE |
| **CA/W-IND** | A/R-UTIL | N/A | WALL-1 | W-IND | SP-RATED | UNRE |
| **CA/E-RES** | A/R-UTIL | N/A | ERES-1, ERES-2 | E-RES | SP-RATED | REGU |
| **CA/E-COM** | A/R-UTIL | N/A | ECOM-1 | E-COM | SP-RATED | UNRE |
| **CA/E-IND** | A/R-UTIL | N/A | EIND-1 | E-IND | SP-RATED | UNRE |
| **CA/WW-RES** | A/R-UTIL | N/A | WWALL-1 | W-RES, WW-RES | SP-RATED | REGU |
| **CA/WW-COM** | A/R-UTIL | N/A | WWALL-1 | W-COM, WW-COM | SP-RATED | UNRE |
| **CA/WW-IND** | A/R-UTIL | N/A | WWALL-1 | W-IND, WW-IND | SP-RATED | UNRE |
| **CA/CABLE** | A/R-UTIL | N/A | CABLE | CABLE | SP-RATED | UNRE |
| **CA/E-COY** | EXP-COMP | N/A | E CO USE | E-CO USE | COMPUSAG | No debt |
| **CA/G-COY** | EXP-COMP | N/A | G CO USE | G-CO USE | COMPUSAG | No debt |
| **CA/W-COY** | EXP-COMP | N/A | W CO USE | W-CO USE | COMPUSAG | No debt |

Notice the three company usage SA types do not have a debt class. This is because their bill segment type's FT algorithm doesn't cause debt to be created and therefore there is no reason to have a debt class. However, you'll need to create a "dummy" debt class - call it N/A - for these SA types because every SA type must reference a debt class.

## Budget Billing Segmentation

Many utilities offer their customers levelized payment plans to smooth out the seasonal bill variations. We call this levelized amount the *budget amount*.

**FASTPATH:**
Refer to *Budget Billing* for more information about budgets in general. Refer to *Billing - Current Balance versus Payoff Balance***for an example** of budget billing accounting.

If we assume that you only allow budget billing on the electric and gas residential services, then you'll need to update your CA/G-RES and CA/E-RES SA types:

| CIS Division/ SA Type | Dist Code | Rev Class | Rates | SP Type | Bill Seg Type | Debt Class | Recurring Charge Control Info |
|---|---|---|---|---|---|---|---|
| **CA/G-RES** | A/R-UTIL | R | GALL-1 | G-RES | SP-RATED | REGU | Amount to bill is Not Allowed<br>Amount is Optional<br>Frequency is Monthly<br>Recurring Amount Label is Budget Amount: |
| **CA/G-COM** | A/R-UTIL | C | GALL-1 | G-COM | SP-RATED | UNRE | |
| **CA/G-IND** | A/R-UTIL | I | GALL-1 | G-IND | SP-RATED | UNRE | |
| **CA/W-RES** | A/R-UTIL | N/A | WALL-1 | W-RES | SP-RATED | REGU | |
| **CA/W-COM** | A/R-UTIL | N/A | WALL-1 | W-COM | SP-RATED | UNRE | |
| **CA/W-IND** | A/R-UTIL | N/A | WALL-1 | W-IND | SP-RATED | UNRE | |
| **CA/E-RES** | A/R-UTIL | N/A | ERES-1, ERES-2 | E-RES | SP-RATED | REGU | Amount to bill is Not Allowed<br>Amount is Optional<br>Frequency is Monthly<br>Recurring Amount Label is Budget Amount: |
| **CA/E-COM** | A/R-UTIL | N/A | ECOM-1 | E-COM | SP-RATED | UNRE | |
| **CA/E-IND** | A/R-UTIL | N/A | EIND-1 | E-IND | SP-RATED | UNRE | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **CA/WW-RES** | A/R-UTIL | N/A | WWALL-1 | W-RES, WW-RES | SP-RATED | REGU |
| **CA/WW-COM** | A/R-UTIL | N/A | WWALL-1 | W-COM, WW-COM | SP-RATED | UNRE |
| **CA/WW-IND** | A/R-UTIL | N/A | WWALL-1 | W-IND, WW-IND | SP-RATED | UNRE |
| **CA/CABLE** | A/R-UTIL | N/A | CABLE | CABLE | SP-RATED | UNRE |
| **CA/E-COY** | EXP-COMP | N/A | E CO USE | E-CO USE | COMPUSAG | No debt |
| **CA/G-COY** | EXP-COMP | N/A | G CO USE | G-CO USE | COMPUSAG | No debt |
| **CA/W-COY** | EXP-COMP | N/A | W CO USE | W-CO USE | COMPUSAG | No debt |

Notice the following:

- We updated the two SA types to allow recurring charge information.
- The Recurring Charge Amount is Optional . Why? Because those customers who aren't on a budget plan won't have a recurring charge amount. Those customers on a budget will have a recurring charge amount.

**NOTE:**
**Turn on Eligible for Budget.** Besides indicating that these SA types use recurring charges, you also need to turn on the Eligible for Budget switch on the SA type to indicate that this type of SA participates in budget processing.

**Override Budget Eligibility**. You may plug in an override budget eligibility algorithm on an SA type that is configured to be Eligible for Budget if certain service agreements of this type are not eligible.

**FASTPATH:**
Refer to the Description of Page under *SA Type - Billing***for the definition** of the recurring charge attributes.

# Designing SA Types For SAs Without Service Points

The topics in this section provide guidelines describing how to design the SA types associated with your service agreements that don't have service points.

**Contents**

*Loan Segmentation*

*Non-billed Budget Segmentation*

# Overpayment Segmentation

When a customer pays more than they owe, you must decide what to do with the excess money. The following points describe two possibilities:

- You could create a new service agreement to hold the excess (let's call it an overpayment SA). The credit would be transferred from this service agreement to the billable service agreements when the next bill is completed. This means that all billable service agreements have the same opportunity to receive the overpayment when they are billed in the future.
- You could amalgamate the excess payment on one of the existing, billable service agreements. For example, if a customer has both electric and gas service, the excess funds could be kept on either the gas or the electric SA. This would result in the following:
  - The service agreements that do NOT receive the overpayment will have debt when they are next billed.
  - The service agreement that receives the overpayment could have its future debt offset by the overpayment (meaning that it could have a credit balance until the service agreement's future bill segments offset the overpayment amount).
- The above situation is not desirable unless the customer intentionally overpaid one service agreement. The first method (keeping the overpayment on a separate service agreement) obviates this potential problem. Obviously, if your organization sells a single service (and therefore your customers have a single service agreement) you would choose the second method.

You control which method is used by plugging in the appropriate Overpayment Distribution algorithm on each *Customer Class* (i.e., you can choose a different method for different customer classes). If you choose to hold overpayments on a separate SA, then you must set up an SA Type as described in the following table:

| CIS Division/ SA Type | Service Type | Distrib. Code | Eligible for Billing | Debt Class | Pay Seg Type | Do Not Overpay | One-time |
|---|---|---|---|---|---|---|---|
| **CA/OVERPAY** | Other | A/P - OVER | Not billed | N/A | Normal | No | Yes |

Notice the following about the new overpayment SA type:

- It has an interesting distribution code. This is because when a payment segment is created for this type of service agreements, the system must credit a liability (an overpayment is a liability).
- It's important to indicate that the overpayment SA is a one-time service agreement. Why? Because this means that the system will automatically close the SA when it's balance falls to zero (i.e., when all of the overpayment has been used to satisfy future bills).
- A bill segment type is not needed because the system never creates bill segments for such service agreements (they exist only to hold excess credits).
- You may also want to turn on the alert message
- You must plug-in a bill completion algorithm on this SA type. This bill completion algorithm will transfer the credit balance to the account's other service agreements when the bill is completed. Refer to *The Credit Transfer Algorithm* for more information about this algorithm.
- You must also reference this overpayment SA type as the parameter value on your overpayment algorithm (this algorithm is plugged in on the desired customer classes). Refer to *Overpayment Algorithm* for more information about this algorithm.

**NOTE:**

**If overpayment means charitable contribution.** Some organizations sponsor a program that works as follows - if a customer overpays a bill by a given amount (say $5), this amount is assumed to be a charitable contribution. If you have this requirement, you will create another SA type to hold a customer's charitable contributions. This SA type will look similar to the one described below (see *Charitable Contribution Segmentation*) except it is not billable. The funds will be credited to this service agreement by creating a new overpayment algorithm that is similar to the base package *Overpayment Algorithm*. This new algorithm will be very similar to the existing algorithm. The main difference will be that it will have to check if the overpayment amount is an exact value (say $5). If so, it will create a payment segment for the charitable contribution SA type; otherwise it will create a payment segment for the overpayment SA.

## Write Off Segmentation

When you write off non-collectable debt, you transfer the receivable from a "normal" service agreement onto one or more write-off service agreements. When the debt is transferred to a write-off service agreement, the distribution code on the "normal" service agreement is credited (typically an A/R GL account), and the distribution code on the write-off service agreement is debited.

You will almost always need a write-off service agreement whose distribution code is the write-off expense. However, you probably don't book all of the write-off amount to a write-off expense account. Why? Because the debt that you're writing off typically contains both revenue and liabilities. At write-off time, you want to book the written off revenue to a write-off expense account and you want to reduce the liabilities (you don't owe the liability if you don't get paid). This means you'll need another SA type for the liabilities. Refer to *The Ramifications of Write Offs in the General Ledger* for a complete explanation.

The following table contains the minimum number of SA Types that you'll need to hold your write-offs.

| CIS Division/ SA Type | Service Type | Distrib. Code | Bill Seg Type | Debt Class | Pay Seg Type | Do Not Overpay |
|---|---|---|---|---|---|---|
| **CA/WO-STD** | Other | EXP-W/O | Not billed | WO | Normal | Yes |
| **CA/WO-LIA** | Other | LIA-General | Not billed | WO | Normal | Yes |

Notice the following about the new write-off SA types:

- They have interesting distribution codes. This is because when debt is transferred to these types of service agreements, the system must debit either an expense account (i.e., write-off expense) or a liability account. It's important to note that in *The Ramifications of Write Offs in the General Ledger* we explain how this liability account may be overwritten with the liability account that was originally booked.
- Neither needs a bill segment type because the system never creates bill segments for such service agreements (they exist only to hold uncollectable debt)
- Even though the debt is not collectable, it still has a debt class. Why? Because the system shows a customer's debt on many inquiries by debt class and it's important to show write-off debt on these queries.
- The combination of Payment Segment Type and Do Not Overpay are important. Refer to *The Ramifications of Write Offs in the General Ledger* for a complete explanation.

**NOTE:**
The adjustment type used to set the offending service agreement's current balance equal to its payoff balance is defined on each write-offable SA type. The adjustment type used to transfer the delinquent debt to the write-off service agreement is defined on the write-off SA type.

**An Alternative.** If you have a limited number of liability accounts, you may decide to have a separate write-off service agreement for each liability account. Doing this would proliferate the number of service agreements created at write-off time. However, it would simplify the remittance of payment to the taxing authority if the reversed liability is ever paid.

## Connection Charge Segmentation

If you levy connection charges, you have two options:

- You can create a SA type that exists purely to handle connect charge debt. After doing this, you'd create a start option for this SA type that causes an adjustment to be levied as part of the start service process. This adjustment would contain your standard connection charge. This approach would be used by a utility that had multiple services (e.g., a combined electric, gas, water utility) that only levies a single connection charge regardless of the number of services started. If you use this approach, make sure to indicate the SA type is non billable.
- You can levy a start adjustment on one of your existing SA types (e.g., CA/E-RES). The easiest way to do this is with a start option. On the start option you'd indicate an adjustment to be levied as part of the start service process. This adjustment would contain your standard connection charge. This approach would be used by a utility that had a single service offering (e.g., an electric-only utility). Refer to *Setting Up Start Options* for more information.

In the table below, we show what would be necessary if you want to have a separate service agreement for the connection charge.

| CIS Division/ SA Type | Service Type | Distrib. Code | Bill Seg Type | Debt Class |
|---|---|---|---|---|
| **CA/CONNECT** | Other | A/R-UTIL | Not billed | REGU |

Notice the following about the new connection charge SA type:

- It has a normal receivable distribution code.
- It doesn't need a bill segment type because the system never creates bill segments for such service agreements (its charged via an adjustment).
- The debt class is interesting - REGU (for regulated). We are intentionally linking the connection charge debt to the same debt class as the regulated debt from which it originates. This way, the C&C process will consider the connection charge debt the same as regulated debt and therefore perform the regulated collection (which results in the severance of all regulated service agreements).

## Charitable Contribution Segmentation

If your organization accepts charitable contributions made by your customers, you must create a SA type to hold these contributions.

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type | Recurring Charge Control Info |
|---|---|---|---|---|---|
| **CA/CHARITY** | Other | A/P-CHAR | CHAR | RECUR | Amount to bill is Not Allowed<br>Amount is Required<br>Frequency is Monthly |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Recurring Amount Label is Contrib. Amount |

Notice the following about the new charitable contribution SA type:

- It has an interesting distribution code. This is because when a payment is distributed to these types of service agreements, the system must credit a payable account (i.e., charitable contribution payable) rather than a receivable account. Note well, we have assumed a receivable is not incurred when the bill segment for the charitable contribution is created.
- It uses an interesting bill segment type - RECUR. This bill segment type was set up to create recurring charges that don't automatically stop at some point in time.
- The debt class is interesting - CHAR (for charity). This is done so that past due charitable contribution debt is treated separately from other types of debt.
- The recurring charge control information is set up as defined.

**FASTPATH:**
Refer to the Description of Page under *SA Type - Billing***for the definition** of the recurring charge attributes. Refer to *Start Option Considerations For SA Types That Use Recurring Charges***for how** you can use start options to automatically populate a service agreement's recurring charge fields with appropriate values when service is started.

**WARNING:**
It's important that you assign the charitable contribution SA type with a payment segment type that only affect current balance (as opposed to affecting current AND payoff balance). This is because there is no receivable recognized when the contribution is billed and therefore there is no payoff balance to relieve when it's paid.

## Payment Arrangement Segmentation

If your organization allows customers to payoff outstanding debt using payment arrangements (e.g., current bill plus $X), you will need a new SA type for every debt class that can have a payment arrangement. If we assume you can have payment arrangements for both regulated and unregulated debt, then you'll need at least two more SA types (you may have more SA types if you need to segregate the payment arrangement receivable amount by utility type (or some other type)).

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type | Recurring Charge Control Info |
|---|---|---|---|---|---|
| **CA/PA-REGU** | Other | A/R-ARRG | REGU | RECUR-AS | Amount to bill is Not Allowed<br>Amount is Required<br>Frequency is Monthly<br>Recurring Amount Label is Arrange Amount |
| **CA/PA-UNRE** | Other | A/R-ARRG | UNRE | RECUR-AS | Amount to bill is Not Allowed<br>Amount is Required<br>Frequency is Monthly |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Recurring Amount Label is Arrange Amount |

Notice the following about the new payment arrangement SA types:

- They have an interesting distribution code. This is because when funds are transferred to these types of service agreements, the system must debit a receivable (i.e., payment arrangement receivable).
- They use an interesting bill segment type - RECUR-AS. This bill segment type was set up to create recurring charges that stop when the customer no longer has a payoff balance.
- Each new SA type references the debt class whose debt it will pay off. We are intentionally linking the payment arrangement debt to the same debt class as the regulated debt from which it originates. This way, the C&C process will consider the arrangement debt as the same as regulated debt and therefore perform the regulated collection (which results in the severance of all regulated service agreements).
- The recurring charge control information is set up as defined.

**FASTPATH:**
Refer to the Description of Page under *SA Type - Billing***for the definition** of the recurring charge attributes. Refer to *Start Option Considerations For SA Types That Use Recurring Charges***for how** you can use Start Options to automatically populate a service agreement's recurring charge fields with appropriate values when service is started.

## Merchandise Segmentation - Installment Billing

If your organization allows customers to purchase merchandise using an installment plan, you must create a SA type for this.

**NOTE:**
**No installments.** If the customer must pay for the merchandise in one lump amount, you'd create an SA type similar to the *Connection Charge Segmentation* example.

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type | Recurring Charge Control Info |
|---|---|---|---|---|---|
| **CA/MERCH-I** | Merch | A/R-MRCH | UNRE | RECUR-AS | Amount to bill is Not Allowed<br>Amount is Required<br>Frequency is Monthly<br>Recurring Amount Label is Install Amount |

Notice the following about the new merchandise SA type:

- It has a normal receivable distribution code.
- It uses an interesting bill segment type - RECUR-AS. This bill segment type was set up to create recurring charges that stop when the customer no longer has a payoff balance.
- The recurring charge control information is set up as defined.

**FASTPATH:**
Refer to the Description of Page under *SA Type - Billing***for the definition** of the recurring charge attributes. Refer to *Start Option Considerations For SA Types That Use Recurring Charges***for how** you can use start options to automatically populate a service agreement's recurring charge fields with appropriate values when service is started. Refer to *Start Option Considerations For SA Types That Use Initial Adjustments***for how** you can use start options to automatically populate a service agreement's recurring charge fields with appropriate values when service is started.

## Deposit Segmentation - Installment Billing

If your organization allows customers to pay deposits using an installment plan, you must create an SA type for this.

**NOTE:**
**No installments.** If the customer must pay for the deposit in one lump amount, you'd create an SA type similar to the *Connection Charge Segmentation* example. Just make sure the adjustment that's levied to charge for the deposit amount doesn't affect payoff balance (when you bill a deposit, the customer doesn't really owe anything because it's not a true receivable from an accountant's perspective).

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type | Recurring Charge Control Info |
|---|---|---|---|---|---|
| **CA/DEP-I** | Other | A/P-DEPO | DEP | RECURATB | Amount to bill is Required<br>Amount is Required<br>Frequency is Monthly<br>Recurring Amount Label is Install Amount |

Notice the following about the new deposit SA type:

- It has an interesting distribution code. This is because when a payment is distributed to these types of service agreements, the system must credit a payable account (i.e., deposit payable) rather than a receivable account. Note well, we have assumed a receivable is not incurred when the bill segment for the deposit is created.
- It uses an interesting bill segment type - RECURATB. This bill segment type was set up to create recurring charges that stop when the system has billed the Total Amount to Bill.
- The debt class is interesting - DEP (for deposit). This is done so that past due deposit "debt" is treated separately from other types of debt.
- The recurring charge control information is set up as defined. Note well, the Amount to bill is Required .

**FASTPATH:**
Refer to the Description of Page under *SA Type - Billing***for the definition** of the recurring charge attributes. Refer to *Start Option Considerations For SA Types That Use Recurring Charges***for how** you can use start options to automatically populate a service agreement's recurring charge fields with appropriate values when service is started.

**NOTE:**

**Bill messages on receipt of deposit in full.** The base package includes a special FT Freeze algorithm that can be specified on deposit SA Types. It recognizes when a deposit has been paid in full, and creates a bill messages to inform the customer. Refer to algorithm DEP PIF MSG in *Algorithm Types* for more information.

## Billable Charge Segmentation

You create a billable charge whenever a customer should be charged for a service that occurs outside the normal course of business. For example, you would create a billable charge to charge a contractor for the repair of a ruptured gas line. You can also use billable charges to "pass through" other bill ready charges generated outside the system, by another application, or by a 3rd party supplier.

A billable charge must reference a service agreement. This service agreement behaves just like any other service agreement:

- **Bill segments are created for the service agreement.** Whenever billing is performed for an account with billable charge service agreements, the system creates a bill segment for each service agreement with unbilled charges. If multiple unbilled charges exist for a given service agreement, only one bill segment will be created and it will contain details about all of the billable charges.
- **Payments are distributed to the service agreement.** Payments made by an account are distributed to its billable charge service agreements just like any other service agreement.
- **Overdue debt is monitored.** The credit and collections process monitors billable charge service agreements for overdue debt and responds accordingly when overdue debt is detected.

Therefore, you must set up at least one SA type to hold your billable charge debt. You may have multiple charges based on billing frequencies, A/R booking, debt monitoring, etc. It's really up to you.

The easiest way to determine how many billable charge SA types you'll need is to define every conceivable billable charge (which you should have done when you designed your *billable charge templates*). Then ask yourself if they have the same billing and payment behavior, if so, you'll have one SA type. If not, you'll need one SA type for each combination.

We will assume your billable charges are all used to levy unusual one-off charges that can be collected in the same way, therefore we'll need one SA type.

| CIS Division/ SA Type | Service Type | Distrib Code | Debt Class | Bill Seg Type | Billable Charge Templates | Rate |
|---|---|---|---|---|---|---|
| **CA/ONETIME** | Other | A/R-UTIL | UNRE | BILLCHRG | TREETRIM<br>DAMAGE | None |
| **CA/PASSTHRU** | Electricity | A/R-OTHER | UNRE | BILLCHRG | None | None |
| **CA/ADDON** | Electricity | A/R-OTHER | EXTERNAL | BILLCHRG | None | TAXES |

Notice the following about the new one time SA type:

- It has a normal receivable distribution code.
- Its debt class is unregulated.
- It uses an interesting bill segment type - BILLCHRG. This bill segment type was set up to create bill segments using billable charges.
- It references the valid billable charge templates that can be used on this SA type.

**NOTE:**
**One Time Charge.** The ONE TIME example shown above implies this SA type exists to hold one-time charges. Because of this, you should turn on the One Time Charge switch on the SA type so that service agreement's of this type are automatically closed when final payment is received. You don't have to do this because a customer could have a

single billable charge service agreement that is perpetually active for pass through charges (i.e., it doesn't have a stop date). If you do this, the system will create a bill segment for this service agreement whenever it finds an unbilled billable charge linked to the service agreement.

Notice the following about the pass through SA Type:

- It doesn't use the normal distribution code or debt class. This is done so that the debt and receivable can be tracked separately. If these charges were being pass through from another system, you might want to track these financial values separately.
- It still uses the normal bill segment type - BILLCHRG. From a billing perspective, there is no difference between this and the one time SA Type.
- Templates are not relevant - these charges on not created on-line using templates, but are loaded via the *Billable Charge Upload Staging*.

Notice the following about the add on charges SA Type:

- This is an example of bill-ready charges (similar to pass through) to which the system adds on other charges, for example, taxes.
- It still uses the normal bill segment type - BILLCHRG. From a billing perspective, there is no difference between this and the one time SA Type.
- It also uses a Rate. In this case, the bill creation algorithm (specified on the bill segment type) will take any billable charge lines and attach them to a bill. In addition, these billable charges will include billable charge service quantities (SQs). These service quantities will also be swept onto the bill segment, and the Rate (TAXES in this example) will be applied. In order for taxes to be calculated, the billable charge SQs must include the total taxable amount - the system is not able to apply the rate on top of the other billable charges. But, it can apply the tax rate to the SQs that are supplied.
  - You can also use this technique to bill other rate-ready service quantities, like kWh, CCF, *etc.* This is a way to process rate-ready data for which you have a contract, but you do not know the meter (and therefore, cannot collect real meter reads).
  - If the rate has pre-processing calculation groups, these will be applied as well.

**FASTPATH:**
For more information about billable charge templates, refer to *Setting Up Billable Charge Templates*.

## Over/Under Cash Drawer Segmentation

In order to balance a tender control that is out-of-balance, your organization must set up an account with a service agreement whose SA type references the over/under expense account. You will probably only have one service agreement that references this SA type, but you still must have it if you remit funds via a cash drawer.

**FASTPATH:**
For more information about over/under processing, refer to *How To Get An Unbalanced Tender Control In Balance (Fixing Over/Under)*.

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type |
|---|---|---|---|---|
| **CA/OVR UNDR** | Other | EXP-OV/UND | N/A | Not billed |

Notice the following about the new SA type:

- It has an interesting distribution code. This is because when a payment segment is applied to this type of service agreement, the system must debit an expense account for under amounts (and credit it for over amounts).
- It doesn't need a bill segment type because the system never creates bill segments for such service agreements (it only has over/under payment segments linked to it).
- It uses the N/A debt class because the credit and collections process should never consider debt associated with service agreements of this type (because it's not really debt).

## Payment Upload Error Segmentation

If the payment upload process detects an invalid account on a payment upload record, it will create a payment for the suspense service agreement defined on the upload process' tender source (see *Setting Up Tender Sources*). You should create a special SA type for this service agreement.

**FASTPATH:**
For more information about the payment upload process, refer to *Phase 3 - Create Payment Events, Tenders, Payments and Payment Segments* .

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | Bill Seg Type |
|---|---|---|---|---|
| **CA/SUSPENSE** | Other | EXP-MISC | N/A | Not billed |

Notice the following about the new SA type:

- It has an interesting distribution code. This code should probably be a suspense account. All payment segments that are created for this service agreement will eventually be transferred to a "real" service agreement and therefore this GL account's balance should be zero when no payments are in suspense.
- It doesn't need a bill segment type because the system never creates bill segments for such service agreements (it only has invalid account payment segments linked to it).
- It uses the N/A debt class because the credit and collections process should never consider debt associated with service agreements of this type (because it's not really debt).

## CIAC Segmentation

If your company bills and refunds Contribution In Aid of Construction (CIAC) contracts, you must create one or more SA types. CIAC contracts are typically used to levy charges associated with line extensions. These types of service agreements are different from other service agreements because the initial amount charged is refunded to the original payee when new properties (or extensions) are added to the extension (or when the new properties are subsequently billed for service).

**NOTE:**
**Billable charges are used for the original CIAC service agreement.** CIAC SA types are always Billable Charge SA types because an operator must specify the exact amount to charge the contractor using a billable charge. Refer to *Billable Charge Segmentation* for more information.

The following points describe how CIAC processing is implemented in the system:

- When a new line extension is build, you will create a new service agreement that references your CIAC SA type. This service agreement should be linked to a service point associated with the extension. The easiest way to create this service

agreement and link it to the service point is by using the Start Account transaction. It's important to remember to define your CIAC SA type as a valid SA type for the SP type used to represent the line extension.

- When a new premise / service point is built that "hangs" off the original extension, the new service point should be linked to the original service point. This can be done by referencing the original service point as the "parent" service point of the new service point using a *foreign key value characteristic*.
- The system periodically monitors the original CIAC service agreement. The process that performs this monitoring is referenced on the original CIAC service agreement's SA type. The exact processing that takes place during this monitoring is up to your organization's specific business requirement. For example, if you refund 10% of every bill produced for the "downstream" service points to the original contractor, you would have logic in your CIAC monitoring process that looks for recent bill segments produced for the "downstream" service agreements and then creates an adjustment for the master service agreement.

**NOTE:**
**CIAC refunds are idiosyncratic.** Because CIAC refund processing is idiosyncratic, we do not supply any CIAC monitoring processes in the base package. This is because the likelihood that they could be used is extremely low because of your organization's unique requirements.

Therefore, if your organization performs CIAC processing, you should create a special SA type.

| CIS Division/ SA Type | Service Type | Distrib. Code | Debt Class | CIAC Process | Bill Seg Type |
|---|---|---|---|---|---|
| **CA/CIAC** | Other | A/R - CIAC | UNRE | Refund based on percent of future bills | Billable Charge |

## Loan Segmentation

If you loan money to customers that is recouped using an amortization schedule, you need to set up an SA type for the loan service agreement.

| CIS Division/ SA Type | Service Type | Distrib. Code | Loan A/R Distrib. Code | Debt Class | Bill Seg Type |
|---|---|---|---|---|---|
| **CA/LOAN** | Other | A/R - LOAN | A/R - STLN | UNRE | LOAN |

**FASTPATH:**
Refer to *Setting Up The System To Enable Loans* for more information.

## Non-billed Budget Segmentation

If you allow your customers to pay set amounts at specified intervals (e.g. every two weeks), you need to set up SA types for non-billed budget service agreements. Non-billed budgets are typically used when your company bills on an infrequent basis and you want to provide your customers with a mechanism to make smaller payments more frequently. You may implement two types of non-billed budgets monitored and unmonitored, each type requiring a different SA type. You may also implement different renewal options for non-billed budgets.

| CIS Division/ SA Type | Service Type | Distrib. Code | Non Billed Budget Monitoring | Debt Class | Renewal | Bill Seg Type |
|---|---|---|---|---|---|---|
| **CA/NBB-MON** | Other | A/P - OVPY | Monitored | NBB | Optional | Not billed |
| **CA/NBB-UNMON** | Other | A/P - OVPY | Unmonitored | N/A | Optional | Not billed |

**FASTPATH:**
For more information about monitored and unmonitored non-billed budgets, refer to *Defining Non-billed Budget Options*.

# Designing SA Type For Other Segmentations

The earlier parts of this discussion described the most common factors that cause the creation of SA Types. However, many obscure factors could cause the introduction of more SA Types. In this section, we explain these more obscure factors.

**WARNING:**
We strongly recommend not being too pedantic when considering the factors described in this section. If you can only think of a few strange situations that would necessitate a SA type, think carefully before you introduce it. It's better to be a little less than perfect than end up with large number of obscure SA types.

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## Cash Distribution Segmentation

Every SA Type has a payment segment type. The payment segment type defines the cash account to which the SA type's payments should be booked. If different service agreements have different cash accounts, you will need to split the SA types accordingly.

## Adjustment Profile Segmentation

Every SA Type has one or more adjustment profiles. These profiles define the valid adjustment types that can be booked to the SA type's service agreements. If different service agreements within an SA type have different mixtures of valid adjustment types, you must split the SA types accordingly.

## Late Payment Charge Segmentation

An option exists on SA Type that causes the system to generate a late payment charge if payment is not received on time. If you don't levy late payment charges on all service agreements, you will need to determine when you do and design your SA types accordingly.

In addition, if you levy late payment charges, the percentage levied and the algorithm that defines the amount of the outstanding balance subject to the charge is defined on the SA type.

## Debt Classification Segmentation

Every SA Type has a debt class. The debt class is used to categorize a service agreement's debt for the purpose of credit and collections (C&C) analysis. If a given SA Type has different categories of debt from C&C's perspective, you must split the SA Type.

**FASTPATH:**
For more information about debt class, refer to *Designing Your Collection Procedures*.

**NOTE:**
**Write Off Debt Class vs. Normal Debt Class.** An SA type references both write off debt class and normal debt class. An SA type's write-off debt class controls the write-off rules imposed on service agreements of a given type. An SA type's normal debt class controls the collection rules imposed on service agreements of a given type. Refer to *Different Collection Criteria For Different Customers And Different Debt* for more information about collection rules. Refer to *Different Write-Off Criteria For Different Customers And Different Debt* for more information about write-off rules.

## Allow Estimates Segmentation

Every SA Type has a switch that controls whether the system estimates consumption if meter reads are missing at billing time. If a given SA Type has different situations when the system should and should not estimate, you will have to split the SA Type.

**NOTE:**
**Override.** You can override the value of the SA Type's estimation switch on an individual service agreement. This means that if only a few service agreements don't abide by the SA Type's estimation switch, you can change the switch value of these service agreements.

**FASTPATH:**

For more information about estimation, refer to *Setting Up Consumption Estimation Parameters*.

## Severance Criteria Segmentation

Every SA Type has severance criteria. The severance criteria define the severance process used to sever service if the customer doesn't pay. You can have multiple severance processes if different conditions warrant a different process. For example, you may have a different severance process if the customer has life support.

If you have a SA Type that requires different severance conditions other than those currently supported, you can make a programmatic change to introduce the additional conditions OR you can split the SA Type.

**FASTPATH:**
For more information about severance, refer to *Designing Your Severance Procedures*.

## Deposit Class Segmentation

Every SA Type that exists to hold a cash deposit will reference a deposit class. The deposit class defines the business rules that control various functions including interest calculation and refund criteria. You will need multiple deposit SA Types if any of the deposit class' rules / conditions differ for different types of deposits. For example, if residential customers use a different recommended deposit algorithm as compared to commercial customers, you'd need one SA type for residential deposits and another for commercial deposits (where the residential deposit SA type will reference the residential deposit class and the commercial deposit SA type will reference the commercial deposit class).

You will need additional deposit SA types if your customers can have multiple deposits where each deposit is restricted to a specific type of debt. For example, if separate deposits are held for regulated and unregulated debt (and a customer could hold a combination of regulated and unregulated debt), you'd need one SA type for regulated deposits and another for unregulated deposits.

**FASTPATH:**
For more information about deposit class, refer to *Designing and Defining Deposit Classes*.

## Sub SA Types

If you operate in a deregulated environment AND if you provide billing services for other service providers, you will need to create SA types to handle the billing of the service providers' charges.

**FASTPATH:**
Refer to *Designing Your SA Types And Start Options For Sub SAs* for more information.

## Financial Settlement SA Types

If you operate in a deregulated environment, you may have to create financial settlement service agreements for the service providers. As explained in *Service Providers Have Service Agreements Too* , We Bill For Them and They Bill For Us service providers require a service agreement to hold adjustments used to increase how much you owe the service provider (or how much they owe you).

**FASTPATH:**
Refer to *Designing SA Types For Service Provider Financial Settlements* for more information.

## Interval Billing SA Types

If you have customers with interval meters, the SA types for these customers will require special setup.

**FASTPATH:**
Refer to *Designing Your SA Interval Billing Options* for more information.

## Usage Request SA Types

If your organization uses a meter data management system to store meter reading information and the MDM is responsible for calculating bill determinants during billing, the SA types for these customers will require special setup.

**FASTPATH:**
For more information about usage requests, refer to *The Big Picture Of Usage Requests*.

## Initial Consumption Period Considerations

Bill segments produced for a service agreement have two time periods:

- The bill segment period. The bill segment period defines the entire period of time covered by a bill segment's charges.
- The consumption period. The consumption period defines the period of time used to calculate the number of days for daily charges.

The consumption period almost always starts one day after the bill segment period. The consumption period always ends on the bill segment's end date. For example, a bill segment period that spans 5-Jan-2002 through 6-Feb-2002 will almost always have a corresponding consumption period of 6-Jan-2002 through 6-Feb-2002. The reason that the start dates don't match is because a bill segment's start date equals the end date of the prior bill segment (i.e., the start date was already counted in the previous bill segment's consumption period and we don't want to count it twice).

The only time when the previous paragraph isn't true is the first bill segment that's produced for a new service agreement. This is because different utilities count the first day of a new service agreement differently than others. Because of this, a flag exists on SA Type called **Initial Start Date Option**. This flag controls whether the service agreement's start date is included in the consumption period in a service agreement's first bill segment.

The following table describes the ramifications of the options you can set for this flag.

| Flag Value | Consumption Period Calculation | Use This Option When |
|---|---|---|
| Add 1 Day Always | The consumption period's start date is calculated by adding 1 day to the service agreement's start date. (The SA start date is never included in the consumption period for the first bill segment.) | You want the initial bill and all subsequent bills to have a consistently calculated consumption period (i.e., the consumption period for the first and all other bills is always one day less than the bill segment's period). |
| Add 1 Day for Back-to-back | A back-to-back occurs when any service point for this service agreement was previously | You want to flexibly handle consumption period calculation. If you start customers |

| | | |
|---|---|---|
| | linked to a different service agreement that was stopped on the same date that the new service was started (i.e., there is no gap in the service).<br>If a back-to-back is detected, the consumption period start date is calculated by adding 1 day to the SA start date.<br>If no back-to-back is detected, the start date of the consumption period is the SA start date. | on the same date as the stop date of the previous customer, billing does not include the SA start date in the consumption period. However, if you start a new customer one day (or more) after the stop date of the previous customer, billing includes the first day of the service agreement in the consumption period. |
| Include First Day | The start date of the consumption period is the service agreement start date. (The SA start date is always included in the consumption period.) | You want to always include the first day AND you will never encounter a back-to-back situation. |

The example below shows how the consumption period would be calculated with the various options for a customer who starts service on January 1.

| | First Bill<br>**Meter Read: Jan 31**<br>**Bill Segment Period: Jan 1 to Jan 31** | Second Bill<br>**Meter Read: Feb 28**<br>**Bill Segment Period: Jan 31 to Feb 28** | Third Bill<br>**Meter Read: Mar 31**<br>**Bill Segment Period: Feb 28 to Mar 31** |
|---|---|---|---|
| Consumption period using Add 1 Day Always | Jan 2 to Jan 31 ( **30 days**) | Feb 1 to Feb 28 (28 days) | Mar 1 to March 31 (31 days) |
| Consumption period using Add 1 Day for Back-to-back when back-to-back is detected | Jan 2 to Jan 31 ( **30 days**) | Feb 1 to Feb 28 (28 days) | Mar 1 to March 31 (31 days) |
| Consumption period using Add 1 Day for Back-to-back when back-to-back is NOT detected | Jan 1 to Jan 31 ( **31 days**) | Feb 1 to Feb 28 (28 days) | Mar 1 to March 31 (31 days) |
| Consumption period using Include First Day | Jan 1 to Jan 31 ( **31 days**) | Feb 1 to Feb 28 (28 days) | Mar 1 to March 31 (31 days) |

There may be SA types for which the value of this flag does not affect the consumption period calculation and still other SA types where this flag is never used. For example,

- For billable charge service agreements, the consumption period is equal to the start and end dates on the billable charge and therefore this flag is not applicable.
- A sub SA either inherits the consumption period from the master SA or it uses billable charges. As a result, billing does not use this flag.
- For some service agreements, the charges on the rate are not affected by the consumption period. For example, if you have a customer with a simple meter and a simple usage-based charge, billing calculates the amount of consumption between the start reading and end reading and applies the rate (i.e., the number of days in the consumption period doesn't impact the charges in some rates).
- Some service agreements are not billed, for example, *overpayment service agreements*. For this type of service agreement and other types of service agreements that are not billed, this flag is not applicable. However, the system does not prevent a value from being entered in these cases to allow for an implementation process to use the flag if needed.

Setting this flag to an appropriate value is significant for certain types of service agreements.

- For services whose rate includes daily charges, the configuration of this flag may impact the first bill segment for the service agreement. For example, if the first bill period is October 1st through October 31st, do you consider consumption period to be 31 days or 30 days? How you want to bill the customer on the first bill determines how you set this flag.
- For interval billing service agreements, the interval usage recordings typically begin on the first day of service. If you add 1 to the start date, you miss billing for intervals on the first day. In this case, you should set the value to Add 1 Day for Back-to-back .

**FASTPATH:**
Refer to *Determine the Consumption Period* for more information.

## Processing Sequence Considerations

You may have customers with a complex collection of contracts such that the calculation for one bill segment relies on information calculated by another bill segment for the same account. For example, perhaps you need to process your bill segments as follows:

- Step 1: Calculate bill segments for all the account's "single site" service agreements (i.e., each service agreement related to a single premise)
- Step 2: Calculate the bill segment for additional charges for the "head office" service agreement where the charges are based on the aggregated consumption of all premises from all bill segments (calculated in the first step).

To create the "head office" bill segment for the account, you must control the order in which the system creates the bill segments for each service agreement.

The SA type allows you to indicate a billing processing sequence that controls the order in which the service agreements are processed. The processing sequence is optional and service agreements are processed in ascending order of their SA type's billing processing sequence. As a result, SA Types with a processing sequence of zero are processed first, then 1, then 2, etc.

**NOTE:**
If you have sub SAs linked to a master SA, the billing processing sequence is used first to order the creation of bill segments for the master SAs. If you populate a processing sequence on an SA type for a sub SA, it is used to control the order in which the sub SAs for a given master SA are processed relative to each other. Refer to *Designing Your SA Types And Start Options For Sub SAs* for more information.

The billing processing sequence also controls the order of service agreements in the following other processes:

- Execution of pre bill completion algorithms. The system processes each service agreement in the billing processing sequence order. Within each service agreement, the pre bill completion algorithms on its *SA type* are processed in the order of the algorithm's sequence.
- Execution of bill completion algorithms. The system processes each service agreement in the billing processing sequence order. Within each service agreement, the completion algorithms on its *SA type* are processed in the order of the algorithm's sequence.
- Interval Data Creation. For interval service agreements linked to interval profiles with profile creation algorithms defined, the system processes each service agreement in the processing sequence order. Within each service agreement, the *data creation algorithms* are processed in the order of the creation priority on the *profile type*.

# Designing Prepayment Billing Options

This section provides guidelines describing how to design service agreements that handle smart meter prepaid billing.

When a customer is subject to prepayment, normal cycle-based billing is not used to calculate the bill segments for their service. Rather, a prepay billing (PPB) process creates bill segments frequently (for example, daily) and periodically requests funds to maintain an adequate payoff balance. Bills will only be used to periodically inform the customer of the various financial transactions that have occurred since the last bill was produced.

Implementing prepayment billing requires the configuration of the following objects:

- SA Type
- Adjustment Types
- Bill Segment Type
- Service Task Type

These configuration tasks are described below.

**NOTE:** For additional information, see the detailed descriptions in the application for the C1-PrepayBillerTaskType and C1-PrepayBillerTask business objects.

**SA Type for Prepay Billing**

To configure a prepay billing SA Type, create a new SA type with the following attributes:

- Set the Special Role flag to **Bill Determinants Required.** The Prepay Option should be set to **Prepaid Smart Meter.**
- Specify the SA Creation system event with the algorithm CI_CREATEPPB to create the service agreement's prepay biller.
- Specify the Payment Freeze system event with the algorithm STPZ-RMVC to set current amount to zero on a payment.
- If required, specify the Bill Completion system event with an algorithm of the type C1-CREPPBBM to add a bill message that informs an end customer of their prepaid charges for the period. You may need to create an algorithm of this type if it does not exist in your system.
- **Eligible for Budget** should be set to false.
- Reference a new **Prepay Bill Segment Type**, which is described below.

The following adjustment types must also be defined on the prepay SA type:

- **Adjustment Type (Xfer)** specifies the type of adjustment used to transfer funds from the delinquent service agreements to the prepaid service agreement
- **Adjustment Type (Current=0)** specifies the type of adjustment used to set the prepaid current balance to zero after debt has been transferred
- **NSF Adjustment Type** specifies the type of adjustment used to levy an NSF charge. The NSF Adjustment Type is described in greater detail below.

The new SA types must be added to the data value mapping between CCB and MDM. This is to enable the synchronization of SAs of this type to MDM. The new CCB SA types can be mapped to existing US types in MDM. For additional information about this configuration, please see the integration documentation.

**Adjustment Types for Prepay Billing**

- **Funds Request Adjustment Type:** This adjustment type captures the type of adjustment used to request more prepaid funds. This adjustment type is specified on the prepaid biller task type. Specify the following algorithms on this adjustment type:
  - **Adj. Financial Algorithm** should reference the Adjustment FT creation algorithm ADJT-CA (Payoff=0/Current=Adj Amount (No GL)).
  - **Adjustment Freeze Algorithm** should reference an algorithm of the type C1-PPBADJFRZ (Set Prepaid Funds Request FT Details). You may need to create an algorithm of this type if it does not exist in your system.

- **NSF Adjustment Type:** For prepaid customers on autopay, when a user cancels an autopay tender the cancel reason must indicate that an NSF charge should be levied. The system invokes the NSF Charge algorithm specified on the tender's account's customer class which creates the NSF adjustment on the appropriate SA. The charge is levied using the NSF Adjustment Type specified on the SA's SA type. This adjustment type must reference the new adjustment freeze algorithm that will disable automatic payments on the PPB. This algorithm must be based on the algorithm type C1-DISPPBAP (Disable PPB's Automatic Payment). You may need to create an algorithm of this type if it does not exist in your system.

**Bill Segment Type Required for Prepay Billing**

Configure a new bill segment type for prepaid service agreements. This bill segment type should have the following attributes:

- **Create Algorithm** should be set to C1-BSBS-UR to create bill segment using a usage request.
- **Financial Algorithm** should be set to a new algorithm with algorithm type C1-NEM-GL (Payoff Amt = Bill Amt / Current Amt = 0 (GL affected)).You may need to create an algorithm of this type if it does not exist in your system.
- **Get Consumption Algorithm** should be set to C1-BSGC-USG to get bill segment consumption using a usage request.

**Service Task Type for Prepay Billing**

Configure a new service task type for prepay billing. This task type should reference the Prepay Biller (PPB)Task Type Business Object (C1-PrepayBillerTaskType). The task type must be specified on the new prepay billing SA creation algorithm. The task type captures the adjustment type used when an adjustment is created to request additional funds from the customer. Ensure that this adjustment type references the adjustment freeze algorithm (C1-PPBADJFRZ) that populates the financial transaction's arrears date.

# SA Types And The Financial Design

In this section, we provide an example of how our SA Types map to Bill Segment Types, Payment Segment Types, and Adjustment Profiles. This example is meant to help solidify the power of the financial model, it is not necessarily indicative of how your specific implementation will look.

**WARNING:**
If you are not comfortable with the topics described in *Defining Financial Transaction Options*, the following table will not make sense.

| Division/SA Type | Distribution Code | Bill Segment Type | Payment Segment Type | Adjustment Profiles |
|---|---|---|---|---|
| **CA/G-RES** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES, BUDGET |
| **CA/G-COM** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/G-IND** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/W-RES** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/W-COM** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/W-IND** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/E-RES** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES, BUDGET |
| **CA/E-COM** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/E-IND** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/WW-RES** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |

| | | | | |
|---|---|---|---|---|
| **CA/WW-COM** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/WW-IND** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/CABLE** | A/R-UTIL | SP-RATED | NORMAL | BALXFER, MISCFEES |
| **CA/E-COY** | E-COMP | COMPUSAG | | |
| **CA/G-COY** | E-COMP | COMPUSAG | | |
| **CA/W-COY** | E-COMP | COMPUSAG | | |
| **CA/WO-STD** | | | NORMAL | BALXFER |
| **CA/WO-LIA** | | | NORMAL | BALXFER |
| **CA/CONNECT** | | | NORMAL | BALXFER, MISCFEES |
| **CA/CHARITY** | A/P-CHAR | RECUR | CHARITY | CHARITY |
| **CA/PA-REGU** | A/R-ARRG | RECUR-AS | NORMAL | BALXFER, MISCFEES, DPA |
| **CA/PA-UNRE** | A/R-ARRG | RECUR-AS | NORMAL | BALXFER, MISCFEES, DPA |
| **CA/MERCH-I** | A/R-MRCH | RECUR-AS | NORMAL | BALXFER, MISCFEES, MERCH |
| **CA/DEP-I** | A/P-DEPO | RECUR-AS | NORMAL | BALXFER, MISCFEES, DEPOSIT |
| **CA/ONETIME** | A/R-UTIL | BILLCHRG | NORMAL | BALXFER, MISCFEES |
| **CA/OVR UNDR** | EXP-OV/UND | | NORMAL | |
| **CA/OVERPAY** | A/P-OVER | | NORMAL | BALXFER |
| **CA/SUSPENSE** | A/R-SUSP | | NORMAL | |
| **CA/NBB** | A/P-OVPY | | NORMAL | BALXFER, MISCFEES, NBB |

If you operate in a deregulated environment, you will also have additional SA types as described under *Designing Your SA Types And Start Options For Sub SAs* and *Designing SA Types For Service Provider Financial Settlements* you may have additional SA types.

# Setting Up SA Types

In the previous section, Designing SA Types, we presented a case study that illustrated a mythical organization's SA types. In this section, we explain how to use the windows on the SA Type window group to maintain your SA Types.

**NOTE:**
**When a new SA type is added.** When you add a SA type whose service agreements use service points, you must update the respective SP types if the new SA type is defaulted when service is initially started at the service points of a given SP type. Refer to *SP Type - SA Type* for more information.

**Contents**

# SA Type - Main Information

Open **Admin** > **SA Type** > **Add** to define core information about your SA Types.

**WARNING:**
Every SA Type is owned by a CIS Division. This Division controls many values that can be referenced on the SA Type. If you don't understand Divisions and their place in the application, do NOT attempt to set up your SA Types. Rather, refer to *Setting Up CIS Divisions* before proceeding.

**Description of Page**

Enter a unique combination of **CIS Division** and **SA Type** for every service agreement type.

Enter a **Description** for the SA type.

**Service Type** defines the type of service associated with the SA type. If the SA type has rates, only rates belonging to this service type may be linked to the SA type.

**FASTPATH:**
For more information about service types, refer to *Setting Up Service Types*.

Select the **Distribution Code** and **GL Division** that defines the receivable account for receivable-oriented service agreements. For non-receivable oriented service agreements, this distribution code is typically as follows:

- Charitable contributions. The distribution code is a charity payable account.
- Deposits. The distribution code is a deposit payable account.
- Non-billed budgets. The distribution code is an overpayment payable account.
- Company usage. The distribution code is a company usage expense account.
- Write off. The distribution code is a write-off expense account.
- Payment arrangements. The distribution code is a payment arrangement receivable account.

**FASTPATH:**

For more information about GL accounts, refer to *The Source Of GL Accounts On Financial Transactions*.

Select the **Revenue Class** associated with the SA Type (and its service agreements). The revenue class may affect the revenue account(s) generated by the service agreement's rate.

**FASTPATH:**
Refer to *Designing Calculation Groups and Rules* for more information about revenue class.

Turn on **Start Options Required** if you want to force a customer service rep to choose a start option when they start service for this SA Type (on the Start Account window). If this switch is off and a rate is required for the SA Type, the system defaults the SA type's default rate on new service agreements. The default rate is defined on the SA Type - Rate page.

**FASTPATH:**
Refer to *Setting Up Start Options* for more information about the pros and cons of requiring start options.

Select the **Pay Segment Type** that defines how payment segments linked to service agreements of this type affect:

- The service agreement's payoff and current balances

**FASTPATH:**
For more information about payment segment types, refer to *Setting Up Payment Segment Types*.

When a tender is canceled, a cancellation reason must be supplied. If the cancellation reason indicates a NSF (non sufficient funds) charge should be levied, the system invokes the Levy an NSF Charge algorithm specified on the tender's account's *customer class*. Because adjustments must be linked to a service agreement, the algorithm must determine the appropriate service agreement to use to levy the adjustment based on business rules. The charge is levied using the **NSF Adjustment Type** of the appropriate service agreement's SA type.

**WARNING:**
You must specify adjustment type profiles on the SA type (on the Adjustment Type window) before adjustment types will appear in the above drop downs.

**FASTPATH:**
For more information about adjustment types, refer to *Setting Up Adjustment Types*. For more information about cancellation reasons, refer to *Setting Up Payment Cancellation Reasons*.

Select the **Payment Priority**. This field is available for use by the algorithms that distribute partial payments amongst an account's service agreements. Higher priority service agreements will have their debt relieved before lower priorities. Refer to *Distribution Based on Payment Priority* and *Delinquent Payment Distribution Algorithm* for information about payment distribution algorithms that use this field.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is PAY_PRIORITY_FLG.

**FASTPATH:**
For more information about distribution priority, refer to *Distributing A Payment Amongst An Account's Service Agreements* .

Select the **Delinquent Payment Priority**. This field is available for use by the algorithms that distribute partial payments amongst an account's service agreements. Higher priority service agreements will have their debt relieved before lower

priorities. Refer to *Delinquent Payment Distribution Algorithm* for information about a payment distribution algorithm that uses this field.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is DEL_PRIORITY_FLG.

Turn on **Do Not Overpay** if the system is not allowed to distribute an overpayment to this type of service agreement (i.e., the service agreement is not allowed to have a system-created credit balance). This field is available for use by algorithms that distribute overpayments. Refer to *Overpayments Held On Highest Priority Service Agreement* for information about an overpayment algorithm that uses this field.

Turn on **Late Payment Charge** if the system should generate a late payment charge for this type of service agreement if payment is not received on time. If this is turned on, you must define the **LPC Calc. Algorithm** used to calculate the late payment charge amount. Refer to *Defining Late Payment Charge Options* for more information about late payment charges. Examples of algorithm types used for calculating late payment charges are *BILPC-SPRC* and *BILPC-TOTAL*.

Define the **Adj**ustment **Type (Synch Curr)** that will be used to synchronize (make equal) the current amount with the payoff amount on a service agreement of this type. This type of processing happens as follows:

- Most *write-off* algorithms that perform financial efforts (e.g., writing off debt), will issue an adjustment of this type if the service agreement's current and payoff balances are not equal.
- If a user stops a customer on a *budget plan*, the system issues adjustments of this type to synchronize the customer's current and payoff balances.
- If a user stops a service agreement covered by a ***non-billed budget*** , the system issues adjustments of this type to synchronize the customer's current and payoff balances.
- If a *cancellation of a bill segment* occurs after a customer has stopped participating in a budget plan, an adjustment of this type is issued to synchronize the imbalance created when the bill segment's financial transaction is canceled.

Turn on **CIAC SA Type** and specify an appropriate **CIAC Refund Process** if service agreements of this type are used to bill for Contribution In Aid of Construction (CIAC) charges. Refer to *CIAC Segmentation* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SA_TYPE*.

# SA Type - Detail

Open **Admin** > **SA Type** > **Search** and navigate to the **Detail** page to define additional details about a given SA type.

**Description of Page**

Turn on **Display As Alert** if Control Central should display an alert if an account has a service agreement of this type that isn't Closed or Canceled . If this switch is on, also enter the **Alert Information** to appear on Control Central. We recommend only using this feature on unusual SA types (e.g., payment arrangements, write-offs) so that a CSR is not presented with an alert for every SA type.

If this SA Type is used for any of the **Special Role**s defined in the drop down, indicate which one. Valid values are: Billable Charge , Cash Deposit , Interval, Loan, Non-billed Budget, Payment Arrangement, Write Off, Bill Determinants Required . This information is used on windows with functionality that can only be used by service agreements used for specific roles. For example, the Billable Charge window group can only reference Billable Charge service agreements.

If Special Role is Cash Deposit , you must define the **Deposit Class** of the deposit. You should also define a **Deposit Class** on every SA type to which a given deposit can be distributed.

**FASTPATH:**

Refer to *What Do Deposit Classes Do?* for more information.

If the Special Role is Loan , you must also define the following fields:

- Use the **Interest Bill Factor** to define the bill factor code for the loan interest rate.
- Use **Override Interest Flag** to indicate whether the interest rate defined on the interest bill factor may be overridden at the SA level. If you select Allowed , the interest rate may be overridden by a contract value on a start option or the SA.
- Use the **Loan A/R Distribution Code** to define the distribution code to be used when posting the short-term receivable amount to the general ledger (the normal distribution code is used for the long-term receivable). If the normal distribution code is the same as the **Loan A/R Distribution Code**, the SA type does not differentiate between long- and short-term receivables. If the two distribution codes are different, the SA type differentiates between long- and short-term receivables.

**FASTPATH:**
Refer to *Defining Loan Options* for more information about **Interest Bill Factor**, **Overview Interest Flag** and **Loan A/R Distribution Code**.

If the Special Role is Non-billed Budget , you must also define the following:

- Use **Adjustment Type (Xfer)** to specify the type of adjustment used to the transfer accumulated credit from the non-billed budget SA to the SAs covered by the non-billed budget when the account is billed or the non-billed budget SA is stopped.
- Use the **Non-billed Budget Monitoring** to specify whether the non-billed budget is monitored by the account debt monitor.

If the SA type is defined as Eligible for Non-billed Budget , you must also define the following:

- Use **Adjustment Type (Current=0)** to specify the type of adjustment used to set the service agreement's current balance to zero when a service agreement of this type is linked to an active, monitored non-billed budget.

If the Special Role is Payment Arrangement , you must also define two adjustment types:

- Use **Adjustment Type (Xfer)** to specify the type of adjustment used to transfer funds from the delinquent service agreements to the payment arrangement service agreement.
- Use **Adjustment Type (Current=0)** to specify the type of adjustment used to set the payment arrangement's current balance to zero after funds have been transferred.

If the Special Role is Write Off , you must also define the following adjustment types:

- Use **Adjustment Type (Xfer)** to specify the type of adjustment used to transfer funds from the uncollectable service agreements to the write off service agreement.

If the Prepay Option is **Prepaid Smart Meter**, you must also define two adjustment types:

- Use **Adjustment Type (Xfer)** to specify the type of adjustment used to transfer funds from the delinquent service agreements to the prepaid service agreement.
- Use **Adjustment Type (Current=0)** to specify the type of adjustment used to set the prepaid current balance to zero after debt has been transferred.

**WARNING:**
You must specify adjustment type profiles on the SA type (on the Adjustment Type window) before adjustment types will appear in the above drop downs.

The **Stop Option Flag** can be used to automatically stop a service agreement when all other service agreements of an account are stopped. Valid values are: Automatically Stop SA . When all service point related service agreements of an account are stopped then all additional service agreements where the **Stop Option** is set to Automatically Stop SA will

also be stopped. This is useful, for example, with charitable contribution service agreements. The charity service agreement should be stopped when all utility related services are stopped.

**FASTPATH:**
Refer to *The Lifecycle of a Service Agreement* for more information on the **Stop Option.**

Turn on **One Time Charge** if this SA type is used for one-time invoices. When a one-time invoice service agreement is created, the system sets the stop date of the SA to be equal to the start date.

Turn on **Sub SA** if this SA type is used to define the business rules for sub service agreements.

**FASTPATH:**
Refer to *Sub Service Agreements* for more information about sub service agreements.

**Renewal** of SAs of this type may be Optional , Not Allowed or Required depending on your business processes. If renewal is not allowed, the SA expires on the expiration date. Renewal treatment is an important consideration for SAs that require an expiration date, such as *non-billed budget SAs*.

If renewal is required or optional, specify the **Days Before Expiration for Renewal**. Note that currently this is only used by non-billed budgets to calculate the renewal date based on the expiration date.

If the Special Role is Non-billed Budget , **Non-billed Budget Monitoring** must indicate whether the non-billed budget is monitored by the account debt monitor.

**FASTPATH:**
Refer to *Credit and Collections and Non-billed Budgets* for more information about monitoring non-billed budgets.

**Where Used**

The alert information is used by Control Central to alert a CSR when unusual service agreements exist for an account. Refer to *Control Central - Main* for more information.

Only SA types designated as being Billable Charge may have billable charges linked to them. Refer to *Maintaining Billable Charges* for more information.

Only SA types designated as being Cash Deposit are processed by the various deposit-related background processes (e.g., interest calculation, automatic refund, etc.). Refer to *The Big Picture Of Deposits* for more information.

Only SA types designated as being Interval may define Contract Option Types, Profile Relationship Types and TOU Map Types. Refer to *Designing Your SA Interval Billing Options* for more information. This role also ensures that a service agreement of this type defines the cutoff time and start day option required by billing. Refer to *Start and End Times for Billing* for more information.

Only SA types designated as Loan are used to define the loan terms for a loan SA. Refer to ***Loans*** for more information.

Only SA types designated as Non-billed Budget may be used to set up non-billed budgets. Refer to ***Non-billed Budgets*** for more information.

Only SA types designated as being Payment Arrangement may be used on the payment arrangement window group. Refer to *Setting Up Payment Arrangements* for more information.

Only SA types designated as being Write Off may be specified as the write off SA type on distribution codes. Refer to *Setting Up Distribution Codes* for more information.

Only service agreements whose SA type is designated as being Write Off appear on the Write Off SAs query. Refer to *Write Off - Write Off SAs* for more information.

# SA Type - Billing

Open **Admin** > **SA Type** > **Search** and navigate to the **Billing** page to define how the system manages bill segments for service agreements of a given SA type.

**Description of Page**

Turn on **Eligible for Billing** if the system should create bill segments for service agreements of this type. This will typically be turned on for all service agreements except for those used to hold write-off amounts or to levy one-off adjustments.

Define the minimum number of days a bill segment (other than the final segment) must span using **Minimum Days for Billing**. This is useful to prevent initial bill segments that span only a few days.

**FASTPATH:**
For more information about minimum days, refer to *Preventing Short Bill Segments*.

Select the **Bill Segment Type** that controls both how bill segments for this SA Type will be created and how the related financial transaction affects the general ledger and the customer's debt.

**FASTPATH:**
For more information about bill segment types, refer to *Setting Up Bill Segment Types*.

Use **DefaultDescription on Bill** to define the verbiage that should print on the customer's bill.

**NOTE:**
**Rates overwrite this description.** The Default Description on Bill is not applicable for service agreements whose charges are calculated using a rate. Why? Because the description that appears on the bill segment is defined on the rate schedule's rate version calculation group.

**Billable charges overwrite this description.** The Default Description on Bill is not applicable for service agreements whose charges are calculated using a billable charge. Why? Because the description that appears on the bill segment is defined on the billable charge.

Use the **Billing Processing Sequence** if you need to control the order in which service agreements linked to this SA type are processed by billing and interval data creation processes.

**FASTPATH:**
Refer to *Processing Sequence Considerations* for more information.

Use **Bill Print Priority** to define the order in which the SA type's bill segments should appear on bills (relative to the other SA types that appear on a bill).

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is BILL_PRT_PRIO_FLG.

Use **Max Bill Threshold** if you want the system to generate a bill error when a bill segment is produced in batch that exceeds a given value. These bill errors will appear on the standard billing queries and To Do lists. If, after reviewing the high value bill segment, an operator truly intends to send the bill out, they should regenerate the bill. Refer to *How To Correct A Bill Segment That's In Error* for more information.

**WARNING:**

The value entered in this field will DEFAULT onto service agreements of this type when they are first created. An operator may change the default value on a service agreement in case a specific customer has unusually high bills that continually error out. It's important to be aware that if you change the value of High Bill Amount on an SA type and there already exist service agreements of this type, the existing service agreements will contain the original value (the new value on the SA type will not be propagated on the existing service agreements).

Use **Graph Unit Of Measure** to define the unit of measure of the graphed consumption on the bill (if any).

Turn on **Allow Estimates** if the system is allowed to generate estimated consumption if meter reading(s) cannot be found at billing time. This value is defaulted onto service agreements and can be overridden on an individual service agreement.

**FASTPATH:**
For more information about estimated consumption, refer to *The Theory Behind Consumption Estimation*.

Turn on **Characteristic Premise Required** if a characteristic premise must be linked to the service agreement when the service agreement is activated. The characteristic premise is used to define the taxing authorities associated with the service agreement's bill segments. It is also used to identify where the service agreement's service is located on various windows.

**FASTPATH:**
For more information about how characteristic premise is used, refer to ***An Illustration Of A Bill Factor And Its Characteristics*** .

Use the **Initial Start Date Option** to control how billing should calculate the consumption period for the very first bill for service agreements of this type. This field is not applicable for sub SA types or SA types with a special role of Billable Charge . Valid values are Include First Day , Add 1 Day Always and Add 1 Day for Back-to-back . Refer to *Initial Consumption Period Considerations* for more information.

Non-metered service agreements may have the end date of their bill segments defined on a user-maintained bill period schedule. This option is used when bill segments must fall on strict calendar boundaries (e.g., quarterly bills that end on the last day of the quarter). If this SA type should be billed like this, select Use Bill Period in the **Use Calendar Billing** field. When this option is used, you must define the **Bill Period** whose schedule defines the bill segment end dates.

**FASTPATH:**
For more information about bill period schedules, refer to *Designing Bill Periods*. For more information about other bill end date methods, refer to *Ways To Control The End Date Of A Bill Segment*.

Instead of the Use Bill Period method, non-metered service agreements may have their bill segment end date based on the first day of service. For example, if service started on the 16th of some month, the ongoing bill segments will start on roughly the 16th of each month. This option is frequently used to bill for garbage or cable service. If this SA type should be billed like this, select Anniversary Future Billing or Anniversary Past Billing in the **Use Calendar Billing** field. When either option is used, you must define the **AnniversaryBill Frequency**. This frequency defines the amount of time between bill segments.

**FASTPATH:**
For more information about anniversary billing, refer to *Using The Anniversary Method*. For more information about other bill end date methods, refer to *Ways To Control The End Date Of A Bill Segment*.

**Total Bill Amount** indicates whether service agreements of this type can use the total amount to bill field on the service agreement page. Valid values are Not Allowed and Required . Only SA types used to bill for deposits or loans should have this field set to Required .

If Required is selected, you must enter the **Total Amount To Bill Label**. The **Total Amount To Bill Label** defines the label that prefixes the total bill amount on the service agreement page for service agreements of this SA type.

**FASTPATH:**
For more information about total amount to bill and deposit service agreements, refer to *Total Amount To Bill*. For more information about total amount to bill and loan service agreements, refer to ***Setting Up The System To Enable Loans*** .

**Recurring Charge** indicates whether service agreements of this type can use the recurring charge field on the service agreement window . Valid values are Not Allowed , Optional and Required . If either Optional or Required are used, you must enter:

- **Recurring Chg Amt Label**. This defines the label that prefixes the recurring charge amount on the service agreement window for service agreements of this SA type.
- **Recurring Charge Frequency**. This defines the following:
  - Specifies the frequency at which the Recurring Charge Amount specified on service agreements of the SA Type is to be billed.
  - Serves as the basis for proration of the Recurring Charge Amount.
  - Specifies the frequency at which service agreements of the SA Type without a rate and/or meters will be billed.

**FASTPATH:**
For more information about how to use the recurring charge information, refer to *Charitable Contribution Segmentation*, *Merchandise Segmentation - Installment Billing*, *Deposit Segmentation - Installment Billing*, *Payment Arrangement Segmentation*, *Budget Billing Segmentation*, *The Terms Of A Loan Are Stored On A Service Agreement*.

Turn on **Eligible for Budget** if service agreements of this type can participate in budget billing. If this switch is turned on, then you must define the **Adj**ustment **Type (Synch Current)** that will be used to synchronize (make equal) the current amount with the payoff amount on a service agreement of this type when a budget is cancelled. (The Adjustment Type (Synch Current) field is on the main page.)

**FASTPATH:**
Refer to *Budget Billing* for more information about budgets in general. Refer to *Budget Billing Segmentation* and *Designing and Defining Budget Plans* for more information.

Set the **Eligible for Non-billed Budget** flag to Eligible for Non-billed Budget if you want SAs of this type to be eligible to be covered by a non-billed budget. If this flag is set to Eligible for Non-billed Budget , you must also define the **Adjustment Type (Current = 0)** field (on *SA Type - Detail*).

**FASTPATH:**
Refer to *Current Amount For SAs Covered By A Non-billed Budget* and *SA Types for SAs Covered by Non-billed Budgets* for more information.

**Contents**



## Require Total Amount Switch versus Bill Segment Algorithm

The following table shows valid combinations of the SA type's required total amount switch and the bill segment creation algorithm defined on the SA type's bill segment type. If N/A appears in a cell, the combination is not supported in the system. Otherwise, we list typical types of service agreements that will use a combination.

| Bill Segment Create Algorithm | SA Type Require Total Amount Switch:<br>Not allowed | SA Type Require Total Amount Switch:<br>Required |
|---|---|---|
| *Apply Rate* | Metered services.<br>Lamp services.<br>Misc item services.<br>Company usage.<br>Misc recurring charges whose value is specified in a rate or is taxable. | N/A |
| *Recurring Charge With Auto Stop* | Payment arrangements.<br>Merchandise installment plans.<br>Zero-interest loans. | N/A |
| *Recurring Charge For Amount To Bill* | N/A | Deposit installment plans. |
| *Recurring Charge* | Charitable contributions. | N/A |
| *Billable Charge* | One time invoices.<br>Pass through charges | N/A |
| *Loan* | N/A | Loans. |

## Allow Recurring Charge Switch versus Bill Segment Algorithm

The following table shows valid combinations of the SA type's allow recurring charge switch and the bill segment creation algorithm defined on the SA type's bill segment type. If N/A appears in a cell, the combination is not supported in the system. Otherwise, we list typical types of service agreements that will use a combination.

| Bill Segment Create Algorithm | SA Type Recurring Charge Switch:<br>Not allowed | SA Type Recurring Charge Switch:<br>Optional | SA Type Recurring Charge Switch:<br>Required |
|---|---|---|---|
| *Apply Rate* | Metered services - no budget<br>Lamp services<br>Misc item services.<br>Company usage.<br>Misc recurring charges whose value is specified in a rate or is taxable. | Metered services - budget optional | Metered services - budget required |
| *Recurring Charge With Auto Stop* | N/A | Payment arrangements.<br>Merchandise installment plans.<br>Zero-interest loans.<br>SEE NOTE! | Payment arrangements.<br>Merchandise installment plans.<br>Zero-interest loans.<br>SEE NOTE! |
| *Recurring Charge For Amount To Bill* | N/A | Deposit installment plans.<br>SEE NOTE! | Deposit installment plans.<br>SEE NOTE! |
| *Recurring Charge* | Charitable contributions | N/A | N/A |

| | | | |
|---|---|---|---|
| *Billable Charge* | One time invoices.<br>Pass through charges | N/A | N/A |
| *Loan* | N/A | N/A | Loans. |

**NOTE:**
Most recurring charge SA types require a recurring charge amount on their service agreements. However, the above matrix indicates you can have recurring charge SA types where this value is optional. Why? A special algorithm exists in billing that says if the recurring charge amount is 0 (zero) the system will bill the remaining payoff balance or total amount to bill. This algorithm exists so that you can easily bill the amount in one lump sum (i.e., don't bill it in installments).

**Where Used**

The billing information is used when the system creates a bill segment for service agreements of this type.

# SA Type - Rate

Open **Admin** > **SA Type** > **Search** and navigate to the **Rate** page to define the rates that may be referenced on service agreements of a given type.

**Description of Page**

Turn on **Rate Required** if the bill segment creation algorithm for the SA type expects a rate schedule to be referenced on service agreements of this type.

**FASTPATH:**
For more information, refer to ***Rates*** .

Define the date the system uses when selecting an effective-dated rate (from the service agreement's rate history) using **Rate Selection Date**. Selecting Bill Start Date will cause the system to use the rate effective on the first day of the bill segment's *consumption period*. Selecting Bill End Date will cause the system to use the rate effective on the last day of the bill period. Selecting Accounting Date will cause the system to use the rate effective on the accounting date associated with the bill.

If the Contract Management module is not *turned off*, which includes *umbrella agreement management*, indicate the **Rate Source**. Check SA Only indicates that the rate schedule currently in effect for the service agreement should always be used. Check TOS First, then SA indicates that if the service agreement is linked to a terms of service record, the service agreement's rate could be *overridden by one linked to the terms of service* record.

The information in the **Rate Schedules** collection defines the rates that may be referenced on service agreements of this type. The following fields are required for each SA Type:

**Rate Schedule** Specify the rate schedule; its description is displayed adjacent.

**Use As Default** Turn on this switch for the rate to be defaulted on new service agreements.

## Rate Required versus Bill Segment Algorithm

The following table shows appropriate combinations of the SA type's rate required switch and the bill segment creation algorithm defined on the SA type's bill segment type. If N/A appears in a cell, the combination is not applicable. Otherwise, we list typical types of service agreements that will use a combination. Be aware that no cross validation exists between the rate required switch and the bill segment creation algorithm when setting up the SA type.

| Bill Segment Create Algorithm | SA Type Rate Required Switch:<br>Not allowed | SA Type Rate Required Switch:<br>Rate required on SA |
|---|---|---|
| *Apply Rate* | N/A | Metered services.<br>Lamp services.<br>Misc item services.<br>Company usage. |
| *Recurring Charge With Auto Stop* | Payment arrangements.<br>Merchandise installment plans.<br>Zero-interest loans. | N/A |
| *Recurring Charge For Amount To Bill* | Deposit installment plans. | N/A |
| *Recurring Charge* | Charitable contributions. | N/A |
| *Billable Charge* | One time invoices. | Billable charges that require a rate to add-on extra charges (like taxes) or billable charges where the consumption is interfaced and the system is responsible for calculating the charges. |
| *Loan* | Loans. | N/A |

### Where Used

This information is used to default and validate the rate specified on a service agreement. Refer to *Service Agreement - Rate Info* for more information.

## SA Type - SP Type

Open **Admin** > **SA Type** > **Search** and navigate to the **SP Type** page to define the service point types that may be referenced on service agreements of a given type.

### Description of Page

Turn on **Service Points Required** if at least one service point should be linked to service agreements of this type in order to properly bill the service agreements.

The information in the **SP Types** collection defines the service point (SP) types that may be referenced on this SA type's service agreements. The following fields are required for each SA Type:

**SP Type** Specify the SP type; its description is displayed adjacent.

> **FASTPATH:**
> For more information about SP types, refer to *Designing SP Types*.

### Where Used

This information is used to validate the types of service points linked to a service agreement. Refer to *Service Agreement - SA / SP* for more information.

## SA Type - Adjustment Profiles

Open **Admin** > **SA Type** > **Search** and navigate to the **Adj Profile** page to define the adjustment profiles that define adjustment types that may be referenced on service agreements of a given type.

**Description of Page**

Define the **Adjustment Type Profiles** that, in turn, define adjustment types that may be referenced on service agreements of a given type.

> **FASTPATH:**
> For more information about adjustment type profiles, refer to *Setting Up Adjustment Type Profiles*.

**Where Used**

This information is used to validate the adjustments linked to the service agreement. Refer to *Adjustments - Main Information* for more information.

# SA Type - C&C

Open **Admin** > **SA Type** > **Search** and navigate to the **C&C** page to maintain attributes that affect how the system severs the service agreement when collection attempts fail.

> **FASTPATH:**
> Refer to *Designing Your Severance Procedures* for more information.

**Description of Page**

Select the **Debt Class** associated with the SA Type. Any debt on a service agreement of this SA Type will be categorized under this debt class.

Select the **Write Off Debt ClassCode** associated with the SA Type. Any debt on a service agreement of this SA Type will be categorized under this debt class during write-off processing.

> **NOTE:**
> **Write Off Debt Class vs. Regular Debt Class.** It's important to be aware that a SA type references both a regular debt class and a write-off debt class. The regular debt class controls the collection criteria applied against an account's service agreements. The regular debt class is also used to segregate an account's outstanding balance on several queries in the system. The write-off debt class controls the write-off criteria applied against an account's stopped service agreements. The reason the system supports two different debt classes is because you may categorize your service agreements differently when you try to collect overdue debt versus when you write-off debt. Refer to *The Big Picture Of Write Off Processing* for more information.

The information in the **Severance Criteria** collection defines the SA Type's severance criteria. Severance criteria define the severance process to be executed for service agreements of a given SA type. The severance process may differ depending on some attribute of the customer or premise. For example, you may have a different severance process if the customer has life support equipment.

> **FASTPATH:**
> The following information is not intuitively obvious. Refer to *Designing Your Severance Procedures* for more information.

The following fields are required for each instance:

**Priority** The priority controls the order in which the system determines if the severance process should be applied (the first severance process whose algorithm applies is used). Higher priorities are checked before lower priorities.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is CRIT_PRIO_FLG. Be aware that this field is used for multiple tables: *Collection Class Control*, *Severance Criteria*, *Write Off Control* and *Workflow Process Profiles*.

**Severance Criteria Algorithm** Select the algorithm to be used to check if the severance process should be initiated for service agreements of this type. If a condition is met, a severance process is created using the associated severance process template.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that determines if the severance of a service agreement should be processed using the associated **Severance Process Template**. Click *here* to see the algorithm types available for this plug-in spot.

**IMPORTANT:**
You must have at least one entry in this collection otherwise the system will not start a severance process when a service agreement of this type needs to be stopped due to non payment. This entry should have the lowest priority code and should reference a **Severance Criteria Algorithm** that references the *SV CRIT DFLT* algorithm type.

**Severance Process Template** Specify the severance process template to use to sever the service agreement; its description is displayed adjacent.

**Where Used**

The debt class has multiple uses:

- The system summarizes an account's debt by debt class on *Account - Main Information* and *Account - Financial Balances*.
- Debt class is one component that controls how the system analyzes an account's overdue debt (the others are the account's collection class and currency). Refer to *Different Collection Criteria For Different Customers And Different Debt* for more information.
- Write off debt class is one component that control how the system writes off an account's stopped service agreements. Refer to *Different Write-Off Criteria For Different Customers And Different Debt* for more information.

The severance criteria are used when a collection event is activated that indicates that service should be severed.

# SA Type - Billable Charge Template

Open **Admin** > **SA Type** > **Search** and navigate to the **BC Template** page to define the billable charge templates that can be used on service agreements of a given type.

**NOTE:**
**Only billable charges have billable charge templates.** Only service agreements that are defined as Billable Charges (in the Special Role on the Details window) may use the grid on this window.

**Description of Page**

The information in the **Billable Charge Template** collection defines the SA Type's permissible billable charge templates. A billable charge template contains the default bill lines, amounts and distribution codes used to levy a one-off charge. The following fields are required for each template:

**Billable Charge Template** Specify the billable charge template. Its description is displayed adjacent.

**Use As Default** Turn on this switch for the template to be defaulted on new billable charges linked to service agreements of this type (if any).

> **FASTPATH:**
> For more information about billable charge templates, refer to *Setting Up Billable Charge Templates*.

**Where Used**

This information is used to limit the billable charge templates that can be used for a given SA type.

# SA Type - Characteristics

To define characteristics common to all service agreements of a given type, open **Admin** > **SA Type** > **Search** and navigate to the **Characteristics** page.

**Description of Page**

Use the characteristics collection to define a **Characteristic Type**, **Sequence** and **Characteristic Value** common to all service agreements of this type.

> **NOTE:**
> You can only choose characteristic types defined as permissible on a SA Type record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

# SA Type - Algorithms

Open **Admin** > **SA Type** > **Search** and navigate to the **Algorithm** page to define the algorithms that should be executed for service agreements of a given type.

**Description of Page**

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (descriptions of all possible events are provided below).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

> **WARNING:**
> These algorithms are typically significant processes. The absence of an algorithm may prevent the system from operating correctly.

The following table describes each **System Event** for which you can define algorithms.

| System Event | Optional / Required | Description |
|---|---|---|
| Bill Completion | Optional | These algorithms are executed whenever a bill is completed for an account that contains a non-canceled service agreement of this type. The following situations necessitate the definition of a completion algorithm on an SA type: |

| | | |
|---|---|---|
| | | - As explained under *Technical Implementation of A/R Transfer* and *Technical Implementation of Routing Billable Charges To Service Providers* , when a bill is completed, the system needs to set up the data necessary to interface any "master" SA's charges to the service provider and to transfer the receivable balance from the customer to the service provider. The system will only do this if you specify an appropriate algorithm on the master SA types.<br><br>- As explained under *Billing For SAs Covered By The Non-billed Budget*, when a bill is completed for accounts that have a non-billed budget SA, the system needs to distribute the non-billed budget's credit balance to the covered SAs. The system will only do this if you specify an appropriate algorithm on the NBB SA types.<br><br>- As explained under *Overpayment Segmentation*, when a bill is completed, the system may apply an excess credit from a prior overpayment to an account's service agreements.<br><br>**Note**. Algorithms of this type are called for all non- Canceled service agreements, regardless of whether or not they are billed. If your algorithms should only be processed under certain conditions (for example, only process this algorithm for Active service agreements), then it is the responsibility of the algorithm to check the conditions before continuing.<br><br>Click *here* to see the algorithm types available for this system event. |
| Break NBB SA | Optional | These algorithms are executed when a *non-billed budget* is manually stopped via the ***non-billed budget maintenance page*** .<br><br>Click *here* to see the algorithm types available for this system event.<br><br>Note that the Payment Arrangement algorithm and the Break Pay Arrangement algorithm are mutually exclusive. |
| Break Pay Arrangement | Optional | These algorithms are by executed by severance events when the event is created for payment arrangement SAs. This algorithm should be specified on SA types with a special role of Payment Arrangement to perform special actions that take place when a customer breaks a payment arrangement. Refer to *Monitoring Payment Arrangements* |

| | | |
|---|---|---|
| | | for more information about breaking payment arrangements.<br><br>Click *here* to see the algorithm types available for this system event. |
| Budget Eligibility | Optional | These algorithms are executed when determining in a service agreement is eligible for budget. Algorithms of this type are only applicable on SA types that are marked as eligible for budget and may be used to override that setting and indicate that the service agreement is not eligible.<br><br>For example, maybe service agreements in a certain rate are not eligible. Or perhaps service agreements with a given characteristic value are not eligible.<br><br>Click *here* to see the algorithm types available for this system event. |
| Cut Process Rule | Optional | These algorithms are executed to create a cut process for service agreements of this type. Refer to *The Big Picture Of Cut Processes* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| FT Freeze | Optional | These algorithms are executed whenever a financial transaction is frozen that is linked to a service agreement of this type. The following situations necessitate the definition of an FT freeze algorithm:<br><br>- As explained under *Technical Implementation of Routing Consumption To Service Providers* , when a master SA's bill segment is frozen, the system must check if there are any service providers who need the bill segment's consumption. If so, it sets up the data necessary to interface the master SA's consumption (snapshot on the bill segment) to the service provider(s). The system will only do this if you specify an appropriate FT Freeze Algorithm on the master SA types.<br><br>- As explained under *Technical Implementation of Paying The Service Provider* , when a financial transaction (FT) is frozen that is associated with a sub SA, the system must check if this FT should trigger the "payment" of a service provider. If so, it has to create an adjustment to increase how much we owe the service provider. The system will only do this if you specify an appropriate FT Freeze Algorithm on the sub SA types. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| High Bill Amount | Optional | This algorithm type checks for high bill amounts during batch billing. A bill threshold amount can be defined on a service agreement. By default the system compares this threshold amount to the bill segment amount during batch billing. If the bill segment amount exceeds the given threshold value, a bill error is generated. No proration takes place on the threshold amount if the bill segment's consumption period falls outside of the rate frequency's normal period.<br><br>This algorithm may be used to override the default system behavior. It will prorate the SA's bill threshold amount before comparing it to the batch bill segment amount if the consumption period falls outside of the rate frequency's normal period.<br><br>Click *here* to see the algorithm types available for this system event. |
| Landlord Reversion | Optional | These algorithms are used to create, update or cancel a service agreement for a landlord when service is started, stopped or updated for a premise that references a *landlord agreement*.<br><br>Algorithms of this type are called:<br><br>- When starting a new SA (start initiation)<br><br>- When stopping an SA (stop initiation)<br><br>- When canceling a pending start SA<br><br>- When changing the stop / start dates of back-to-back service agreements<br><br>Click *here* to see the algorithm types available for this system event. |
| Loan Interest Charge | Optional | These algorithms are executed whenever the interest charge needs to be calculated for a loan, such as when the loan amortization schedule is created and when a bill segment is created for a loan SA. This algorithm should be specified on SA types with a special role of Loan . Refer to *Defining Loan Options* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Loan Periods and Amount | Optional | These algorithms are executed whenever a user clicks the Calculate button on ***Loan - Main*** or on the Start SA Confirmation dialog for a loan SA. It calculates either the number of periodic payments or the payment amount (depending on whether the user specifies the |

| | | |
|---|---|---|
| | | number of payments or the payment amount as input). This algorithm should be specified on SA types with a special role of Loan . Refer to *Defining Loan Options* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Loan Schedule | Optional | These algorithms are executed whenever the system needs to create a ***loan amortization schedule*** for a loan, such as when you renegotiate the terms of a loan on ***Loan - Main*** . This algorithm should be specified on SA types with a special role of Loan . Refer to *Defining Loan Options* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Payment Arrangement | Optional | These algorithms are by executed to handle the creation, breaking and canceling of payment arrangement SAs. This algorithm should be specified on SA types with a special role of Payment Arrangement to perform special actions that take place during the lifecycle of a payment arrangement. Refer to *Monitoring Payment Arrangements* for more information about payment arrangements.<br><br>Note that the Payment Arrangement algorithm and the Break Pay Arrangement algorithm are mutually exclusive. |
| Payment Freeze | Optional | These algorithms are executed whenever a payment is frozen. The following situations necessitate the definition of such an algorithm:<br><br>- For a loan SA, such an algorithm is required to create a frozen adjustment that transfers any credit balance resulting from an *overpayment* to the loan's principal balance. Refer to *Defining Loan Options* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Pre-Bill Completion | Optional | These algorithms are executed immediately prior to bill completion when a bill contains a bill segment for a service agreement whose SA type has such an algorithm. The following situations necessitate the definition of such an algorithm:<br><br>- If you want to delete a bill segment that's in error on the last night of a bill cycle when there are other bill segments that aren't in error, use such an algorithm. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Process NBB Scheduled Payment | Optional | These algorithms are executed by the NBB Scheduled Payment Processing background process whenever a scheduled payment is due. If the non-billed budget SA is unmonitored, this algorithm is not called. This algorithm should be specified on non-billed budget SA types to create the necessary adjustments for the non-billed budget SA.<br><br>Click *here* to see the algorithm types available for this system event. |
| Proposal SA Acceptance | Optional | These algorithms are executed when a *proposal service agreement* is accepted. Refer to *Enabling The Creation Of A Real Service Agreement* for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Proposal SA Bill Segment Generation | Optional | These algorithms are executed to generate simulated bills segments for a ***proposal service agreement*** . Refer to ***Enabling The Generation Of Simulated Bill Segments*** for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| Proposal SA Creation | Optional | These algorithms are executed when a ***proposal service agreement*** is created. Refer to ***Enabling The Automatic Generation Of Billing Scenarios*** for more information.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Activation | Optional | These algorithms are executed when a service agreement status changes from Pending Start to Active . It performs any additional activities that are necessary to activate an SA. The following situations necessitate the definition of such an algorithm:<br><br>- If you want to create a customer contact to indicate that a non-billed budget has been activated, use such an algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Cancel | Optional | These algorithms are executed when a service agreement status changes to Canceled . It performs any additional activities that are necessary to cancel an SA.<br><br>An example of when you may use this algorithm is that perhaps your business |

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| | | rules dictate that the creation of a payment arrangement should create a credit rating history transaction. When a payment arrangement SA is canceled, the credit rating should be updated with an end date.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Creation | Optional | These algorithms are executed when a service agreement is created. The following situations necessitate the definition of such an algorithm on an SA type:<br><br>- If you want to create a To Do entry whenever a new service agreement of a given type is added, specify such an algorithm.<br><br>- If you want to automatically activate SAs of a given type (instead of waiting for the background SA activation process to run), specify such an algorithm.<br><br>- If you want to create a Workflow Process when a service agreement of a given type is added, specify such an algorithm.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Information | Optional | We use the term "SA information" to describe the basic information that appears throughout the system to describe a service agreement. The data that appears in "SA information" is constructed using this algorithm.<br><br>Plug an algorithm into this spot to override the "SA information" algorithm on installation options or the system default "SA information" if no such algorithm is defined on installation options.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Renewal | Optional | These algorithms are executed by the Service Agreement Renewal background process whenever an SA is due for renewal or when the user clicks the **Renew** button (for ***non-billed budgets*** ). It performs any activities that are necessary to renew an SA and returns the new renewal and expiration dates for the SA.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Stop | Optional | These algorithms are executed whenever a service agreement's status changes from pending stop to stopped . The following situations necessitate the definition of a SA stop algorithm: |

| | | |
|---|---|---|
| | | - For *non-billed budgets* to distribute any remaining credit balance from the non-billed budget SA to the covered SAs, you must specify such an algorithm.<br><br>- For service credit memberships that have a *refundable membership fee*, an SA Stop algorithm attempts to refund the fee if this is the last SA linked to the membership that is being stopped.<br><br>Click *here* to see the algorithm types available for this system event. |
| SA Stop Initiation | Optional | These algorithms are executed whenever a service agreement's status becomes pending stop . The following situations necessitate the definition of a stop initiation algorithm on an SA type:<br><br>- As explained under *Finalizing Pending Stops*, service agreements are normally transitioned from pending stop to stopped by a background process (or manually). For *non-billed budget SAs* to transition to stopped automatically (without waiting for the background process), you must specify such an algorithm.<br><br>**When does a SA become pending stop?** Service agreements typically become pending stop when a user initiates a request to stop service on *Start Stop - Main*. A *severance process* with an Expire SA *severance event* causes a service agreement to become pending stop (when the event is executed). Additionally, the *Stop Expired Service Agreements* background process starts the process to initiate the stop of an SA when the expiration date is on or before the process date.<br><br>Click *here* to see the algorithm types available for this system event. |
| Start Stop Field Work | Optional | These algorithms are executed to create the field activities necessary to start and stop service. Refer to *Starting Service and Field Activities* and to *Stopping Service and Field Activities* for a description of when algorithms of this type are called. The following situations necessitate the definition of a start stop fieldwork creation algorithm:<br><br>- If a service agreement has field activities created to start and stop service at its service points, its SA type must have an appropriate start stop field work creation algorithm. |

Click *here* to see the algorithm types available for this system event.

## SA Type - Billable Charge Overrides

The *BCU2 - Create Billable Charge* background process is responsible for creating billable charges for each billable charge upload staging record interfaced into the system. This process will override the values of the various switches referenced on a billable charge upload staging line if the respective service agreement's SA type has an override value for the billable charge upload staging line's billable charge line type.

**NOTE:**
**This information is optional.** If you don't need to override the values of a ***Billable Charge Line Type*** you don't need to set up this information.

Open **Admin** > **SA Type** > **Search** and navigate to the **BC Upload Override** page to define override values for a given SA Type / Billable Charge Upload Staging Line Type.

**Description of Page**

Use the **Billable Charge Overrides** collection to define values to be overridden on billable charge lines uploaded from an external system (refer to the description above for the details). The following switches may be overridden for a given **SA Type** and **Billable Charge Line Type.**

- Use the **Show on Bill** switch to define the value to be defaulted into the Show on Bill indicator on billable charge upload lines that reference this line type.
- Use the **Appear in Summary** switch to define the value to be defaulted into the App in Summary indicator on billable charge upload lines that reference this line type.
- Use **Memo Only, No GL** switch to define the value to be defaulted into the Memo Only, No GL indicator on billable charge upload lines that reference this line type.
- Use **Distribution Code** to define the value to be defaulted into the Distribution Code on billable charge upload lines that reference this line type.

## SA Type - Contract Option Type

Open **Admin** > **SA Type** > **Search** and navigate to the **Contract Option Type** page to define the contract option types, which are valid for service agreements of a given type.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

**FASTPATH:**
Contract Options are used by the system to define special options under which certain calculations supporting a contract's rate may be overridden or altered occasionally for specific periods of time. Refer to *Contract Option Background Topics* for more information.

**Description of Page**

If the SA Type's special role is Interval , you may define the **Contract Option Types** that are valid for contract options linked to a service agreement of this type.

> **FASTPATH:**
> For more information, refer to *Setting Up Contract Option Types*.

**Where Used**

This information is used to validate the contract options linked to the service agreement. Refer to *Service Agreement - Contract Options* for more information.

## SA Type - Interval Info

Open **Admin** > **SA Type** > **Search** and navigate to the **Interval Info** page to define the interval profile relationship types and TOU map relationship types, which are valid for service agreements of a given type.

> **NOTE:**
> **This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

**Description of Page**

If the SA Type's special role is Interval , you may define the **Interval Profile Relationship Types** that may be linked to service agreements of this type.

> **FASTPATH:**
> For more information about interval profile relationship types, see *Designing Interval Profile Relationship Types*.

If the SA Type's special role is Interval , you may define the **TOU Map Relationship Types** that may be linked to service agreements of this type.

> **FASTPATH:**
> For more information about TOU map relationship types, refer to *Designing TOU Map Relationship Types*.

**Where Used**

The interval profile information is used to validate the interval profile relationship types linked to the service agreement. Refer to *Service Agreement - Interval Info* for more information.

The TOU map information is used to validate TOU map relationship types linked to a service agreement. Refer to *Service Agreement - Interval Info* for more information.

## SA Type - NBB Recommendation Rule

Open **Admin** > **SA Type** > **Search** and navigate to the **NBB Rec'n Rule** page to define the recommendation rules that are valid for non-billed budget SAs of this type.

**Description of Page**

If the SA Type's special role is Non-billed Budget , you may define the **Recommendation Rules** that are valid on non-billed budget SAs of this type. Check the **Use As Default** box to indicate the default recommendation rule for service agreements of this type.

**FASTPATH:**
For more information about non-billed budgets, refer to ***Defining Non-Billed Budget Options*** .

**Where Used**

The non-billed budget recommendation rules are used to recommend the payment amount and payment schedule for non-billed budget service agreements. Refer to ***Maintaining Non-billed Budgets*** for more information.

# Setting Up Start Options

Start options save users time and prevent data entry errors because they default many values on a service agreement (e.g., the rate schedule, recurring charge amount, contract riders, contract terms, characteristics, terms and conditions, etc. can all be defaulted onto a service agreement from a start option).

A SA type may have zero or more start options.

- A SA type without start options is usually one that has a very limited number of options. For example, if a SA type has a single valid rate and no customer-specific contract values, you don't need to setup a start option (the SA's default rate can default based on the information defined when you setup the SA type).
- A SA type with multiple start options is one where many different permutations are possible. For example, a SA type that can have multiple rates and each rate can have multiple riders is a good candidate for start options (where each start option will default, for example, a specific rate and set of contract riders).

When the *Start/Stop* transaction is used to start service AND the service being started uses a SA type with start options, the user is asked to select one of the start options. The service agreement that's created is populated with fields from the start option.

When the *Order* transaction is used to start service, the user selects start options, but only indirectly. It works like this:

- A user selects a "package" of services to start service for a customer.
- A "package" contains one or more start options.
- When a user selects a package, the system creates a service agreement for each start option on the package (and defaults the information on each service agreement from the respective start option).

A start option's default values may change over time (i.e., the information on a start option is effective-dated). The start service logic uses the version of the start option that is effective on the day service starts.

Start options can cause a great deal of information to be populated on a service agreement. There are several ways to change this default information:

- A user may override this information using the *Service Agreement* transaction.
- If the service agreement is in the pending start state, you can use the *Start/Stop - Pending SAs* page to change the service agreement's SA type and/or start option.
- If the service agreement is in active or pending stop states, a button appears on *Service Agreement - Main* called **Apply New Start Option**. When pressed, the user is allowed to define a start option and the date its terms become effective on the service agreement. Refer to *Changing A Start Option* for the details of this functionality.

The topics in this section describe how to setup start options.

**NOTE:**
**The merge transaction can save setup time.** The *Start Options Merge* transaction can be used to construct a start option by copying pieces from other start options.

**Contents**

## Start Option Considerations - Rate-Oriented SA Types

To understand the following discussion, you should be familiar with the following concepts:

- SA types that use rates have one or more valid rate schedules. Only these rate schedules may be defined on service agreements of a given type.
- One of a SA type's rate schedules may be designated as the "default" rate. The system assigns the "default" rate to new service agreements when a CSR doesn't choose a start option.
- Start options may be used by customer service reps when a service is started for a customer. A start option causes the customer's new service agreement to be populated with a specific rate and contract terms (e.g., contract riders, contract values). The use of start options is not allowed if the service's SA type does not require a start option. The use of start options is required if the service's SA type requires a start option.

Whether or not a SA Type has start options is dependent on the following factors:

- If a SA Type has only one valid rate and the rate doesn't use customer-specific contract terms (e.g., contract riders, contract values), the SA Type does not need any start options. Why? Because the system default's the SA type's default rate on new service agreement when no start option is used at start time.
- If a SA Type has only one valid rate, but under unusual circumstances, it uses customer-specific contract terms, you'll want an option for every situation (both the standard one and the unusual ones).
- If a SA Type has a single rate with a variety of contract terms (which, by definition, are different for each customer), then you'd want a start option for each permissible combination of contract terms. You'd also want to turn on the SA type's Start Option Required switch to make your CSR's pick one of the start options when service is started (rather than let the system use the SA type's default rate).
- If a SA type has multiple valid rates and a variety of contract terms (a combination of the previous two points), you'd need a start option for each permissible combination. You'd also want to turn on the SA type's Start Option Required switch to make your CSR's pick one of the start options when service is started (rather than let the system use the SA type's default rate).

## Start Option Considerations - SA Types That Use Recurring Charges

To understand the following discussion, you should be familiar with the following concepts:

- Many SA types use the recurring charge algorithms to generate the bill segments. For example, if you let a customer pay for a $900 heat pump in 3 installments of $300, you'd have an SA type called CA/MERCH-I and indicate it uses the recurring charge algorithm.
- When a CSR creates an SA type that uses recurring charge algorithms, they can enter the recurring charge amounts on *Start/Stop Service - Start Confirmation* window OR they can specify a start option on this window and let the system populate the recurring charge amount. For example, if you let a customer pay for a $900 heat pump in 3 installments of $300, you can set up a start option called HP 3PAY with an installment amount of $300.
- Depending on the type of service being started, you might also need to generate an adjustment when service is started in order to initialize the total debt. For example, when a customer buys a heat pump we'll need an adjustment issued to realize the entire $900 of revenue.

The following table provides examples of recurring charge SA types with several typical start options:

| CIS Division/ SA Type | Start Option | Adjustment Type | Install Amount | Comments |
|---|---|---|---|---|
| **CA/CHARITY** | DONATE $5 | | 5 | This causes a charitable contribution to be created with an installment amount of $5. |
| **CA/CHARITY** | DONATE $10 | | 10 | This causes a charitable contribution to be created with an installment amount of $10. |
| **CA/PA-REGU** | PAY $10 PM | | 10 | This causes a payment arrangement to be created with an installment amount of $10. |
| **CA/PA-REGU** | PAY $20 PM | | 20 | This causes a payment arrangement to be created with an installment amount of $20. |
| **CA/PA-UNRE** | PAY $10 PM | | 10 | This causes a payment arrangement to be created with an installment amount of $10. |
| **CA/PA-UNRE** | PAY $20 PM | | 20 | This causes a payment arrangement to be created with an installment amount of $20. |
| **CA/MERCH-I** | HP 3PAY | HEATPUMP | 300 | This causes a merchandise service agreement to be created with an installment amount of $300. It also causes an adjustment to be issued to realize the $900 of revenue. |

| | | | | |
|---|---|---|---|---|
| **CA/MERCH-I** | BBQ 3PAY | BBQ | 250 | This causes a merchandise service agreement to be created with an installment amount of $250. It also causes an adjustment to be issued to realize the $750 of revenue. |
| **CA/DEP-I** | PAY $40 PM | | 40 | This causes a deposit service agreement to be created with an installment amount of $40. The CSR would be required to define the total deposit amount to be billed over the life of the service agreement on the secondary SA window on the Start Account window. |

## Start Option Considerations - Initial Adjustment SA Types

To understand the following discussion, you should be familiar with the following concepts:

- Some SA types depend on an adjustment to book their initial debt. For example, the CA/MERCH-I SA type requires an initial adjustment to book the payoff amount for the entire cost of the merchandise. Another example would be a loan service agreement (refer to *Booking The Principal Amount Using An Adjustment* for the details).
- When a CSR starts an SA type that requires an initial adjustment, they can create the adjustment immediately after starting service OR then can specify a start option when they start service and let the system generate the adjustment. You could let the system create the adjustment to book the $900 associated with the heat pump as shown in the previous section.

The following table provides examples of SA types that use adjustments with several typical start options:

| CIS Division/ SA Type | Start Option | Adjustment Type | Install Amount | Comments |
|---|---|---|---|---|
| **CA/MERCH-I** | HP 3PAY | HEATPUMP | 300 | This causes a merchandise service agreement to be created with an installment amount of $300. It also causes an adjustment to be issued to realize the $900 of revenue. |
| **CA/MERCH-I** | BBQ 3PAY | BBQ | 250 | This causes a merchandise service agreement to be created with an installment amount of $250. It also causes an adjustment to |

| | | | |
|---|---|---|---|
| | | | be issued to realize the $750 of revenue. |
| **CA/CONNECT** | CONNECT | CONNECT | This causes an adjustment to be issued to realize the connection charge. |

## Start Option Considerations - Interval SA Types

Refer to *Designing Your SA Interval Billing Options* for information about setting up start options for interval service agreements.

## Start Option - Main

Open **Admin** > **SA Type Start Option** > **Add** to define a SA type's start options.

**Description of Page**

Every start option is uniquely identified by the following fields:

**CIS Division & SA Type** Enter the Division and SA type to which the start option is linked.

**Start Option** Enter the unique identifier of the option. Pick something easy to recognize as this will be used by CSRs to pick an option when they start service.

**Effective Date** Enter the earliest effective date. It should be the same as the earliest effective date of the start option's rate (although it doesn't hurt for it to be earlier). The date defaults to the current date. (The status, below, should be Active .)

The remaining fields further describe a start option.

Enter a **Description** for the start option.

Indicate its **Status**. For new start options, the status should be Active . When it's no longer applicable, change it to Inactive .

Enter the primary **Rate Schedule** that should be defaulted onto service agreements created using this option. Refer to *Start Option Considerations For SA Types That Use Rates* for more information.

**FASTPATH:**
For more information about a service agreement's rates, refer to *Service Agreement - Rate Info*.

Enter the **Adjustment Type** that should be generated, if any, when service is started using this option. Refer to *Start Option Considerations For SA Types That Use Initial Adjustments* for more information.

Enter the **Recurring Charge Amount** that should be defaulted onto service agreements created using this option. This field is only visible when the SA type allows recurring charges. In addition, the prompt for this field is defined on the SA type table on the billing window (e.g., it could appear as Payment Amount, Budget Amount, or Installment Amount). Refer to *Start Option Considerations For SA Types That Use Recurring Charges* for more information.

Enter the **Currency Code** in which monetary amounts are denominated.

**NOTE:**
The currency code defaults from the *installation record*.

Enter the **Total Amount to Bill** that should be defaulted onto service agreements created using this option. This is useful to initiate either a loan or a deposit. The prompt for this field is defined on the SA type table on the billing window (e.g., it could be Deposit Amount or Loan Amount).

Use **Number of Payment Periods** to default the number of payment periods of service agreements created using this option. This field is only allowed for SA types with special role of Loan . Refer to *The Terms Of A Loan Are Stored On A Service Agreement* for more information.

If your SA Type has a special role of Interval , then you must enter the **Cutoff Time** and **Start Day Option** that should be defaulted onto service agreements created using this option. For start day option, you may choose Current Day or Previous Day . Refer to *Start and End Times for Billing* for more information about how these fields are used.

If your SA Type has a special role of Billable Charge , then you can setup the start option to automatically create a billable charge when a service agreement is created using this start option. For example, you might have a start option that automatically creates a "one-time invoice" service agreement along with a "tree trimming" billable charge. To use this feature you should turn on the **Create Billable Charge** switch and specify the **Billable Charge Template** that will be used to create the billable charge. These fields are only allowed for SA types with special role of Billable Charge .

**FASTPATH:**
Refer to *Setting Up Billable Charge Templates* for more information about templates. Refer to *An Easier Way To Create One Time Charges* for an example of how you can setup a campaign with packages that use this type of start option.

**NOTE:**
The duplicate action in the page actions toolbar enables you to copy another start option. Refer to *Duplicate Button* in the system wide standards document for more information.

## Start Option - Rate Info

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **Rate Info** page to define the start option's default values for contract riders and contract values.

**Description of Page**

The information in the **Contract Riders** collection defines the contract riders to be defaulted onto service agreements created using this start option. The following fields are required for each instance:

**Bill Factor** The bill factor defines the type of rider. You may only reference bill factors designated as being applicable for contract riders.

**Number of Days** The number of days the rider should be in effect. This value is used by the system to set the stop date on the service agreement's contract rider. If the rider has no expiration, set this field to 0. Default note: this field will be set to 0 if left blank.

**FASTPATH:**
For more information about a rate's contract riders, refer to ***Defining General Bill Factor Information*** . For more information about a service agreement's contract riders, refer to *Service Agreement - Contract Riders*.

The information in the **Contract Values** collection defines the contract values to be defaulted onto service agreements created using this start option. The following fields are required for each event:

**Bill Factor** The bill factor defines the type of value. You may only reference bill factors designated as allowing values in contract terms.

**Number of Days** The number of days the value should be in effect. This value is used by the system to set the stop date on the service agreement's contract value. If the value has no expiration, set this field to 0.

**Value** The amount of the contract value.

**FASTPATH:**
For more information about a rate's contract values, refer to ***Defining General Bill Factor Information*** . For more information about a service agreement's contract values, refer to *Service Agreement - Contract Values*.

## Start Option - Characteristics & Qty

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **Characteristics & Qty** page to define the start option's default values for characteristics and contract quantities.

**Description of Page**

The information in the **Characteristics** collection defines the characteristics to be defaulted onto service agreements created using this start option. The following fields are required for each instance:

**Characteristic Type** This defines the type of characteristic. Note: you may only define characteristics valid on service agreements.

**Characteristic Value** This defines the characteristic value that will be defaulted.

**FASTPATH:**
For more information about a service agreement's characteristics, refer to *Service Agreement - Characteristics*.

The information in the **Contract Quantity** collection defines the contract quantities to be defaulted onto service agreements created using this start option. The following fields are required for each instance:

**Contract Quantity Type** This defines the type of contract quantity.

**Contract Quantity** The amount of the contract quantity.

**FASTPATH:**
For more information about a service agreement's contract quantities, refer to *Service Agreement - Contract Quantity*.

## Start Option - Contract Option

**FASTPATH:**
Refer to *Designing Your SA Interval Billing Options* for information about setting up start options for interval service agreements.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **Contract Option** page to define the start option's contract option default values.

**Description of Page**

The collection of contract option types will be used to link contract options to a service agreement that will be created with this start option. If the contract option to create for the service agreement will be SA Specific , simply indicate the **Contract Option Type**. This will cause a new contract option to be created with this contract option type and the new contract option will be linked to the new SA at start time. If the contract option to create for the service agreement will be Shared , indicate

the contract option type and the **Contract Option ID**. This will cause the specified contract option to be linked to the new SA at start time.

**FASTPATH:**
For more information about contract option types, see *Designing Your Contract Option Types*.

## Start Option - Interval Info

**FASTPATH:**
Refer to *Designing Your SA Interval Billing Options* for information about setting up start options for interval service agreements.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **Interval Info** page to define the start option's interval profile and TOU map default values.

**Description of Page**

The collection of interval profile information will be used to link interval profiles to a service agreement that will be created with this start option. The **Interval Profile Relationship Type** indicates the value that will be linked to each new SA Profile record. For each interval profile relationship type, define either an **Interval Profile Type** or an **Interval Profile ID** depending on whether the Profile to be linked to the new service agreement should be SA Specific or Shared . For SA Specific, indicate an interval profile type. This will cause a new interval profile to be created with this interval profile type and the new interval profile will be linked to the new SA at start time. For Shared profiles, indicate the Interval Profile ID. This will cause the specified Profile to be linked to the new SA at start time.

If a **Derivation Algorithm** is linked to the interval profile type, then the algorithm and its **Creation Priority** are displayed.

**FASTPATH:**
For more information about interval profile relationship types, see *Designing Interval Profile Relationship Types*. For more information about Shared profiles vs. SA Specific profiles, see ***Common Profiles vs. SA Owned Profiles*** .

The collection of TOU map information will be used to link TOU Maps to a service agreement that will be created with this start option. The **TOU Relationship Type** indicates the value that will be linked to each new SA TOU Map record. For each TOU relationship type, define either a **TOU Map Type** or a **TOU Map ID** depending on whether the map to be linked to the new service agreement should be SA Specific or Shared . For SA Specific, indicate a TOU map type. This will cause a new TOU map to be created with this TOU map type and the new TOU map will be linked to the new SA at start time. For Shared map, indicate the TOU map id. This will cause the specified map to be linked to the new SA at start time.

If a TOU map creation algorithm is linked to the TOU Map type, then the **Derivation Algorithm** and its **Creation Priority** are displayed.

**FASTPATH:**
For more information about TOU map relationship types, see *Designing Your TOU Map Relationship Types*.

## Start Option - TOU Contract Value

**FASTPATH:**
Refer to *Designing Your SA Interval Billing Options* for information about setting up start options for interval service agreements.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **TOU Contract Value** page to define the start option's default TOU contract values.

**Description of Page**

The **TOU Contract Value** scroll contains information to define when you would like TOU contract values to be defaulted onto service agreements created using this start option

Indicate the **Bill Factor** associated with the TOU contract values. You may only reference bill factors designated as "TOU" bill factor types and where the value may be in contract terms.

Indicate the **TOU Group**, which contains the appropriate collection of TOU codes for service agreements created using this start option.

Indicate the **Number of Days** the value should be in effect. This value is used by the system to set the stop date on the service agreement's contract value. If the value has no expiration, set this field to 0.

Use the Time of Use collection to indicate the TOU **Value** associated with each **Time of Use** codes for the TOU Group.

**FASTPATH:**
For more information about TOU contract values, refer to *Customer Specific TOU Values*.

## Start Option - Terms and Conditions

Open **Admin** > **SA Type Start Option** > **Search** and navigate to the **Terms and Conditions** page to define the start option's default terms and conditions.

**Description of Page**

The information in the grid defines the terms and conditions to be defaulted onto service agreements created using this start option. The following fields are required for each instance:

**Terms and Conditions** This is the code that identifies a term and condition (T&C).

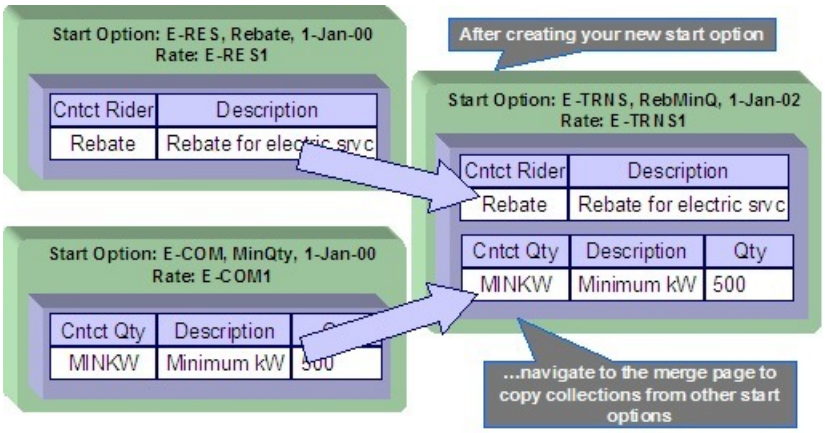
**Number of Days** The number of days the T&C should be in effect. This value is used by the system to set the end date on the service agreement's T&C. If the T&C has no expiration, set this field to 0. Default note: this field is set to 0 if left blank.

## Start Option Merge

Use this page to modify an existing start option by copying information from other start options. This page may be used to copy records from the contract rider, contract value, contract quantity, characteristic, interval profile, TOU map, contract option and TOU contract value collections from one or more existing start options to another.

**NOTE:**

The target start option must exist prior to using this page. If you are creating a new start option, you must first go to the *Start Option* page to add the new start option and then navigate to the merge page to copy collection information.




**NOTE:**
**Duplicate versus Merge**. The ***Start Option*** page has *Duplication* capability. You would duplicate a start option if you want to a) create a new start option AND b) populate it with all the information from an existing start option. You would use the start option merge page if you want to build a start option using pieces of one or more start options.

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## Start Option Merge - Main

Open **Admin** > **SA Type Start Option Merge.**

**Description of Page**

Select the **Original Start Option**, which is the target for merging the start option collection information.

Select the **Merge From Start Option**, which is your template start option to copy the collections from.

**NOTE:**
You may only copy information from one Merge From start option at a time. If you wish to copy information from more than one start option, select the first Merge From start option, copy the desired records, Save, then select the next Merge From start option.

The left portion of the page will display any existing records in the collections for the original start option. The right portion of the page will display the existing records in the collections for the Merge From start option.

You may use the **Copy All** button to copy all the records in all the collections from the Merge From start option to the Original start option. If you do not choose to copy all, you may copy records individually as described below.

The left portion of the **Contract Riders** collection initially displays existing contract riders linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Bill Factor** and **Number of Days** for each contract rider is displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

The left portion of the **Contract Values** collection initially displays existing contract values linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Bill Factor**, **Number of Days** and **Value** for each contract value is displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

The topics, which follow, describe how to perform common maintenance tasks:

**Contents**



## Removing A Row From A Grid

If you wish to remove a record linked to the Original start option, click the "-" button to the left of the record.

## Adding A New Row To A Start Option

You may move any of the records from the Merge From start option to the original start option by selecting the left arrow adjacent to the desired row. Once a record is moved it will disappear from the Merge From information and appear in the Original information with the word Merge in the Merge Type column.

## Removing An Uncommitted Row From A Start Option

If you have copied a row across by mistake, you may remove it by clicking on the right arrow adjacent to the appropriate record.

**FASTPATH:**
Refer to *Editable Grid* in the system wide standards documentation for more information about adding records to a collection by selecting from a list.

## Start Option Merge - Characteristics and Quantities

Open **Admin** > **SA Type Start Option Merge** and navigate to the **Characteristics and Quantities** page to copy rows in the characteristic and contract quantity collections.

**Description of Page**

The left portion of the **Characteristics** collection initially displays existing characteristics linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Characteristic Type** and **Characteristic Value** for each characteristic are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

The left portion of the **Contract Quantity** collection initially displays existing contract quantities linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Contract Quantity Type** and **Contract Quantity** for each contract quantity are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

**FASTPATH:**
Refer to *Start Option Merge - Main* for more information about how to perform common maintenance tasks for the grids displayed on this tab page.

## Start Option Merge - Contract Option

Open **Admin** > **SA Type Start Option Merge** and navigate to the **Contract Option** page to copy rows in the contract options collection.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

### Description of Page

The left portion of the **Contract Option** collection initially displays existing contract option information linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Contract Option Type**, **Contract Option ID** and **Description** of the contract option for each contract option row are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

**FASTPATH:**
Refer to *Start Option Merge - Main* for more information about how to perform common maintenance tasks for the grids displayed on this tab page.

## Start Option Merge - Interval Info

Open **Admin** > **SA Type Start Option Merge** and navigate to the **Interval Info** page to copy rows in the interval profile, and TOU map and TOU contract quantity collections.

**NOTE:**
**This tab may not appear.** This tab is suppressed if the interval billing Complex Billing module is *turned off*.

### Description of Page

The left portion of the **Interval Profiles** collection initially displays existing interval profile information linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Interval Profile Rel**ationship **Type**, **Interval Profile Type** and **Interval Profile ID** for each interval profile row are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

The left portion of the **TOU Maps** collection initially displays existing TOU map information linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **TOU Map Relationship Type**, **TOU Map Type** and **TOU Map ID** for each TOU map row are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

The left portion of the **TOU Contract Values** collection initially displays existing TOU contract values linked to the original start option. In the **Merge Type**, you will see the word Original , for any of these records. The **Bill Factor** and

**TOU Group** for each TOU contract value are displayed. In the right portion of the collection, the existing records in the merge from start option are displayed initially.

**FASTPATH:**
Refer to *Start Option Merge - Main* for more information about how to perform common maintenance tasks for the grids displayed on this tab page.

## Start Option Merge - Terms and Conditions

Open **Admin** > **SA Type Start Option Merge** and navigate to the **Terms and Conditions** page to copy terms and conditions (T&Cs).

**Description of Page**

The left side of the **Terms and Conditions** grid initially displays the T&Cs linked to the original start option. On the right side, the T&Cs linked to the merge from start option are displayed initially.

**FASTPATH:**
Refer to *Start Option Merge - Main* for a description of how to perform common maintenance tasks for the grids displayed on this tab page.

# Background Processes Addendum

This chapter is an addendum to the general *Defining Background Processes* chapter. This addendum describes the background processes that are provided with Oracle Utilities Customer Care and Billing.

**Contents**



## The System Background Processes

The topics in this section describe functionality that is common to system background processes.

**Contents**

*Conversion Processes*

*Conversion Processes Executed In The Staging Database*

*Purge Processes*

*Column Descriptions*

# Process What's Ready Processes

Some background processes create and update records that are "ready for processing". The definition of "ready" differs for every process. For example,

- The bill cycle process produces bills for all accounts belonging to open bill cycles.
- The account debt monitor process analyzes the debt associated with all accounts whose review date is on or before the business date.
- The process that activates pending stop and pending start SAs attempts to activate all service agreements that aren't already activated.

Processes of this type tend to use a business date in their determination of what's ready. For example, the bill cycle process creates bills for all bill cycles whose bill window is open (i.e., where the business date is between the bill cycle's start and end date). If the requester of the process does not supply a specific business date, the system assumes that the current system date should be used. If you need to use a date other than the current date, simply supply the desired date when you request the batch process.

The following table lists every background process that processes all data that is "ready".

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Error Generates To Do | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|---|
| ACTVTAPY | CIPPAAPB | This process marks each auto pay download staging record with the batch control associated with its auto-pay source's route type. It also stamps the respective batch control's current run number on each record.<br>Note: The APAYACH/ C1-APACH background processes use the information on this staging | Yes | *MAX-ERRORS* | Yes | 200/15 |

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|---|---|---|---|---|---|---|
| | | table to create the flat file that is used to interface information to the ACH. The BALAPY background process uses the information on this staging table to create automatic payment tender controls.<br>Refer to *Activating Automatic Payments* for more information. | | | | |
| ADM | CIPLADMB | The account debt monitor analyzes all accounts whose C&C review date is on or before the supplied business date. Refer to *The C&C Monitors* for more information.<br>The input parameter controls how the trigger date is set on collection events that are created by this process. Refer to *Calendar vs Work Days* for more information about your date arithmetic options. | Yes | ADD-WORK-DAYS (Y or N)<br>*MAX-ERRORS* | Yes | 100/15 |
| ADM2 | CIPLDM2B | The account debt monitor analyzes all accounts who have not been analyzed in the last X days (where X is the Days Between Review defined | Yes | ADD-WORK-DAYS (Y or N)<br>*MAX-ERRORS* | Yes | 100/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | on the account's customer class). Refer to *The C&C Monitors* for more information.<br>The input parameter controls how the trigger date is set on collection events that are created by this process. Refer to *Calendar vs Work Days* for more information about your date arithmetic options. | | | | |
| ANLYZ SAR | CIPCCSSB | The analyze SA relationship process looks at newly activated SA relationships and creates the sub service agreement(s) for them if we provide billing service for the service provider (both rate ready and bill ready). In addition, this process also:<br>- Activates pending start sub SAs when their master SA is active<br>- Stops pending stop sub SAs when their master SA is stopped<br>Refer to *Automatic Creation of Sub SAs* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| APAYCRET | CIPPACRB | This process creates automatic | Yes | *MAX-ERRORS* | Yes | 300/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | payments for bills whose automatic payment creation has been deferred until the extract date. This extract date is stamped on the bill and is used by this background process to select all bills whose automatic payment extract date is on or before the supplied business date. It calls the automatic payment creation algorithm plugged in on the installation record to create the automatic payments. Note that the algorithm supplied does not distribute and freeze the automatic payments that are created. This is handled by the complementary background process APAYDSFR .<br>Refer to *Installation Options - Billing* and *Automatic Payments* for more information. | | | | |
| APAYDSFR | CIPPADFB | This process distributes and freezes automatic payments whose distribution date (indicated on the download | Yes | *MAX-ERRORS* | Yes | 300/15 |

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|---|---|---|---|---|---|---|
| | | staging record) is on or before the supplied business date. Payments that have been distributed (e.g., manually) are frozen if the above criterion is satisfied.<br>This job complements the APAYCRET background process and the PPAPAY background process when the **Autopay Creation Option** on the installation record is set to Create on Extract Date .<br>Refer to *Installation Options - Billing* and *Automatic Payments* for more information. | | | | |
| ASSGNSBN | CIPBASBB | This process allocates completed bills a sequential bill number. You need only schedule this job if your organization assigns sequential bill numbers. Please refer to *Sequential Bill Numbers* for important information about this job and why it may not be necessary if you single-thread the BILLING | No | *MAX-ERRORS* | Yes | 1/ not applicable |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | background process. | | | | |
| BALAPY | CIPPBAPB | This process creates a new tender control (with an associated deposit control) for each batch control and run number encountered for extracted automatic payments that are not already linked to a tender control.<br>Afterwards, this process balances the open tender and deposit control records.<br>Note: Automatic payment staging records are activated by the ACTVTAPY process and extracted by either APAYACH or C1-APACH.<br>Refer to *Creating Automatic Payment Tender Controls* for more information. | No | *MAX-ERRORS* | Yes | 200/15 |
| BCASSIGN | CIPFBCAB | This process assigns the Pending balance control group to new FT's (i.e., those without a balance control group).<br>Refer to *The Big Picture of Balance Control* for more information. | Yes | *MAX-ERRORS* | No | 200/15 |

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|---|---|---|---|---|---|---|
| BCGNEW | CIPFBCGB | This process creates a Pending balance control group if one doesn't already exist.<br>Refer to *The Big Picture of Balance Control* for more information. | No | *MAX-ERRORS* | No | N/A (only 1 record is inserted) |
| BCGSNAP | CIPFBCSB | The balance control snapshot and verification process has two functions:<br>1. It summarizes the number and value of the financial transactions on the current Pending balance control group record.<br>2. It verifies the financial integrity of your system.<br>The value of the VERIFY-ONLY-SW parameter controls which of these functions is performed:<br>- If VERIFY-ONLY-SW = "N", the system summarizes the new financial transactions under the current Pending balance control and verifies that the balances summarized on every historical balance control group are consistent with the financial transactions | No | VERIFY-ONLY-SW<br>*MAX-ERRORS* | No | 200/15 |

associated with this balance control group (i.e., it checks the financial integrity of the system).

- If VERIFY-ONLY-SW = "G", the system only summarizes the new financial transactions under the current Pending balance control (i.e., the verification step is not performed).

- If VERIFY-ONLY-SW = "Y", the system verifies that the balances summarized on every historical balance control group are consistent with the financial transactions associated with this balance control group (i.e., it checks the financial integrity of the system).

Note: You may want to use the VERIFY-ONLY-SW parameter to improve system performance. For example, you can generate the balance control summary nightly (run the process with the switch set to "G") and validate the balance control summaries weekly (run the

| | | | | | | |
|---|---|---|---|---|---|---|
| | | process with the switch set to "Y").<br>Refer to *The Big Picture of Balance Control* for more information. | | | | |
| BCU1 | CIPCBC1B | The first phase of the billable charge upload staging process validates and defaults information on to billable charge upload staging records.<br>Refer to *Billable Charge Upload Background Processes* for more information. | No | *MAX-ERRORS* | No | N/A |
| BCU2 | CIPCBC2B | The second phase of the billable charge upload staging process creates billable charges for the new billable charge upload staging records.<br>Refer to *Billable Charge Upload Background Processes* for more information. | Yes | *MAX-ERRORS* | No | 200/15 |
| BILLING | CIPBBILB | The bill cycle process creates bills for accounts with an "open" bill cycle.<br>Refer to *Batch Billing* for more information. | Yes | *MAX-ERRORS* | Yes | 100/15 |
| BUDMON | CIPGMBGB | The budget monitor analyzes all customers with a budget plan and highlights those | Yes | *MAX-ERRORS* | Yes | 200/15 |

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| | | where the current budget amount is out-of-sync with the recommended budget amount.<br>Refer to *Budget Billing* for more information. | | | | |
| BUDTRUP | CIPGTUPB | The budget true up process periodically trues up customers on a budget plan.<br>Refer to *Budget Billing* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| C1-ADMOV | CIPLOVMB | The overdue monitor uses your overdue rules to collect overdue debt. Refer to *How Does The Overdue Monitor Work?* for more information. | Yes | *MAX-ERRORS* | Yes | 2000/15 |
| C1-CSTRS | CIPQTRCB | The case scheduled transition process transitions cases to a nominated **next status** or **transition condition** at a scheduled time. The process selects all open cases whose current status is linked to the process' batch control code and are allowed to transition from their current status to the chosen next status or condition (i.e. where a corresponding | Yes | NEXT-STATUS-CD (Next Status Code)<br>NEXT-TR-COND-FLG (Next Transition Condition)<br>*MAX-ERRORS* | Yes | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | transition rule exists for the case type/status combination) based on the input algorithm parameters. | | | | |
| C1-ODET | CIPLOETB | The overdue / cut event manager activates all overdue and cut events whose trigger date is on or before the supplied business date. Refer to *How and When Events Are Activated* for more information. This process also has the responsibility of recursively activating later events that are dependent on the completion of earlier events.<br><br>For overdue or cut events that are in the Wait state, this process runs the associated waiting algorithm for the event type to determine if the object the event is waiting for is complete (and then triggering the dependent events when it completes).<br><br>Populate an Overdue Process Template in the input parameter to limit the processing to overdue | Yes | OD-PROC-TMP-CD (Optional)<br><br>*MAX-ERRORS* | Yes | 2000/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | processes for this template. | | | | |
| C1-PEPL1 | CIPPEL1B | This is the first of three background processes that load the contents of the payment event upload staging records into the various payment tables.<br><br>It first creates new deposit control records. It also creates a new tender control record if the staging record is not currently linked to one. It then updates the payment event upload staging records with the corresponding Tender Control ID.<br><br>Next, it processes each incomplete record as follows: It updates the record's Tender Account ID with the account ID returned by the Determine Tender Account algorithm defined on the *distribution rule* . If the Pay Event Process ID field is not populated, it is set equal to the tender account ID. If no error was encountered, it transitions the record from to Pending . | Yes | *MAX-ERRORS* | Yes | 300/15 |

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| | | Refer to *Interfacing Payments Using Distribution Rules* for more information. | | | | |
| C1-PEPL2 | CIPPEL2B | This is the second of three background processes that load the contents of the payment event upload staging records into the various payment tables.<br>The responsibility of this process is to create payment events, payment tenders and payments and transition the corresponding staging records from Pending to Complete .<br>Refer to *Interfacing Payments Using Distribution Rules* for more information. | Yes | *MAX-ERRORS* | Yes | 300/15 |
| C1-PEPL3 | CIPPEL3B | This is the last of three background processes that load the contents of the payment event upload staging records into the various payment tables.<br>The responsibility of this process is to create the tender deposit and update the status of the related deposit and tender controls | Yes | *MAX-ERRORS* | No | 300/15 |

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|---|---|---|---|---|---|---|
| | | from open to balanced .<br>Refer to *Interfacing Payments Using Distribution Rules* for more information. | | | | |
| C1-PUBAL | CIPPUPFB | This batch process is responsible for balancing tender and deposit control tables in the payment upload process. These control tables can either be balanced during the payment upload batch process (**PUPL**), or by executing this batch process after the payment upload batch process completes.<br>Refer to Interfacing Payments From External Sources for more information | No | | No | 10/15 |
| C1-WFSUB | CIPWWETB | This process does two things:<br>• It sets the trigger date of workflow events for the input **workflow process template** that are dependent on the completion of earlier workflow events.<br>• It activates all workflow events for the input **workflow** | Yes | **WF-PROC-TMPL-CD (Workflow Process Template)**<br>*MAX-ERRORS* | No | 200/15 |

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|---|---|---|---|---|---|---|
| | | **process template** whose trigger date is on or before the supplied business date.<br>This background process is the same code used for *WFET*. It is used for the batch scheduling functionality.<br>Refer to *Workflow Event Dependencies* for more information. | | | | |
| CAREPROG | CIPCCRCB | This batch process is responsible for creating customer contacts (letters) for SA characteristics that are about to expire.<br>It finds SAs with the indicated Characteristic Type and Value that will expire within Threshold Days and creates the indicated type of customer contact.<br>Note. The Threshold Days are calendar days.<br>(In California this can be used to create letters for CARE, California Alternate Rates for Energy, SAs that are about to expire.) | No | **CHAR-TYPE-CD (Characteristic Type Code)**<br>**CHAR-VAL (Characteristic Type Value)**<br>**THRES-DAYS (Threshold Days)**<br>**CC-CLASS (Customer Contact Class)**<br>CC-TYPE (Customer Contact Type)<br>*MAX-ERRORS* | Yes | 200/15 |
| CASETRAN | CIPQCSTB | This batch process is responsible | Yes | **CASE-TYPE-CD (Restrict** | Yes | 200/15 |

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| | | for calling the algorithm that determines if a case should be transitioned to a new state. Refer to *Automatic Transition Rules* for the details.<br>If **Restrict To Case Type Code** is specified, only cases of this type will be analyzed to determine if they should be transitioned to a new state.<br>If **Restrict To Case Status Code** is specified, only cases in this status will be analyzed to determine if they should be transitioned to a new state. Note, if this parameter is specified, a **Restrict To Case Type Code** must also be defined. | | **To Case Type Code)**<br>CASE-STATUS-CD (Restrict To Case Status Code)<br>*MAX-ERRORS* | | |
| CET | CIPLCETB | The collection event trigger activates all collection events whose trigger date is on or before the supplied business date. Refer to *How Are Collection Events Completed* for more information.<br>The input parameter controls how the trigger date is set on severance events that | Yes | ADD-WORK-DAYS (Y or N)<br>*MAX-ERRORS* | Yes | 100/60 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | are created by collection events. Refer to *Calendar vs Work Days* for more information about your date arithmetic options. | | | | |
| CLOSEQTE | CIPCUQEB | The close quotes process closes all quotes whose expiration date is on / before the business date.<br>The PROP-SA-ACTION parameter controls whether the proposal SAs linked to the quote's quote details should be marked as declined or cancelled. If you indicate the proposal SAs should be declined, you must also use PROP-DCL-RSN-CD to define the declination reason code to be updated on the SAs. | Yes | PROP-SA-ACTION (DECL or CANC)<br>PROP-DCL-RSN-CD<br>*MAX-ERRORS* | Yes | 300/15 |
| CPM | CIPLCPMB | The collection process monitor removes service agreements from collection processes when they have sufficient credits. It will also cancel a collection process when all of its service agreements have been removed. | Yes | *MAX-ERRORS* | Yes | 100/60 |

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|---|---|---|---|---|---|---|
| | | Refer to *The C&C Monitors* for more information. | | | | |
| DEPINTRF | CIPDINTB | The deposit interest refund process calculates the deposit amount for service agreements whose SA type has a special role of "cash deposit".<br>Refer to *Deposit Interest* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| DEPRFND | CIPDRFNB | The deposit refund process refunds deposits to a customer when the customer satisfies the refund criteria.<br>Refer to *Deposit Refunds* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| DEPRVW | CIPDRVWB | The deposit review process highlights accounts that require an additional deposit.<br>Provide an input Deposit Class to optionally restrict the review to accounts that have SAs belonging to that class.<br>Refer to *Deposit Review* for more information. | Yes | DEP-CL-CD (Optional)<br>*MAX-ERRORS* | Yes | 200/15 |
| FACOMPL | CIPOFOCB | The field activity completion process completes field activities and field orders using | Yes | *MAX-ERRORS* | No | 100/10 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | the records in the various field activity staging tables.<br>Refer to *Uploading Field Order Completion Information* for more details. | | | | |
| FACT | CIPOFACB | The field activity remark activation process executes the algorithm associated with field activities that have pending field activity remarks that reference an activation algorithm.<br>Refer to *Field Activity Remark Exceptions* for more information. | Yes | *MAX-ERRORS* | No | 200/15 |
| FANRMRCO | CIPOSSRB | The complete field activity using a recent read process looks for pending start / stop field activities (using the input **FA-TYPE-CD**) for which a meter read was recently taken (within **NO-OF-DAYS**). It prorates the read (Usage only) into an end read and a start read for the start and stop SAs. The new reads are created with meter read type system prorated , and are linked to the SA/SP. A meter read remark is also created for the reading | Yes | TD-TYPE-CD (To Do Type Code)<br>ROLE-ID (To Do Role)<br>READER-REM-CD (MR Remark Code)<br>FA-TYPE-CD (Field Activity Type)<br>NO-OF-DAYS (Number of Days)<br>*MAX-ERRORS* | Yes | 200/15 |

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|---|---|---|---|---|---|---|
| | | (using the input **READER-REM-CD**). If this process finds a peak demand type reading or a consumption type reading, it posts a To Do entry using the **TD-TYPE-CD** and **ROLE-ID** parameters. Refer to *How To Start Service Using A Scheduled Meter Read* for more information.<br><br>The base package is set up with a To Do Type D/C REG , which should be used for the TD-TYPE-CD parameter, unless you've set up your own.<br><br>This process will only be useful if you've created field activities of a special type. A base package field activity creation algorithm support this; refer to the algorithm *SASP FW CRE* for more information. | | | | |
| FDS | CIPOSTDB | The create field order download staging process creates a download staging record for every field order that is ready for download.<br><br>This process populates the field order | No | *MAX-ERRORS* | Yes | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | download staging table with the unique ID of all field orders to be routed to field work personnel. This process marks each staging record with the batch control associated with the field order's dispatch group. It also stamps the respective batch control's current run number on each record.<br><br>Note: The *FODL* background process uses the information on this staging table to create the flat file that is used to interface information to your field order print software.<br><br>Refer to *Downloading Field Orders* for more information. | | | | |
| FOD | CIPOADPB | This batch process automatically dispatches eligible field activities X days in advance of their scheduled date (where X is defined by the parameter **DISPATCH-DAYS**). By dispatch, we mean that this process creates field orders and links the field | No | DISPATCH-DAYS (This is an optional parameter. If it is not entered the system will select all field activities with a scheduled date up to and including the business date. If it is entered, the number of DISPATCH-DAYS will be added to the business date and this process will select | Yes | 200/15 |

| | | |
|---|---|---|
| | activities to the field order.<br><br>Eligible field activities are:<br><br>- in the pending state<br><br>- have a field activity type that is dispatchable<br><br>- have a scheduled date / time that is within the specified DISPATCH-DAYS<br><br>- if the **PRIORITY** parameter has been specified, the field activity's field activity type must have a priority that matches the value of the parameter<br><br>The BUS-OR-CAL-DAYS parameter is used in conjunction with the DISPATCH-DAYS parameter.<br><br>Valid values are:<br><br>B - Business days<br><br>C - Calendar days<br><br>The dispatched field activities are grouped by premise, dispatch group (or alternate dispatch group) and date. Refer to *Dispatch Field Activities Automatically* for more information on dispatching field activities. | records up to and including this new date.)<br><br>BUS-OR-CAL-DAYS= business or calendar days.<br><br>PRIORITY (This is an optional parameter. If specified, it must equal one of the field activity type priority values - in the base package, these are 10, 20, 30, 40, 50, 60, 70, 80, 90)<br><br>*MAX-ERRORS* |

| | | | | | | |
|---|---|---|---|---|---|---|
| GLASSIGN | CIPFGLAB | The GL account number assignment process assigns GL account numbers to the GL details associated with financial transactions. Refer to *The GL Interface* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| GLS | CIPFGLEB | The create general ledger download staging process creates a download staging record for every financial transaction that is ready for download.<br>This process populates the FT / Batch Process table with the unique ID of all financial transactions to be interfaced to the general ledger. This process marks each staging record with the GL interface's batch process ID (defined on the installation record). It also stamps the respective batch control's current run number on each record.<br>Note: The GLDL background process uses the information on this staging table to create the consolidated | Yes | *MAX-ERRORS* | No | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | journal entries that are interfaced to your general ledger.<br>Refer to *The GL Interface* for more information. | | | | |
| IB-SPDB | CIPISPDB | This process derives interval data for accounts in the system. Only accounts that have at least one interval SA with derivable profiles linked to it are processed. A 'derivable' profile is an SA Owned profile where this SA is the owner AND the profile type indicates an "Interval Data Creation" derivation algorithm. Interval data for SAs linked to the Account are derived in Process Priority order as defined on their SA Type. For each SA, the Interval Data Creation algorithms are executed in creation priority order.<br>The standard batch parameter business date will be used by the system to determine until what date to generate data for.<br>Use the Force Derive Switch parameter to | Yes | FORCE-DERIVE-SW (Indicates whether this is a forced derivation - optional.)<br>FRCE-DRV-START-DT (Start date YYYY-MM-DD for forcing derivation - optional)<br>*MAX-ERRORS* | No | 1/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | indicate that you are *forcing derivation*. Use the Force Derive Start Date to indicate the starting point for the forced derivation.<br>Refer to *Creation of Profile Data through Data Derivation* for more information. | | | | |
| IB-STDB | CIPISTDB | This process derives TOU map data for accounts in the system. Only accounts that have at least one interval SA with derivable TOU maps linked to it are processed. A 'derivable' map is an SA Owned map where this SA is the owner AND the map type indicates a "TOU Data Creation" algorithm. TOU map data for SAs linked to the Account are derived in Process Priority order as defined on their SA Type. For each SA, the TOU Map Creation algorithms are executed in creation priority order.<br>The standard batch parameter business date will be used by the system to | Yes | FORCE-DERIVE-SW (Indicates whether this is a forced derivation - optional.)<br>FRCE-DRV-START-DT (Start date YYYY-MM-DD for forcing derivation - optional)<br>*MAX-ERRORS* | No | 1/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | determine until what date to generate data for.<br>Use the Force Derive Switch parameter to indicate that you are *forcing derivation*. Use the Force Derive Start Date to indicate the starting point for the forced derivation.<br>Refer to *Automatic Creation of TOU Map Data* for more information. | | | | |
| IPDSDVB | CIPIPDVB | This process is used to validate interval profile data. It processes interval profiles that were created up to the cutoff date/time and executes their validation algorithms, if any, defined on their profile type. The algorithms are executed one after the other in their predefined sequence order.<br>Refer to *Validation of Profile Data* for more information. | Yes | *MAX-ERRORS* | No | 50/15 |
| IPDSIDB | CIPIPIDB | The Determine Profile For Profile Datasets process attempts to link interval profile data sets to an appropriate profile. It tries to find an interval profile with the | Yes | START-EXT-ID (Start External ID - optional)<br>END-EXT-ID (End External ID- optional)<br>*MAX-ERRORS* | No | 50/15 |

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|---|---|---|---|---|---|---|
| | | same external ID as the one defined on the dataset. Use the Start External ID and End External ID parameters if you only want to process records in that range of Ids.<br>Only profile data sets in pending status that are not already associated with a profile are processed.<br>Refer to *Upload Interval Data* for more information. | | | | |
| IREGDVB | CIPIRDVB | The Interval Register Data Validation process is used to validate interval register data. It processes interval registers that were created up to the cutoff date/time and executes their validation algorithms, if any, defined on their interval register type. The algorithms are executed one after the other in their predefined sequence order.<br>Refer to *Validation of Register Data* for more information. | Yes | *MAX-ERRORS* | No | 50/15 |
| IREGIDB | CIPIRIDB | The Determine Register For Register Data Sets process attempts to link | Yes | START-EXT-ID (Start External ID - optional) | No | 50/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | interval register data sets to an appropriate interval register. It tries to find an interval register with the same external ID as the one defined on the dataset. Use the Start External ID and End External ID parameters if you only want to process records in that range of Ids.<br>Only interval register data sets in pending status that are not already associated with a register are processed.<br>Refer to *Upload Interval Register Data* for more information | | END-EXT-ID (End External ID-optional)<br>*MAX-ERRORS* | | |
| LATEPYMT | CIPBLPCB | The late payment generator creates late payment charges when an account doesn't pay a bill by the end of the grace period.<br>Refer to *How Late Payment Charges Get Calculated* for more information. | Yes | *MAX-ERRORS* | Yes | 100/15 |
| MDS | CIPMMDSB | The create meter read download staging process creates a download staging record for every meter on every route that is ready | No | *MAX-ERRORS* | No | 200/15 |

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|---|---|---|---|---|---|---|
| | | for download. This process uses the route information on the service cycle schedule. The MSR process must run before this process runs.<br>This process marks each staging record with the batch control associated with the meter's route. It also stamps the respective batch control's current run number on each record.<br>Note: the MDL background process uses the information on the staging table to create the flat file that is used to interface information to your meter read software.<br>Refer to *Downloading Meter Reads* for more information. | | | | |
| MRRA | CIPMRRUB | The meter read remark activation process executes the algorithm associated with recently added meter reads that have meter read remark codes that reference an activation algorithm.<br>Refer to *Meter Read Remark Exceptions* for more information. | No | *MAX-ERRORS* | No | 200/15 |

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|---|---|---|---|---|---|---|
| MSR | CIPMMSRB | The prepare meter read route for download process looks for all routes that are scheduled to be downloaded and populates them on the service cycle schedule. The MDS process must run after this process in order to populate the meter read download staging table.<br>Refer to *Downloading Meter Reads* for more information. | No | *MAX-ERRORS* | No | 200/15 |
| MUP1 | CIPMUP1B | The first phase of the meter read upload staging process defaults meter configuration ID's for the badge number on newly added meter read upload staging records. If unique geographic type/ value information is available, the meter configuration ID is populated even if the badge number is not unique.<br>Refer to *Uploading Meter Reads* for more information. | Yes | *MAX-ERRORS* | No | 200/15 |
| MUP2 | CIPMUP2B | The second phase of the meter read upload staging process creates meter and | Yes | *MAX-ERRORS* | No | 200/15 |

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| | | register reads for the new meter read upload staging records.<br>Refer to *Uploading Meter Reads* for more information. | | | | |
| NBBAPAY | CIPGACRB | The NBB scheduled payment autopay create process creates autopay records for any scheduled non-billed budget payments where the account is set up for autopay and the non-billed budget is not excluded from autopay.<br>For more information about non-billed budget auto payments, refer to *Automatic Payment and Non-billed Budgets*. | Yes | *MAX-ERRORS* | Yes | 300/ not applicable |
| NBBPS | CIPGNPSB | The non-billed budget scheduled payment process performs processing for scheduled payment records with a payment date on or before the process business date.<br>If the scheduled payment is for a monitored non-billed budget the process runs the *NBB process scheduled payment algorithm*. | Yes | *MAX-ERRORS* | Yes | 300/15 |

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|---|---|---|---|---|---|---|
| | | If the scheduled payment processing is successful or was not required (i.e. for unmonitored non-billed budgets), the process deletes the current scheduled payment.<br><br>For more information, refer to *Scheduled and Actual Payments on the Non-billed Budget*. | | | | |
| PAYSPR | CIPPSPRB | The pay service provider process creates the adjustment used to increase the amount owed to service providers (when you provide billing services for the service provider). This process uses all FT / Process associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all FT / Process records marked with the current run number.<br><br>Refer to *The Technical Implementation Of Paying Service Providers* for more information.<br><br>Note: records are written to | Yes | *MAX-ERRORS* | Yes | 200/15 |

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| | | the FT / Process table when an FT is frozen that is associated with a sub service agreement. | | | | |
| PPAPAY | CIPCPPAB | This process creates automatic payments on the scheduled payment date by calling the automatic payment creation algorithm plugged in on the installation record. Note, automatic payments are only created if:<br>1) the account has indicated that they pay automatically<br>2) the payment method on the pay plan indicates automatic payment should be performed.<br>Note that the automatic payment creation algorithm supplied does not distribute and freeze the automatic payments that are created if the **Autopay Creation Option** on the installation record is set to Create on Extract Date . The background process APAYDSFR handles this. | Yes | *MAX-ERRORS* | Yes | 200/15 |

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| | | Refer to *The Big Picture Of Pay Plans* and *Automatic Payments* for more information. | | | | |
| PPM | CIPCMPPB | This batch process is responsible for monitoring all active payment plans.<br>It looks for payments made by the pay plan's payor and for SAs in the same debt class as the pay plan's debt class. It uses these payments to logically offset the pay plan's scheduled payments. This batch process determines if a pay plan has been kept, broken or remains active.<br>An ADM trigger is stored for those accounts whose pay plans have been broken.<br>Refer to *The Pay Plan Monitor* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| PSASPM | CIPCSSMB | The create field activities for pending start and pending stops process creates field activities for pending start and stop service agreements shortly before the start/stop date if field activities | Yes | *MAX-ERRORS* | Yes | 100/60 |

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| | | have not already been created.<br>Refer to *When Field Activities Are Created To Start Service* and *When Stop Field Activities Are Created* for more information. | | | | |
| PUPL | CIPPUPLB | The upload payments process creates payment events, payments, and tenders using the records in the various payment staging tables. Depending on the EXCLUDE-BAL-CTRL-TBL-UPDATE parameter, it may also balance the various control tables, i.e. tender and deposit control, as well as tender and deposit control staging. If this parameter is set to N (or blank), payment upload performs control table balancing, otherwise a separate batch process (C1-PUBAL) must be scheduled after payment upload to balance control tables. Scheduling payment upload and balancing separately is useful for high volume payment uploads which may result in | Yes | EXCLUDE-BAL-CTRL-TBL-UPDATE. Enter Y to skip balancing of the various control tables, i.e. tender and deposit control, as well as tender and deposit control staging. Enter N (or blank) if control table balancing should be performed.<br>*MAX-ERRORS* | No | 100/15 |

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| | | deadlocks on these control tables.<br>Refer to *Interfacing Payments From External Sources* for more information. | | | | |
| PY-RPE | CIPPRPEB | The resolve payments in error process attempts to resolve the following payment errors automatically:<br>• A valid account was found but no active SA exists.<br>Refer to *Resolving Exceptions Automatically* for more information. | Yes | *MAX-ERRORS* | No | 200/15 |
| REACH | CIPBCHRB | This batch process accumulates the total amount paid towards charity service agreements in the past year (for each account). If the resultant amount is greater than zero, a temporary bill message will be added to the account.<br>SA-TYPE-CD defines the SA type of your charitable contribution service agreements. Note, this is the SA Type code without the Division. All service | No | SA-TYPE-CD. This is the SA type of the charitable contribution service agreements.<br>START-DT. It should be entered in the format YYYY-MM-DD.<br>END-DT. This should be entered in the format YYYY-MM-DD.<br>BILL-MSG-CD.<br>ACCT-ID<br>*MAX-ERRORS*<br>ADJ-TYPE-CD1<br>ADJ-TYPE-CD2 | No | 200/15 |

agreements with this SA Type, regardless of Division, will be processed.

START-DT is the start date of the financial year in which payments should be accumulated.

END-DT is the end date of the financial year in which payments should be accumulated.

BILL-MSG-CD is the code of the bill message that will be added to the customer's bill. Note, your bill message code should have two parameters: the tax year and the total amount of contributions. For example, Thank you for your charitable contributions in %1 for %2, please keep this bill for tax purposes . The tax year is derived from the year in the START-DT parameter.

ACCT-ID should be zero if this processing should happen for all accounts in the system. If this parameter is non-zero, this process will be limited to the supplied ACCT-ID

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| | | Use ADJ-TYPE-CD1 and CD2 to indicate adjustments whose FTs should be ignored when calculating the contribution amount. This allows you to make adjustments to the charitable contribution SA that are not included in the calculation.<br>(Note: in California, this program is referred to as REACH - Relief for Energy Assistance through Community Help.) | | | | |
| REDSAAMT | CIPFFTRB | This process looks for financial transactions linked to each SA that are older than X days (where X is defined on the installation record) that sum to zero. If it finds such FTs, it marks them as "redundant". Redundant FTs do not have to be accessed by the various SQL statements that accumulate an account or SA's balance. | Yes | *MAX-ERRORS* | Yes | 100/10 |
| SAACT | CIPCSATB | The service agreement activation | Yes | *MAX-ERRORS* | Yes | 200/15 |

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|---|---|---|---|---|---|---|
| | | process updates pending start and pending stop service agreements.<br>Refer to *The System Activates Most Service Agreements Behind The Scenes* for more information. | | | | |
| SAEXPIRE | CIPCOSVB | The stop expired service agreement process initiates the stop for all active service agreements where the expiration date is on or before the process date.<br>For more information, refer to *Expiring Service Agreements*. | Yes | *MAX-ERRORS* | Yes | 300/ not applicable |
| SARENEW | CIPCSARB | The service agreement renewal process renews all active SAs that are due for renewal (i.e. where the renewal date is populated and is less than or equal to the process date).<br>For more information, refer to *Renewing Service Agreements*. | Yes | *MAX-ERRORS* | Yes | 300/15 |
| SASP | CIPCSAPB | The find read for SA/SP process updates SA/SP records of active service agreements with the appropriate | Yes | *MAX-ERRORS* | Yes | 200/15 |

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| | | start or stop read. This read is derived from the completed field activity linked to the SA/SP. Only billable reads linked to the field activity are used for the start or stop read.<br>Refer to *SAACT* for the process that handles SAs that are pending start or pending stop. | | | | |
| SEC | CIPLSECB | The severance event completion process completes field activity oriented severance events when their field activity is completed.<br>Refer to *The Big Picture Of Severance Events* for more information. | No | *MAX-ERRORS* | No | 100/15 |
| SED | CIPLSEDB | The severance event set dependency date sets the trigger date of later severance events that are dependent on the completion of earlier severance events. Refer to *The Big Picture Of Severance Events* for more information.<br>The input parameter controls how the trigger date is set. Refer to *Calendar vs* | Yes | ADD-WORK-DAYS<br>*MAX-ERRORS* | Yes | 100/60 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | *Work Days* for more information about your date arithmetic options. | | | | |
| SET | CIPLSETB | The severance event trigger activates all severance events whose trigger date is on or before the supplied business date.<br>Refer to *The Big Picture Of Severance Events* for more information. | Yes | *MAX-ERRORS* | Yes | 100/60 |
| STMPRD | CIPBSTCB | This process creates statements for statement construct records with a pending statement cycle whose processing date has been reached.<br>Refer to *Create Statements* for more information. | No | *MAX-ERRORS* | Yes | 200/15 |
| TREND | CIPMTRNB | The meter read trend process updates meter read trends using consumption from newly added reads. Only register readings that have not failed high/low and whose read type is Customer Read , Regular or Verified are considered by this process.<br>In addition, a To Do entry is created for each | Yes | TD-TYPE-CD (To Do Type)<br>ROLE-ID (To Do Role)<br>THRESHOLD (Threshold Trickle Percent)<br>*MAX-ERRORS* | No | 200/15 |

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| | | meter read where the SP is not linked to a SA and where daily consumption exceeds a trickle consumption threshold, computed as a percentage of the billable average daily consumption derived from the trend.<br><br>The base package is set up with a To Do Type NCFSSPS , which should be the first parameter to this process, unless you've set up your own.<br><br>Refer to *Trends Are Updated Behind The Scenes* for more information. | | | |
| UARENEW | CIPKURNB | This is the umbrella agreement renewal process. It selects all the umbrella agreements in Complete status with a renewal date on or before the given business date.<br><br>For each umbrella agreement found, it calls the renewal algorithm on the umbrella agreement's UA type.<br><br>Refer to *Umbrella* | Yes | *MAX-ERRORS* | Yes |

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|---|---|---|---|---|---|---|
| | | *Agreement Renewal* for more information | | | | |
| WAITCOM | CIPWTMCB | This workflow waiting process Completes a workflow event that has been in the Waiting state for longer than X days (X is defined in a parameter supplied to the background process).<br>Refer to *Waiting Events And Their Waiting Processes* for more information. | Yes | WAIT-DAYS<br>*MAX-ERRORS* | Yes | 200/15 |
| WAITFA | CIPWTFAB | This workflow waiting process monitors the state of a field activity created as a result of a workflow event. When the field activity is Complete , the associated workflow event is moved from the Waiting to the Complete state. This process will Fail the workflow event if the event has been in the Waiting state for longer the X days (X is defined in a parameter supplied to the background process).<br>Refer to *Waiting Events And Their Waiting Processes* for more information. | Yes | TIMEOUT-DAYS<br>*MAX-ERRORS* | Yes | 200/15 |

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| WAITMAN | CIPWTMNB | This workflow waiting process Fails a workflow event that has been in the Waiting state for longer than X days (X is defined in a parameter supplied to the background process).<br>Refer to *Waiting Events And Their Waiting Processes* for more information. | Yes | TIMEOUT-DAYS<br>*MAX-ERRORS* | Yes | 200/15 |
| WAITNT | CIPWTNTB | This workflow waiting process monitors the Notification Upload Staging Response (stored as a context entry) of a notification download staging record that was created as a result of a workflow event. If a Response of Accept appears, the associated event is marked as Complete . If a Response of Reject appears, the associated event is marked as Failed . This process will Fail the workflow event if the event has been in the Waiting state for longer the X days (X is defined in a parameter supplied to the background process). | Yes | TIMEOUT-DAYS<br>*MAX-ERRORS* | Yes | 200/15 |

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|---|---|---|---|---|---|---|
| | | Refer to *Waiting Events And Their Waiting Processes* for more information. | | | | |
| WET | CIPLWETB | The write-off event trigger activates all write-off events whose trigger date is on or before the supplied business date.<br>Refer to *The Big Picture Of Write-Off Events* for more information. | Yes | *MAX-ERRORS* | Yes | 200/15 |
| WFET | CIPWWETB | This process does two things:<br>• It sets the trigger date of workflow events that are dependent on the completion of earlier workflow events.<br>• It activates all workflow events whose trigger date is on or before the supplied business date. If the input Workflow Process Template is populated, only events for workflow processes with that template are processed.<br>Refer to *Workflow Event Dependencies* for more information. | Yes | WF-PROC-TMPL-CD (Workflow Process Template - optional)<br>*MAX-ERRORS* | No | 200/15 |
| WFPRINIT | CIPWNUSB | The workflow process initiation process creates | Yes | *MAX-ERRORS* | Yes | 200/15 |

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| | | a workflow process to handle a notification upload staging record.<br>Refer to *How Are Workflow Processes Created* for more information. | | | | |
| WPM | CIPLWMOB | The write-off monitor analyzes all accounts with finalized, unpaid service agreements. Refer to *The Write Off Monitor* for more information.<br>The input parameter controls how the trigger date is set on write-off events that are created by this process. Refer to *Calendar vs Work Days* for more information about your date arithmetic options. | Yes | ADD-WORK-DAYS<br>*MAX-ERRORS* | Yes | 100/15 |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Monitor Processes

A periodic monitor batch process is provided for any maintenance object whose business object defines a *lifecycle*. In addition deferred monitor batch process is provided if a business object supplied in the base product required a deferred process for one of its states.

**FASTPATH:**
Refer to *Monitoring Batch Processes* for more information.

## Extract Processes

Extract processes extract information that is interfaced out of the system. Processes of this type typically extract records marked with a given run number. If the requester of the process does not supply a specific run number, the system assumes that the latest run number should be extracted. If you need to re-extract a historical batch, you can simply supply the respective run number when you request the batch process.

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|
| APAYACH | CIPPXAPB | The automatic payment ACH (automated clearing house) download extraction process creates the flat file that is interfaced to the ACH. This process downloads all auto pay download staging records associated with its batch control ID that are marked with a supplied run number. If a run number is not supplied, the process extracts all automatic payment download records marked with the current run number.<br>Note: the ACTVTAPY process updates auto pay download records on their extract date so that they will be downloaded by this process.<br>Refer to *Downloading Automatic Payments* for more information. | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | NA |
| C1-APACH | CIPPXA2B | The automatic payment ACH (automated clearing house) download extraction process creates the flat file that is interfaced to the ACH. This process downloads | No | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed | NA |

all auto pay download staging records associated with its batch control ID that are marked with a supplied run number. If a run number is not supplied, the process extracts all automatic payment download records marked with the current run number.

The **NBR-DAYS** parameter is added to the scheduled extract date to determine the draft date when the payment amount should be withdrawn from the customer's account. If specified, the value must be a non-negative numeric value.

The **BUS-OR-CAL-DAYS** parameter is required when the NBR-DAYS parameter is specified, otherwise it's not allowed. This parameter is used when adding the NBR-DAYS parameter to the scheduled extract date. Valid values are:

B - Business days

C - Calendar days

Note: the ACTVTAPY process updates auto pay download records on their extract date so that they will be downloaded by this process.

NBR-DAYS= number of days until withdrawal.

BUS-OR-CAL-DAYS= business or calendar days.

*MAX-ERRORS*

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| | | Refer to *Downloading Automatic Payments* for more information. | | | |
| APDL | CIPADAPB | The A/P download process creates the flat file that is interfaced to your accounts payable software (to cut checks).<br><br>The process that is delivered has skeletal logic and must be customized by your organization to satisfy the needs of your accounts payable software.<br><br>In order to adapt the base package program to your specific needs, please following the standard steps:<br><br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.<br><br>• Introduce logic to format the downloaded records into your specific format.<br><br>• If you need assistance, please contact the implementation support group.<br><br>This process uses all adjustment extract records associated | Yes | *FILE-PATH* = directory path into which output should be placed<br><br>FILE-NAME= name of file into which output should be placed<br><br>*MAX-ERRORS* | NA |

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| | | with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all A/P request extract records marked with the current run number.<br><br>Refer to *The A/P Interface* for more information. | | | |
| DSGPFODL | CIPODGFB | The dispatch group FO print production process invokes the field order extract algorithm defined on the dispatch group associate to the batch control. The extract algorithm determines the field order print software to use and report or field order template to use to produce the field orders from the field order download staging table associated with the batch control and run number for a range of field orders specified.<br><br>This process is similar to the existing *FO Print Production Process (FODL)*. The differences are:<br><br>• FODL calls the extract algorithm defined in the Dispatch Group for each field order associated to the Dispatch Group, while this process only calls the distinct extract algorithm associated with the batch control. | Yes | *MAX-ERRORS* | NA |

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| | | • FODL produces a flat file that is interfaced to a FO print software, while this process calls the FO print software for every distinct extract algorithm found and produce the field orders (i.e. the report containing the field orders).<br>Refer to *Downloading Field Orders* for more information. | | | |
| DWLDBILC | CIPBXBCB | The billable charge download extraction process creates the flat file that contains billable charges to be interfaced to your service providers. This process extracts all FT / Process records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process extracts all FT / Process records marked with the current run number.<br>The program that is delivered contains skeletal logic that should be used as the basis for your specific processing. The skeletal logic does NOT extract information to a flat file; you must introduce the logic to support your specific flat file format. In order to adapt the base package program to your specific needs, | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | please following the standard steps:<br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.<br>• Introduce logic to format the downloaded records into your specific format.<br>Note: records are written to the FT / Process table when a bill is completed that contains master service agreements with service providers who provide billing service for your organization.<br>Refer to *Routing Billable Charges To Service Providers* for more information. | | | |
| DWLDCONS | CIPMXCSB | The consumption download extraction process creates the flat file that contains consumption to be interfaced to your service providers. This process extracts all FT / Process records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process extracts all FT / | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | NA |

Process records marked with the current run number.

The program that is delivered contains skeletal logic that should be used as the basis for your specific processing. The skeletal logic does NOT extract information to a flat file; you must introduce the logic to support your specific flat file format.

In order to adapt the base package program to your specific needs, please following the standard steps:

• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.

• Introduce logic to format the downloaded records into your specific format.

Note: records are written to the FT / Process table when a master service agreement's bill segment is frozen if the master service agreement is linked to service providers who need consumption.

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| | | Refer to *Routing Consumption To Service Providers* for more information. | | | |
| DWLDCOLL | CIPLXCRB | The collection agency referral download extraction process creates the flat file that contains referrals to be interfaced to your collection agencies. This process extracts all collection agency referral history records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process extracts all referral history records marked with the current run number.<br><br>The program that is delivered contains skeletal logic that should be used as the basis for your specific processing. The skeletal logic does NOT extract information to a flat file; you must introduce the logic to support your specific flat file format.<br><br>In order to adapt the base package program to your specific needs, please following the standard steps:<br><br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer | No | *FILE-PATH* = directory path into which output should be placed<br><br>FILE-NAME= name of file into which output should be placed<br><br>*MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | modification"). This is important as it prevents the upgrade process from overwriting your new logic.<br>• Introduce logic to format the downloaded records into your specific format.<br>Note: records are written to the referral history table when a collection agency oriented write-off events are activated. Referral history records may also be added manually by an operator.<br>Refer to *How Do Collection Agency Referrals Work?* for more information. | | | |
| FODL | CIPOFOXB | The field order download process creates the flat file that is interfaced to your field order print / dispatching software.<br>This process uses all field order extract records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all field order extract records marked with the current run number.<br>The information that is extracted and placed on the flat file for each field order is controlled by each order's dispatch group's extract algorithm. | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | NA |

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|---|---|---|---|---|---|
| | | Refer to *Dispatch Groups Control The Information Merged Onto Field Orders* for information about how a field order's flat file records are constructed.<br>Refer to *Downloading Field Orders* for more information. | | | |
| GLDL | CIPFXGLB | The general ledger download process creates the flat file that is interfaced to your general ledger software.<br>This process uses all FT / Batch Process records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all FT / Process records marked with the current run number.<br>In order to adapt the base package program to your specific needs, please following the standard steps:<br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic. | No | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | • Introduce logic to format the downloaded records into your specific format.<br>Refer to *The GL Interface* for more information. | | | |
| LTRPRT | CIPCLTPB | The customer contact letter download process creates the flat file(s) that are interfaced to your letter print software to print letters associated with letter-oriented customer contacts.<br>This process extracts all customer contact records associated with its batch control ID that are marked with a supplied run number. If a run number is not supplied, the process uses all customer contact records associated with its batch control ID that are marked with the current run number.<br>Each downloaded letter's output is written to a filename that is a concatenation of the letter's Letter Template Code and the process's Thread Number. This means that this process can write to multiple files as multiple Letter Template Codes may be downloaded by this process.<br>The information that is extracted and placed on the flat file for each letter is controlled by each | Yes | *FILE-PATH* = directory path into which output should be placed<br>FIELD-DELIM-SW=Y or N<br>CNTL-REC-SW=Y or N<br>*MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | customer contact's letter template's extract algorithm. Refer to *Letter Templates Control The Information Merged Onto Letters* for information about how a letter's flat file records are constructed.<br>The **FILE-PATH** parameter controls where the output files are placed.<br>The format of the information on the flat file can be either tilde delimited or in a fixed position (based on the **FIELD-DELIM-SW** parameter). Tilde delimited output is used if you merge the information into a Word template. Fixed position output is used if you merge the information into a document composition application template.<br>You can use the **CNTL-REC-SW** parameter to cause the extract to produce a control record that contains batch code, run number, number of letters to print, etc.<br>Refer to *Printing Letters* for more information. | | | |
| MDL | CIPMMDLB | The meter read download extraction process creates the flat file that is interfaced to your meter reading software. This process uses all | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which | NA |

meter read download staging records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all meter read extract records marked with the current run number.

The program that is delivered contains skeletal logic that should be used as the basis for your specific processing. The skeletal logic does NOT extract information to a flat file; you must introduce the logic to support your specific flat file format. In order to adapt the base package program to your specific needs, please following the standard steps:

• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.

• Introduce logic to format the downloaded records into your specific format.

Refer to *Downloading Meter*

output should be placed

*MAX-ERRORS*

| | | | | | |
|---|---|---|---|---|---|
| | | *Reads* for more information. | | | |
| NDSXTR | CIPWXNDB | The notification download extraction process creates the flat file that is interfaced to your notification routing. This process uses all notification download staging records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process uses all records marked with the current run number.<br><br>The program that is delivered should be used as a sample as your record formats will differ. In order to adapt the base package program to your specific needs, please following the standard steps:<br><br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.<br><br>• Introduce logic to format the downloaded records into your specific format.<br><br>Refer to *Downloading Notifications* for more information. | Yes | *FILE-PATH* = directory path into which output should be placed<br><br>FILE-NAME= name of file into which output should be placed<br><br>*MAX-ERRORS* | NA |

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|---|---|---|---|---|---|
| POSTROUT | CIPBXBLB | The bill print process creates the flat file that is interfaced to your bill print software. This process uses all bill routing extract records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process extracts all bill routing extract records marked with the current run number.<br><br>The information that is extracted and placed on the flat file for each bill is controlled by each bill route type's extract algorithm. Refer to *Bill Route Controls The Information Merged Onto Bills* for information about how a bill's flat file records are constructed.<br><br>The **FILE-PATH** parameter controls where the output files are placed.<br><br>Refer to *Printing Bills* for more information. | Yes | *FILE-PATH* = directory path into which output should be placed<br><br>FILE-NAME= name of file into which output should be placed<br><br>*MAX-ERRORS* | NA |
| QUOTROUT | CIPCQTXB | The quote-print process creates the flat file that is interfaced to your quote-print software. This process uses all quote-routing extract records associated with its batch control that are marked with a supplied run number. | Yes | *FILE-PATH* = directory path into which output should be placed<br><br>FILE-NAME= name of file into which output should be placed<br><br>*MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | If a run number is not supplied, the process extracts all quote routing extract records marked with the current run number.<br><br>The information that is extracted and placed on the flat file for each letter is controlled by each quote route type's extract algorithm. Refer to *Quote Route Type Controls The Information Merged Onto Quotes* for information about how a quote's flat file records are constructed.<br><br>The **FILE-PATH** parameter controls where the output files are placed.<br><br>Refer to *Printing Quotes* for more information. | | | |
| RTTYPOST | CIPBRTBB | The bill route type bill print production process invokes the bill extract algorithm defined in the bill route type associated to the batch control. The extract algorithm will determine the bill print software to use and the report or bill template to use to produce all the bill routing records associated with the batch control and run number for a range of bills specified.<br><br>This process is similar to the Bill Print Production Process | Yes | *MAX-ERRORS* | NA |

| | | | | | |
|---|---|---|---|---|---|
| | | ( *POSTROUT*). The differences are:<br>• POSTROUT calls the extract algorithm defined in the Bill Route Type for each bill associated to the Bill Route Type; while RTTYPOST only calls the distinct extract algorithm associated with the batch control.<br>• POSTROUT produces a flat file that is interfaced to a bill print software, while RTTYPOST calls the bill print software for every distinct extract algorithm found and produce the bills (i.e. the report containing the bills).<br>Refer to *Printing Bills* for more information | | | |
| STMDWLD | CIPBSTXB | The statement download extraction process creates the flat file that contains statement information. This file will be interfaced to your bill print software, or whatever mechanism you will use for sending statements to the appropriate persons.<br>This process extracts all Statement records associated with its batch control that are marked with a supplied run number. If a run number is not supplied, the process extracts all Statement records marked with the current run number. | Yes | *FILE-PATH* = directory path into which output should be placed<br>FILE-NAME= name of file into which output should be placed<br>*MAX-ERRORS* | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | The information that is extracted and placed on the flat file for each statement is controlled by each statement's construct's route type's extract algorithm. Refer to *Statement Route Types Control The Information Merged Onto Statements* for information about how a statement's flat file records are constructed.<br>Refer to *Printing Statements* for more information. | | | | |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Adhoc Processes

These are background processes that are run on an ad hoc basis (e.g., if you need to back out bills that were created by the billing process).

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Error Generates To Do | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|---|
| CPCRALOC | CIPCCCLB | The capital credit allocation process creates allocation service credit events for active capital credit memberships.<br>THIS BACKGROUND PROCESS IS ONLY APPLICABLE TO COMPANIES THAT ISSUE CAPITAL CREDITS | Yes | SC-EVT-TYPE-CD = service credit event type to use for new events<br>SC-EVT-STATUS-FLG = Indicate if the events should be created in pending (10) or active (20) status<br>SCMTY-SUBCAT-NAME = indicate the subcategory to assign to the | Yes | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | TO THEIR CUSTOMERS.<br>Refer to *Allocating Capital Credits* for more information.<br>The program that is delivered one possible method for calculating capital credit allocations. If the logic provided does not meet your business needs, you must adapt the base package program to your specific needs. To do this, please follow the standard steps:<br>• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process from overwriting your new logic.<br>• Modify the new program as per your business needs.<br>• Create a *batch control* record for your new background process, prefixed with CM . | | new event, if applicable<br>ALLOCATION-FACTOR = the allocation factor to use for the calculation of the capital credit allocation<br>BILL-LINE-CHAR-TYPE-SQ = char type identifying bill line containing SQ info<br>BILL-LINE-CHAR-VAL-SQ = char value identifying bill line containing SQ info<br>BILL-LINE-CHAR-TYPE-SALES = char type identifying bill line containing sales (revenue) info<br>BILL-LINE-CHAR-VAL-SALES = char value identifying bill line containing sales (revenue) info<br>FISCAL-YEAR = indicate the fiscal year to assign to the new event<br>MIN-CALC-AMT = indicate the minimum calculated amount needed to create an event<br>*MAX-ERRORS* | | |
| CPCRRETR | CIPCCCRB | The capital credit retirement process creates | Yes | SC-EVT-TYPE-CD = service credit event type | Yes | 200/15 |

retirement service credit events for active capital credit memberships.

THIS BACKGROUND PROCESS IS ONLY APPLICABLE TO COMPANIES THAT ISSUE CAPITAL CREDITS TO THEIR CUSTOMERS.

Refer to *Capital Credit Retirement* for more information.

The program that is delivered one possible method for calculating capital credit retirement amounts. If the logic provided does not meet your business needs, you must adapt the base package program to your specific needs. To do this, please follow the standard steps:

• Copy the base package program to your own program. Your own program should be prefixed with the letters CM (which stands for "customer modification"). This is important as it prevents the upgrade process to use for new events

SC-EVT-STATUS-FLG = Indicate if the events should be created in pending (10) or active (20) status

PCT-ALLOC-TO-RETIRE = Percentage of balance to retire

SCMTY-SUBCAT-NAME = indicate the subcategory to limit retirement to a single subcategory (if blank, all subcategories are processed)

CTRL-ID = stamped onto new events - used for restart control

*MAX-ERRORS*

| | | | | | | |
|---|---|---|---|---|---|---|
| | | from overwriting your new logic.<br>• Modify the new program as per your business needs.<br>• Create a *batch control* record for your new background process, prefixed with CM . | | | | |
| F1-AVALG | Java | This process regenerates algorithm type and their related algorithm information to be displayed by the Application Viewer. It produces a series of XML files in a designated folder under the application viewer /data folder.<br>Refer to *Application Viewer Generation* for more information on this background process is used. | No | *MAX-ERRORS* | No | NA |
| F1-AVMO | Java | This process regenerates maintenance object information to be displayed by the Application Viewer. It reads the meta-data maintenance object information and produces a series of XML files in a designated folder under the application | No | *MAX-ERRORS* | No | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | viewer /data folder.<br>Refer to *Application Viewer Generation* for more information on this background process is used. | | | | |
| F1-AVTBL | Java | This process regenerates table and column information to be displayed by the Application Viewer. It reads the meta-data table and related entities and produces a series of XML files in a designated folder under the application viewer /data folder.<br>Refer to *Application Viewer Generation* for more information on this background process is used. | No | *MAX-ERRORS* | No | NA |
| F1–LANG | Java | This batch process is used to insert or delete language row for language tables in the system.<br>Note: The new language row is just a place holder and need to be translated to the language associated with language code.<br>Warning: Please be aware that running this | No | action=Action<br>sourceLanguage=Source Language<br>targetLanguage= Target Language<br>tables= Language Tables<br>*MAX-ERRORS* | No | NA |

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| | | process in Delete mode will delete all language data entries regardless of the owner flag CM or CI or F1. It is the responsibility of the customer to back up any and all entries in language tables they wish to preserve prior to running this process in delete mode.<br>If you have any questions, please see your implementation team for more information. | | | | |
| MASSCNCL | CIPBMCNB | The mass bill cancellation process removes an entire batch of bills that were created by the BILLING process.<br>Refer to *Canceling A Batch Of Bills After They're Complete* for more information. | Yes | BILL-CYC-CD= the bill cycle associated with the bills<br>WIN-START-DT=the bill cycle window start date associated with the bills. This should be entered in the format YYYY-MM-DD.<br>BILL-DT= the date on which the bills were created. This should be entered in the format YYYY-MM-DD.<br>*MAX-ERRORS* | Yes | 100/15 |
| MASSROBL | CIPBMROB | The mass bill reopen process reopens an entire batch of bills that were completed by the BILLING process. | Yes | BILL-CYC-CD= the bill cycle associated with the bills<br>WIN-START-DT= the bill cycle window start date | Yes | 200/15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Refer to *Reopening A Batch Of Bills After They're Complete* for more information. | | associated with the bills<br>BILL-DT= the date on which the bills were created. This should be entered in the format YYYY-MM-DD.<br>*MAX-ERRORS* | | |
| REGCNST | CIPMRCVB | This process selects all service points (SP) that meet the following criteria:<br>- they reference the input **MR_CYC_CD** (Service Cycle)<br>- their SP type references the input **SVC-TYPE-CODE** (service type, e.g., Electric) and **SP-SUBTYPE-FLG** (sub type, e.g., Metered)<br>For each SP, it extracts the current and potential transformers linked to the SP (these are defined as equipment linked to the SP and are identified by **CT-ITEM-TYPE** and **PT-ITEM-TYPE**).<br>For each current transformer linked to the service point, it extracts the CT ratio (identified by **CT-RATIO-CHAR**). The CT ratio value is defined as | Yes | MR-CYC-CD = Service Cycle<br>CT-ITEM-TYPE = CT Item Type<br>CT-RATIO-CHAR = CT Ratio Characteristic Type on Item type (for equipment)<br>PT-ITEM-TYPE = PT Item Type<br>PT-RATIO-CHAR = PT Ratio Characteristic Type on Item type (for equipment)<br>DIAL-CONST = Dial Constant Characteristic Type on meter<br>C-TO-DO-TYPE = Constant To Do Type<br>D-TO-DO-TYPE = Divisible5 To Do Type<br>SVC-TYPE-CD = Service Type Code<br>SP-SUBTYPE-FLG = SP Subtype (this will typically be "M" for metered service points)<br>*MAX-ERRORS* | Yes | 100/10 |

a ratio in the format a:b, e.g., 400:5, 1500:5, 7200:120, etc. The first number in the ratio is divided by the second number to derive the actual CT ratio. If a characteristic is not found, a CT ratio of 1 is assumed.

It does the same for each potential transformer linked to the service point (using **PT-RATIO-CHAR**).

It then calculates the product of the various CT and PT ratios. If the product is **not** divisible by 5, a To Do entry is created (To Do type = **D-TO-DO-TYPE** - this should be RGCMOD ) for a user to verify the ratios, as ratios for standard transformers are divisible by 5.

It then finds the meter currently installed at the service point and extracts its dial constant from a meter characteristic identified by **DIAL-CONST**.

It then calculates a register constant by taking the product of all

| | | | | | | |
|---|---|---|---|---|---|---|
| | | CT ratios and PT ratios and multiplying this value by the meter's dial constant.<br>It then compares the calculated register constant with the actual register constant of every register linked to the meter. If they differ, a To Do entry is created (To Do type = **C-TO-DO-TYPE** - this should be RGCDIFF ).<br>Refer to *Validating Register Constants* for more information. | | | | |
| UPDERR | CIPZUESB | The process updates In Progress threads in an abnormally terminated batch run to be Error . When at least one thread is in Error , this process also updates the status of the batch run to be Error .<br>Refer to *Dealing With Abnormally Terminated Background Processes* for information about when and why this process would be executed. | No | BATCH-CD-IN-PROGRESS = the batch control ID of the abnormally terminated batch process<br>BATCH-NBR-IN-PROGRESS = the run number of the abnormally terminated batch process<br>UPD-ALL-THRDS-SW must be Y or N. A value of Y means that the status of all In Progress threads will be changed to Error . A value of N means that the next parameter must be supplied.<br>BATCH-THRD-NBR-IN- | No | N/A |

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|---|---|---|---|---|---|
| | | | | PROGRESS = the thread number whose status should be changed from In Progress to Error . This parameter should only be specified if UPD-ALL-THRDS-SW = N.<br>*MAX-ERRORS* | |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## To Do Entry Processes

These are background processes whose main purpose is to generate To Do Entry records based on a certain condition. Refer to *To Do Entries Created By Background Processes* for the details. The section that appears below simply lists these processes.

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|
| TD-BCUPL | CIPQBCEB | This background process creates a To Do entry for every billable charge upload record that's in error. | No | *MAX-ERRORS* | 200/15 |
| TD-BIERR | CIPQBIEB | This background process creates a To Do entry for every bill that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-BSERR | CIPQBSEB | This background process creates a To Do entry for every bill segment that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-BTERR | CIPQBERB | This background process creates To Do Entry for any other batch processes that ended in error. A To Do Entry is only created if one does not already exist. | No | *MAX-ERRORS* | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| TD-CCCB | CIPQCCCB | This background process creates a To Do entry for customer contacts that have been flagged to generate a To Do entry on a future date. Note well, most To Do background processes create To Do entries in the pending state. If the customer contact indicates a specific user should be notified (as opposed to notifying a group of users - a role), the To Do entry will be created in the being worked state and it will be assigned to the designated user. | Yes | LEAD-DAYS = Number of days before the customer contact's reminder date that the To Do entry should be created. Valid values of 0 to 99 are acceptable.<br>*MAX-ERRORS* | 200/15 |
| TD-CEVT | CIPQCEVB | This background process creates a To Do entry for collection events that should generate a To Do entry. | Yes | *MAX-ERRORS* | 200/15 |
| TD-CLERR | CIPQCLEB | This background process creates a To Do Entry for any batch process that has root objects that created an error. A To Do Entry is only created if one does not already exist. | Yes | *MAX-ERRORS* | 200/15 |
| TD-DTCST | CIPQDTCB | This background process creates a To Do entry for deposit control staging / tender control staging records that are in error. | No | *MAX-ERRORS* | 200/15 |
| TD-ECBK | CIPQENHB | This background process creates To Do entries for held orders. | Yes | DAYS-BEF-CALLBK = Number of days before the order's reminder date that the To Do entry should be created | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | *MAX-ERRORS* | |
| TD-EPND | CIPQENPB | This background process creates To Do entries for pending orders. | Yes | *MAX-ERRORS* | 200/15 |
| TD-FAUPL | CIPQFAEB | This background process creates a To Do entry for every field activity upload staging record that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-FACT | CIPQFARB | This background process creates a To Do entry for every field activity remark record that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-HILO | CIPQMHLB | This background process creates a To Do entry for every meter read that has at least one register read that failed high/ low review.<br>Refer to *TD-HILO - To Do for Meter Read High/ Low Errors* for more information about this process, including its parameter values. This section also provides more information about the To Do entry created. | Yes | NO-OF-DAYS = System will auto-complete 'Open' To Do entries of this To Do Type whose creation date is before the business date minus this parameter. (Optional).<br>VERY-LOW-PERCENTAGE-CUTOFF<br>USE-ON-BILL-VERY-LOW-READS<br>USE-ON-BILL-LOW-READS<br>VERY-HIGH-PERCENTAGE-CUTOFF<br>USE-ON-BILL-VERY-HIGH-READS<br>USE-ON-BILL-HIGH-READS<br>MULTIPLE-REGISTERS-PRIORITY<br>*MAX-ERRORS* | 200/15 |
| TD-MODTL | CIPQODMB | This background process creates a To Do entry for every disputed match event | Yes | NO-OF-DAYS = Number of days old the match event must be before a To Do entry is created (this prevents | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | young entries from appearing on To Do lists)<br>*MAX-ERRORS* | |
| TD-MONTL | CIPQONMB | This background process creates a To Do entry for every open, non-disputed match event | Yes | NO-OF-DAYS = Number of days old the match event must be before a To Do entry is created (this prevents young entries from appearing on To Do lists)<br>*MAX-ERRORS* | 200/15 |
| TD-MRRER | CIPQMRRB | This background process creates a To Do entry for every meter read remark record that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-MRUPL | CIPQMRUB | This background process creates a To Do entry for every uploaded meter read that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-NCDEX | CIPQNCDB | This background process creates a To Do entry for every non-cash deposit that is due to expire within the next X days (X is a parameter).<br>Note. The process checks for completed To Do entries for this To Do Type and Account Id and will not create a new To Do if a completed one exists. | Yes | DAYS-TO-EXPIRY = Number of days prior to NCD expiration that the entry should be created<br>*MAX-ERRORS* | 200/15 |
| TD-NOBC | CIPQNBCB | This background process creates a To Do entry for every account that doesn't have a bill cycle but has active service agreements. | Yes | *MAX-ERRORS* | 200/15 |
| TD-NOMR | CIPQNRCB | This background process creates a To Do entry for every metered service | Yes | *MAX-ERRORS* | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | point that doesn't have a service cycle. Where the service point is in service and connected. | | | |
| TD-NTDWN | CIPQNTDB | This background process creates a To Do entry for every notification download staging record that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-NTUPL | CIPQNTUB | This background process creates a To Do entry for every notification upload staging record that's in error. | No | *MAX-ERRORS* | 200/15 |
| TD-PYERR | CIPQPAYB | This background process creates a To Do entry for every payment that's in error or that is unfrozen. | Yes | *MAX-ERRORS* | 200/15 |
| TD-PYUPL | CIPQPYUB | This background process creates a To Do entry for every payment staging record that's in error. | No | *MAX-ERRORS* | 200/15 |
| TD-SEVT | CIPQSEVB | This background process creates a To Do entry for severance events that should generate a To Do entry. | Yes | *MAX-ERRORS* | 200/15 |
| TD-SPRO | CIPQSVPB | This background process creates a To Do entry for cancelled severance processes that have dispatched field activities that should be cancelled. | Yes | *MAX-ERRORS* | 200/15 |
| TD-SSFTL | CIPQSSLB | This background process creates a To Do entry for pending start/stops that are older than the number of days specified. This catches start/stop requests that have gone unfulfilled. | Yes | NO-OF-DAYS = the number of days old a pending start / stop SA must be to be considered unfulfilled.<br>*MAX-ERRORS* | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| TD-UNBAL | CIPQPYEB | This background process creates a To Do entry for every payment event that's unbalanced. | Yes | *MAX-ERRORS* | 200/15 |
| TD-WEXTL | CIPQWEXB | This background process creates a To Do entry for every workflow event that's in error. | Yes | *MAX-ERRORS* | 200/15 |
| TD-WOEVT | CIPQWEVB | This background process creates a To Do entry for write-off events that should generate a To Do entry. | Yes | *MAX-ERRORS* | 200/15 |
| TD-XAIDN | CIPQXADB | This background process creates a To Do entry for every XAI Download Staging exception. | No | *MAX-ERRORS* | 200/15 |
| TD-XAIUP | CIPQXAUB | This background process creates a To Do entry for every XAI Upload Staging in error. | Yes | *MAX-ERRORS* | 200/15 |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Object Validation Processes

These background processes are run to validate the master data objects. These programs are typically only run as part of the conversion and upgrade processes.

**NOTE:**
**Another use for these programs.** In addition to validating your objects after conversion or an upgrade, the validation programs listed below have another use. Say for example, you want to experiment with changing the validation of a person and you want to determine the impact of this new validation on your existing persons. You could change the validation and then run the person validation object - it will produce errors for each person that fails the new validation.

**FASTPATH:**
Refer to *Validate Information In The Staging Tables* for more information about these processes and where their errors appear.

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| VAL-ACCT | CIPVACCB | Validate the account object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-BCHG | CIPVBCGB | Validate the billable charge object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>*MAX-ERRORS* | 200/15 |
| VAL-CEVT | CIPVCEVB | Validate the contract option event object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-CFG | CIPVMTGB | Validate the meter configuration object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-COLL | CIPVCLPB | Validate the collection process object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>*MAX-ERRORS* | 200/15 |
| VAL-COP | CIPVCOPB | Validate the contract option object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-DCL | CIPVDCRB | Validate the declaration object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-DTST | CIPVDTTB | Validate the device test object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>STATUS3=validate rows with this status STATUS4=validate rows with this status<br>STATUS5=validate rows with this status<br>*MAX-ERRORS* | |
| VAL-FA | CIPVFACB | Validate the field activity object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>STATUS3=validate rows with this status | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | STATUS4=validate rows with this status<br>*MAX-ERRORS* | |
| VAL-FO | CIPVFORB | Validate the field order object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>STATUS3=validate rows with this status STATUS4=validate rows with this status<br>STATUS5=validate rows with this status<br>*MAX-ERRORS* | 200/15 |
| VAL-IDS | CIPVIDSB | Validate the Interval Data Set object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-INPF | CIPVINPB | Validate the interval profile object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-IRDS | CIPVIRSB | Validate the interval register data set object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-ITEM | CIPVITMB | Validate the item object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-IVS | CIPVIVSB | Validate the interval value set object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-LL | CIPVLNDB | Validate the landlord agreement object | Yes | OVRD-LOW-ID=key value to override the | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-MTR | CIPVMTRB | Validate the meter object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-PER | CIPVPERB | Validate the person object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-PREM | CIPVPRMB | Validate the premise object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-SA | CIPVSVAB | Validate the service agreement object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-SARL | CIPVSREB | Validate the SA Relationship object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-SEVP | CIPVSEPB | Validate the severance process object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status<br>STATUS2=validate rows with this status<br>*MAX-ERRORS* | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| VAL-SCM | CIPVSCMB | Validate the service credit membership object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-SP | CIPVSPPB | Validate the service point object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-TDS | CIPVTDSB | Validate the TOU data set object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | 200/15 |
| VAL-TMAP | CIPVTMBB | Validate the TOU map object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>*MAX-ERRORS* | |
| VAL-WFP | CIPVWPRB | Validate the workflow process object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>*MAX-ERRORS* | 200/15 |
| VAL-WOP | CIPVWOPB | Validate the write off process object | Yes | OVRD-LOW-ID=key value to override the calculated start-key value<br>OVRD-HIGH-ID=key value to override the calculated end-key value<br>SKIP-ROWS= nth row to be processed, for example 10 to process every 10th row.<br>STATUS1=validate rows with this status STATUS2=validate rows with this status<br>*MAX-ERRORS* | 200/15 |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Referential Integrity Validation Processes

The following table lists every background process that validates transaction data using the same program CIPVRNVB . These programs are typically run as part of the conversion and upgrade processes.

In all cases, the processes are not multi-threaded and do not include extra parameters. In addition, Records Between Commits and Minutes Between Cursor Re-Initiation are not applicable.

**FASTPATH:**
Refer to *Validate Information In The Staging Tables* for more information about these processes and where their errors appear.

| Batch Control ID | Description |
|---|---|
| CIPVAAPV | Foreign Key validation for Account Automatic Payment |
| CIPVACHV | Foreign Key validation for Account Characteristics |
| CIPVACPV | Foreign Key validation for Account Person Relationship |
| CIPVADJV | Foreign Key validation for Adjustment |
| CIPVAPAV | Foreign Key validation for Premise Alternate Address |
| CIPVAPRV | Foreign Key validation for A/P Check Request |
| CIPVARHV | Foreign Key validation for Collection Agency Referral History |
| CIPVARSV | Foreign Key validation for Credit Review Schedule |
| CIPVBCHV | Foreign Key validation for Bill Characteristic |
| CIPVBCGV | Foreign Key validation for Billable Charge |
| CIPVBCLV | Foreign Key validation for Billable Charge Line |
| CIPVBFVV | Foreign Key validation for Bill Factor Value |
| CIPVBLLV | Foreign Key validation for Bill Header |
| CIPVBLMV | Foreign Key validation for Bill Messages |
| CIPVBLRV | Foreign Key validation for Bill Routing |
| CIPVBSAV | Foreign Key validation for Bill - SA Balance Snapshot |
| CIPVBSCV | Foreign Key validation for Bill Segment Calc Header |
| CIPVBSIV | Foreign Key validation for Bill Segment Item |
| CIPVBSLV | Foreign Key validation for Bill Segment Calc Line |
| CIPVCARV | Foreign Key validation for Collection Agency Referral |
| CIPVCCFV | Foreign Key validation for Contract Option Characteristic |
| CIPVCECV | Foreign Key validation for Collection Event/Customer Contact |
| CIPVCLPV | Foreign Key validation for Collection Process |
| CIPVCLSV | Foreign Key validation for Collection Process Service Agreement |
| CIPVCOLV | Foreign Key validation for Contract Option Language |
| CIPVCRTV | Foreign Key validation for Credit Rating History |
| CIPVCSCV | Foreign Key validation for Customer Contact |
| CIPVCVCV | Foreign Key validation for Cont Opt Event Characteristic |
| CIPVCVNV | Foreign Key validation for Collection Event |
| CIPVDTCV | Foreign Key validation for Device Test Characteristic |
| CIPVDTMV | Foreign Key validation for Device Test Component |
| CIPVDTRV | Foreign Key validation for Device Test Result |
| CIPVDTTV | Foreign Key validation for Device Test |

| | |
|---|---|
| CIPVFAFV | Foreign Key validation for Field Activity |
| CIPVFAHV | Foreign Key validation for Field Activity Characteristics |
| CIPVFALV | Foreign Key validation for Field Activity Log |
| CIPVFARV | Foreign Key validation for Field Activity / Remark |
| CIPVFORV | Foreign Key validation for Field Order |
| CIPVFSTV | Foreign Key validation for Field Activity Step |
| CIPVFTFV | Foreign Key validation for Financial Transaction |
| CIPVFTGV | Foreign Key validation for Fin'l Transaction Gen Ledger |
| CIPVFTPV | Foreign Key validation for Fin'l Transaction Process |
| CIPVIEQV | Foreign Key validation for Item / Equipment |
| CIPVILHV | Foreign Key validation for Item Location History |
| CIPVINLV | Foreign Key validation for Interval Profile Lang |
| CIPVITCV | Foreign Key validation for Item Characteristic |
| CIPVITFV | Foreign Key validation for Interval Data |
| CIPVITVV | Foreign Key validation for Interval Value |
| CIPVLLDV | Foreign Key validation for Landlord Agreement Detail |
| CIPVMEQV | Foreign Key validation for Meter / Equipment |
| CIPVMIDV | Foreign Key validation for Meter Ids |
| CIPVMLHV | Foreign Key validation for Meter Location History |
| CIPVMRDV | Foreign Key validation for Meter Read |
| CIPVMRCV | Foreign Key validation for Meter Read Characteristics |
| CIPVMRMV | Foreign Key validation for Meter Read Remark |
| CIPVMSGV | Foreign Key validation for Account Bill Messages |
| CIPVMTCV | Foreign Key validation for Meter Characteristic |
| CIPVNBSV | Foreign Key validation for Non-billed Budget SA / SA |
| CIPVNCDV | Foreign Key validation for Non Cash Deposit |
| CIPVNPMV | Foreign Key validation for NBB SA Payment Schedule Parameter Values |
| CIPVNSPV | Foreign Key validation for NBB SA Scheduled Payments |
| CIPVPAOV | Foreign Key validation for Person Address Override |
| CIPVPAYV | Foreign Key validation for Payment Header |
| CIPVPCHV | Foreign Key validation for Premise Characteristic |
| CIPVPGOV | Foreign Key validation for Premise Geographic location |
| CIPVPIDV | Foreign Key validation for Person Identifier |
| CIPVPNMV | Foreign Key validation for Person Name |
| CIPVPPEV | Foreign Key validation for Person to Person |
| CIPVPPHV | Foreign Key validation for Person Phone |
| CIPVPRCV | Foreign Key validation for Person Characteristics |
| CIPVPSAV | Foreign Key validation for Person Seasonal Address |
| CIPVPSGV | Foreign Key validation for Payment Segment |

| | |
|---|---|
| CIPVPYCV | Foreign Key validation for Payment Characteristics |
| CIPVREFV | Foreign Key validation for Interval Register Data |
| CIPVREGV | Foreign Key validation for Register |
| CIPVRGCV | Foreign Key validation for Register Characteristics |
| CIPVRGRV | Foreign Key validation for Register Read |
| CIPVSACV | Foreign Key validation for SA Characteristics |
| CIPVSAHV | Foreign Key validation for SA Rate Schedule History |
| CIPVSAOV | Foreign Key validation for SA Contract Terms |
| CIPVSAPV | Foreign Key validation for SA SP |
| CIPVSAQV | Foreign Key validation for SA Contract Quantity |
| CIPVSARV | Foreign Key validation for SA Recurring Charge |
| CIPVSCAV | Foreign Key validation for SCM Account |
| CIPVSCCV | Foreign Key validation for SCM Characteristic |
| CIPVSCFV | Foreign Key validation for Service Credit Event FT |
| CIPVSCOV | Foreign Key validation for SA Override Contract Option |
| CIPVSCPV | Foreign Key validation for SA Contract Option |
| CIPVSCVV | Foreign Key validation for Service Credit Event |
| CIPVSECV | Foreign Key validation for Severance Event/Customer Contact |
| CIPVSEDV | Foreign Key validation for Severance Event Dependency |
| CIPVSEFV | Foreign Key validation for Severance Event/Field Activity |
| CIPVSEGV | Foreign Key validation for Bill Segment |
| CIPVSEPV | Foreign Key validation for Severance Process |
| CIPVSEQV | Foreign Key validation for SP / Equipment |
| CIPVSEVV | Foreign Key validation for Severance Event |
| CIPVSIEV | Foreign Key validation for SP Item Event |
| CIPVSIFV | Foreign Key validation for SA Interval Profile |
| CIPVSIHV | Foreign Key validation for History of Item at SP |
| CIPVSMEV | Foreign Key validation for SP Meter Event |
| CIPVSMGV | Foreign Key validation for SA Message |
| CIPVSMHV | Foreign Key validation for History of Meter at SP |
| CIPVSMIV | Foreign Key validation for Multi Item |
| CIPVSPCV | Foreign Key validation for Service Point Characteristics |
| CIPVSPGV | Foreign Key validation for Service Point Geo Location |
| CIPVSPMV | Foreign Key validation for Unbadged Items at SP |
| CIPVSPOV | Foreign Key validation for Service Point/Operation Area |
| CIPVSQTV | Foreign Key validation for Bill Segment Service Quantity |
| CIPVSRLV | Foreign Key validation for SA Relationship |
| CIPVSRRV | Foreign Key validation for Bill Segment Register Read |
| CIPVSSCV | Foreign Key validation for SA SP Characteristics |

| | |
|---|---|
| CIPVSSFV | Foreign Key validation for SA SP Field Activity |
| CIPVSTMV | Foreign Key validation for SA TOU Map |
| CIPVTBVV | Foreign Key validation for TOU Bill Factor Value |
| CIPVTCVV | Foreign Key validation for TOU Contract Value |
| CIPVTMLV | Foreign Key validation for TOU Map Lang |
| CIPVTNCV | Foreign Key validation for Payment Tender Characteristics |
| CIPVTNDV | Foreign Key validation for Payment Tender |
| CIPVTOFV | Foreign Key validation for TOU Data |
| CIPVTRNV | Foreign Key validation for Trend |
| CIPVWECV | Foreign Key validation for Workflow Event Context |
| CIPVWEDV | Foreign Key validation for Workflow Event Dependency |
| CIPVWEVV | Foreign Key validation for Workflow Event |
| CIPVWOCV | Foreign Key validation for Write Off Event/Customer Contact |
| CIPVWOPV | Foreign Key validation for Write Off Process |
| CIPVWOSV | Foreign Key validation for Write Off Process/Service Agreement |
| CIPVWOVV | Foreign Key validation for Write Off Event |
| CIPVWPCV | Foreign Key validation for Workflow Process Context |
| CIPVWPRV | Foreign Key validation for Workflow Process |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Conversion Processes

These background processes are run only when converting or migrating data from external applications into the system. Your company may never use them depending upon your data migration strategy.

**FASTPATH:**
Refer to *The Conversion Tool* for more information about these processes and where their errors appear.

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|
| CNV-ADM | CIPVADMB | Creates ADM triggers for converted accounts. | Yes | *MAX-ERRORS* | 200/15 |
| CNV-BAL | CIPVVSAB | Sets the correct balance for all SAs created during conversion. It creates adjustments that cause each SA's current and payoff balances to | No | SET-PYOF-ZERO= Adjustment Type to set payoff balance to zero<br>SET-CURR-ZERO = Adjustment Type | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | equal their balance in the prior system. Note, this process is referred to as the "tidy balances" process in the conversion tool document. | | to make current balance zero<br>SET-PYOF-BAL= Adjustment Type to set payoff balance to the desired balance<br>SET-CURR-BAL = Adjustment Type to set current balance to the desired balance and age<br>BASE-DATE= Base Date of Aged Debt. This should be entered in the format YYYY-MM-DD.<br>*FILE-PATH* = Path and filename of input data file<br>*MAX-ERRORS* | |
| CNV-BCG | CIPVCBCB | This process resets the Balance Control column on all FT's so that the FT's can be included in a balance control (see the last step below) after they have been transferred to production. | Yes | *MAX-ERRORS* | 200/15 |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Conversion Processes Executed In The Staging Database

There are many other background processes that are only executed if you use the conversion tool to load historical data into your production database. These programs perform the following tasks:

- **Key Assignment Programs.** Background processes of this type assign random, clustered keys to the rows in the staging database.
  A separate background process exists for every table with a system-assigned key that is supported by the conversion tool. The program names of these processes are documented in *The Conversion Tool* (scan for all references to "Key Assignment Program" for a matrix containing these program names).
- **Insertion Programs.** Background processes of this type insert converted rows into production from the staging database. A separate background process exists for every table that is supported by the conversion tool. The program names of these processes are documented in *The Conversion Tool* (scan for all references to "Insertion Program" for a matrix containing these program names).

## Purge Processes

These background processes are used to purge historical records from certain objects that generate a large number of entries and may become unwieldy over time.

| Batch Control ID | Program Name | Description | Multiple Threads | Extra Parameters | Records Between Commits / Minutes Between Cursor Re-Initiation |
|---|---|---|---|---|---|
| BCUP-PRG | CIPCDBSB | Purges completed billable charge upload objects. | Yes | NO-OF-DAYS = number of days after the creation date that a completed billable charge upload object should be purged<br>*MAX-ERRORS* | 200/15 |
| FAUP-PRG | CIPODFSB | Purges completed field activity upload objects. | Yes | NO-OF-DAYS = number of days after the related field activity's schedule date that a completed field activity upload object should be purged<br>*MAX-ERRORS* | 200/15 |
| MRUP-PRG | CIPMDUSB | Purges completed meter read upload objects. | Yes | NO-OF-DAYS = number of days after the meter read date that a completed meter read upload object should be purged<br>*MAX-ERRORS.. \F1\07BkgrndProcesses.doc - SPLINKOverride_ Maximum_Errors_ in_Batch_* | 200/15 |
| PYUP-PRG | CIPPDUSB | Purges completed tender upload objects. | Yes | NO-OF-DAYS = number of days after the related tender's payment event's creation date that a completed tender upload object should be purged<br>*MAX-ERRORS* | 200/15 |
| TD-PURGE | CIPQDTDB | Purges completed To Do entries. | Yes | NO-OF-DAYS = number of days after | 200/15 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | the completion date that a completed To Do entry should be purged<br>DEL-ALL-TD-SW = Y or N. If this switch is Y, all completed To Do entries that are old enough will be deleted. If N, the next parameter defines the specific type of To Do entry that will be deleted.<br>DEL-TD-TYPE-CD. This parameter is only used if DEL-ALL-TD-SW is N. It contains the To Do type code whose completed entries will be deleted.<br>*MAX-ERRORS* | |
| XMLUP-PR | CIPXDXUB | Purges completed XML upload objects. | Yes | NO-OF-DAYS = number of days after the completion date that a completed XML upload object should be purged<br>*MAX-ERRORS* | 200/15 |

Please refer to *Column Descriptions* for more information on the columns used in the table above.

## Column Descriptions

The following descriptions explain the parameters used in the above tables:

- **Batch Control ID.** As described earlier, every background process has an associated batch control record. This column contains the unique identifier of each process' batch control record.
- **Program Name.** This is the name of the program.
- **Description.** This column describes each background process.
- **Multiple Threads.** This column indicates if the background process uses the thread number and thread count to control parallel processing. Refer to *Parameters Supplied to Background Processes* for more information.
- **Extra Parameters.** This column indicates if the background process uses additional parameters (in addition to those described under *Parameters Supplied to Background Processes*).
- **Error Generates To Do.** This column indicates if the background process generates a To Do entry for object-specific errors as described in *Processing Errors*.

- **Records Between Commits / Minutes Between Cursor Re-Initiation.** These values represent the maximum number of records between commits to the database and the number of minutes between cursor re-initiations. The process will issue a commit whenever the maximum records threshold has been exceeded. And, whenever a commit is issued, the process checks if the number of minutes between cursor initiation has been exceeded and if so, it will re-initiate the cursor. These values may be overridden when a specific background process is submitted. Refer to *Parameters Supplied to Background Processes* for more information.

# Batch Process Dependencies

The contents of this section illustrate the periodicity and dependencies between the various background processes described above.

**Contents**



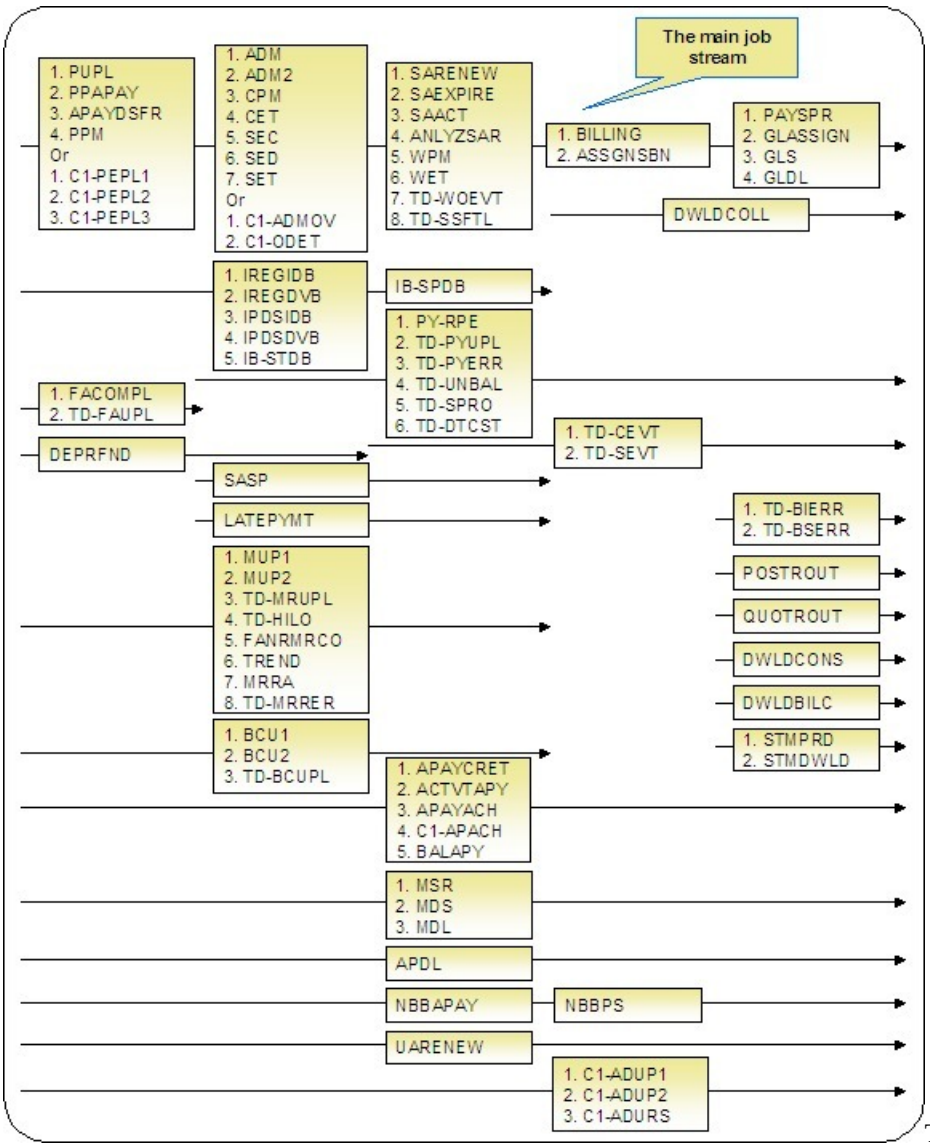
## Batch Schedulers and Return Codes

If you use a batch scheduler (e.g., Control-M, Tivoli) to control the execution of your batch processes, it will be interested in the possible values of each process's return code. The return code is a number that indicates if the process ended successfully. All product processes will return one of the following return code values:

- 0 (zero). A value of zero means the batch process ended normally.
- 2 . A value of 2 means the batch process detected a fatal error and aborted.

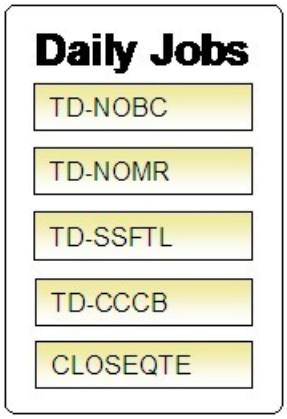
## The Nightly Processes

The following diagram illustrates the dependencies between the batch processes.




The mnemonics in the boxes refer to the individual batch processes described above. When a box contains multiple processes, these processes must be run sequentially. When multiple boxes exist on a timeline, all processes in an earlier box must execute before the subsequent box is executed. Those timelines that appear beneath the Main Job Stream's timeline indicate when the timeline's respective processes can be executed in respect of the Main Job Stream.

The following diagram illustrates the daily batch processes for which there are no dependencies.

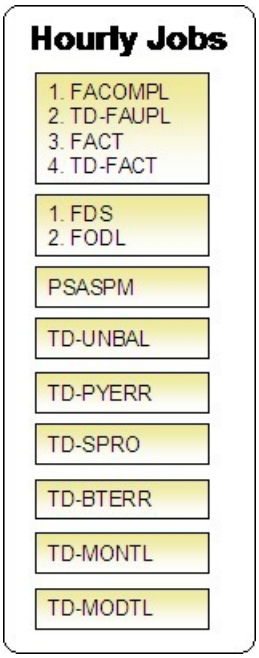



The mnemonics in the boxes refer to the individual batch processes described above.

**NOTE:**
**No dependencies exist.** As you can see, there are no dependencies between the boxes (meaning they may be run in parallel).

## The Hourly Processes

The following diagram illustrates the dependencies between the hourly batch processes.

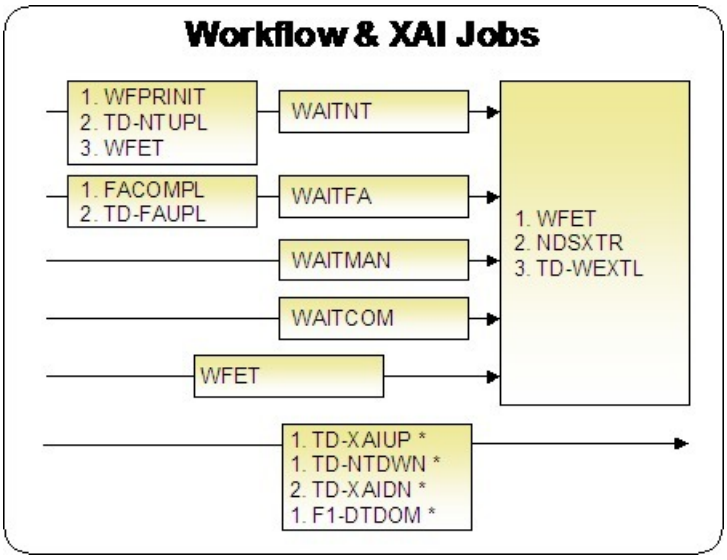



The mnemonics in the boxes refer to the individual batch processes described above. When a box contains multiple processes, these processes must be run sequentially.

**NOTE:**
**No dependencies exist.** As you can see, there are no dependencies between the boxes (meaning they may be run in parallel).

## The Workflow and XAI Processes

The following diagram illustrates the dependencies between the workflow and XAI background processes. While these processes should be run at least once a day, you may want to consider running them more frequently (depending on how frequently you interface notifications and field activities into the system).



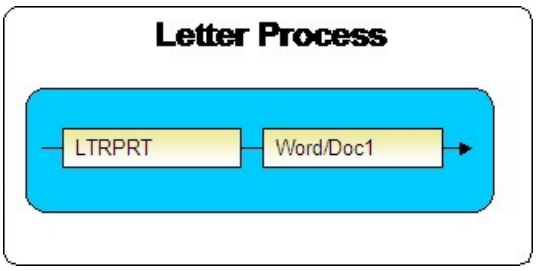

The mnemonics in the boxes refer to the individual batch processes described above. When a box contains multiple processes, these processes must be run sequentially. When multiple boxes exist on a timeline, all processes in an earlier box must execute before the subsequent box is executed.

* These processes create and/or clean up To Do entries for XAI upload staging, notification download staging, XAI download staging records or outbound messages in error. They are only applicable if your organization is using the XAI tool because only the XAI tool will mark one of these records in error.

## The Letter Processes

To extract information for your various letters, only one background process, LTRPRT , is required regardless of the different types of letters you have. This process simply calls an algorithm plugged-in on the respective letter template to construct its flat-file content.

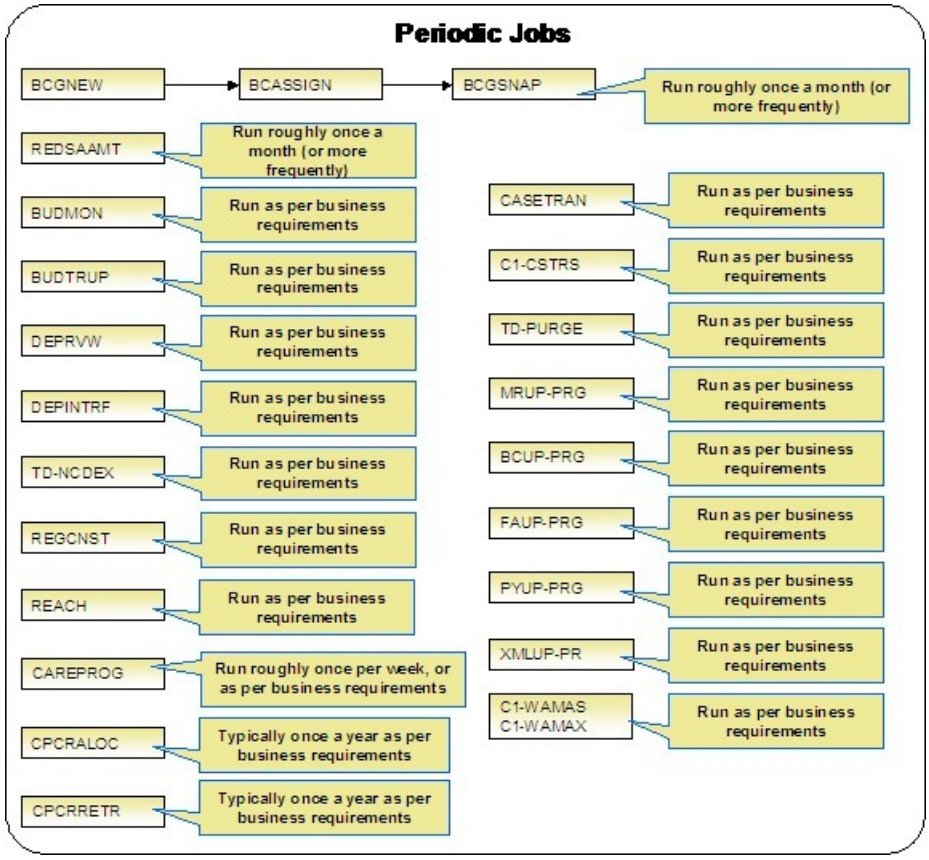
The following diagram illustrates the dependencies for the letter background process. While this process should be run at least on a daily basis, you may want to consider running it more frequently (depending on how frequently you produce letters).



The mnemonics in the boxes refer to the individual batch processes described above. When a box contains multiple processes, these processes must be run sequentially. When multiple boxes exist on a timeline, all processes in an earlier box must execute before the subsequent box is executed.

## The Periodic Processes

The following diagram illustrates the dependencies between the periodic background processes. While many of these processes should be run at least on a monthly basis, you may want to consider running them more frequently (depending on business requirements).




The mnemonics in the boxes refer to the individual batch processes described above.

**NOTE:**
**Few dependencies exist.** As you can see, there are few dependencies between the boxes (meaning they may be run in parallel).

## How To Set Up A New Extract Processes

Several background processes delivered with the system are used to interface information out of the system. The topics in this section describe when and how to introduce an additional extract process.

**Contents**

## Setting Up Meter Read Extracts

You will need a meter read extract for every mechanism your company uses to route meter read requests to the software that handles your meter reading requests. For example:

- You will need a meter read extract to interface records to your handheld device software. The MDL process delivered with the system is intended to be used to handle this function. This process will have to be populated to format the output records in keeping with the needs of your meter reading software.
- If you interface some meter read requests to automatic meter reading software, you will need a new meter read extract process.

If you need additional meter read extract processes, set up the following information:

- Add a new *batch control* record. Populate the fields as follows:
- **ID.** Assign an easily recognizable unique ID for the meter read extract process.
- **Description.** Enter a description of the meter read extract process.
- **Accumulate All Instances.** Turn this switch on.
- Use *Route Type* to define the meter read extract process to be used for each route type.

**NOTE:**
Route types are defined for each route linked to every service cycle. Refer to *Setting Up Service Cycles And Routes* for more information.

- It may be necessary to register the process with your scheduler software.

## Setting Up Automatic Payment Extracts

You will need an automatic payment extract for every mechanism your company uses to route automatic payment requests to a financial institution / clearing house. For example:

- You will need an automatic payment extract to interface records to the Automated Clearing House (ACH) if you allow customer to pay via credit card or direct debit from a checking account. The **APAYACH** and C1-APACH processes delivered with the system are intended to be used to handle this function.

If you need additional automatic payment extract processes, set up the following information:

- Add a new *batch control* record. Populate the fields as follows:
- **Batch Process.** Assign an easily recognizable unique ID for the automatic payment extract process.
- **Description.** Enter a description of the automatic payment extract process.
- **Accumulate All Instances.** Turn this switch on.
- Use *Auto Pay Route Type* to define the auto pay extract process to be used for each route type.

## The Big Picture of Sample & Submit

Sample and Submit refers to the ability to create Activity Requests. This is functionality that enables an implementer to design an ad-hoc batch process using the configuration tools.

Some examples of such processes are:

- Send a letter to customers that use credit cards for auto pay and the credit card expiration date is within 30 days of the current date.
- Stop auto pay for customers that use credit cards as the form of payment if the credit card has already expired. Notify the customer that their auto pay agreement has been terminated and that they need to call to reinstate.
- Select auto pay accounts that have more than X non-sufficient fund penalties, stop the auto pay agreement and notify the customer.

**NOTE:**
The terms *activity request* and *sample & submit request* may be used interchangeably.

**Contents**



## Activity Type Defines Parameters

For each type of process that your implementation wants to implement, you must configure an activity type to capture the appropriate parameters needed by the activity request.

## Preview A Sample Prior To Submitting

To submit a new activity request, a user must select the appropriate activity type and enter the desired parameter values, if applicable.

After entering the parameters, the following actions are possible

- Click **Preview** to see a sample of records that satisfy the selection criteria for this request. This information is displayed in a separate map. In addition, the map displays the total number of records that will be processed when the request is submitted. From this map you can **Save** to submit the request, go **Back** to adjust the parameters or **Cancel** the request.
- Click **Cancel** to cancel the request.
- Click **Save** to skip the preview step and submit the request.

When an activity request is saved, the job is not immediately submitted for real time processing. The record is save in the status Pending and a monitor process for this record's business object is responsible for transitioning the record to Complete .

As long as the record is still Pending , it may be edited to adjust the parameters. The preview logic described above may be repeated when editing a record.

The actual work of the activity request, such as generating customer contact records to send letters to a set of customers, is performed when transitioning to Complete (using an enter processing algorithm for the business object).

## Credit Card Expiration Notice

The base product supplies a sample process to find customers that use credit cards for auto pay and the credit card expiration date is within x days of the current date.

To this functionality the following configuration tasks are needed:

- Define an appropriate *customer contact class* and *type* to use.
- Define appropriate activity request Cancellation Reasons. Cancellation reasons are defined using a customizable *lookup*. The lookup field name is C1_AM_CANCEL_RSN_FLG .
- Define an activity type for the business object C1-NotifyExpiringCreditCardTyp . You may define default parameter values for the number of days for expiration and customer contact class and type.

## Exploring Activity Request Data Relationships

Use the following links to open the application viewer where you can explore the physical tables and data relationships behind the activity request functionality:

- Click *C1-ACM-ACTTY* to view the activity type maintenance object's tables.
- Click *C1-ACM-ACTRQ* to view the activity request maintenance object's tables.

## Defining a New Activity Request

To design a new ad-hoc batch job that users can submit via Sample and Submit, first create a new Activity Type business object. The base product BO for activity type C1-NotifyExpiringCreditCardTyp may be used as a sample.

The business object for the activity request includes the functionality for selecting the records to process, displaying a preview map for the user to review and to perform the actual processing. The base product BO for activity request C1-NotifyExpiringCreditCardReq may be used as a sample. The following points highlight the important configuration for this business object:

- Special BO options are available for activity request BOs to support the *Preview Sample* functionality.
  - Activity Request Preview Service Script. This script is responsible for retrieving the information displayed when a user asks for a preview of a sample of records.
  - Activity Request Preview Map. This is the map that is invoked to display the preview sample results.
- The enter algorithm plugged into the Complete state is responsible for selecting all the records that satisfy the criteria and processing the records accordingly.

## Setting Up Activity Types

Activity types define the parameters to capture when submitting an activity request via Sample and Submit. To set up an activity type, open **Admin** > **Activity Type** > **Add.**

The topics in this section describe the base-package zones that appear on the Activity Type portal.

**Contents**



## Activity Type List

The Activity Type *List zone* lists every activity type. The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent activity type.
- Click the Add link in the zone's title bar to add a new activity type.

## Activity Type

The Activity Type zone contains display-only information about an activity type. This zone appears when an activity type has been broadcast from the Activity Type List zone or if this portal is opened via a drill down from another page. The following functions are available:

- Click the **Edit** button to start a business process that updates the activity type.
- Click the **Delete** button to start a business process that deletes the activity type.
- Click the **Duplicate** button to start a business process that duplicates the activity type.
- State transition buttons are available to transition the activity type to an appropriate next state.

Please see the zone's help text for information about this zone's fields.

# Maintaining Sample & Submit Requests

Use the Sample and Submit transaction to view and maintain pending or historic activity requests. Navigate using **Menu** > **Batch** > **Sample & Submit Request** > **Search.**

**Contents**



## Sample & Submit Request Query

Use the *query portal* to search for an existing sample & submit request. Once a request is selected, you are brought to the maintenance portal to view and maintain the selected record.

## Sample & Submit Request Portal

This portal appears when a sample & submit request has been selected from the Sample & Submit Request Query portal.

The topics in this section describe the base-package zones that appear on this portal.

**Contents**

## Sample & Submit

The Sample & Submit zone contains display-only information about an activity (sample & submit) request. The following functions are available:

- Click the **Edit** button to modify the parameters. Refer to *Preview A Sample Prior to Submitting* for more information.
- If the activity request is in a state that has valid next states, buttons to transition to each appropriate next state are displayed.

Please see the zone's help text for information about this zone's fields.

## Sample & Submit Log

This is a standard *log zone*.

# Defining SA Relationship Options

We use the term "SA Relationship" to describe functionality that supports the following situations:

- When companies other than your own provide a service to your customers AND you have some type of interaction with these companies. For example, in a deregulated market, customers deal with both distribution and energy supply companies. These companies typically exchange a great deal of information about their joint customers.
- When multiple rates are associated with a service (where each rate corresponds with a sub-category of service). For example, most water companies charge for both water and wastewater service using separate rates for each. While it is possible to set up water and wastewater as separate service agreements, the SA relationship functionality allows you to set up a single "master" service agreement (for the water service) and associate with it a "sub" service agreement (for the wastewater service).
- When a party representing a group of customers negotiates a contract that is applied over and above those of the individual service agreements. For example, the head office of a national chain may negotiate for additional discounts that should be calculated together or individually. The SA relationship functionality may be used to track the covered service agreements and to calculate and transfer discounts to the head office's service agreement. Refer to the special discounts section.

**WARNING:**
Setting up the SA relationship control tables is as challenging as your organization's business rules. If you don't have requirements similar to those described above, you don't have to set up anything. If you have these types of requirements, your setup process will be taxing as you must design and set up control tables that manage the financial and consumption interactions that take place between you, your customers, and the various service providers.

The topics in this section describe tables that control your SA relationship functionality. Refer to *Defining Workflow and Notification Options* for a description of the tables that control how your organization communicates with the service providers who provide service to your customers.

**Contents**

# The Big Picture of SA Relationships and Service Providers

You must set up service providers if companies other than your own provide a service to your customers AND you have some type of interaction with these companies. You will have one service provider for each such company. For example, if you are a distribution company in a deregulated market, you will have a service provider for each company that provides any of the following services:

- Energy (commonly referred to as Energy Supply Companies, Energy Service Providers, Retailers, and Suppliers)
- Meter service (commonly referred to as Meter Service Providers and Meter Agents)
- Meter reading (commonly referred to as Meter Data Management Agencies and Meter Reading Service Providers)
- Billing (commonly referred to as Billing Agents)

The topics in this section provide background information about service providers.

**Contents**



## Persons and Service Providers

A great deal of information about your service providers is defined using a person. For example, a service provider's name, address, phone numbers, electronic ID's, etc. are all defined on the person object.

In addition, every service provider must have a service provider object created for it. The service provider object contains information about a provider's relationships with the customer and your organization, for example:

- Do you calculate bills for the service provider? If so, do you have their rates or do they interface their charges to you? Refer to *Billing Relationships* for more information.

- Do you send the customers' consumption to the service provider? Do they send it to you? Refer to *Consumption Relationships* for more information.
- How are financial settlements between your organization and the service provider implemented (do you pay them when you get paid?, do you purchase the receivable for them?, etc.). Refer to *Service Providers Have Service Agreements Too* for more information.
- Etc.

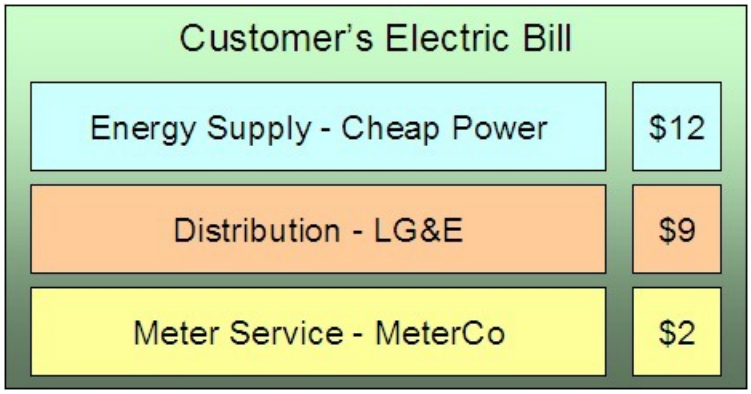
**FASTPATH:**
Refer to *Designing Your SA Relationship Types and Service Providers* for more information.

**NOTE:**
In some situations, you will need to set up a service provider for your own company. Refer to *When Your Company Is A Service Provider* for the details.

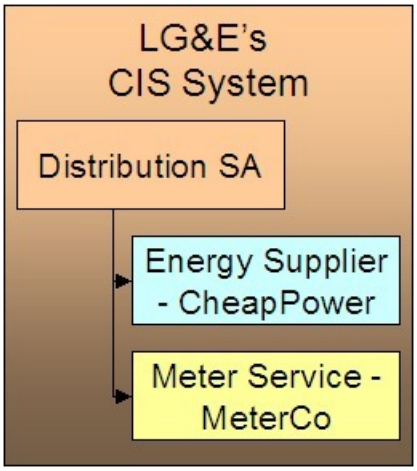
## Service Providers Are Linked To Service Agreements

The following diagram illustrates a customer's bill for electric service in a deregulated market. Notice that there are separate sections for energy, distribution and meter service.

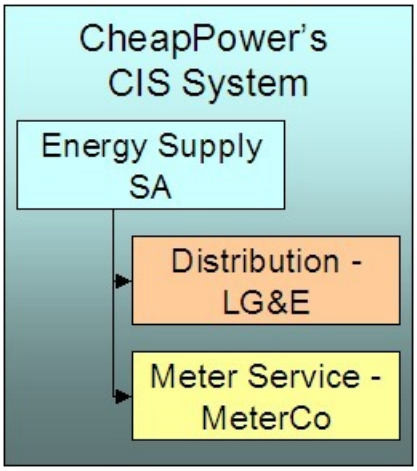
**NOTE:**
**Consolidated billing.** The following is an example of a bill that consolidates charges from many service providers. Rather than receive a consolidated bill, it is possible for the customer to receive 3 separate bills, one from each service provider (we refer to this as Dual billing).



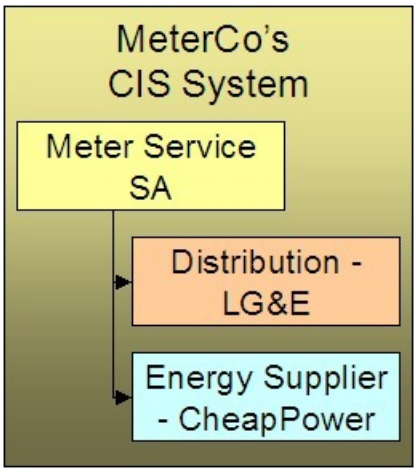

If we were to look at this customer's service agreement in the distribution company's CIS system, we'd find a service agreement for distribution charges, and linked to it would be information about the meter service and energy service providers:




If we look at this customer's service agreement in the energy supply company's CIS system, we'd find a service agreement for energy charges, and linked to it would be information about the distribution and meter service providers:




And finally, if we look at this customer's service agreement in the meter service company's CIS system, we'd find a service agreement for meter service charges, and linked to it would be information about the distribution and energy providers:




**NOTE:**

**Bottom line.** A customer's service providers keep track of the customer and each other in their respective CIS systems. A customer will have a service agreement (or the equivalent) in each service provider's CIS system. A customer's service agreement defines the service providers who supply each type of service.

---

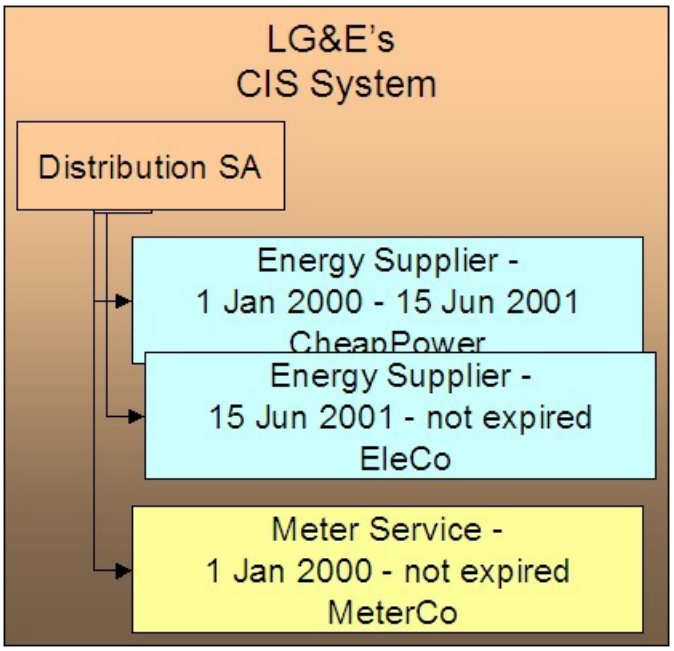
**FASTPATH:**
Because information about customers and their services needs to be kept up-to-date in many different CIS systems, there is a need for automated communications between service providers. Refer to *Service Providers Have To Communicate About Customers* for more information.

---

## Service Providers May Change Over Time

A customer typically has a choice of service providers. Over time, their choice may change. The system keeps track of a customer's service providers throughout time so that it can accurately cancel / rebill historical bills. This means that the service provider relationship is *effective-dated*.

The following diagram illustrates how a distribution company's system keeps track of a customer's service providers (notice the customer changed energy suppliers):




## How To Set Up SA Relationships On A Customer's Service Agreement

There are three ways to set up a customer's service providers:

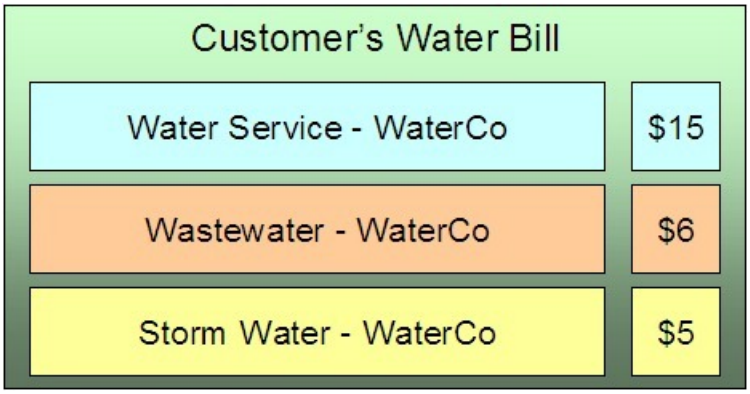
- **Manually.** An operator can manually change a service agreement's SA relationships. The manual method is NOT recommended as changing service providers typically involves many events (e.g., you have to notify the current service provider that they will be dropped). We strongly recommend having an operator kick off a workflow process and let the workflow process notify the service providers and make the desired changes. Refer to *Defining Workflow and Notification Options* for more information.

- **Use Default Service Providers.** The system will default a service provider on a required SA relationship when a service agreement is activated. Refer to *Defaulting Relationship Types And Defaulting Service Providers* for more information.
- **Workflow Processing.** A workflow process may contain workflow events that change a service agreement's SA relationships. Refer to *Defining Workflow and Notification Options* for more information.

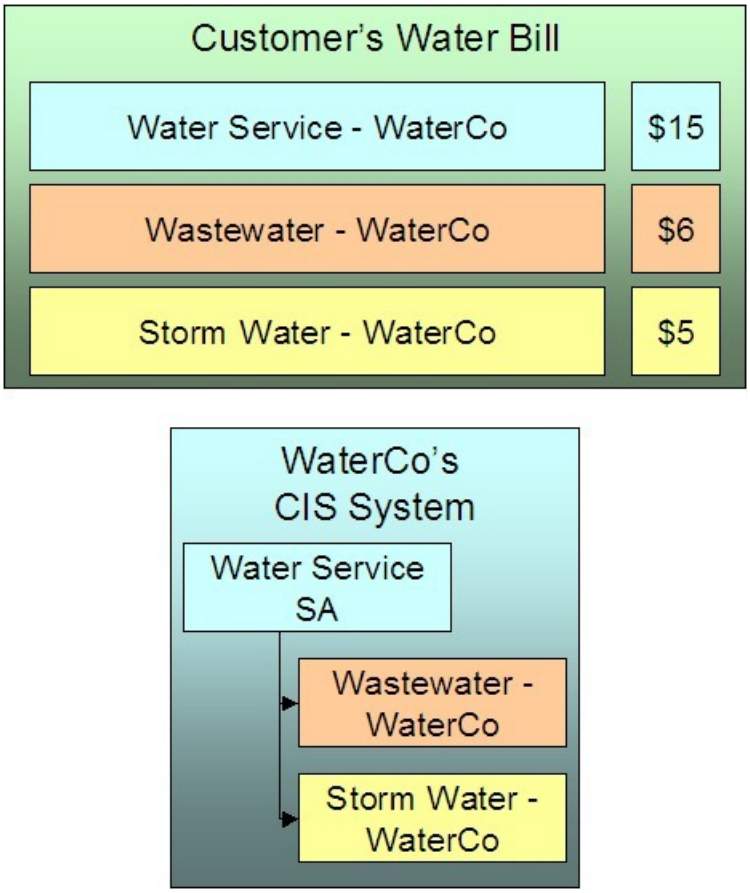
## When Your Company Is A Service Provider

Besides setting up service providers for other companies that provide services to your customer, you may have to set up a service provider for your own company. You have to do this when:

- **Your organization can supply one of the services.** Refer to the illustration in *Service Providers Are Linked To Service Agreements*. If you are LG&E and you supply energy in addition to distribution, you would need to set up a service provider for your own organization. Why? Because whenever you have a subcategory of service (e.g., energy supply), you must indicate the service provider who provides this service; even when it's you.
- **You decide to break up a service into subcategories** (and have a separate service agreement for each category). For example, a water company may choose to break up service charges into water, wastewater and storm water (they may do this because there are different rates for each category of service). The following is an example of the segregated charges associated with this water company's service charges.



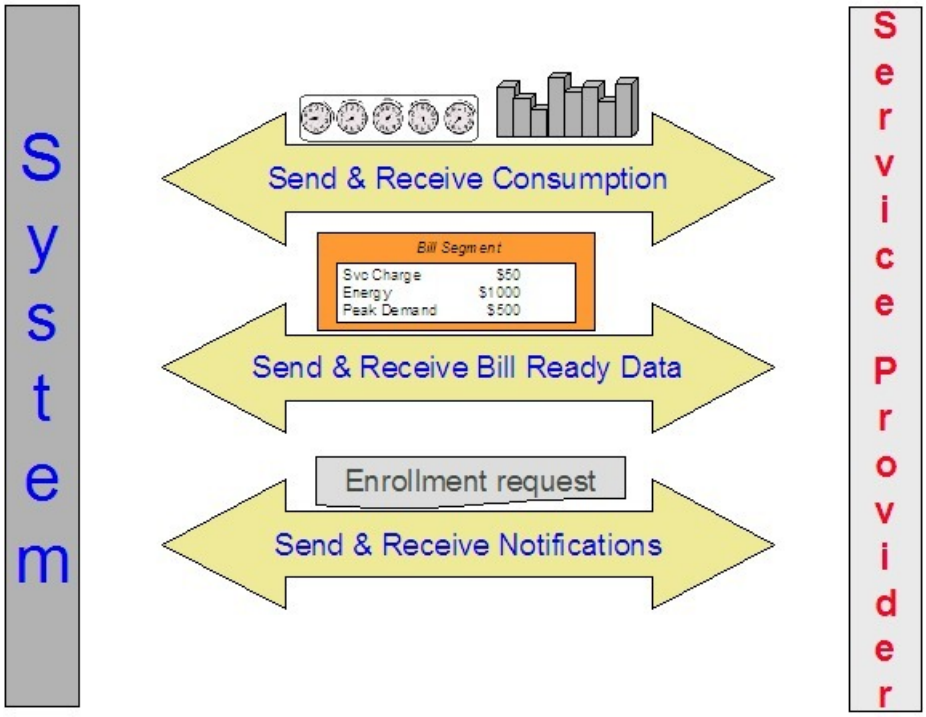

This water company system may benefit by creating a single service (for water) and indicating there are subcategories of service (for wastewater and storm water). Whenever you have a subcategory of service, you must indicate the service provider who provides this service. And, in this example, the water company would be the sole service provider for each subcategory of service.




**NOTE:**
Refer to *We Bill For Them - Rate Ready Bill Segments Are Special* for restrictions in respect of using subcategories of service.

## Service Providers Have To Communicate About Customers

The providers of service typically have to communicate with each other in respect of the customer's service. The following diagram illustrates the major interfaces of information between your system and your service providers.




Depending on where your organization fits in the service provider hierarchy, you may:

- Bill for other service providers (or they may bill for you). Refer to *Billing Relationships* for more information about billing communications.
- Send the customer's consumption to service providers (or they may send it to you). Refer to *Consumption Relationships* for more information about consumption communications.
- Apprise service providers of the changes to the customers' service (or they may apprise you). Refer to *How Do You Communicate With Service Providers?* for more information about communications between service providers.

## Relationships Between Service Providers

Service providers may arrange contractual relationships with other service providers to provide additional services, e.g., an energy service provider may work with a specific meter data management agency to gather and report interval meter read data.

The system does nothing special to enforce or record these inter-relationships. Why? Because most service provider switches are received by notification records. Notification records indicate all the associated service providers. There is no need for the system to maintain the inter-service provider associations.

## A Service Agreement Can Have Many Types Of Relationships

As described in the previous sections, a given service can be subdivided into subcategories. Each type of service can have zero, one or more subcategories. We call each subcategory a **SA Relationship Type** . The topics in this section provide information about SA relationship types.

**Contents**

*Valid Relationship Types and Service Providers Are Defined On SA Types*

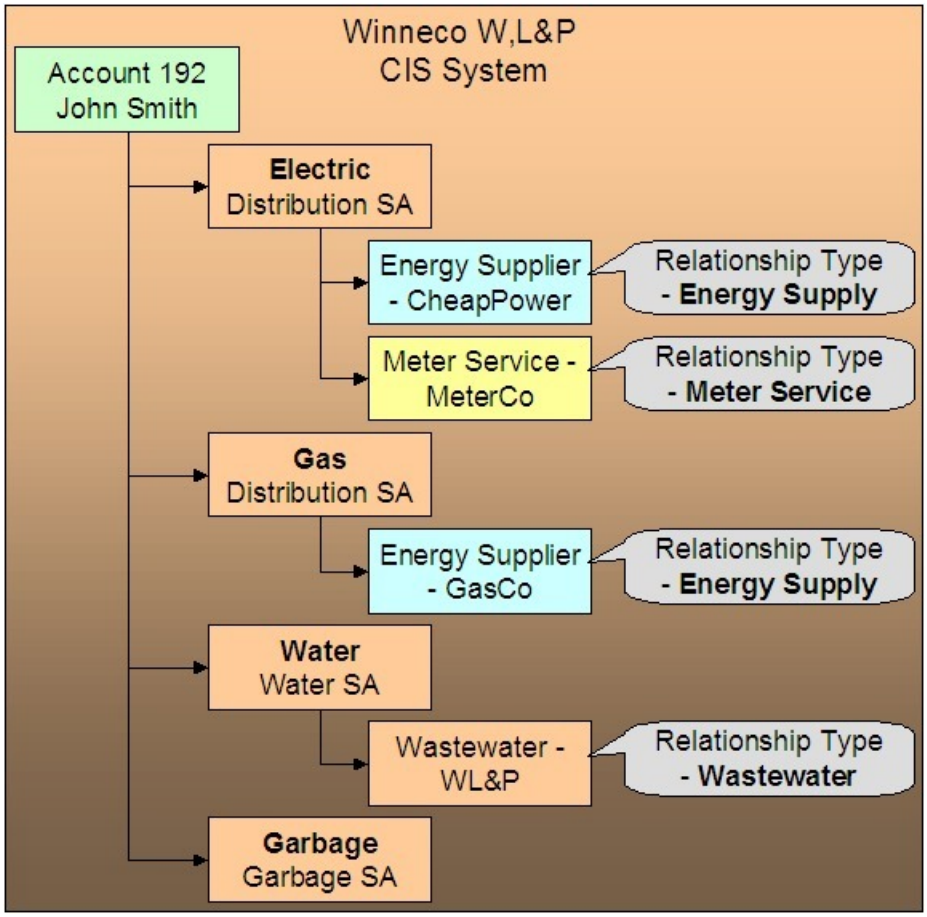
*Defaulting Relationship Types And Defaulting Service Providers*

*Required Relationship Types and Billing*

*Relationship Types Do Not Impact Start / Stop*

## An Example

We'll use the following example of a customer in a municipal utility's CIS system to explain SA Relationship types:




Note the following:

- Electric service has 2 SA relationship types: energy supply and meter service.
- Gas service has 1 SA relationship type: energy supply.
- Water service has 1 SA relationship type: waste water.
- Garbage service has no SA relationship types.

**NOTE:**
**Bottom line.** Service providers are related to the customer via "your" service agreement. Each service provider linked to a service agreement is defined in respect of a SA Relationship Type. This relationship is effective-dated because we care about how it changes over time.

**Your relationship type is implied.** The SA relationship type of "your" service agreement is implied, e.g., if you are a distribution company, "your" service agreement's implied SA relationship type is "distribution".

## Valid Relationship Types and Service Providers Are Defined On SA Types

You control which services have SA relationships (and which don't) when you set up your SA types. Each SA type can have zero, one or more SA relationship types. Each relationship type, in turn, can have one or more valid service providers.

**FASTPATH:**
Refer to *Setting Up SA Relationships For SA Types* for the page used to define the service providers and SA relationship types for each SA type.

## Defaulting Relationship Types And Defaulting Service Providers

Please be aware of the following:

- A SA relationship type for a given SA type can be marked as being **Required**.
- A service provider for a given SA relationship type / SA type can be marked as being the **Default**.

If, at activation time, the customer's master SA is missing a **Required** SA relationship that has a **Default** service provider, the activation process automatically creates the SA relationship type and links to it the **Default** service provider. If a master service agreement doesn't have all **Required** SA relationships, the service agreement cannot be activated. This is handy when your organization is the default service provider for a relationship type.

**FASTPATH:**
Refer to *Automatic Creation of Sub SAs* for information about how the system will automatically create sub service agreements for the defaulted SA relationship / service provider if your organization provides billing services for the service provider. Refer to *Setting Up SA Relationships For SA Types* for the page used to define the service providers and SA relationship types for each SA type.

## Required Relationship Types and Billing

When the system attempts to create a bill segment for a service agreement whose SA type has **Required** relationship types, it checks if all such relationships are defined for the service agreement. If not, a bill segment error will be generated.

The reason this restriction exists is to handle the situation when your required relationship types change over time. For example, assume on your first day of production you only need energy suppliers defined on electric service agreements. After several months, gas deregulates. When this happens, you will need to change your control tables to indicate that your gas SA types require an energy supplier. If you don't write a default program to update your existing gas service agreements, billing will complain.

## Relationship Types Do Not Impact Start / Stop

Customer service representatives (CSR's) are typically not involved with the customer's choice of service providers. Most organizations hear about a customer's service providers from the service providers or from a central body. This means that the start / stop dialog is not impacted by SA relationships. This also means that CSR's are not impacted by SA relationships

(unless something goes wrong). If something goes wrong, the CSR's may need to manually correct SA relationships. Refer to *How To Set Up Service Providers On A Customer's Service Agreement* for more information.

## Billing Relationships

When you set up a service provider, you must define your organization's billing relationship with the service provider. The following points provide examples of the billing relationships supported in the system,

- If you are an energy supply company, you may provide billing services for the distribution company. This means that your bill contains both your charges and the distribution company's charges. We refer to this as the **We Bill For Them** billing relationship.
- Alternatively, the distribution company may provide billing services for you. This means that the distribution company's bill contains your charges and their charges. We refer to this as the **They Bill For Us** billing relationship.
- Alternatively, you may both send bills to the customer. We refer to this as the **Dual Billing** relationship.
- Alternatively, if you subcategorize your services OR if your company provides one of the services that is provided by your service providers, then the system will create a separate bill segment for the subcategory of service. We refer to this as the **It's Us** billing relationship.

If you provide billing services for another service provider (i.e., you bill for them), there are two ways to determine the service provider's charges:

- You can load the service provider's rates in your system and calculate the charges for the service provider. We call this the **Rate Ready** calculation method.
- You can let the service provider calculate their own charges and interface them to you. We call this the **Bill Ready** calculation method.

If a service provider provides billing services for you (i.e., they bill for you):

- If the service provider has a suitable CIS system, they can load your rates in their system and calculate your charges for you. We call this the **Rate Ready** calculation method.
- You can calculate your charges and interface them to them. We call this the **Bill Ready** calculation method.

If you don't have a billing relationship with a service provider, you still need a service provider record to define such. Why? Because the system needs to know that it doesn't have to worry about a particular service provider in respect of billing. In addition, you may have other interactions with a service provider that have nothing to do with billing, e.g., you may send or receive consumption.

The topics in this section provide a wealth of information about the various billing relationships and the ramifications of each.

**Contents**

## Sub Service Agreements

If you provide billing services for another service provider OR if you subcategorize your own charges, there will be a separate service agreement (SA) linked to the customer's account that holds these unique charges. We refer to this new service agreement as a **Sub SA**. We use the term "sub" because this service agreement is subservient to the "master" service agreement. By subservient we mean:

- A sub SA's start and stop dates are the same as the master SA. This statement may seem odd, but it's true – all sub SAs linked to a master service agreement have the same start and stop dates as the master.
- A sub SA's status (i.e., *pending start*, *active*, *pending stop*, *stopped*, etc.) is controlled by its master service agreement. As a rule, the master SA transitions its status first and the sub SA(s) follow.

  **NOTE:** There are situations where the master service agreement transitions its status and the sub service agreement(s) does not. One example of this is when both the master and sub SAs are closed and a payment cancellation occurs that only affects the master SA. In this scenario, the master SA becomes reactivated and the sub SA remains closed. Another example is when a straggling billable charge posts to a sub SA; the master SA is not affected.

- Refer to *The Rate Ready Calculation Method* for additional examples of subservience.

**NOTE:**
You may find it helpful to keep in mind that sub SAs are only used for service providers with a billing relationship of It's Us and We Bill For Them . This is because these are the only relationships that have implicit billing responsibilities.

The topics in this section provide additional information about sub SAs.

**Contents**

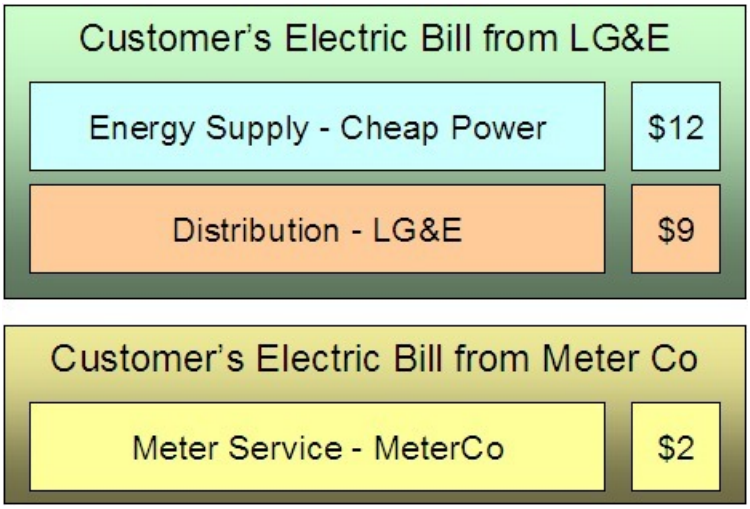


## Only Some Service Providers Have Sub SAs

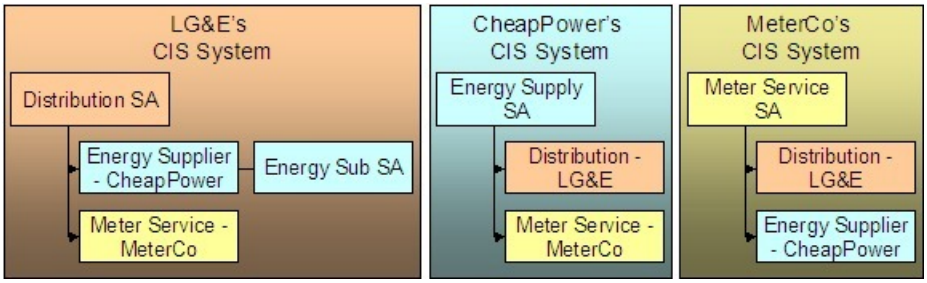
If you do not provide billing services for a service provider, there will be no sub SAs associated with the service provider's SA relationships. Let's use an example to make the point; assume:

- Service is divided into distribution, energy and meter service charges.
- You are the distribution company and you provide billing services for the energy supply company.
- The meter service company bills the customer independently.

In this situation, the customer will receive two bills: one from you (LG&E), the other from MeterCo. Notice that your bill (LG&E) contains your distribution charges AND CheapPower's energy charges:




If we were to look at the customer information in the three service providers' respective CIS systems, we'd find the following service agreements and SA relationships for the customer:




Notice the following:

- The customer has a service agreement in each supplier's CIS system.
- Because LG&E (the distribution company) bills for CheapPower, all customers who have their energy supplied by CheapPower will have a sub SA in LG&E's system. This sub SA maintains the charges (and receivable balance) associated with CheapPower's energy charges.
- Notice that neither CheapPower's nor MeterCo's CIS systems use sub SAs. This is because neither company bills for other service providers.

**NOTE:**
**Sub SAs are needed if you subcategorize your charges.** The above example shows sub SAs being used when a company provides billing service for another company. Sub SAs are also used when you subcategorize your charges - each sub SA contains the rate associated with each subcategory.

## Automatic Creation of Sub SAs

The system creates sub SAs for customers choosing service providers where the billing option is It's Us or We Bill For Them . The system creates sub SAs via the following mechanisms:

- The *analyze SA relationships* background process (known by the batch control ID of ANLYZSAR ) monitors newly activated SA relationships. If the respective service provider is It's Us or We Bill For Them , this process creates the sub SA(s) using the information defined on *SA Type SA Relationship Type - Sub SA Type*.

**NOTE:**

The *analyze SA relationships* background process also activates and stops sub SAs. Refer to *Sub SA State Transition* for the details.

- A button exists on the *SA Relationships* page. This button, when pressed, creates sub SAs real-time. This button would only be used if the operator couldn't wait for the background process to run.

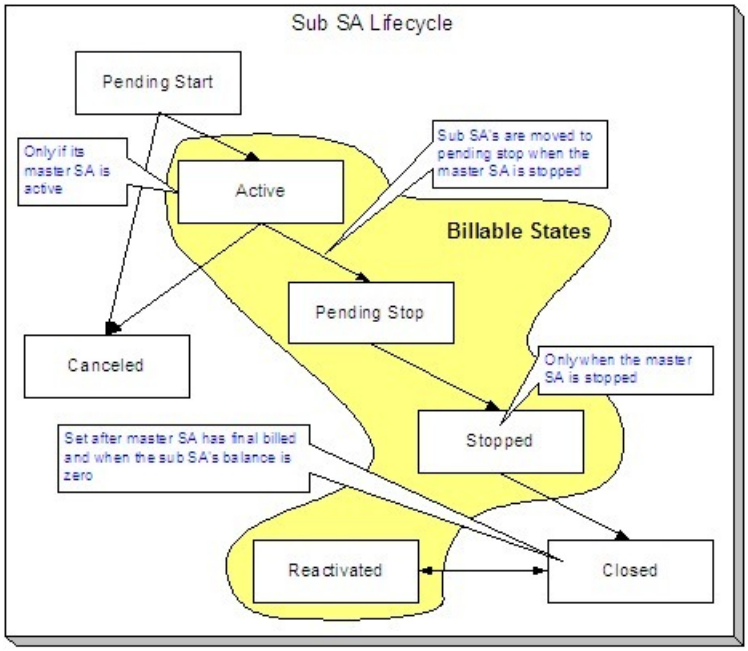
The SA type associated with the new sub SAs is defined when you set up each SA Type / SA Relationship Type. Refer to *Setting Up SA Relationships For SA Types* for more information.

If the SA type uses start options, the start option contains additional values (e.g., rates, contract riders) that are used to populate the newly created sub SAs. Note: start options are typically not used for We Bill For Them - Bill Ready service provider because we don't need to default rates, contract riders and/or contract values on billable charge sub SAs. Refer to *Setting Up SA Relationships For SA Types* for more information.

**NOTE:**
**Manually created sub SAs.** In very unusual situations, an operator may create a sub SA manually. An operator would do this using the *SA Relationship* transaction.

## Sub SA State Transition

Sub SAs follow normal SA state transition rules, but have a few additional rules about when the transitions can take place.




The following points highlight the additional state transition rules:

- A sub SA can only become Active if its master SA is Active . Most sub SAs are activated by the *analyze SA relationships* background process. However, a user can manually activate a sub SA using the activate button on the *SA maintenance* page.
- Sub SAs become Pending Stop when their master becomes Stopped . This typically occurs when the *SA activation background process* stops the master SA. However, this can happen real time if a user manually stops a master SA using the stop button on the *SA maintenance* page.

- A sub SA can only become Stopped if its master SA is Stopped . Most sub SAs are stopped by the *analyze SA relationships* background process. However, a user can manually activate a sub SA using the stop button on the *SA maintenance* page.
- A sub SA becomes Closed if its master has been final billed and it has a balance of zero. Most sub SAs are closed when their balance becomes zero after the master SA is final billed. However, a user can manually close a sub SA using the close button on the *SA maintenance* page. Note, if additional billable charges are interfaced after the master has been closed, the sub SA will be Reactivated .

## We Bill For Them

If you provide billing services for another service provider, then you have a We Bill For Them billing relationship with the service provider. The topics in this section provide information about this type of billing relationship.

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### Sub SAs Are Used When We Bill For Them

As described under *Sub Service Agreements*, sub SAs are used for We Bill For Them service providers. The sub SAs hold the service providers charges. It's important to note that the system allows more than one sub SA to be created for a given service provider.

### The Rate Ready Calculation Method

If you provide billing services for a service provider (i.e., the service provider has a billing relationship of We Bill For Them ), you can load the service provider's rates in your system and calculate the charges for the service provider. We call this the **Rate Ready** calculation method.

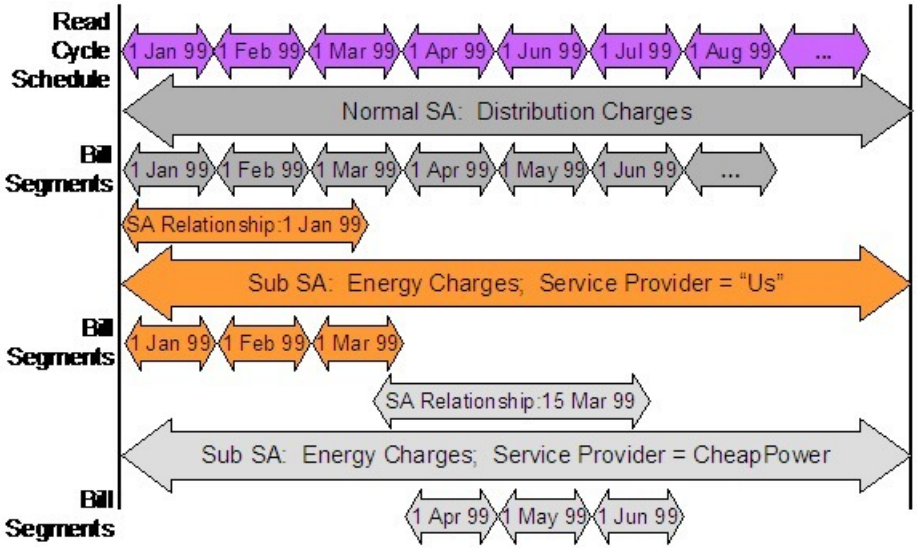
> **NOTE:**
> It's Us **can be Rate Ready .** The prior paragraph indicated that the Rate Ready billing option was used for We Bill For Them service providers. If you subcategorize your services and use rates to calculate each subcategory's charges, the service provider(s) set up for your own organization will also be subject to the Rate Ready rules described below.

If a customer uses a We Bill For Them - Rate Ready service provider, the system will create a separate bill segment for the service provider's charges. Keep in mind the following in respect of these types of bill segments:

- The consumption is copied from the "master" service agreement (note: we copy item details and read details after pre-processing calculation groups, if any exist, have been applied). This means that the bill period on the sub SA's bill segment is identical to that on the normal SA. This also means that if the "master" SA is in error, bill segments for the sub SA will not be created.
- The rate defined on the sub SA is applied against this consumption. All pre-processing calculation groups defined on the service provider's rate will be used to manipulate this consumption. If you have pre-processing calculation group on your master SA's rate to apply a line loss or convert a cubic foot to a therm, you don't have to have these pre-processing

calculation group on the sub SA's rate (because we copy the consumption from the master to the sub after pre-processing calculation group, if any exist, have been applied).

The following illustration should help:




Be aware of the following:

- This example is from a distribution company's perspective.
- From 1 Jan 99 through 15 Mar 99, the distribution company distributes power AND supplies energy (i.e., the distribution company is the service provider of energy).
- On 15 Mar 99, CheapPower becomes the energy supplier. However, the next bill period ends on 30 Mar 99. This means that CheapPower will only start supplying energy on 1 Apr 99. See the following note for why the effective date of the supplier switch is not the true effective date from billing's perspective.

**NOTE:**
**Service Provider Changes Take Effect On The Next Bill.** If the service provider is changed within a customer's billing period, the system assumes that the service provider in effect at the START of the period is effective the entire billing period. This means that a change of service providers will only take effect on the bill whose start date follows the change date.

Please be aware of the following characteristics of Rate Ready bill segments:

- You cannot cancel a Rate Ready bill segment independently from the master bill segment. If you need to cancel / rebill the sub SA's bill segment, you must cancel / rebill the master SA's bill segment.
- You cannot delete a Rate Ready bill segment independently from the master bill segment. If you need to delete the sub SA's bill segment, you must delete the master SA's bill segment.
- Similarly, if you cancel / rebill the normal SA's bill segment, all Rate Ready bill segments will be cancelled / rebilled.

**NOTE:**
**Bottom line.** Creating, freezing, deleting, and canceling a "master" bill segment does the same with all Rate Ready bill segments. You cannot create, freeze, delete or cancel a Rate Ready bill segment independent of its master bill segment.

## The Bill Ready Calculation Method

If a customer uses a We Bill For Them - Bill Ready service provider, the service provider calculates their own charges and interfaces them to the system. We then present their charges on our bill; we don't actually calculate anything (sometimes this is referred to as "pass through" billing).

The sub SA linked to a We Bill For Them - Bill Ready must be a billable charge SA. Why? Because billable charge SAs exist to hold bill lines until such time as a bill is created for the customer's account. Refer to *Setting Up Billable Charge Templates* for more information.

Please be aware of the following characteristics of Bill Ready bill segments:

- Unlike Rate Ready bill segments, Bill Ready bill segments can span different time periods than the master SA. This is because you cannot predict when a service provider will interface their billable charges to you. In fact, a given bill could contain billable charges that span different periods and these charges could have been interfaced from historic and existing service providers.
- Unlike Rate Ready bill segments, Bill Ready bill segments can be created and deleted independently from the master bill segment.
- Unlike Rate Ready bill segments, Bill Ready bill segments can be cancelled independently from the master bill segment.

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Sending Consumption And Waiting For The Charges

If your organization supports We Bill For Them - Bill Ready service providers AND you are the source of consumption used by these service provider to calculate their charges, you need to be aware of the following :

- We do NOT recommend sending raw meter reads to service providers. Rather, we recommend sending these service providers the same consumption that you use on your bill segments. Remember, the system maintains a snapshot of billed consumption on bill segments associated with service agreements that are linked to service points.
- But to implement our recommendation (of only interfacing billed consumption to service providers), we need to create a bill segment for the master SA and then wait until the service provider returns the billable charge before sending out the bill. The following points describe how this works:
  - Early in the bill cycle, the system creates a bill segment for the master SA (remember, the system maintains a snapshot of billed consumption on bill segments linked to service points). When the master bill segment is frozen, the system interfaces the snapshot consumption to all service providers associated with the master service agreement who need consumption (this is defined on the service provider). Refer to *We Can Send Billed Consumption To Any Service Provider* for more information about interfacing consumption to service providers.
  - The bill associated with the bill segment will not be completed. Why? Because the bill segments associated with the We Bill For Them - Bill Ready service providers will be in Error . This only happens if you use the *Billable Charge* bill segment creation algorithm (this algorithm is plugged in on the sub SA's SA type). On the algorithm, make sure to specify a value of Y for the parameter **Wait For The Last Day Of The Bill Cycle**. By doing this, a bill segment in the Error state will exist for the sub SA until the last night of the bill cycle's window.
  - On the last night of the bill cycle window, when the system attempts to create a bill segment for the billable charge SA associated with the We Bill For Them - Bill Ready , it will either find recently interfaced billable charges or it won't. If it finds unbilled, billable charges, a bill segment will be created for the sub SA and the billable charges will be swept onto it. If it doesn't find unbilled billable charges, the bill will be completed (i.e., sent out) without the service provider's charges.

**NOTE:**
**Bottom line.** If a customer's account uses We Bill For Them - Bill Ready service providers, the bill will not be completed (i.e., sent out) until the last night of the bill cycle (if you use the appropriate algorithm). Why? Because we wait until the last night of the bill cycle before trying to sweep on recently interfaced billable charges. If no billable

charges have been interfaced from the service provider by the last night of the bill cycle, the bill will be sent out without the service provider's charges.

**Batch versus Online Bill Creation.** If you create a bill online, the system will NOT create an Error bill segment for the We Bill For Them - Bill Ready service provider. Why? Because if you want to create an online bill, either the service provider has interfaced their charges or they haven't. If they have, they should be swept on the bill (via the creation of a bill segment). If they haven't, it shouldn't prevent you from completing the bill.

U ploading Consumption (Rather Than Uploading Calculated Charges)

We understand this is confusing, but it is quite possible to set up the system so that the We Bill For Them - Bill Ready service provider passes in CONSUMPTION rather than the calculated bill lines. They would only do this if they are not able to calculate the charges in their system and have therefore provided you with their rates. To do this, you would set up everything as described above. In addition, when you upload the billable charges, you must specify the consumption to be rated in the billable charge's service quantity (SQ) collection.

Calculating Taxes On Uploaded Charges

It is possible to set up the system to calculate taxes for billable charges. You would do this if the service providers are passing through the charges and want you to calculate the taxes.

If you want taxes calculated on top of billable charges:

- Create a service quantity (SQ) on the billable charge that contains the total monetary amount that taxes will be calculated on. Note, you would not have to do this if you have a pre-processing calculation group in your rate that calculates the total monetary amount to which taxes should be applied.
- Specify a rate on the billable charge service agreement. This rate will contain calculation rules that calculate taxes. Note, the calculation rules will be simple SQ calculation rules that apply a percentage to the value of the SQ that represents the monetary amount on which taxes should be calculated.

When the system creates the bill segment for the billable charge, it will call the rate and the rate will calculate the taxes and add additional lines (actually, bill calculation headers) to the bill segment.

## Pay At Bill Time vs. Pay At Pay Time

If you provide billing services for another service provider (i.e., the service provider has a billing relationship of We Bill For Them ), you will owe them money because you will be receiving money from their customers for their service. You have two options in respect of when the system increases the amount you owe the service provider:

- You can tell the system to increase how much you owe the service provider when you freeze the customer's bill segment. Some people refer to this method as "purchasing the receivable from the service provider". We call this the **Pay At Bill Time** method.
- You can tell the system to increase how much you owe the service provider only when you are paid for by the customer. We call this the **Pay At Pay Time** method.

The method used for a service provider is defined on the service provider's record.

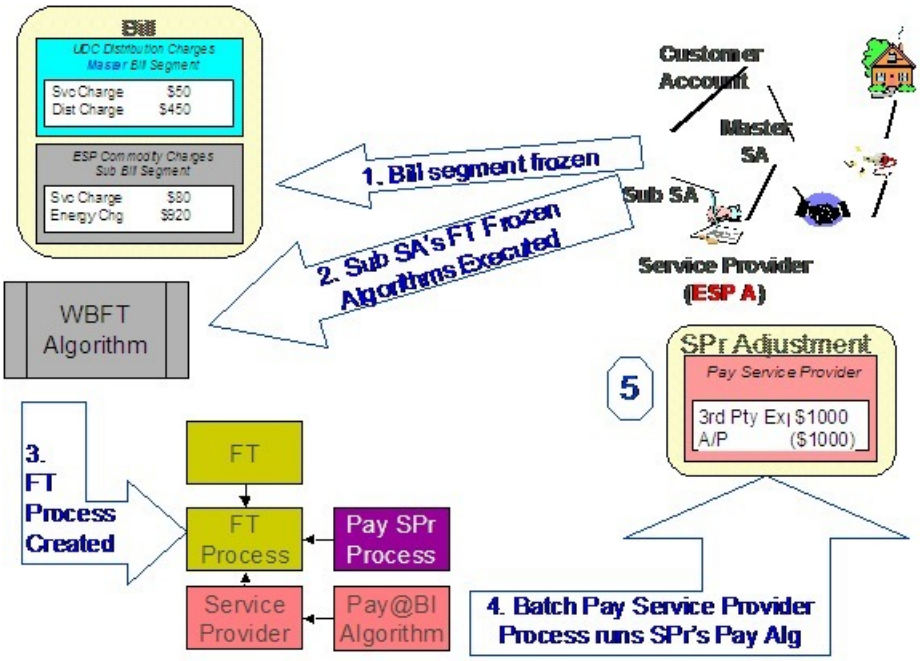
**FASTPATH:**
Refer to *When We Bill For Them, We Owe Them Money* for more information.

## Paying The Service Provider - Technical Implementation

**WARNING:**

This section describes, technically, how we increase the amount we owe a We Bill For Them service provider. If you aren't technically inclined, skip this section.

The following illustration shows the logical steps involved with increasing how much we owe a We Bill For Them service provider.




The following points explain the steps:

- When a financial transaction (FT) is frozen, the system executes the FT Freeze algorithms defined on the SA(s) SA type.
- If you've set up the system properly (i.e., you've put the appropriate FT Freeze algorithm on the sub SA's SA type), one of these algorithms will determine if there is a WBFT service provider associated with the sub SA. If so, it will insert a row on the FT Process table.
- Rows on the FT process table are used as "triggers" for batch processes. In this case, the batch process that is triggered is the one that looks at new FT's and determines if a related "payable" adjustment should be created for the We Bill For Them service provider. This batch process uses the service provider's Payment Relationship and Pay Service Provider algorithm to determine when and how to create these "payable" adjustments.

## Service Providers Have Service Agreements Too

Most service providers need service agreements as explained in the following topics.

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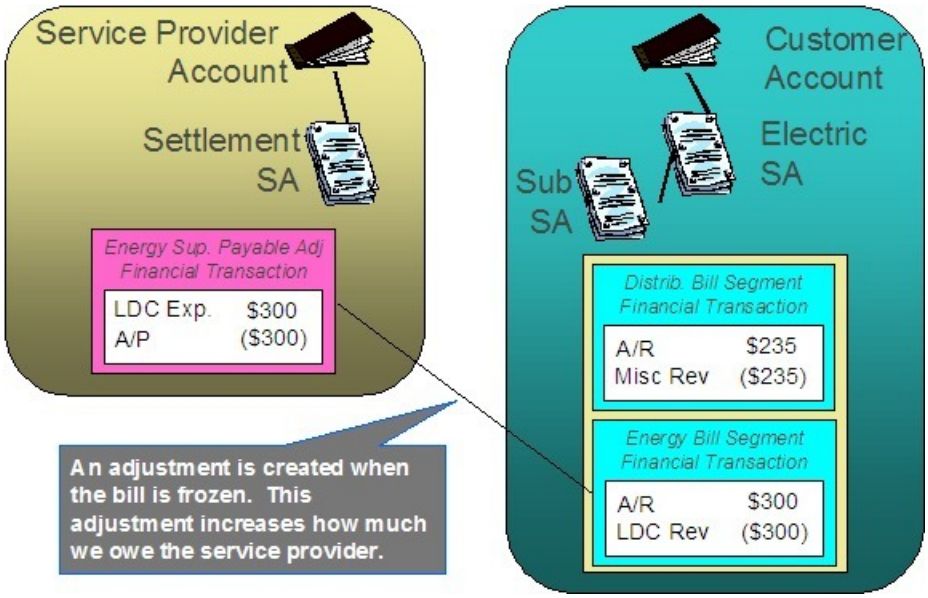
## When We Bill For Them, We Owe Them Money

When you bill on behalf of a service provider (i.e., the service provider has a billing relationship of We Bill For Them ), you will eventually owe them money (because the customer pays you for the service provider's service). You have two options in respect of when the system increases the amount you owe the service provider:

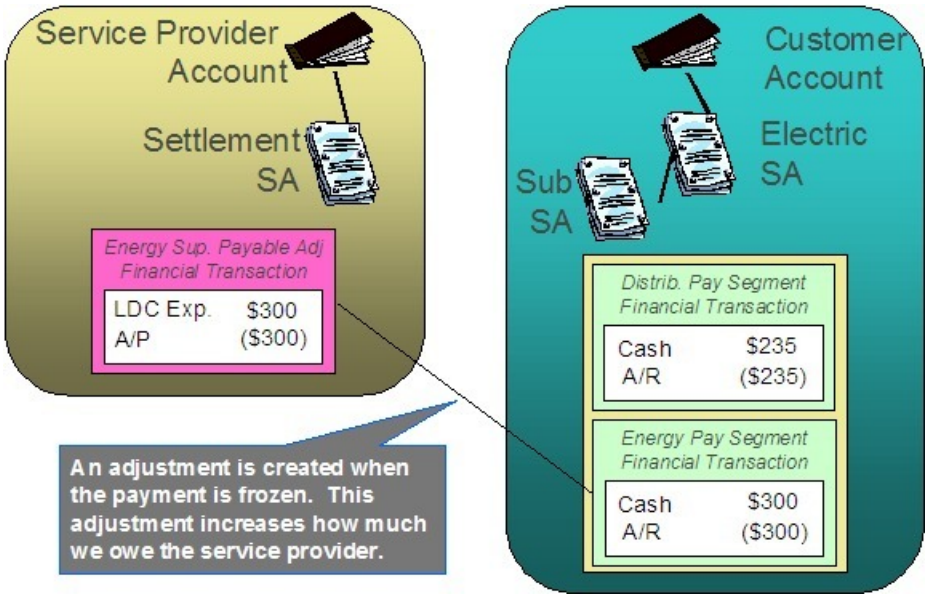
- You can tell the system to increase how much you owe the service provider when you create the customer's bill. Some people refer to this method as "purchasing the receivable from the service provider".
- You can tell the system to increase how much you owe the service provider only when you are paid for by the customer.

The system keeps track of how much you owe a service provider on a service agreement linked to the service provider's account. The system creates adjustments against this service agreement to increase how much you owe them.

If you "purchase the receivable" (i.e., you owe them when you bill the customer), an adjustment is created when the customer is billed. If you owe them only when you are paid by the customer, an adjustment is created when the customer pays. The following example illustrates an adjustment being created when the bill is frozen (illustrating the "purchase the receivable" scenario):




If you only pay the service provider when you are paid, the example would look as follows:



## Adjustments and We Bill For Them Service Providers

**FASTPATH:**
It's important that you are comfortable with the information described under *When We Bill For Them, We Owe Them Money* before reading this section.

Adjustments associated with We Bill For Them sub service agreements are tricky. The following points describe how the system "pays" the related service provider when adjustments are issued against the customer's sub service agreement:

- For Pay At Bill Time service providers, most adjustments are treated just like bill segments, i.e., when the adjustment's FT is frozen, a payable adjustment is created for the respective service provider. The reason "most" is underlined in the previous sentence is because A/P adjustments (i.e., adjustments used to interface check requests to your A/P system) are excluded. Why? Because A/P adjustments are used to refund overpayments to the customer. Overpayments are purely between the customer and your company (you never transferred the overpayment to the service provider because it's associated with a Pay At Bill Time service provider).
- For Pay At Pay Time service providers, A/P adjustments are treated just like payment segments, i.e., when the adjustment's FT is frozen, a payable adjustment is created for the respective service provider. All other types of adjustments are ignored. Why? Because A/P adjustments are used to refund overpayments to the customer. Think of it like this - when the customer originally overpaid, you transferred this overpayment to the Pay At Pay Time service provider; therefore, when you refund the overpayment, you get to take the money back from the service provider.

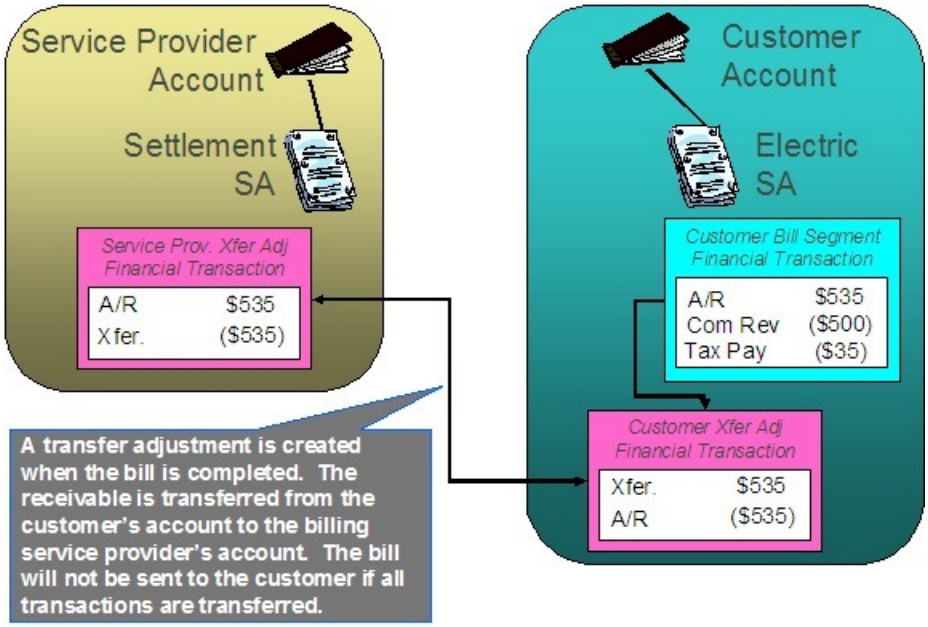
## When They Bill For Us, They Owe Us Money

When a service provider bills on behalf of your organization, they will eventually owe you money (because the customer pays them for your service).

The system keeps track of how much a service provider owes you on a service agreement linked to the service provider's account. The question is, How does the system determine how much you are owed when you don't produce a bill? Well, you do produce a bill, it just doesn't get sent to the customer. We understand this is a little confusing, but think about it like this:

- The service provider is presenting your charges on their bill.
- You still have to calculate how much the customer owes your organization otherwise you'll never know how much you are owed by the service provider.

As illustrated below, when a bill is completed, the system determines if there are bill segments and/or adjustments associated with service agreements with a service provider who "bills for us". If it finds these, it transfers the receivable from the customer's service agreement to the service provider's service agreement. If all financial transactions have been transferred to the service provider, no bill is produced for the customer.




**NOTE:**
**Bottom line.** We always generate a bill for "us", even though we don't send it to the customer.

## They Bill For Us

If a service provider provides billing services for you, then you have a They Bill For Us billing relationship with the service provider. The topics in this section provide information about this type of billing relationship.

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## The Customer Still Needs A Service Agreement

If a service provider bills for you, you still need a service agreement for the customer. Why? Because:

- As explained under *Service Providers Are Linked To Service Agreements*, service providers are defined in respect of a customer's service agreement (therefore the customer must have a service agreement).
- As explained under *When They Bill For Us, They Owe Us Money*, you still have to calculate bills for the customer.

**NOTE:**

**A customer's bill history still exists.** Be aware that even when a service provider bills for us, you will still be able to see the customer's billing history. It's just that the customer won't owe you anything because the receivable balance will be transferred to the service provider's account.

## They Bill For Us - Bill Ready

At bill completion time, the system determines if there are bill segments and/or adjustments associated with service agreements with a service provider who "bills for us". If it finds these,

- It transfers the receivable from the customer's service agreement to the service provider's service agreement. If all financial transactions have been transferred to the service provider, no bill is produced for the customer.
- Note that payments and A/P adjustments are not transferred. Why? Because payments and A/P adjustments are purely between the customer and your company.
- Each bill segment and adjustment is marked to be interfaced to the service provider (via a separate background process). Refer to *The System Background Processes* for more information about this background process.

## They Bill For Us - Rate Ready

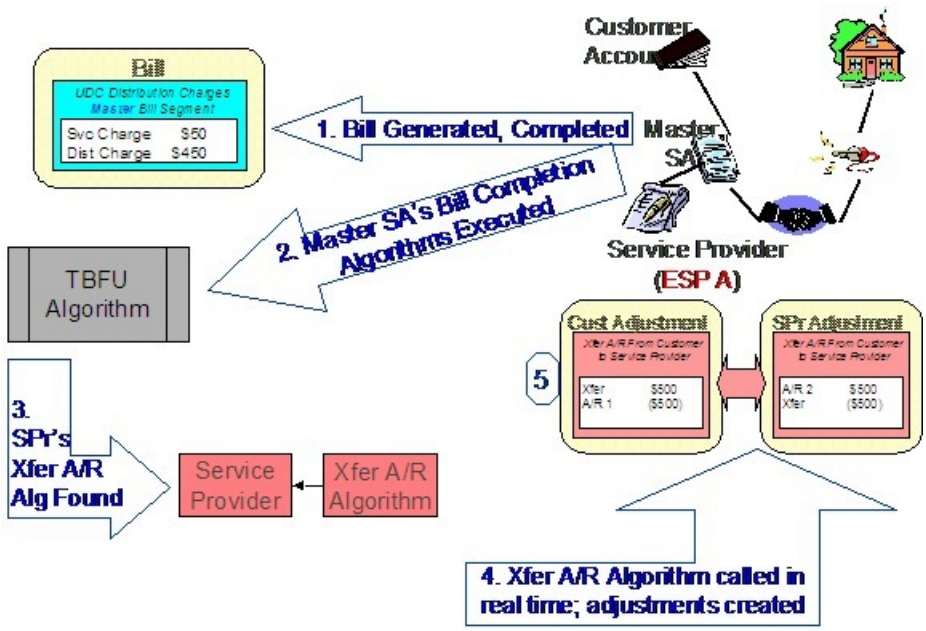
The They Bill For Us - Rate Ready option is not a recommended option. Why? Because you really have to compute how much the customer owes as explained above. If you go to the trouble of figuring out how much the customer owes, then it makes sense to interface this to the billing service provider.

The only difference between this option and They Bill For Us - Bill Ready is that the system will not interface the bill segments and adjustments to the billing service provider.

## A/R Transfer - Technical Implementation

**WARNING:**
This section describes, technically, how a customer's A/R balance is transferred to a They Bill For Us service provider. If you aren't technically inclined, skip this section.

The following illustration shows the logical steps involved with the transference of a customer's A/R balance to a They Bill For Us service provider.




The following points explain the steps:

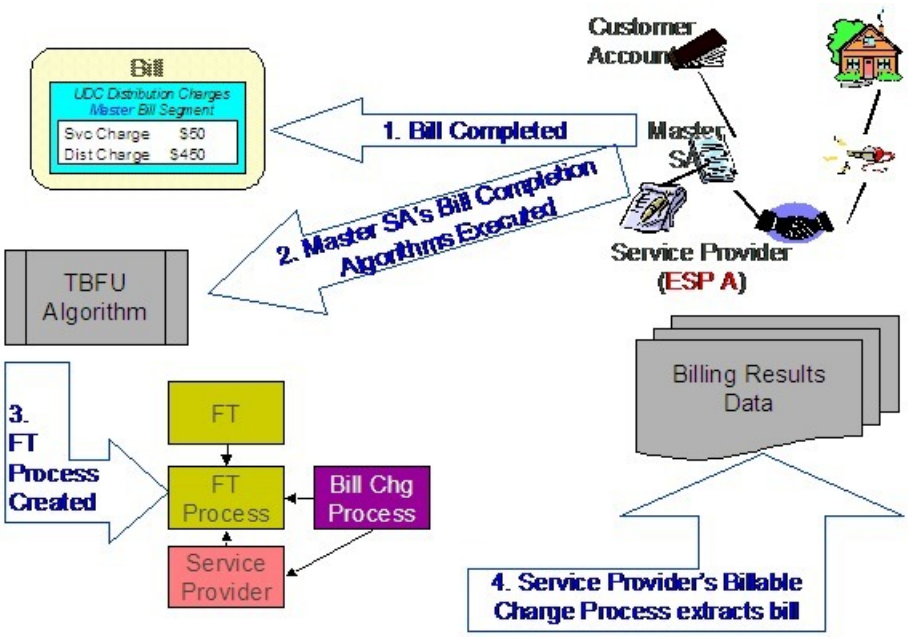
- When a bill is completed, the system executes the bill completion algorithms defined on the bill's master SA(s) SA types.
- If you've set up the system properly (i.e., you've put the appropriate Bill Completion algorithm on the master SA's SA type), one of these algorithms will determine if there is a They Bill For Us service provider associated with each master SA on the bill. If so, it will execute the Transfer A/R algorithm defined on the service provider's record. This algorithm causes a transfer adjustment to be created (transferring the financial transaction's affect on the customer's balance from the customer to the service provider).

**NOTE:**
If there are multiple master SAs on a bill, the financial details associated with each respective master SA could be transferred to different service providers (e.g., one service provider could receive the financial details for gas and another for electricity). Refer to *Different Service Providers Can Bill Different Services* for more information.

## Routing Billable Charges To Service Providers - Technical Implementation

**WARNING:**
This section describes, technically, how we send billable charges to service providers. If you aren't technically inclined, skip this section.

The following illustration shows the logical steps involved with sending billable charges to service providers.




The following points explain the steps:

- When a bill is completed, the system executes the bill completion algorithms defined on the bill's master SA(s) SA types.
- If you've set up the system properly (i.e., you've put the appropriate Bill Completion algorithm on the master SA's SA type), one of these algorithms will determine if there is a They Bill For Us service provider associated with each master SA on the bill. If so, it will insert a row on the FT Process table.
- Rows on the FT process table are used as "triggers" for batch processes. In this case, the batch process that is triggered is the one that downloads billable charges to the service provider. The ID of the batch process that is referenced on the trigger comes from the Service Provider's Billable Charge Download Process.

**NOTE:**
If there are multiple master SAs on a bill, the financial details associated with each respective master SA could be routed to different service providers (e.g., one service provider could receive the financial details for gas and another for electricity). Refer to *Different Service Providers Can Bill Different Services* for more information.

## Bill Routings Are Changed

If all of an account's "master" SAs have a SA relationship with a service provider who bills for us (i.e., the service provider's billing relationship is They Bill For Us ), then we have nothing to send to the customer. The system still creates bill routings, but with a couple of differences:

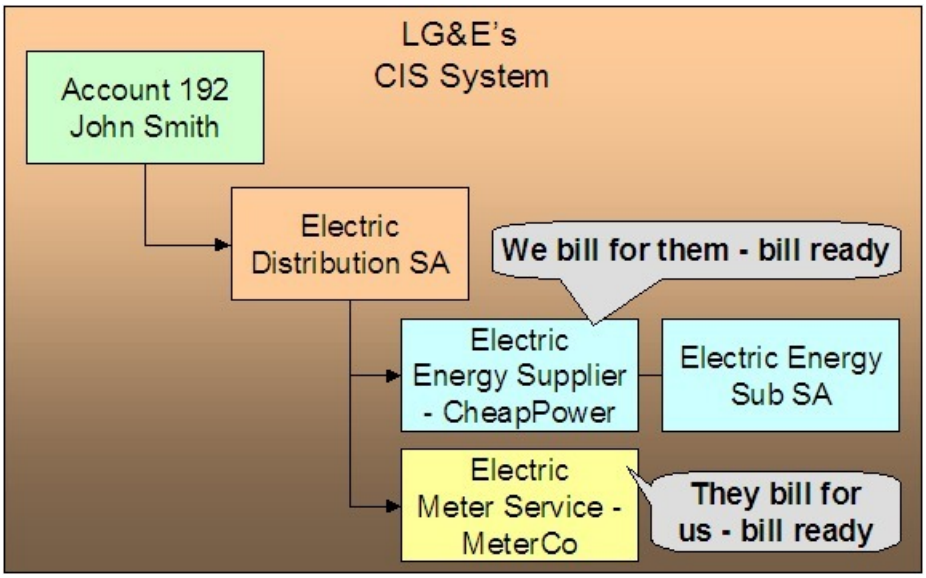
- The Batch Process Id and Run Number are reset.
- The Customer's Name is prefixed with the text from a bill message code 6, 10103. This message code's text is *** Bill not sent .

This way, the operators can easily see that that the bill was not routed and why.

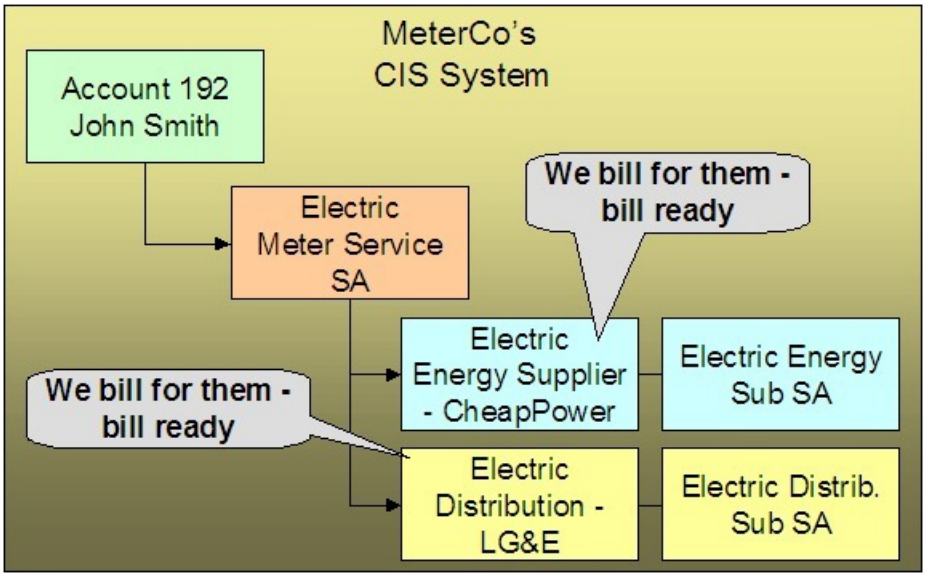
**FASTPATH:**
Refer to *Different Service Providers Can Bill Different Services* for information about how the various services under an account could be billed by different service providers.

## Combinations Of Service Provider Billing Methods

Consider the following situation:




In the above example, we are billing for the energy service provider and the meter service provider is billing for us. This means that we will calculate the charges for ourselves, interface charges from CheapPower, and then interface our charges and CheapPower's charges to MeterCo. MeterCo will then produce a bill for the customer that contains our distribution charges, CheapPower's energy charges, and MeterCo's service charges. To help solidify this point, let's look at how this customer would look in MeterCo's CIS system.




There are some restrictions in respect of permissible combinations of service providers that may supply service to a customer as described in the following points:

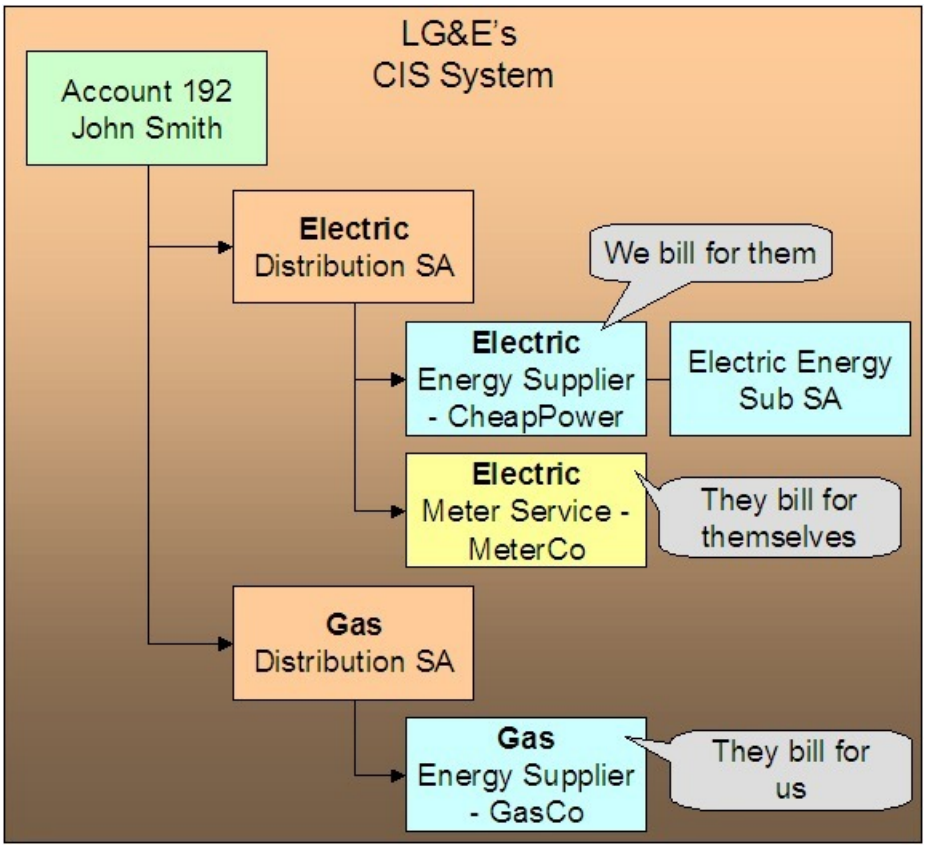
- If the system encounters a customer with a We Bill For Them (WBFT) - Bill Ready service provider and another service provider that is They Bill For Us (TBFU) - Rate Ready, a billing error will be produced. Why? Because TBFU - Rate Ready means they have everything they need to calculate our bills and therefore we do not interface bill lines to them.

If we don't interface our bill lines to them, then we can't interface the charges that were interfaced from the WBFT - Bill Ready service provider. You may wonder why we don't prohibit WBFT - Rate Ready and TBFU - Rate Ready, because it's conceivable for the TBFU service provider to have our rate and the WBFT service provider's rate.

- If the system encounters a WBFT - Pay At Pay Time service provider and another service provider that is TBFU, a billing error will be produced. Why? Because when the system detects a TBFU service provider, it transfers the receivable from the customer to the service provider (and therefore the customer's account will never be paid).

## Different Service Providers Can Bill Different Services

Be aware that the system determines billing relationships at the service agreement level, NOT at the account level. To make the point, check out the following customer in a distribution company's system:




Be aware of the following in respect of the above illustration:

- The distribution company (LG&E) distributes both electricity and gas.
- The customer has a choice of energy service providers for both gas and electricity.
- This customer - John Smith - purchases his electricity from CheapPower and his gas from GasCo.
- LG&E provides billing services for CheapPower.
- GasCo provides billing service for LG&E.

In this situation, LG&E will send bills to the customer that contain both electric distribution and energy charges (but no gas distribution charges). GasCo will also send bills to the customer; these will contain both LG&E's gas distribution charges as well as their own energy charges.

## If You Deal With TBFU Service Providers, You Cannot Reopen Bills

**FASTPATH:**
Refer to *Bill Lifecycle* for information about reopening previously completed bills.

If your organization deals with They Bill For Us (TBFU) service providers, a great deal happens when a bill is completed (e.g., the receivable is transferred from the customer to the service provider, we may mark the bill segments and adjustments for routing to the service provider, etc.). These things cannot be undone and therefore the system will not let you reopen bills when these things have occurred.

**NOTE:**
**Technical rule.** The specific rule that prevents the reopening of bills is as follows: if a bill contains a service agreement whose SA type has one or more bill completion algorithms, the system will not allow the bill to be reopened. Refer to *SA Type - Algorithms* for more information about bill completion algorithms.

# Consumption Relationships

When you set up a service provider, you must define your organization's consumption relationship with the service provider - a service provider may send the customers' consumption to you, you may send consumption to them, or you may have no consumption relationship with a given service provider.

The topics in this section provide a wealth of information about the various consumption relationships and the ramifications of each.

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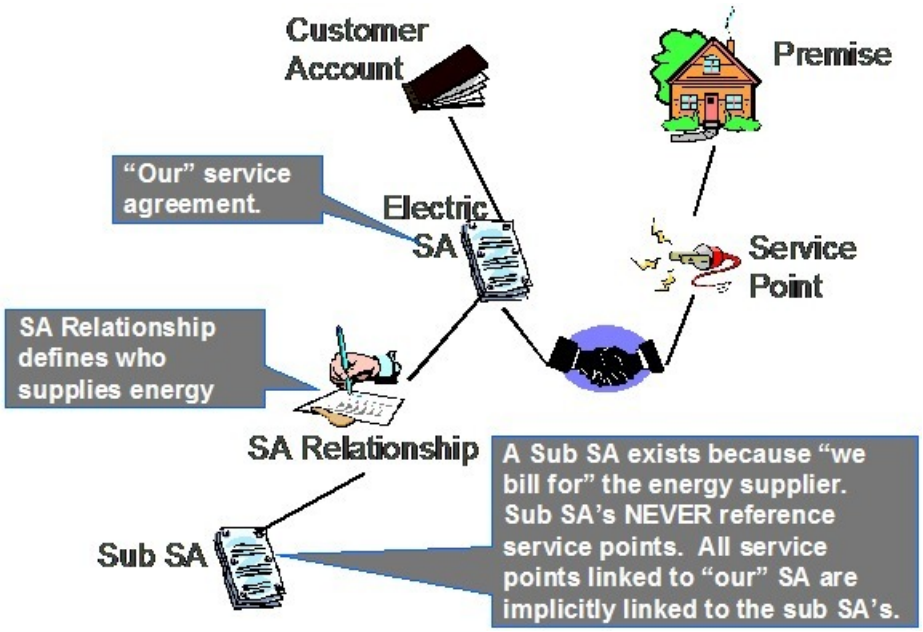
## Only The Master SA Is Linked To Service Points

The following diagram makes the point that service points cannot be linked to sub SAs (i.e., service agreements that exist to hold charges associated with We Bill For Them service providers). This is because all service points associated with our "master" SA are implicitly linked to all sub SAs.




It's important to understand why the system does not allow sub SAs to reference service points:

- The consumption associated with all service providers should be the same, otherwise the customer will receive inconsistent bills from different service providers.
- The easiest way to ensure consumption is the same for all service providers is to make sure that they all have the same service points (which they must if sub SAs "inherit" their service points from their master).

## We Can Send Billed Consumption To Any Service Provider

You can send consumption to any service provider. It doesn't matter what their billing relationship is. Information on the service provider object tells the system if AND how to send consumption to a service provider.

Rather than send raw reads to service providers, we download consumption that has been calculated and snapshot onto the "master" bill segment. We send this billed consumption because:

- It is clean and validated
- Register indexes have been subtracted
- Multiple registers have been summed

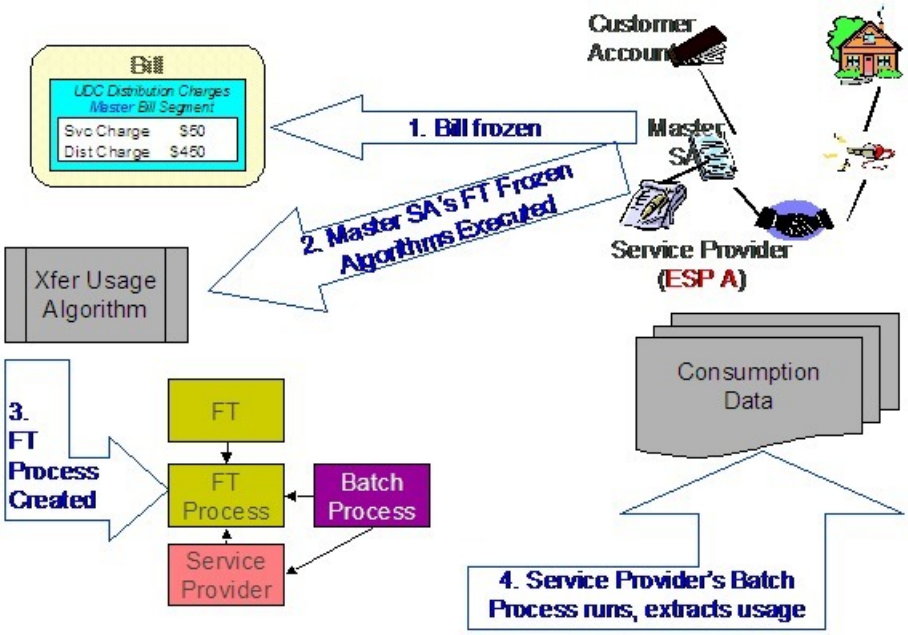
**NOTE:**
We only send consumption after a bill segment is Frozen . If your organization supports We Bill For Them - Bill Ready service providers AND you are the source of consumption used by these service providers to calculate their charges, please refer to *The Bill Ready Calculation Method* for an explanation of how the system waits a given amount of time for the recipient of the consumption to interface their charges back to the system before sending the bill to the customer. In other words, the bill sent to the customer should contain the bill segment that triggered the consumption download as well as bill segments containing uploaded billable charges.

## Routing Consumption To Service Providers - Technical Implementation

**WARNING:**

This section describes, technically, how we send consumption to service providers. If you aren't technically inclined, skip this section.

The following illustration shows the logical steps involved with sending consumption to service providers.




The following points explain the steps:

- When a financial transaction (FT) is frozen, the system executes the FT Freeze algorithms defined on the SA(s) SA type.
- If you've set up the system properly (i.e., you've put the appropriate FT Freeze algorithm on the master SA's SA type), one of these algorithms will determine if there are service providers associated with the master SA who need consumption. If so, it will insert a row on the FT Process table.
- Rows on the FT process table are used as "triggers" for batch processes. In this case, the batch process that is triggered is the one that downloads billable consumption to the service provider. If multiple service providers need consumption, multiple rows will be inserted. The ID of the batch process that is referenced on the trigger comes from the Service Provider's Consumption Download Process.

## We Can Receive Consumption From Service Providers

We can receive consumption from any source. We use the standard meter read upload to interface consumption from service providers. Because we use the standard meter read upload, each customer must have:

- A premise
- A service point
- A meter with registers sufficient to hold the interfaced consumption

**NOTE:**
**You don't have to perfectly model the service points and meters.** If you are not the distribution company, you may be worried about how to keep meter and service point information up-to-date. Be aware that you don't have to model the SP's and meters perfectly. Why? Because you just need to set up enough information so that consumption can be uploaded accurately. Let's use an example of a customer with multiple meters and service points at a premise. Rather

than model this perfectly, you could set up a single SP and link to it a single meter. All that matters is that the meter has the appropriate registers to hold the interfaced consumption.

When a customer's consumption (i.e., meter reads) is uploaded from a service provider, the service provider must be defined as the "upload source" on the meter read upload staging records. The system uses this information to validate that the service provider is linked to the customer on the effective date of the read AND that they are defined as Sending Consumption To Us . Refer to *Uploading Meter Reads* for more information.

## MDMAs And Service Cycles

**WARNING:**
This section uses terminology and concepts described in The Cyclical Meter Read Process.

A Meter Data Management Agency (MDMA) is a service provider who reads meters. In some locales, a meter can be read by a variety of MDMAs, in other locales there is no MDMA as the meter is read by the distribution company. If your organization has MDMAs, then you need to be aware of the following:

- MDMAs must be linked to service agreements as a service provider. Like all service providers, they can change over time.
- When an MDMA is reading a service agreement's meters, the MDMA may override the customer's service cycle (and schedule) with their own cycle. If they do this, the customer's service cycle in the MDMA's system is defined on the service agreement's SA relationship information for the MDMA. Note: whether or not a service provider can override a service cycle is controlled by a switch on the service provider's record. Refer to *Service Provider - Main* for more information.
- A service provider's service cycle schedules are maintained using the system's normal service cycle schedule. The ID of the service provider associated with each schedule is defined on the service cycle; in other words, if a service provider reads meters and they can override the customer's service cycle, the service provider's service cycles must be defined in the system. Refer to *Designing Service Cycles, Routes, And Schedules* for more information.
- At billing time, the system determines if a service agreement is covered by an MDMA. If so, it uses the service cycle defined on the service agreement's MDMA SA relationship record.
- If your organization ever reads the customers' meters, your regular read cycle should be maintained on your service points. You can think of the service cycle that is defined on a service agreement's MDMA SA relationship record as an override of your service points normal service cycle.
- If the meter read download process detects that a service point is linked to a service agreement with an active MDMA, it still creates a meter read download staging record; however, it marks it as Do Not Need To Read . This means that when a service point is no longer read by an MDMA, the meter read will be downloaded normally.
- Refer to *We Can Receive Consumption From Service Providers* for a description of how a service provider interfaces consumption into the system.

## Deposits Issues

**WARNING:**
This section uses terminology and concepts described in *The Big Picture Of Deposits*.

Deposits should be held using normal deposit service agreements (SAs). You should NOT use the *Sub Service Agreements* (sub SA) functionality to hold or bill for deposits because deposit service agreements do not have the same state transition as do master SAs (e.g., you can activate or stop a deposit independent from its master).

However sub SAs can be covered by a deposit. If so, their SA type must reference a deposit class. To make the point, let's examine a few scenarios:

- Assume you have a sub SA for your own charges (this can happen when we use sub SAs to unbundle charges from the Master SA). In this case, it is likely that the sub SA and master SA will be in the same deposit class. This means that a single deposit SA would cover both the master and the sub SA.
- Assume They Bill For Us (Bill or Rate Ready). In this situation, we still have a master SA for our charges and we transfer the charges to the service provider who does the billing. In this case, it is likely that we would be holding the deposit for the service provider, not on the end-use customer. If we are in a situation where 1) we cannot hold a deposit against the service provider, and/or 2) we are not assured of the service provider paying us when the customer doesn't pay them, then we might want to put the master SA in a deposit class and hold a deposit against the customer's account using a normal deposit SA. We would not expect the service provider to bill the customer for the deposit, so we don't need a sub SA. We bill the customer directly for the deposit using our normal deposit SA.
- Assume We Bill For Them (Bill or Rate Ready). In this situation, we could hold a normal deposit SA for the customer's master SA. For sub SAs, we have two scenarios:
  - **We pay at billing time.** Since we purchase the receivable, we would want to increase our normal deposit to cover the Sub SA. To do this, the sub SA's SA type's deposit class should be the same as our master SA's deposit class.
  - **We pay at payment time.** It seems unlikely that we would want to hold a deposit on behalf of a service provider when we don't purchase the receivable. However, it is possible to do so by putting the sub SA into its own deposit class. If you did this, the system will require a separate deposit SA for the service provider's deposit. The system would calculate and refund such deposits using the algorithms defined on the new deposit SA's SA type's deposit class. It's important to be aware that the deposit is not held with respect to the specific service provider. Rather, it is just held in the system as separate deposit that could be used for any service agreement that belongs to its deposit class.

## Credit and Collection Issues

**WARNING:**
This section uses terminology and concepts described in *The Big Picture Of Credit & Collections (C&C*).

C&C is only tricky if you deal with We Bill For Them service providers. We'll run through the service provider billing relationships to explain why:

- If we have a Dual relationship with a service provider, we don't have their debt, so we only have a responsibility to tell them when we cut a customer (via a Notification). We don't have to worry about collecting their debt.
- If we have a They Bill For Us relationship with a service provider, there is no debt on the customer's SA because it gets transferred to the service provider (and the service provider's SA will fall into arrears if they don't pay us).
- If we have a We Bill For Them or It's Us relationship with a service provider, the customer's debt associated with the service provider's service is maintained on a sub SA (i.e., it is segregated from our debt). This segregation of debt is both a powerful feature and a cause of administrative difficulties. The topics in this section provide more information about this issues.

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## Debt Class Recommendations

A service agreement's debt class is an important element in determining how a customer's debt is collected. In general, we recommend the following:

- If the service provider has a billing relationship of It's Us , we recommend the sub SAs belong to the same debt class as the "master". Why? Because both SAs' overdue debt should probably be grouped together under a single collection process.
- If you buy the receivable from the service provider (i.e., the service provider has a payment relationship of Pay at Billing Time ), we recommend the sub SAs belong to the same debt class as the "master". Why? Because both SAs' overdue debt should probably be grouped together under a single collection process.
- If you don't buy the receivable from the service provider (i.e., the service provider has a payment relationship of Pay at Pay Time ), you may want to use a different debt class on the sub SA. Why? Because you may collect the service provider's debt differently.

**NOTE:**
**Bottom line.** If both the "master" and the sub SAs fall into arrears, you will have 1 or 2 collection processes, it all depends on the debt class assigned to each SA type.

**FASTPATH:**
Refer to *Automating Your C&C Activities* for information describing how debt class plays a part in this processing.

## Severing Service

Sub SAs and severance is tricky. Why?

- Because it's possible for the master SA to be in arrears when the sub SA isn't (for all the standard reasons - directed payments, cancel / rebills, etc.).
- Because it's possible for the sub SA to be on one collection process and the master to be on another (due to different debt classes or different time lines).

Both of these situations could result in severance starting for only one of the service agreements in the master / sub relationship. However, YOU CAN'T CUT SERVICE FOR ONE WITHOUT CUTTING THE OTHER because there is only one service point.

Before we describe how to deal with this conundrum, we'd like to remind you that the system starts a unique severance process for each SA (sub or normal) to be severed. It only creates a severance process for those service agreements linked to a collection process when the collection process' Start Severance event is activated. The type of severance process that is created is controlled by each service agreement's SA Type's severance criteria. Please keep in mind the following when designing these severance processes:

- *Only The "Master" Service Agreement Is Linked To Service Points*. This means only master SAs should have a "cut for non payment" severance event. Note: typically, such a severance process will expire the "master SA" several days after the cut event if funds are NOT received.
- As described under *Sub SA State Transition*, a sub SA becomes Pending Stop (and eventually Stopped ) when its "master" is stopped. This means the sub SAs will be finaled when the master is finaled.
- If you start severance on a sub SA when the master isn't being severed, you have a problem because you can't cut the sub SA independent from the master SA.

We'll use an example to illustrate how you should design your severance processes to deal with the above challenge. Assume you have a master and a sub SA where both are being managed under the same collection process. Also assume that the Start Severance event kicks off on 18-Dec-1999. In this situation, we'd recommend the following severance processes to be kicked off.

Master SA Severance Process

| Trigger Dt. | Event Type | Status |
|---|---|---|
| 18-Dec-99 | Set door hanger | Pending |
| Pending | Cut for non pay | Pending |
| Pending | Expire SA | Pending |

Sub SA Severance Process

| Trigger Dt. | Event Type | Status |
|---|---|---|
| 3-Jan-00 | Create To Do Entry | Pending |

Notice that the sub SA's severance process contains a single event that generates a To Do Entry on a date in the future of the Expire SA event on the Master SA. This entry should be something like "sub being severed independent of its master". This event will only be triggered if the master SA is paid off and the sub SA isn't. Why? Because if the master SA's Expire SA event is executed, the Sub SA will be Stopped and stopping a SA cancels outstanding severance processes. If the sub gets paid, the system will cancel the sub's severance process.

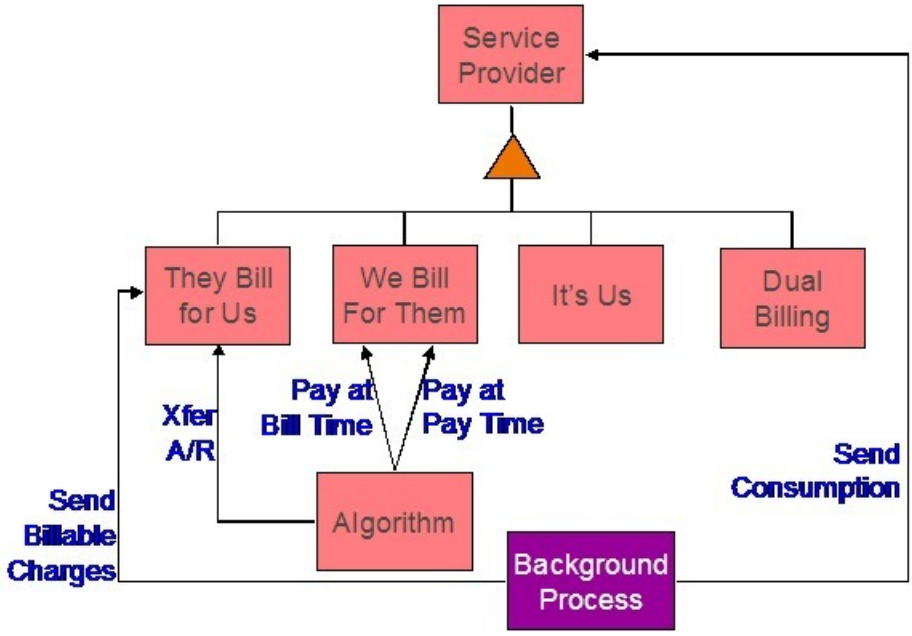
Let's change the example and assume that the master starts severance and the sub doesn't. In this situation, the master SA will eventually hit the Expire SA event and the sub SA will also stop. There's no alternative.

And let's change the example again and assume the sub starts severance and the master doesn't. In this situation, the To Do Entry will only be created X days after the start of severance. If you can't stand this date being X days in the future of the creation of the severance process, create an "Severance Criteria Algorithm" that checks if the master is not being severed or collected and generates a different severance process (with a different start date). Refer to *Designing Your Severance Procedures* for more information about Severance Criteria Algorithms.

## An Object-Oriented Perspective Of Service Providers

**WARNING:**
Skip this section if you are not technically inclined.

The following object diagram illustrates in a concise format the various types of service providers and the plug in algorithms and processes available for each.




## How Do You Communicate With Service Providers?

You communicate with service providers (and they communicate with you) using the following mechanisms:

- You can use traditional interface techniques. For example, if you send consumption to service providers every month (so they can compute their charges), you could use the Consumption Download interface.
- You can use "notifications" to communicate with service providers. Notifications are electronic transactions that service providers exchange to communicate information about a customer. For example, you could use a notification to send a message to an energy supplier when a customer stops service. Note: the term "Direct Access Service Request" (DASR) is synonymous with Notification.

The difference between notifications and traditional interfaces is subtle. Think of notifications as a generic interface that can be used to communicate many different things (e.g., you can use notifications to advise stops, meter exchanges, supplier switches). Traditional interfaces communicate only one thing (and you need one traditional interface for each "thing"). For example, one interface is devoted to downloading consumption, another is responsible for uploading pass through charges, etc.

**FASTPATH:**
Refer to *The Big Picture Of Notification Processing* for more information about notification. Refer to *The System Background Processes* for more information about the traditional interfaces that are supported in the system.

# Designing Your SA Relationship Types and Service Providers

As explain in *A Service Agreement Can Have Many Types Of Relationships*, SA relationship types and service providers are only required when you subcategorize your service agreements.

The topics in this section describe how to design your SA relationship types.

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## Designing SA Relationship Types

The easiest way to design SA relationship types is to start with the matrix of SA types designed in *SA Types And The Financial Design*. For each SA type in the matrix, determine if either of the following questions is true:

- Can companies other than your own provide some subcategory of the service (and do you have some type of interaction with these companies)? For example, this would be true if you are an energy supply company because a different company is responsible for distributing the power to the customer (and you probably exchange consumption and financial transactions with this company).
- Does your organization use different rates for subcategories of the service? For example, this would be true if you use separate rates for water and wastewater service (even though both are based on the customer's water consumption).

If either of the above is true, you will need a SA relationship type for each subcategory of service.

We'll use an example to help make the point. Using the SA types we designed earlier (see *SA Types And The Financial Design*), we'll assume the following:

- We are designing the system for an electric, gas, water, waste water, and cable utility.
- Residential electric customers have a choice of energy supplier.
- Commercial and industrial electric customers can choose an energy supplier and a meter service provider.
- Commercial and industrial gas customers have a choice of energy supplier.

**NOTE:**
We are not showing most of the SA types that we designed earlier because they do not have subcategories of service.

| CIS BU/ SA Type | SA Relationship Type |
|---|---|
| G/COM | Energy supply |
| G/IND | Energy supply |
| E/RES | Energy supply |
| E/COM | Energy supply |
| | Meter service |
| E/IND | Energy supply |
| | Meter service |

**NOTE:**
Notice that we did not design a SA relationship type for our own distribution service. This is because our relationship type is implied (e.g., if you are a distribution company, you do not have to set up a SA relationship type for distribution service because the customer's "master" service agreement is implicitly associated with distribution service).

# Designing Service Providers

After you design your SA relationship types, you need to list every potential service provider for each SA relationship type.

| CIS BU/ SA Type | SA Relationship Type | Service Provider |
|---|---|---|
| G/COM | Energy supply | AmeriGas |
| | | TransGas |
| | | Green Power |
| G/IND | Energy supply | AmeriGas |
| | | TransGas |
| | | Green Power |
| E/RES | Energy supply | Green Power |
| | | Cheap Power |
| | | Us |
| E/COM | Energy supply | ElectriCorp |
| | | Cheap Power |
| | | TeniCorp |
| | Meter service | MeterCorp |
| | | Us |
| E/IND | Energy supply | ElectriCorp |
| | | Cheap Power |
| | | TeniCorp |
| | Meter service | MeterCorp |
| | | Us |

Next, list each unique service provider identified above:

| Service Provider |
|---|
| AmeriGas |
| TransGas |
| Green Power |
| Cheap Power |
| Us |
| ElectriCorp |
| TeniCorp |
| MeterCorp |

You will have at least one service provider for each entry in the above list. However, you may have to set up more than one service provider in the system for a given company. The topics below explain how this happens.

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## Billing Relationship Segmentation

As described under *Billing Relationships*, a service provider may bill for you, you may bill for them, or you may each send a separate bill to the customer. In the table below, we have shown the assumed billing relationships for each service provider.

| Service Provider | Billing Relationship |
|---|---|
| AmeriGas | We Bill For Them - Bill Ready |
| TransGas | We Bill For Them - Bill Ready |
| Green Power | We Bill For Them - Rate Ready |
| Cheap Power - Res | We Bill For Them - Rate Ready |
| Cheap Power - Com/Ind | Dual Billing |
| Us - Billable | It's Us |
| Us - Non billable | None |
| ElectriCorp | They Bill For Us - Bill Ready |
| TeniCorp | We Bill For Them - Bill Ready |
| MeterCorp | Dual Billing |

Notice that we had to introduce additional service providers:

- Cheap Power has two service providers - one for residential customers, the other for commercial/industrial customers. This is necessary because we provide billing service for them for residential customers ( We Bill For Them - Rate Ready ), but for commercial and industrial customers they bill for themselves ( Dual Billing ).
- Our own service provider (the service provider known as "Us") has two service providers - one for energy supply because we bill for the energy we supply ( It's Us ), and another for meter service because we don't create bills for meter service ( None ).

## We Bill For Them - Payment Relationship Segmentation

As described under *Pay At Bill Time vs. Pay At Pay Time* when you provide billing service for a service provider you have to define if you pay the service provider when you bill the customer OR only later, when the customer pays you.

In the table below, we have shown the payment relationships for each service provider.

| Service Provider | Billing Relationship | Payment Relationship |
|---|---|---|
| AmeriGas | We Bill For Them - Bill Ready | Pay At Billing Time |
| TransGas | We Bill For Them - Bill Ready | Pay At Billing Time |

| | | |
|---|---|---|
| Green Power | We Bill For Them - Rate Ready | Pay At Billing Time |
| Cheap Power - Res | We Bill For Them - Rate Ready | Pay At Billing Time |
| Cheap Power - Com/Ind | Dual Billing | N/A |
| Us - Billable | It's Us | N/A |
| Us - Non billable | None | N/A |
| ElectriCorp | They Bill For Us - Bill Ready | N/A |
| TeniCorp - Com | We Bill For Them - Bill Ready | Pay At Billing Time |
| TeniCorp - Ind | We Bill For Them - Bill Ready | Pay At Pay Time |
| MeterCorp | Dual Billing | N/A |

Notice that we had to introduce an additional service provider for TeniCorp because for commercial customer we purchase the receivable (Pay At Bill Time), but for industrial customers we only pay them when we're paid by the customer (Pay At Pay Time).

## Consumption Relationship Segmentation

As described under *Consumption Relationships* a service provider may send the customers' consumption to you, you may send consumption to them, or you may have no consumption relationship with a given service provider.

In the table below, we have shown the consumption relationships for each service provider.

| Service Provider | Billing Relationship | Payment Relationship | Consumption Relationship |
|---|---|---|---|
| AmeriGas | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| TransGas | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| Green Power | We Bill For Them - Rate Ready | Pay At Billing Time | N/A |
| Cheap Power - Res | We Bill For Them - Rate Ready | Pay At Billing Time | N/A |
| Cheap Power - Com/Ind | Dual Billing | N/A | N/A |
| Us - Billable | It's Us | N/A | N/A |
| Us - Non billable | None | N/A | N/A |
| ElectriCorp | They Bill For Us - Bill Ready | N/A | N/A |
| TeniCorp - Com | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| TeniCorp - Ind | We Bill For Them - Bill Ready | Pay At Pay Time | We Send Consumption |
| MeterCorp | Dual Billing | N/A | N/A |

Notice that we didn't have to proliferate service providers due to consumption relationships.

## Other Segmentations

The earlier parts of this discussion described the most common factors that cause the creation of service providers. However, many obscure factors could cause the introduction of more service providers. In this section, we explain these more obscure factors.

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## Payment Method

As described under *Pay At Bill Time vs. Pay At Pay Time*, when you provide billing service for a service provider you have to pay the service provider at some point in time. The algorithm that defines the amount to pay (and how the related adjustment is generated) is defined on the service provider record. If a service provider has different payment algorithms for different customer segments, you must split the service provider accordingly.

## Transfer Receivable Method

As described under *When They Bill For Us, They Owe Us Money*, a service provider will owe you money if they provide billing service for you. The algorithm that defines how to transfer the customer's receivable to the service provider is defined on the service provider record. If a service provider has different transfer A/R algorithms for different customer segments, you must split the service provider accordingly.

## Billable Charge Download Process

As described under *They Bill For Us - Bill Ready*, billable charges are interfaced to service providers who provide billing service for you. The background process that performs the interface of billable charges is defined on the service provider record. If a service provider has different billable charge interfaces for different customer segments, you must split the service provider accordingly.

## Consumption Download Process

As described under *We Can Send Billed Consumption To Any Service Provider*, consumption can be sent to any service provider. The background process that performs the interface of consumption is defined on the service provider record. If a service provider has different consumption interfaces, you must split the service provider accordingly.

## Notification Upload Processing

As described under *Designing Notification Upload & Workflow Procedures*, a service provider can send you notifications. Whenever a notification is uploaded, the system creates a workflow process to process each such notification. The type of workflow process that's created is controlled by the service provider's workflow process profile. If a service provider requires a different workflow process for a given type of notification (for whatever reason), you must split the service provider accordingly.

## Notification Download Processing

As described under *Designing Notification Downloads*, the system will send notifications to service providers when something noteworthy happens and when information is needed from a service provider. The type of notification that is sent to a service provider and the background process that interfaces the notification to the service provider is defined on the service provider's notification download profile. If a service provider requires a different type of notification to be sent or they have different interface protocols for a given type of notification, you must split the service provider accordingly.

## Financial Settlement Service Agreement

As described under *Service Providers Have Service Agreements Too*, service providers have service agreements. These service agreements contain how much you owe the service provider (if you bill for them) and how much they owe you (if they bill for you). If you want to have separate service agreements for financial settlements associated with distinct customer segments, you must split the service provider accordingly.

# Geographic Area Segmentation

The following table reflects the new service providers that were added since we started *Designing Service Providers*.

| CIS BU/ SA Type | SA Relationship Type | Service Provider |
|---|---|---|
| G/COM | Energy supply | AmeriGas |
| | | TransGas |
| | | Green Power |
| G/IND | Energy supply | AmeriGas |
| | | TransGas |
| | | Green Power |
| E/RES | Energy supply | Green Power |
| | | Cheap Power - Res |
| | | Us - Billable |
| E/COM | Energy supply | ElectriCorp |
| | | Cheap Power - Com/Ind |
| | | TeniCorp - Com |
| | Meter service | MeterCorp |
| | | Us - Non billable |
| E/IND | Energy supply | ElectriCorp |
| | | Cheap Power - Com/Ind |
| | | TeniCorp - Ind |
| | Meter service | MeterCorp |
| | | Us - Non billable |

Next, determine the postal code ranges in which a service provider is allowed to provide service.

| CIS BU/ SA Type | SA Relationship Type | Service Provider | Postal Range |
|---|---|---|---|
| G/COM | Energy supply | AmeriGas | 94000 - 95999 |
| | | TransGas | 94000 - 95999 |
| | | Green Power | 94000 - 95999 |
| G/IND | Energy supply | AmeriGas | 94000 - 95999 |
| | | TransGas | 94000 - 95999 |
| | | Green Power | 94000 - 95999 |
| E/RES | Energy supply | Green Power | 94000 - 95999 |
| | | | 93000 - 93999 |
| | | Cheap Power - Res | 94000 - 95999 |
| | | Us - Billable | 94000 - 95999 |
| E/COM | Energy supply | ElectriCorp | 94000 - 95999 |
| | | Cheap Power - Com/Ind | 94000 - 95999 |
| | | TeniCorp - Com | 94000 - 95999 |
| | Meter service | MeterCorp | 94000 - 95999 |
| | | Us - Non billable | 94000 - 95999 |
| E/IND | Energy supply | ElectriCorp | 94000 - 95999 |
| | | Cheap Power - Com/Ind | 94000 - 95999 |
| | | TeniCorp - Ind | 94000 - 95999 |
| | Meter service | MeterCorp | 94000 - 95999 |
| | | Us - Non billable | 94000 - 95999 |

Next, we need to strip off the SA types because the postal ranges are defined for combinations of service provider and SA relationship type. Notice the problem - we have a service provider - Green Power has different postal ranges for the same SA relationship type. You have two ways to fix this problem, you can split your service provider (have one for the gas and another for the electric), or you can split the SA relationship type (have one for the gas and another for the electric). We've chosen the former in our example.

| SA Relationship Type | Service Provider | Postal Range |
|---|---|---|
| Energy supply | AmeriGas | 94000 - 95999 |
| | TransGas | 94000 - 95999 |
| | Green Power - Gas | 94000 - 95999 |
| Energy supply | AmeriGas | 94000 - 95999 |
| | TransGas | 94000 - 95999 |
| | Green Power - Gas | 94000 - 95999 |
| Energy supply | Green Power - Electric | 94000 - 95999 |
| | | 93000 - 93999 |
| | Cheap Power - Res | 94000 - 95999 |
| | Us - Billable | 94000 - 95999 |

| | | |
|---|---|---|
| Energy supply | ElectriCorp | 94000 - 95999 |
| | Cheap Power - Com/Ind | 94000 - 95999 |
| | TeniCorp - Com | 94000 - 95999 |
| Meter service | MeterCorp | 94000 - 95999 |
| | Us - Non billable | 94000 - 95999 |
| Energy supply | ElectriCorp | 94000 - 95999 |
| | Cheap Power - Com/Ind | 94000 - 95999 |
| | TeniCorp - Ind | 94000 - 95999 |
| Meter service | MeterCorp | 94000 - 95999 |
| | Us - Non billable | 94000 - 95999 |

In the table below, we have shown the final list of service providers.

| Service Provider | Billing Relationship | Payment Relationship | Consumption Relationship |
|---|---|---|---|
| AmeriGas | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| TransGas | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| Green Power - Electric | We Bill For Them - Rate Ready | Pay At Billing Time | N/A |
| Green Power - Gas | We Bill For Them - Rate Ready | Pay At Billing Time | N/A |
| Cheap Power - Res | We Bill For Them - Rate Ready | Pay At Billing Time | N/A |
| Cheap Power - Com/Ind | Dual Billing | N/A | N/A |
| Us - Billable | It's Us | N/A | N/A |
| Us - Non billable | None | N/A | N/A |
| ElectriCorp | They Bill For Us - Bill Ready | N/A | N/A |
| TeniCorp - Com | We Bill For Them - Bill Ready | Pay At Billing Time | We Send Consumption |
| TeniCorp - Ind | We Bill For Them - Bill Ready | Pay At Pay Time | We Send Consumption |
| MeterCorp | Dual Billing | N/A | N/A |

# Designing Your SA Types And Start Options For Sub SAs

When you were *Designing Service Providers*, you defined the service providers that were valid for every combination of SA type and SA relationship type. If you provide billing services for another service provider or if you subcategorize your own services, you another task - you have to design the SA types for your sub SAs.

As described earlier, there will be a separate *Sub Service Agreement* for every SA relationship for which we calculate a bill segment. Every sub SA must reference an SA type. The following table shows sample SA types (notice that they are only used for We Bill For Them and It's Us service providers).

| CIS BU/ SA Type | SA Relationship Type | Service Provider | SA Type(s) for Sub SAs |
|---|---|---|---|
| G/COM | Energy supply | AmeriGas | AG1 |
| | | TransGas | TG1 |
| | | Green Power - Gas | GP-GC1 |

| | | | |
|---|---|---|---|
| G/IND | Energy supply | AmeriGas | AG1 |
| | | TransGas | TG1 |
| | | Green Power - Gas | GP-GI1 |
| E/RES | Energy supply | Green Power - Electric | GP-ER1 |
| | | Cheap Power - Res | CP-ER1 |
| | | Us - Billable | US-ER1 |
| E/COM | Energy supply | ElectriCorp | Not applicable - they bill for us |
| | | Cheap Power - Com/Ind | Not applicable - dual billing |
| | | TeniCorp - Com | TC1 |
| | Meter service | MeterCorp | Not applicable - dual billing |
| | | Us - Non billable | Not applicable - no billing |
| E/IND | Energy supply | ElectriCorp | Not applicable - they bill for us |
| | | Cheap Power - Com/Ind | Not applicable - dual billing |
| | | TeniCorp - Ind | TC1 |
| | Meter service | MeterCorp | Not applicable - dual billing |
| | | Us - Non billable | Not applicable - no billing |

The design steps required to set up these SA types are similar to those described under *Designing SA Types For Service Agreements With Service Points*. The following points provide a few suggestions that will help you design your SA types for sub SAs:

- The business unit should be the same as defined for the master service agreement.
- Service type should be set up as per *Service Segmentation*.
- Distribution code should be set up as per *Receivable Segmentation*.
- Obviously, the sub SA switch should be turned on.
- Start options:
  - If the SA type is used for a We Bill For Them - Rate Ready service provider or for yourself, the start options should be Required because rates, contract riders and/or contract values will be populated on the sub SA from a start option. Refer to *Automatic Creation of Sub SAs* for more information.
  - If the SA type is used for a We Bill For Them - Bill Ready service provider, the start options should be not allowed because we don't need to default rates, contract riders and/or contract values on billable charge sub SAs.
- The payment distribution and late payment information should be set up as for any SA type. Refer to *Cash Distribution Segmentation* and *Late Payment Charge Segmentation* for more information.
- If the SA type is used for We Bill For Them - Bill Ready service provider, the special role should be Billable Charge , otherwise it should not be used. Remember, you should not use sub SAs for Cash Deposits .
- Deposit class should be used if the sub SA is covered by a deposit. Refer to *Deposits Issues* for more information.
- The one time charge switch should be off.
- Bill segment type:
  - If the SA type is used for a We Bill For Them - Bill Ready service provider, the bill segment type should reference a bill segment creation algorithm that creates bill segments from billable charges (and generates bill segment errors until the last night of the bill cycle). Refer to *The Bill Ready Calculation Method* for more information.

- If the SA type is used for a We Bill For Them - Rate Ready service provider, the bill segment type should reference a get consumption algorithm that gets consumption from the master SA, and a bill segment creation algorithm that applies a rate.

- Specify a characteristic premise is required if the sub SA is associated with premise-oriented service.
- The calendar billing options should not be used.
- The recurring charge information should not be used.
- Sub SAs used for We Bill For Them - Rate Ready service providers should NOT be eligible for budgets and therefore the eligible for budget switch should be off. This admonition is given because budget billing causes current amount due to be out-of-sync with payoff amount due and we don't want this to happen for sub SAs. Why? Because we use the bill segments associated with these sub SAs to determine how much we owe the service provider.
- If the SA type is used for a We Bill For Them - Rate Ready service provider or for your own company, rates need to be set up; otherwise they should not be used.
- Sub SAs never reference service points. Refer to *Only The "Master" Service Agreement Is Linked To Service Points* for more information.
- Adjustment types profiles should be set up accordingly.
- Refer to *Credit and Collection Issues* for recommendations in respect of the debt class, write off debt class, and severance criteria associated with these SA types.
- Billable charge templates should not be used.
- Completion algorithms cannot be used for sub SAs.
- If the SA type is used for a We Bill For Them service provider, you should link to the SA type the FT freeze algorithm that controls how we pay the service provider. Refer to *Pay At Bill Time vs. Pay At Pay Time* for how this algorithm is used.
- The creation of bill segments for the sub SAs occurs after the bill segment for the related master SA is created. If you populate a *billing processing sequence* on an SA type for a sub SA, it is used to control the order in which the sub SAs for a given master SA are processed relative to each other.

Refer to *Setting Up SA Types* for how to set up these new SA types in the system.

## Reference Send Consumption Algorithm On Master SA Types

As explained under *We Can Send Billed Consumption To Any Service Provider*, when a master SA's bill segment is frozen, the system must check if there are any service providers who need the bill segment's consumption. If so, it sets up the data necessary to interface the master SA's consumption (snapshot on the bill segment) to the service provider(s). The system will only do this if you specify an appropriate FT Freeze Algorithm on the master SA types. Refer to *SA Type - Algorithm* (FT Freeze Algorithm) for more information.

## Reference TBFU Algorithm On Master SA Types

As explained under *They Bill For Us*, when a bill is completed, the system needs to check if there are any service providers who bill for us associated with the bills "master" SAs. If so, it sets up the data necessary to interface the master SA's charges to the service provider and to transfer the receivable balance from the customer to the service provider. The system will only do this if you specify an appropriate FT Completion Algorithm on the master SA types. Refer to *SA Type - Algorithm* (Bill Completion Algorithm) for more information.

**NOTE:**

If there are multiple master SAs on a bill, the financial transactions associated with each respective master SA could be routed to different service providers (e.g., one service provider could bill for gas and another could bill for electricity). Refer to *Different Service Providers Can Bill Different Services* for more information.

## Designing SA Types For Service Provider Financial Settlements

As explained in *Service Providers Have Service Agreements Too*, We Bill For Them and They Bill For Us service providers require a service agreement. You must create SA types for these types of service agreements. The following points provide a few suggestions that will help you design these financial settlement SA types:

- Service type should probably be a non-service oriented service type.
- Distribution code for We Bill For Them settlement SAs should be a payable account (or treat it as a "contra" receivable. Refer to *Receivable Segmentation* for more information.
- The sub SA switch should be turned off.
- Start options are not allowed.
- The payment distribution and late payment information should be set up as for any SA type. Refer to *Cash Distribution Segmentation* and *Late Payment Charge Segmentation* for more information.
- Special role should not be used.
- Deposit class should be used if the settlement service agreement is covered by a deposit. This would probably only be used for They Bill For Us service providers (because they will owe us money).
- The one time charge switch should be off.
- These service agreements are not billable and therefore none of the billing information should be specified.
- The characteristic premise switch should be off.
- Rates should not be used.
- Service points should not be used.
- Adjustment types profiles should be set up accordingly.
- Debt class, write off debt class, and severance criteria should be set up accordingly.
- Billable charge templates should not be used.
- Completion algorithms should not be used.
- Freeze algorithms should not be used.

Refer to *Setting Up SA Types* for how to set up these new SA types in the system.

## Setting Up SA Relationship Information

In the previous section, Designing Your SA Relationship Types and Service Providers, we presented a case study that illustrated a mythical organization's SA relationship information. In this section, we explain how to set up this information.

**Contents**

*Update Master SA Types With FT Freeze and Bill Completion Algorithms*

*Setting Up SA Relationships For SA Types*

# Setting Up SA Relationship Types

Open **Admin** > **SA Relationship Type** to define your SA relationship types. Refer to *Designing SA Relationship Types* for more information.

**Description of Page**

Enter an **SA Relationship Type** code and **Description** for every relationship type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SA_REL_TYPE*.

# Setting Up Service Providers

The topics in this section describe how to set up service providers.

**Contents**



## Service Provider - Main

Open **Admin** > **Service Provider** > **Add** to define core information about a service provider.

**Description of Page**

Enter a unique **Service Provider** code for the service provider.

End a brief **Description** of the service provider.

If you communicate with this service provider via notification messages or outbound messages, indicate the service provider's **External System**.

If you send notifications to this service provider, select a **Notification DL** (download) **Profile** that is used to define the configuration of the outgoing messages. Refer to *Designing Notification Download Profiles* for more information.

Select the **Person ID** that contains this service provider's phone numbers and demographic information.

If you bill for the service provider or if they bill for you, select the **Service Agreement** that holds how much you owe them or they owe you. Refer to *Service Providers Have Service Agreements Too* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SPR*.

## Service Provider - Detail

Open **Admin** > **Service Provider** > **Search** and navigate to the **Detail** page to define additional information about your service providers.

**Description of Page**

Define the **Billing Relationship** you have with the service provider. Refer to *Billing Relationships* for more information.

If you provide billing services for this service provider (i.e., the **Billing Relationship** is We Bill For Them ), define the **Payment Relationship**. Refer to *Pay At Bill Time vs. Pay At Pay Time* for more information. You may not be paying some service providers as such. Rather, the customer's receivables are simply transferred to the service provider, e.g., when you calculate discounts for special *negotiated terms*. For these service providers, choose a payment relationship of Pay SPr Not Applicable .

Define the **Consumption Relationship** you have with the service provider. Refer to *Consumption Relationships* for more information.

If a service provider reads meters and they can override the customer's service cycle, turn on **Overrides ServiceCycle**. Refer to *MDMAs And Service Cycles* for more information.

As described under *Pay At Bill Time vs. Pay At Pay Time*, when you provide billing service for a service provider you have to pay the service provider at some point in time. The **Pay Service Provider Algorithm** defines the amount to pay and how the related adjustment is generated. Refer to *Paying The Service Provider - Technical Implementation* for more information about how this algorithm is used. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that increases how much is owed the service provider. Click *here* to see the algorithm types available for this plug-in spot.

As described under *When They Bill For Us, They Owe Us Money*, a service provider will owe you money if they provide billing service for you. The **Transfer A/R Algorithm** defines how to transfer the customer's receivable to the service provider. Refer to *A/R Transfer - Technical Implementation* for more information about how this algorithm is used. This algorithm is also used to transfer receivables when you calculate discounts for special *negotiated terms*. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that transfers financial transactions from the customer to the service provider. Click *here* to see the algorithm types available for this system event.

As described under *They Bill For Us - Bill Ready*, billable charges are interfaced to service providers who provide billing service for you. The **Billable Charge Download Process** performs the interface of billable charges to the service provider. Refer to *Routing Billable Charges To Service Providers - Technical Implementation* for more information about how this process is used.

As described under *We Can Send Billed Consumption To Any Service Provider*, consumption can be sent to any service provider. The **Consumption Download Process** performs the interface of consumption to the service provider. Refer to *Routing Consumption To Service Providers - Technical Implementation* for more information about how this process is used.

## Service Provider - SA Relationship Type

Open **Admin** > **Service Provider** > **Search** and navigate to the **SA Relationship Type** page to define the types of relationships (e.g., energy supplier, energy distributor, meter data management agency) associated with a service provider and the postal code ranges in which the service provider operates.

**Description of Page**

Use the **SA Relationship Types** collection to define this service provider's **SA Relationship Types**. Use the collection that appears in the grid to define the **Postal Code** ranges in which this service provider is allowed to operate for each **SA Relationship Type**.

**IMPORTANT:**
After defining the SA relationship types that can be associated with a service provider, you must then define the SA types on which the service provider / SA relationship type combination can be used. This information is defined using *Setting Up SA Relationships For SA Types*.

## Service Provider - Bill Messages

Open **Admin** > **Service Provider** > **Search** and navigate to the **Bill Messages** page to define bill messages to appear on bills that contain charges associated with a service provider.

**Description of Page**

Use the **Bill Messages** collection to define **Bill Message** codes that should appear on bills that contain charges associated with a given service provider. For each message, also specify the **Start Date** and **End Date** when such a message should appear on the bill (leave **End Date** blank if the message should appear indefinitely).

**Where Used**

The system snaps bill messages on a bill during bill completion. Refer to *The Source Of Bill Messages* for more information.

## Setting Up SA Types and Start Options For Sub SAs

The SA types and start options described under *Designing Your SA Types And Start Options For Sub SAs* must be set up. Refer to *Setting Up SA Types* for how to do this.

## Setting Up SA Types For Financial Settlements

The SA types described under *Designing SA Types For Service Provider Financial Settlements* must be set up. Refer to *Setting Up SA Types* for how to do this.

## Update Master SA Types With FT Freeze and Bill Completion Algorithms

Refer to *SA Type - Algorithm* for more information.

## Setting Up SA Relationships For SA Types

**Contents**

## SA Type SA Relationship Type - Main

Open **Admin** > **SA Type SA Rel. Type** > **Add** to define the types of SA relationships and service providers than can be associated with a SA type.

**Description of Page**

Define the **SA Relationship Type** that can be associated with service agreements of this **SA Type**.

> **NOTE:**
> You may only define SA Relationship Types for "master service agreements".

Turn on the **Required** switch if this **SA Relationship Type** must be defined for service agreements of this type. Refer to *Defaulting Relationship Types And Defaulting Service Providers* and *Required Relationship Types and Billing* for more information.

Indicate if **Gaps in SA Relationships** of this type that are associated with this service agreement type are Allowed or Not Allowed . You should only select Allowed if relationships of this type can be expired without a relationship with another service provider to replace it. Deregulated relationships typically should not have gaps in the relationship. For example, a relationship with an energy service provider should not expire unless a relationship with another energy service provider replaces it. Refer to *negotiated terms* for an example of SA relationship types that allow gaps in SA relationships.

Use the collection to define the **Service Provider**s who can be associated with this **SA Relationship Type** on service agreements of this **SA Type**.

> **NOTE:**
> Only **Service Provider**s previously defined as being valid for the **SA Relationship Type** can be specified (refer to *Service Provider - SA Relationship Type* for how to link a service provider to a SA relationship type).

Turn on **Default SPR** if the **Service Provider** should be defaulted on newly created SA relationships. Refer to *Defaulting Relationship Types And Defaulting Service Providers* for more information.

Use **Status** to control if the **Service Provider**'s relationship to the SA Type / SA Relationship type is Active or Inactive . Only Active service providers can be linked to service agreements of this type. The system allows Inactive service providers in order to support historical service providers who are no longer active and to allow you to set up new service providers in advance of their start date.

Use the drill down button adjacent to a service provider to view the valid Sub SA Types. Alternatively, navigate the Sub SA Type tab and scroll until you find the desired service provider.

**Where Used**

When a new SA relationship is defined for a service agreement, the system uses this information to make sure the relationship is valid and that the associated service provider is valid.

## SA Type SA Relationship Type - Sub SA Type

Open **Admin** > **SA Type SA Rel Type** > **Search** and navigate to the **Sub SA Type** page to define valid sub SA types for service providers associated with a SA type.

If you provide billing services for the service provider (i.e., the service provider's billing relationship is We Bill For Them ) or if you subcategorize your own charges (i.e., the service provider is your organization and it has a billing relationship of It's Us ) a *Sub Service Agreement* will be created for the service provider.

**Description of Page**

The information in the collection defines the valid **Sub CIS Division** and **Sub SA Type**s of these sub service agreements. Those entries marked as **Create Initially** are used by the process that creates sub SAs for new SA relationships. This background process uses this information as follows:

- If the sub SA's SA type doesn't use Start Options (as defined on SA Type - Main), the background process simply creates a sub SA with the given SA type. Note: these types of sub SAs are typically used for service providers who send their charges to you (i.e., they have a billing relationship of We Bill For Them - Bill Ready ). This is because Billable Charge service agreements are used for these types of service agreements and billable charge service agreements contain very little information.
- If the sub SA's SA type uses Start Options (as defined on SA Type - Main), the **Start Option** defined in the collection is used to populate the sub SA with default values (e.g., rate, contract rider, etc.). Refer to *Setting Up Start Options* for more information.

**Where Used**

The process that creates sub SAs for new SA relationships uses this information to determine the number and type of sub SAs to create for each SA relationship.

# Negotiated Terms

The topics in this section describe the use of SA relationship functionality for applying certain types of negotiated terms. It assumes that you are familiar with SA relationship functionality in general.

> **NOTE:**
> **Negotiated terms are optional.** The functionality described in this section is only relevant if your organization offers this functionality.
>
> **Umbrella agreements**. If the Contract Management module is not *turned off*, you may also choose to use umbrella agreements to manage the functionality described here.

Imagine that the head office for a multi-site organization negotiates special terms that cover a number of its sites, each of whom have their own account and service agreement. The negotiated terms typically involve discounts. These discounts may be realized

- Under a single service agreement, separate and distinct from the service agreements that are covered, or
- Individually, for each covered service agreement. In this case, two sub-scenarios exist:
  - The discounts may be reflected on the bill segment of each service agreement, or
  - The discounts may be transferred to another service agreement (the group's service agreement). The discount does NOT appear on the individual bill segment for the service agreements that are covered by the negotiated terms.

SA relationships track and manage complex business relationships between a customer and a service provider. You can define the above relationships using service agreement relationship functionality. This is a special type of SA relationship in which the head office is the service provider.

**Contents**



# Examples Of Special Discounts

The following topics illustrate examples of how your organization may configure the system to handle this business functionality.

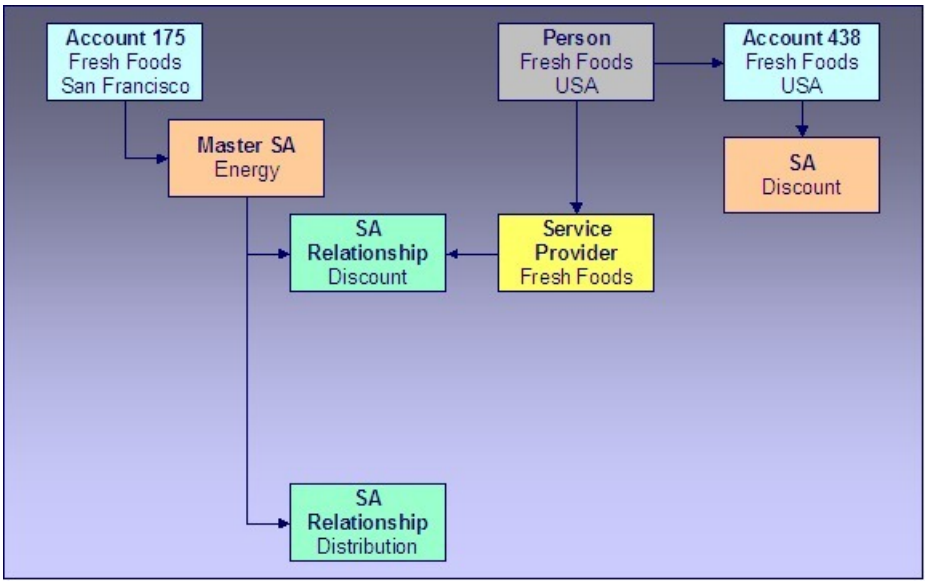
**Contents**



## Example Using Aggregated Consumption

A customer, Fresh Foods has 10 stores each with its own account and electric service agreement, i.e., each store is billed separately. Fresh Food's head office decides to negotiate a group discount that applies to one or more of the individual stores.

In the following diagram, one store's account is shown.




***Example Using Aggregated Consumption***

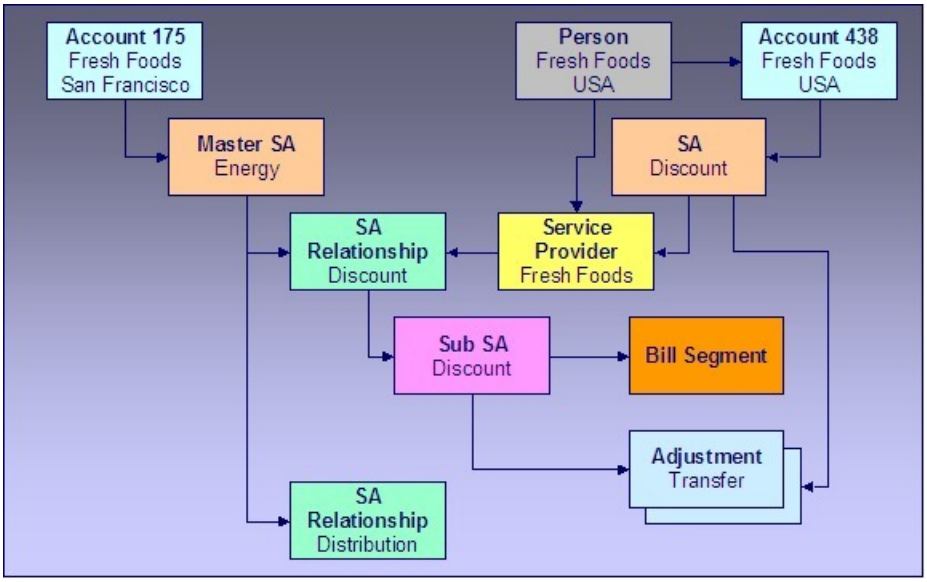
Note the following:

- An SA relationship is created for the energy SA covered by the negotiated terms.
- The service provider in the relationship is the head office.
- This relationship does not have a sub-SA because no additional billing services are provided for each individual covered service agreement.
- Discounts are calculated using the head office discount service agreement and affect only this service agreement and therefore only the head office's account.
- The master SA may have other deregulated relationships, such as the distribution relationship shown.

**NOTE:**
**Aggregated consumption algorithm.** In this scenario, the service provider's service agreement amalgamates the group's consumption and applies a rate to calculate the discount. This algorithm is not provided - you get to write this algorithm to meet your needs.

## Example Using Site-by-site Discount

In this scenario, the discount is calculated on a site-by-site basis.




***Example Using Site By Site Discount***

Note the following differences between this example and the one where consumption is aggregated:

- Each service agreement participating in the discount has an SA relationship with a sub SA.
- Discounts are calculated on a site-by-site basis by the sub SA for each service agreement covered by the discount agreement.
- The discounts may be transferred to the head office service agreement using transfer adjustments. In this case, you may choose to not show the discount on the individual site's bills.

# Setting Up The System To Enable Negotiated Terms

The above topics provided background information about how special negotiated terms could be supported in the system. The following discussion summarizes the various setup tasks alluded to above. These notes highlight the setup required in addition to that detailed in *Setting Up SA Relationships Information*.

**Contents**

## Algorithm

If you use sub SAs to calculate charges / discounts for each covered service agreement individually and you want to transfer the charges / discounts to the service provider's service agreement at bill completion, you will need to set up a bill completion algorithm to do this.

Refer to the algorithm type *BCMP-TR* for more information.

## SA Relationship Type

You will need an SA relationship type that will be used for each type of negotiated term or discount.

## Service Provider

Set up a service provider using the principal party of the negotiated discount. For example, if a head office negotiates a special agreement for its sites, you should set up a new service provider representing the head office.

- **Billing Relationship** will depend on the type of negotiated terms you choose to set up. For terms where debits / credits are calculated for each covered service agreement individually, select We Bill For Them, Rate Ready . We are effectively billing on behalf of the principal party. For terms where the discount is calculated on an amalgamated SA there is no billing relationship because no additional billing services are provided for each covered service agreement.
- Select a **Payment Relationship** of Pay SPR Not Applicable if debits / credits to the sub-SA should not be transferred to the service provider. If you want to transfer charges at bill completion time using a bill completion algorithm, you should also select Pay SPR Not Applicable because you will not be creating adjustments to pay the principal party service at payment time or at billing time.
- Enter a **Transfer A/R Algorithm** to transfer the debit / credit from the sub-SA to the principal party's service agreement. If you do not want to transfer the debit / credit to the principally party's service agreement, you do not need to specify a transfer algorithm.

## SA Type SA Relationship Type

Associate the SA relationship type setup for negotiated terms with the SA type(s) of the service agreements that are covered by the terms. The following are suggested values for the SA type SA relationship type:

- **Required**. Relationships of this type should not be required for the SA type because the negotiated terms will only cover selected service agreements with that SA type.
- **Gaps in SA Relationship** are Allowed if service agreements of this type do not have to have an SA relationship of this type with a service provider throughout the effective period of the SA.
- Add the service provider set up above to the list of valid service providers for this SA type and SA relationship type combination.

## SA Type

Set up an SA type for the sub SAs that will be used to calculate discounts. This SA type should use the *BCMP-TR* bill completion algorithm if you want to transfer the discounts to the head office.

**NOTE:**
**TBFU Deregulated Relationship with WBFT Negotiated Terms Relationship**. If you have the unusual situation where a master service agreement has a relationship with a TBFU service provider as well as a negotiated term "relationship" with a WBFT service provider, and you transfer charges / discounts from the discount agreement sub SA to the WBFT service provider, you will not be able to use the algorithms provided to transfer receivables to the service providers. This is because bill completion algorithms associated with the SA type of a master service agreement are executed before any bill completion algorithms associated with the SA types of sub service agreements. Consequently the TBFU XFER algorithm associated with the master service agreement will transfer all receivables from related sub SAs to the TBFU service provider before the BCMP-TR algorithm can transfer the discount agreement receivables. You will need to modify the TBFU XFER bill completion algorithm that transfers receivables from the customer to the TBFU service provider to exclude the discount agreement receivables.

# Defining Service Credit Options

Some companies allow their customers to participate in a special rewards program. The term "service credits" is used to describe a program that rewards customers for their business. The topics in this section provide details to help you set up the control tables required to support any service credit program that your company supports.

**NOTE:**
**Penalty Points**. The service credits functionality is described in the documentation with the assumption that it is used for accumulating points to reward your customers. However, if your company has a business need to record penalty points for a customer, the service credits functionality may be used for that purpose as well.

**Contents**



## The Big Picture Of Service Credits

The topics in this section provide background information about service credit functionality.

**Contents**

## Service Credit Membership

Let's look at some examples of special programs that may use service credits functionality:

- Capital credits - When customers receive their utility service from a cooperative, they are considered "members" of the cooperative and may over time receive capital credit allocations from the cooperative based on their service history and the cooperative's profits allocated during that time period.
- Frequent flier miles - Perhaps your company has made an agreement with one or more airlines to allow customers to accumulate frequent flier miles for every x amount spent on service.
- Free pay-per-view movies - Maybe your cable service offers free pay-per-view movies under certain conditions. Using service credits, you can set up your system to accumulate the free pay-per-view movies and use the free movies to offset actual movies viewed by the customer.
- Any other type of loyalty program where the customer earns credits that may later be redeemed in some way.

To participate in a program such as those described above, the customer is linked to a service credit membership. The membership record provides the following functionality:

- It defines the accounts that are linked to the membership.

  **FASTPATH:**
  Refer to *Who are the Members?* for information about linking persons and accounts to a membership.

- It defines a *membership type*, which controls certain behavior about the membership.
- It may define an external ID if the membership is associated with an external program, such as a frequent flier mile program.
- It may define a *service agreement* to use for miscellaneous financial transactions that may get created.
- It may define characteristics used to capture miscellaneous information about the membership.
- Over time, service credit events are created for a membership. The events indicate an amount that either adds or subtracts credit units (i.e., points, miles, movies, dollars, etc) for the membership.

  **FASTPATH:**
  Refer to *The Big Picture of Service Credit Membership* for more information about functionality related to a membership.

## How Are Service Credits Earned?

Service credits may be monetary rewards for service or they may be non-monetary rewards such as free movies or frequent flier miles. In any case, how the membership earns the points or rewards depends on the business rules for the program you are offering.

A typical scenario is that the service credits are earned for a membership as a result of other services linked to the membership's accounts. For example:

- Perhaps free pay-per-view movies are earned when signing up for cable service. In this case, the pay-per-view movie membership is related to the membership account's cable service agreement. Refer to *Service Credits Earned When Starting Service* for more information.

- Perhaps one frequent flier mile is earned for every $10 spent on electricity. In this case, the frequent flier membership is related to the membership account's electricity service agreements (for example, electricity distribution, electricity retail and lamp service). Refer to *service credits earned through billing* for more information.
- For a capital credits membership, capital credit allocations are calculated based on the amount spent by the customer for standard service, for example electricity and/or gas service. In this case, the capital credit membership is related to the membership account's electricity and/or gas service agreements. For capital credits, a background process is used to calculate the allocated amounts. Refer to *Allocating Capital Credit* for more information.

It is also possible to earn service credits irrespective of other service for the membership's accounts. (Again, it depends on the business rules for the program you are offering.) For example, perhaps you offer 500 frequent flier miles for signing up for service with your company, regardless of the type of service chosen. In addition, assume that no additional miles are earned for ongoing service. In this example, there is no need to link the membership to any service agreements.

**FASTPATH:**
Refer to *Service Agreements Contribute to a Membership* for more information.

Each earned service credit amount is linked to the membership via a *service credit event*.

## How Are Service Credits Redeemed?

Once service credits have been earned for a membership, how may a customer redeem these credits? The method by which the credits are redeemed depends on the business rules for the program you are offering. Here are some examples of how a service credit may be redeemed:

- For free pay-per-view movies, perhaps your customer's monthly cable bill is credited for any pay-per-view movies until all free movies are used. Refer to *Service Credits Redeemed Through Billing* for more information.
- For frequent flier miles, the information about the earned miles is exported to the appropriate airline. The miles are actually redeemed by the customer through the airline, not through your company. Refer to *Interface Membership Information to a Third Party* for more information.
- For a capital credit membership, the company periodically (maybe once a year) decides if credits should be redeemed (referred to as "retired") and if so, how much. The company runs a background process to calculate the "retirement" amount. When an amount is retired, the membership balance is reduced by the retirement amount and the amount is transferred to service agreements related to the membership. Refer to *Capital Credit Retirement* for more information.

**NOTE:**
**Tracking Membership Balances**. If service credits are redeemed via the system, your membership should probably be configured to keep track of a balance. Refer to *Event Amounts May Contribute to a Balance* for more information.

Each service credit amount redeemed through the system is linked to the membership via a *service credit event*.

## Service Agreements For a Membership

There are three types of service agreements that may be associated with a service credit membership. The following points describe these three types.

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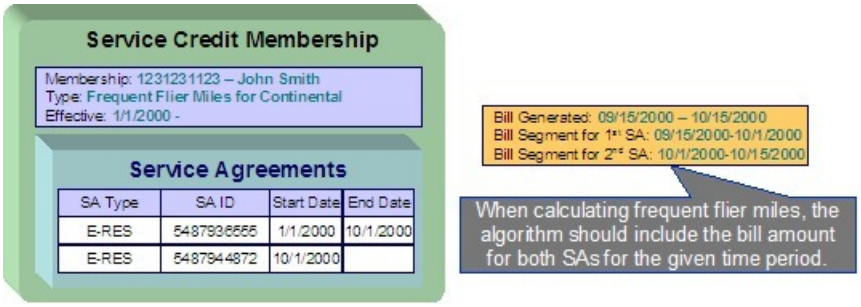
## SAs Contribute to the Membership

As described in *how are service credits earned* , many memberships are related to specific service agreements for the membership's accounts. We refer to these service agreements as the SAs that contribute to the membership because often the service credit amounts earned for the membership are based on amounts spent by the customer for these services.

During the lifetime of a membership, service agreements that contribute to a membership may be stopped and other service agreements started. For example, perhaps you have a frequent flier membership that is related to electric service. Imagine that the customer starts out with a certain rate for electric service, but later decides to opt for a different type of rate that requires expiring the old service agreement and creating a new one. How does this affect your frequent flier mile calculation? It depends on how you design the *algorithm* that creates the frequent flier events. Essentially, the algorithm must cater for this situation. The following diagram illustrates the scenario.




The service agreements that contribute to a membership are not linked directly to the membership record. This would cause a maintenance burden, requiring links to be updated when service is stopped or started for applicable service agreements. Rather, this link is indirect. The list of service agreement types is defined for the membership type. The system can determine which service agreements are "linked" to the membership by looking at the SA types for the membership type.

**FASTPATH:**
Refer to *Determine The Types of Service Agreements That Contribute to the Membership* for more information on designing your membership type to include appropriate SA types.

## SA Used for Miscellaneous Transactions

For some memberships, you may need to define a special service agreement to use for miscellaneous transactions. For example:

If events created for a membership cause an adjustment to be created to affect the general ledger, rather than allowing the system to arbitrarily pick a service agreement to use for this adjustment, the SA to use should be indicated on the membership. Refer to *An Event May Cause Other Actions to Occur* for more information.

## Membership Fee SAs

For some memberships, a *membership fee* may be applicable. A special service agreement is used to hold the fee. This service agreement is not linked directly to the membership, but is simply a service agreement linked to one of the membership's accounts.

**NOTE:**

**Some fees may be refundable.** The refunding of a fee must be handled by an algorithm. Refer to *SAST-RF* for information about the algorithm type provided with the base product.

# Designing Your Service Credit Options

This section helps you to determine how to design your service credit membership types and service credit event types.

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## Designing Your Membership Types

This section discusses the options to consider when designing your service credit membership types.

First consider the type of unit that your membership's service credit events represent.

- Is it related to a currency? If so, ensure that your currency is correctly defined on the *currency* page.
- Is it a non-currency unit, such as movies, points or miles? If so, you need to define the unit on the *credit unit* page.

Next, consider other behavior that your membership may exhibit.

- Should your membership *calculate an overall balance* ?
- Will miscellaneous financial transactions be created for you membership over its lifetime? If so you may need to link a *service agreement to your membership*.
- Should events linked to your membership reference a *fiscal year* ?

The table below illustrates three types of memberships: one for capital credits, one for frequent flier miles and one for free pay-per-view movies.

| Membership Type | Description | Unit Type / Currency or Credit Unit | Has Balance? | Require SA? | Fiscal Year? |
|---|---|---|---|---|---|
| STDCAPCR | Standard capital credit membership | Currency / $ | Yes | Yes | Yes |
| FFDELTA | Delta frequent flier miles | Credit Unit / Miles | No | No | No |
| FREEPPV | Free pay-per-view movies | Credit Unit / Movies | Yes | No | No |

The following points explain the settings for each membership above:

- The capital credit membership uses a currency of US dollars for its units. Over time, capital credits are allocated and retired. The overall balance of the credits and debits should be calculated and displayed for information purposes. It is common for the allocation and retirement of capital credits to affect the GL, and as a result, a membership SA is required for posting these financial effects. Finally, in a capital credit situation, the allocation is typically related to a specific fiscal year. When calculating and displaying balances, the balance for each fiscal year must also be available. As a result, the fiscal year must be set to required.

- For the frequent flier membership type, a separate membership type must be created for each different airline. This is because a separate membership must exist for each separate airline in order to keep track of the accumulated miles correctly. The membership type does not have a balance because the accumulated miles are interfaced to the airline and the airline keeps track of the balance. In this example, no SA is required because an assumption is being made that the creation of frequent flier miles does not affect the GL. (Accumulating miles is no liability or expense for the company. The miles are simply accumulated on behalf of a third party.) Finally, the frequent flier miles do not need to indicate a fiscal year.
- For the free pay-per-view movies membership, we assume that the credits are redeemed from within the system. For example, perhaps a calculation rule calculation algorithm or pre-processing calculation rule redeems the free pay-per-view movies over time as customers are billed for the movies. As a result, the membership should have a balance. In this example, no SA is required because an assumption is being made that any affect on the GL is posted at the time the free movies are redeemed (i.e., when calculating a bill). (This is just an example. It's possible that you may want to post to the GL when free movies are accumulated to mark a payable for the company.) Finally, free pay-per-view movies do not need to indicate a fiscal year.

More options must be considered for each membership type.

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## Consider Whether the Membership Should Indicate Subcategories

For some types of memberships, the amount of each service credit event is further grouped by a subcategory. Refer to *Events May Indicate a Subcategory* for more information.

Use subcategories if multiple subtypes of credits may be accumulated and redeemed and if balances need to be tracked for each subcategory.

For our sample membership types, only the capital credits type should indicate subcategories.

| Membership Type | Description | Subcategories |
|---|---|---|
| STDCAPCR | Standard capital credit membership | Distribution Transportation |
| FFDELTA | Delta frequent flier miles | |
| FREEPPV | Free pay-per-view movies | |

## Determine the Types of Service Agreements Linked to the Membership

Memberships typically exist to reward customers for participating in standard service with the company. Refer to *How Are Service Credits Earned?* for more information. If memberships of this type are related to standard service for your company, determine the SA types for these service agreements.

**NOTE:**

**Standard Service SA Types**. These service agreement types are probably different from the type of service agreement you may link as the membership SA. The membership SA is used for miscellaneous charges like general ledger posting. These SA types are related to electricity service, gas service, etc.

For our three examples, assume that the company provides electric service and cable. The capital credits are related only to electric service, frequent flier miles are accumulated for a combination of services, and free pay-per-view movies are related only to cable service.

| Membership Type | Description | SA Types |
|---|---|---|
| STDCAPCR | Standard capital credit membership | E-RES (Electric Residential) AL-RES (Area Lighting) |
| FFDELTA | Delta frequent flier miles | E-RES (Electric Residential) AL-RES (Area Lighting) CABLE -RES (Cable Residential) |
| FREEPPV | Free pay-per-view movies | CABLE-RES (Cable Residential) |

## Consider Special Functionality Needed When Adding, Activating or Inactivating a Membership

Should a letter or bill message be generated when a membership is created or activated? Should anything happen when a membership is inactivated? If so, you may need to define one or more algorithms to be plugged in on the membership type.

For our examples, let's say that a bill message is generated when a frequent flier or free pay-per-view membership is created. Let's say that a letter is generated when a capital credits membership is activated. We also assume that when a capital credits membership becomes inactive, any outstanding balance is redeemed. For the frequent flier miles and pay-per-view memberships, we assume nothing special occurs when the membership becomes inactive.

**FASTPATH:**
Refer to *Lifecycle of a Membership* for more information about the various status values for a membership.

| Membership Type | Description | Algorithm System Event | Algorithm |
|---|---|---|---|
| STDCAPCR | Standard capital credit membership | Membership Activation | Send Letter |
| | | Membership Inactivation | Redeem Balances |
| FFDELTA | Delta frequent flier miles | Membership Creation | Generate Bill Message |
| FREEPPV | Free pay-per-view movies | Membership Creation | Generate Bill Message |

**NOTE:**
**Sample Algorithms**. The base package does not provide sample algorithms for all the above examples. Refer to *Service Credit Membership Type - Algorithm* for more information about the algorithms provided with the system.

## Determine Whether The Membership Requires Additional Information

Is there any information about your membership that you need to capture that is not already provided by the base system logic? If the answer is yes, you may need to define characteristics for your membership. Use the *characteristic collection*

on the membership type to define the types of characteristics allowed for memberships of this type. You may also define default values for you membership's characteristics.

## Designing Your Service Credit Event Types

Now that you have designed your membership types, you need to design the types of service credit events that may be created for your membership.

In many cases, a credit event should cause additional functionality to occur. Algorithms are executed when an event is completed and when an event is canceled and are used to perform additional functionality. The following points illustrate possible algorithms that may be needed when a credit event is completed.

- Validate the event as compared to other events. For example, perhaps a new event should never cause the overall membership balance to fall below zero. You could use an algorithm on the service credit event type to check this condition.
- Create an adjustment that posts to the general ledger. Your credit event may not affect the customer's balance when created, but perhaps it should have an effect on the general ledger. For these types of credit events, you may need to create an adjustment to post to the GL.
- Create adjustments to affect the customer's balance. When "redeeming" a credit, you may need to transfer a monetary amount to one or more of the customer's service agreements.
- Create a bill message. Perhaps when a credit is accumulated, you want to inform the customer via a message on the bill indicating the credit amount. A temporary bill message is added to one of the membership's accounts.

  **NOTE:**
  **One Account Message of the Same Message Type**. The temporary bill message collection on the account allows only one bill message of the same bill message type. If it's possible for multiple types of events to be generated for the same account, consider creating a different bill message type for each event type.

- Stamp a batch code and batch run number onto the event. This would be used when your event information needs to be interfaced to an external system.

The following points illustrate possible algorithms that may be needed when a credit event is canceled.

- Validate the event as compared to other events. For example, perhaps canceling an event should never cause the overall membership balance to fall below zero.
- Cancel adjustments that may have been created when the event was completed.

To illustrate examples of when to use some of the algorithms above, we'll design event types for the membership types designed above.

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## Designing Capital Credit Event Types

The following event types illustrate typical events for a capital credits membership.

| SC Event Type | Description | Membership Type | Algorithm System Event | Algorithm |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| ALLOCATECCR | Capital credit allocation | STDCAPCR | Event Creation | Create Simple Adjustment |
| | | | Event Creation | Generate Bill Message |
| | | | Event Cancellation | Validate Balance Not < Zero |
| | | | Event Cancellation | Cancel Related Adjustments |
| RETIRECCR | Retire capital credit (apply to customer's balance) | STDCAPCR | Event Creation | Validate Balance Not < Zero |
| | | | Event Creation | Create Adjustments to Affect Customer's Balance |
| | | | Event Cancellation | Cancel Related Adjustments |
| FORFEITCCR | Forfeit capital credit (retirement not applied to customer's balance) | STDCAPCR | Event Creation | Validate Balance Not < Zero |
| | | | Event Creation | Create Simple Adjustment (affect GL only) |
| | | | Event Cancellation | Validate Balance Not < Zero |
| | | | Event Cancellation | Cancel Related Adjustments |

These event types assume the following:

- When credit events are allocated, the customer is notified via a bill message, the general ledger is affected so a simple GL only adjustment is created. If an event of this type is canceled, any adjustments that were created should be canceled. The event amount should always be positive, so checking that the membership balance does not fall below zero is only checked for event cancellation.
- When capital credits are retired, it's possible that the full membership balance is not applied to the customer's balance. For the portion of the retirement that does affect the customer's balance, you need an algorithm that applies the credits to the customer's service agreements via adjustments. Cancellation of this event should cause any related adjustments to be canceled. It's assumed that the amount of this event is a credit so checking that the membership balance does not fall below zero is only checked for event completion.
- For the portion of the retirement that is not applied to the customer's balance, the event amount should simply affect the GL so a GL only adjustment is created. Cancellation of this event should cause any related adjustments to be canceled. It's assumed that the amount of this event is a credit so checking that the membership balance does not fall below zero is only checked for event completion.

**NOTE:**
**Service credit event types are independent of subcategories.** A capital credits membership typically uses subcategories. When events are created for different subcategories, the same service credit event type may be used. As a result, all subcategories use the same event completion and event cancellation algorithms.

## Designing Frequent Flier Event Types

The following event types illustrate typical events for a frequent flier membership:

| SC Event Type | Description | Membership Type | Algorithm System Event | Algorithm |
|---|---|---|---|---|
| ADDMILES | Add miles to the membership | FFDELTA | Event Creation | Generate Bill Message |
| | | | Event Creation | Populate Batch Information |
| | | | Event Cancellation | Event may not be canceled. |

This event type assume the following:

- A new event should generate a bill message.
- Information about the event amount should be interfaced to an external system so batch information should be populated when the event is completed.
- Events of this type may not be canceled because the information is interfaced to an external system. Rather, to reverse an event, simply create a new event whose amount is a credit. This credit amount is also interfaced to an external system.

**NOTE:**
**Sample Algorithm.** The system does not provide a sample cancellation algorithm that prevents the event from being canceled.

- There is no validation to ensure that the balance does not fall below zero. Recall that this membership was defined as not requiring a balance.

Notice that only one type of event has been defined for this membership. That is because the credits for this membership are not redeemed via this system. Rather they are accumulated on behalf of an external system.

## Designing Pay-per-view Event Types

The following event types illustrate typical events for a free pay-per-view movies membership:

| SC Event Type | Description | Membership Type | Algorithm System Event | Algorithm |
|---|---|---|---|---|
| ADDPPV | Free pay-per-view movies | FREEPPV | Event Creation | Generate Bill Message |
| | | | Event Cancellation | Validate Balance Not < Zero |
| REDEEMPPV | Redeem pay-per-view movies | FREEPPV | Event Creation | Validate Balance Not < Zero |
| | | | Event Creation | Generate Bill Message |

These event types assume the following:

- Any type of new event should generate a bill message.
- For adding free movies, it is assumed that the quantity is positive so when the event is cancelled, the algorithm verifies that the balance does not become negative.
- For redeeming free movies, it is assumed that the quantity is negative so when the event is completed, the algorithm verifies that the balance does not become negative.
- These events do not affect the general ledger and they do not directly affect the customer's balance so no adjustment algorithm is needed.

# How Are Service Credit Events Created?

Now that you have designed the behavior of your service credit events, an important issue is to determine how these events are created. Consider your business practice for each type of membership.

Let's use our sample memberships to work through different ways that you may create service credits.

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## Service Credits for Capital Credit Memberships

For a capital credit membership, capital credit allocations are calculated once a year based on billing history and the cost of service. To accomplish this, a background process calculates the amount and creates the service credits. Refer to *allocating capital credits* for a sample process provided with the base package.

Credits are redeemed via the retirement process. The company determines when to retire capital credits based on analysis of their financial situation. This retirement process is also handled by a background process. Refer to *capital credit retirement* for a process provided with the base package.

For capital credits memberships, special functionality is required when a member dies. The capital credits are considered part of the person's estate and may need to be retired and applied to a beneficiary's account. This process depends on the company's business practice. However, typically, the membership status would change to inactive so that new capital credit allocations are not created for the membership. The system provides a sample inactivation algorithm called *SCMI-RB* that transfers part or all of the outstanding credit balance to the member's service agreements. From there, a user can cut a check to the beneficiary.

**NOTE:**
**Some Credits Are Never Retired**. For many cooperatives, some types of allocated credits are never retired. Refer to *Partial Retirement* for more information.

## Service Credits for Frequent Flier Memberships

In our example, frequent flier miles were related to both the electricity and phone service. Let's assume that frequent flier miles are accumulated every $x spent on electricity and phone service. In this example, a bill completion algorithm creates service credits based on the bill segment amounts for these service agreements. Refer to *Service Credits Earned Through Billing* for more information.

As mentioned before, the frequent flier miles are not redeemed using this system, but are interfaced to a third party for redemption.

## Service Credits for Free Movies Memberships

**NOTE:**

**Sample Algorithms**. No base package algorithm types are provided to support the logic described in this example.

In this scenario, let's suppose that a customer receives three free pay-per-view movies when signing up for new service. To handle this, perhaps an SA creation algorithm creates the membership and the service credits when the service is started. Or perhaps you want to wait until the first bill is generated and a bill completion algorithm is used to generate the first credit. It depends on your business practice.

For redeeming the free pay-per-view movies, it is assumed that the movies are credited during billing after it is determined that the customer has been billed for a movie. The number of movies used for the membership is reduced until all the free movies are used.

**FASTPATH:**
Refer to *Service Credits Redeemed Through Billing* for more information.

# Setting Up Service Credit Options

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## Setting Up Credit Units

Credit unit is used for service credit membership types whose *events* record non-monetary units. Open **Admin** > **Credit Unit** to set up credit units.

**Description of Page**

The following fields display for each credit unit:

**Credit Unit** The unique identifier of the credit unit.

**Description** The description of the unit. This also acts as a label for the unit when displaying information about a service credit event.

**Symbol / Label Position** Indicates whether or not the label for this credit unit appears as a Prefix or as a Suffix to the service credit event amount.

**Decimal Positions** Indicates the number of decimal positions used for this credit unit. This information should be used by any algorithm or background process that creates a service credit event to determine how to store the event amount. It is also use to correctly display the service credit amounts.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CR_UNIT*.

## Setting Up SC Membership Inactive Reasons

The service credit membership inactive reason must be specified when the status of a service credit membership changes to inactive . Open **Admin** > **Membership Inactive Reason** > **Add** to set up service credit inactive reasons.

**Description of Page**

The following fields display for each inactive reason:

**Inactive Reason** The unique identifier of the service credit membership inactive reason.

**Description** The description of the inactive reason.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SCM_NCTV_RSN*.

# Setting Up Service Credit Membership Types

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## SC Membership Type - Main

Service credit memberships have a membership type. Open **Admin** > **Service Credit Membership Type** > **Add** to define the membership type.

**Description of Page**

Enter a unique **Service Credit Membership Type** and **Description** for each membership type.

Use the **SA Requirement** flag to indicate whether a *miscellaneous SA* must be linked to memberships of this type. The possible values are SA Required and SA Not Allowed .

> **NOTE:**
> The value defaults to SA Required .

Use the **Fiscal Year Requirement** flag to indicate whether events linked to memberships of this type should indicate a *fiscal year*. The possible values are Fiscal Year Required and Fiscal Year Not Allowed .

> **NOTE:**
> **Default Note**. The value defaults to Fiscal Year Not Allowed .

Use the **SCM Event Balance** flag to indicate whether or not a *balance of service credit events* linked to memberships of this type should be calculated and displayed. The possible values are Has a Balance and No Balance .

> **NOTE:**
> **Default Note**. The value defaults to Has a Balance .

Use the **SC Membership Type Unit** flag to indicate whether or not the unit for the event amounts for events linked to memberships of this type is Currency or Credit Unit . When the unit is currency, indicate the **Currency Code**. When the unit is credit unit, indicate the **Credit Unit**.

If events linked to memberships of this type must indicate a subcategory, enter a valid **Subcategory Name** and **Description** for each subcategory applicable to this membership.

**FASTPATH:**
Refer to *Events May Indicate a Subcategory* for more information.

Use the **SA Types** grid to indicate the types of *service agreements that contribute to memberships* of this type. Indicate the **CIS Division** and **SA Type** for each type of service agreement that is related to a membership of this type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SCM_TYPE*.

## SC Membership Type - Algorithm

Open **Admin** > **Service Credit Membership Type** > **Search** and navigate to the **Algorithm** page to define any algorithms that are associated with a membership type.

**Description of Page**

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (descriptions of all possible events are provided below).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** for which you can define algorithms.

| System Event | Optional / Required | Description |
|---|---|---|
| Membership Creation | Optional | Use this system event for algorithms that are executed when a membership is created.<br>Click *here* to see the algorithm types available for this system event. |
| Membership Activation | Optional | Use this system event for algorithms that are executed when a membership becomes active .<br>Click *here* to see the algorithm types available for this system event.<br>**NOTE:**<br>**Creating Memberships In Active Status**. A membership may be created in either pending status or in active status, based on your business practice. For memberships created in active status, the system executes the membership creation algorithms and the membership activation algorithms. |
| Membership Inactivation | Optional | Use a system event of Membership Inactivation for algorithms that are executed when a membership becomes inactive . |

| | |
|---|---|
| | Click *here* to see the algorithm types available for this system event. |

## SC Membership Type - Characteristics

To define characteristics that can be defined for service credit memberships of a given type, open **Admin** > **Service Credit Membership Type** > **Search** and navigate to the **Characteristics** page.

**Description of Page**

Use the characteristics collection to define characteristics that can be defined for service credit memberships of a given type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on service credit memberships of a given type. Turn on the **Default** switch to default the **Characteristic Type** when service credit memberships of the given type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

# Setting Up Service Credit Event Types

Service credit events created for a service credit membership have an event type. Open **Admin** > **Service Credit Event Type** > **Add** to set up service credit event types.

**Description of Page**

Enter a unique **Service Credit Event Type** and **Description** for each event type.

Indicate the **Service Credit Membership Type** to which this event type belongs.

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (descriptions of all possible events are provided below).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** for which you can define algorithms.

| System Event | Optional / Required | Description |
|---|---|---|
| Event Completion | Optional | Use a system event of Event Completion for algorithms that are executed when an event is completed. Refer to *An Event May Cause Other Actions to Occur* for more information.<br>Click *here* to see the algorithm types available for this system event. |
| Event Cancellation | Optional | Use this system event for algorithms that are executed when an event is canceled .<br>Click *here* to see the algorithm types available for this system event. |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_SC_EVT_TYPE*.

# Service Credit Examples

In this section, we provide examples of how to define your control tables to support functionality related to different types of service credit memberships. While your company may not define your environment exactly the same way, this section should help solidify your understanding of how to set up your company's service credit options.

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# Defining Control Tables for a Refundable Fee

If your membership requires payment of a *fee* that is refundable, you must define an SA type to use for the refundable fee.

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## Adjustment Type for Refundable Fee

This example assumes that the fee is set up similarly to a deposit. The adjustment used to charge the fee would affect the current balance, but not the payoff balance or the general ledger because the fee is not considered a "receivable", rather it is an amount collected and held for the customer.

Create an *adjustment type* for levying the fee. Indicate the fee amount and indicate the adjustment FT creation algorithm *ADJT-CA*, which affects the current balance, but not the payoff balance or the general ledger.

**NOTE:**
**Adjustment Type Profiles**. Be sure to add this adjustment type to an appropriate *adjustment type profile* and ensure this profile is linked to your SA type.

## SA Type for Refundable Fee

Create an SA type to use for the fee. This SA type should be marked as not billable.

Indicate the appropriate adjustment type profile that includes the adjustment type to levy the fee.

Indicate an appropriate payment segment type that references the *PSEG-NM* payment segment FT algorithm. This algorithm affects the payoff amount and current amount by the payment amount, which should cause the current amount to become zero and the payoff amount to become a credit for the fee amount when the fee is paid.

## Start Option for Refundable Fee

For this SA type, define a start option that causes an adjustment to be levied as part of the start service process.

**FASTPATH:**
Refer to *Including The Membership Fee* on campaigns and packages for more information about levying the fee via the order transaction.

## Algorithm for Refunding the Fee

The base product provides an algorithm type *SAST-RF* that refunds a fee when *service agreements that contribute to the membership* are stopped. You must create an algorithm for this algorithm type and enter the SA type created above as an input parameter.

This SA stop algorithm must be plugged in on all SA types that you defined for the *membership type*.

# Defining Control Tables for a Nonrefundable Fee

If your membership requires payment of a *fee* that is not refundable, you can set this up in two ways:

- You can create a special SA type to handle charging the fee. For this SA type, define a start option that causes an adjustment to be levied as part of the start service process. This adjustment contains your fee. You may use this option if the membership is related to multiple types of services and not all services need to be present in order to create the membership.
- You can levy an adjustment on one of the other service agreements that is being started. To do this, you would use a start option to define an adjustment to be levied as part of the start service process. You may use this option if the membership is related to a single service (for example, free pay-per-view movies).

For our example, we will set up the SA for the nonrefundable fee with a separate 'fee' SA type.

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## Adjustment Type for Nonrefundable Fee

Create an *adjustment type* for levying the fee. Indicate the fee amount and indicate the adjustment FT creation algorithm *ADJT-NM*, which affects the current balance and payoff balance by the adjustment amount, and affects the general ledger.

**NOTE:**
**Adjustment Type Profiles**. Be sure to add this adjustment type to an appropriate *adjustment type profile* and ensure this profile is linked to your SA type.

## SA Type for Nonrefundable Fee

Create an SA type to use for the fee. This SA type should be marked as not billable.

Indicate the appropriate adjustment type profile that includes the adjustment type to levy the fee.

Indicate an appropriate payment segment type that references the *PSEG-NM* payment segment FT algorithm. This algorithm affects the payoff amount and current amount by the payment amount, which causes the current amount to become zero and the payoff amount to become a credit for the fee amount when the fee is paid.

## Start Option for Nonrefundable Fee

For this SA type, define a start option that causes an adjustment to be levied as part of the start service process.

**FASTPATH:**
Refer to *Including The Membership Fee* on campaigns and packages for more information about levying the fee via the order transaction.

# Defining an SA Type for Miscellaneous Transactions

Does your membership require a *service agreement* to support miscellaneous transactions? If so, you need to consider the SA type to use for this service agreement. This SA type should be marked as not billable.

If you choose to use the order transaction to set up the membership, this SA type must be defined on the *algorithm that creates the membership*.

It is possible that you may require a start option for this SA type, for example if you want to define a characteristic for service agreements of this type.

# Using Campaigns/Packages to Set Up Membership

If enrollment in a membership is a common occurrence for your customers when starting service, you should consider using the *order* page to start service for the customer and to create the membership as well.

**NOTE:**

This section only makes sense if you are familiar with the *Sales and Marketing* chapter.

The recommendation is to use a question/miscellaneous field to ask the customer service representative to indicate the appropriate membership type. Algorithms validate this membership type and use it to create a membership of that type.

This section walks you through how to set up the campaign / package required to support this.

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## Column Reference for Membership Type

In order to ask the customer service representative to define an appropriate service credit membership type, you must define a column reference for the membership type.

Add a new column reference with the following information:

- Column Reference: SCM-TYPE
- Description: SC Membership Type
- FK Reference: SCM TYPE
- Long Description: Service Credit membership type to use when creating a service credit membership at start time.

**NOTE:**
**Column Reference Algorithms**. This column reference indicates a validation algorithm and a posting algorithm. However, we have not defined them yet so for now simply save this information.

## Algorithms to Create Membership via Order

The base product provides two algorithm types to support the creation of a membership record via the order page: a validation algorithm type and a posting algorithm type.

**Validate Membership Information**

This algorithm is a column reference validation algorithm that checks that an input membership type is valid. Refer to *CRVL-ME* for more information. You must define an appropriate algorithm for this algorithm type, and on that algorithm you must define the column reference used to identify the membership type. For example:

- Algorithm: VAL MEM TYPE
- Description: Validate SC Membership Type
- Algorithm Type: CRVL-ME
- Parameter1: (Column Reference for Membership Type): SCM-TYPE

**Post Membership Information**

This algorithm is a column reference posting algorithm that creates a membership using the membership type indicated by the user. Refer to *CRPS-ME* for more information. You must define an appropriate algorithm for this algorithm type, and on that algorithm you must define the column reference used to identify the membership type. For example:

- Algorithm: CREATE MEMBRSHP
- Description: Validate SC Membership Type
- Algorithm Type: CRPS-ME
- Parameter1: (Column Reference for Membership Type): SCM-TYPE
- Parameter2: (Service Credit Membership Status): 10 -Pending or 20 -Active. Refer to *Lifecycle of a Membership* for more information.
- Parameters3-5: (Division, SA Type, Start Option): Indicate the information needed to create an SA for miscellaneous transactions.

**NOTE:**
This algorithm first looks for an existing service agreement of this division / SA type linked to the membership's accounts. If one exists, it uses that SA to link to the membership. If an SA does not exist, it creates one with the input division, SA and (optional) start option.

**Update the Column Reference.** Now that you have defined the validation and posting algorithms, return to your *column reference for membership type* and define the algorithms there.

Although your company may support multiple types of memberships, this column reference and its algorithms have been designed such that only one column reference for membership type would be needed to set up any type of membership. Although the posting algorithm for the membership type column reference indicates an SA type to use for miscellaneous transactions, a service agreement is only created and linked if your membership type indicates that an SA is required. As a result, you may use the same column reference for both memberships that require an SA and those that don't require an SA. However, if you have different membership types that require an SA and each uses a different SA type or a different start option for the membership SA, you need to define more than one posting algorithm and, as a result, more than one column reference.

## Define a Campaign for Creating a Membership When Starting Service

Many factors must be considered when *designing your campaigns and packages*. The possible creation of a membership when using the order page is simply another factor to consider.

If you plan to define a question/miscellaneous field to capture a service credit membership type, the available packages linked to the campaign should be ones that are related to memberships. For example, if your membership is related to electric service, it doesn't make sense to create a membership for a campaign designed to generate a one-time charge.

When defining a question/miscellaneous field, you must indicate its applicability. Consider whether a membership type is required, optional or only applicable for certain packages. This helps ensure that your users capture this information when appropriate.

## Including the Membership Fee

You must determine the best way to setup your campaign/package to handle the levying of your membership fee, if applicable. Consider some of the following questions.

- If the membership has a fee, is it a refundable fee or a non-refundable fee?
- Is the fee always applicable for the membership? Or is it waived under certain conditions? For example, maybe the fee is applicable if a customer signs up for a single service, but the fee is waived if the customer signs up for two or more services.

The SCM type column reference and question/miscellaneous field are set up to ask the user what type of membership to create. Because the applicability of the fee may differ for each membership type, you should carefully consider the campaign / package setup to levy the fee correctly.

- If a fee is always applicable for a membership, you may consider creating a membership creation algorithm that creates a fee SA with a start option to levy the fee when the membership is created.

  **NOTE:**
  **Sample Algorithm**. The base product does not provide a membership creation algorithm to do this.

- If the fee is not always applicable for a membership, you must determine when the fee is applicable. The recommendation is to include the fee SA type in the SAs-to-create collection for the appropriate package. For example,
  - If the fee is applicable when the customer signs up for a single service, you should define a package for each single service that includes one SA to create for the single service and the fee SA as another SA to create.
  - If the fee is waived when the customer signs up for two or more services, you should define a package for each combination of the multiple services. These packages do not include the fee SA in the SAs to create.
- If the customer signing up for service is a former customer who has returned, perhaps the fee was paid earlier when the customer originally had service. In this case, maybe your business practice is to waive the fee at this time. To do this, you should set up a question/miscellaneous field for the user to mark that this is a returning customer. Based on the answer to this question, perhaps only packages that do not levy any fee are eligible for selection.

## Defining Another Person for Your Account

It is common for a capital credit membership to define more than one person for the account being turned on and linked to a membership. A typical example is a married couple. Both spouses are indicated on the account and financially responsible persons and as a result, both are considered *members*.

Column reference algorithms have been provided by the base product to enable linking a second person to your account via the *order* page.

This section walks you through how to set up the column reference and campaign to support this.

**NOTE:**
**Linking A Second Person to the Account.** This logic is not restricted to service credit functionality. Any campaign may be designed to include the ability to link a second person to the account being started.

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## Column References for Additional Person

In order to ask the customer service representative to link an additional person for the account, you must define several column references to use as questions/miscellaneous fields.

- We should assume that the person may already exist in the database. As a result, a question to record the person ID is needed.

- If the person does not already exist, the user should capture the person's name, an ID type and an ID number. Questions for these three fields are needed. The system uses this information to create a new person.
- Whether we are using an existing person or creating a new one, the person's link to the account must include an account relationship type. A question to record the account relationship type is needed.

Add a new column reference for person ID:

- Column Reference: PERSON-ID
- Description: Person ID
- FK Reference: PER
- Long Description: Person ID of the additional person to link to the order's account.

Add a new column reference for person name:

- Column Reference: PERSON-NAME
- Description: Person Name
- FK Reference: not applicable
- Long Description: Name of a new person to create.

Add a new column reference for identifier type:

- Column Reference: PER-ID-TYPE
- Description: Identifier Type
- FK Reference: ID TYPE
- Long Description: Identifier type for the primary ID of the additional person to link to the order's account.

Add a new column reference for identifier number:

- Column Reference: PER-ID-NUM
- Description: Person ID Number
- FK Reference: not applicable
- Long Description: Identifier number for the primary ID of the additional person to link to the order's account.

Add a new column reference for account relationship type:

- Column Reference: ACCT-REL-TYPE
- Description: Account Relationship Type
- FK Reference: ACCT REL
- Long Description: Relationship type to use for the link between the additional person and the order's account.

**NOTE:**
**Column Reference Algorithms**. One of the column references above must indicate a validation algorithm and a posting algorithm. However, we have not defined them yet so for now simply save this information. We recommend using the account relationship type record because that is used for all additional persons.

## Algorithms to Link Additional Person via Order

The base product has provided two algorithm types to support the linking of an additional person to the account via the order page: a validation algorithm type and a posting algorithm type.

**Validate Addition Person Information**

This algorithm is a column reference validation algorithm which checks that either a person id or person name, a valid ID type and ID number are provided and that a valid account relationship type is provided. Refer to *CRVL-PE* for more information. You must define an appropriate algorithm for this algorithm type and on that algorithm you must define the column reference used for the five fields required for this validation. For example:

- Algorithm: VAL ADD PER
- Description: Validate Additional Person Info
- Algorithm Type: CRVL-PE
- Parameter1: (Column Reference for Person ID): PERSON-ID
- Parameter2: (Column Reference for Person Name): PERSON-NAME
- Parameter3: (Column Reference for Person ID Type): PER-ID-TYPE
- Parameter4: (Column Reference for Person ID Number): PER-ID-NUM
- Parameter5: (Column Reference for Account Relationship Type): ACCT-REL-TYPE

**Post Addition Person**

This algorithm is a column reference posting algorithm that may link an existing person to the order's account or create a new person and link that person to the order's account. Refer to *CRPS-PE* for more information. You must define an appropriate algorithm for this algorithm type, and on that algorithm you must define the column reference used for the five fields required for this logic. For example:

- Algorithm: LINK ADDNTL PER
- Description: Link additional person to order's account
- Algorithm Type: CRPS-PE
- Parameter1: (Column Reference for Person ID): PERSON-ID
- Parameter2: (Column Reference for Person Name): PERSON-NAME
- Parameter3: (Column Reference for Person ID Type): PER-ID-TYPE
- Parameter4: (Column Reference for Person ID Number): PER-ID-NUM
- Parameter5: (Column Reference for Account Relationship Type): ACCT-REL-TYPE

**NOTE:**
**Update the Column Reference.** Now that you have defined the validation and posting algorithms, return to your *column reference for account relationship type* and define the algorithms there.

## Design a Campaign to Include Linking an Additional Person

Any campaign related to a specific account may include the questions and miscellaneous fields defined here to create/link an additional person to the account.

Simply create entries in the questions and miscellaneous fields collection to prompt the user to ask for the required information. A question should exist for each column reference created above. The following table illustrates a possible setup.

| Seq | Description | Prompt on Order | Column Reference | Dependency |
|---|---|---|---|---|
| 10 | Account relationship type for additional person. | If you would like to link another person to this account, please enter an account relationship type. | ACCT-REL-TYPE | Must have account |

| | | | | |
|---|---|---|---|---|
| 20 | Person ID for additional person | If the additional person already exists in the database, enter the person id. | PERSON-ID | Must have account |
| 30 | Person name for additional person | If you would like to create a new person, please enter the person name. | PERSON-NAME | Must have account |
| 40 | ID type for additional person | Please enter the ID type of the new person. | PER-ID-TYPE | Must have account |
| 50 | ID Number for additional person | Please enter the ID number of the additional person. | PER-ID-NUM | Must have account |

## Service Credits Earned When Starting Service

For some memberships, you may want to add service credits when starting the program. For example, the customer gets three free pay-per-view movies when signing on for cable service. Or a customer receives 500 frequent flier miles for signing up for a combination of gas and electric service.

There are various ways that you can accomplish this. You should work with your implementers to consider the various options to determine the method that best suits your business practice.

- You could use an SA activation algorithm to create a membership and an event for the initial points. Use this method if the points are related to a single type of service agreement and the points are earned automatically when starting service (i.e., without any human decision to be made).
- You could use a membership creation or membership activation algorithm to generate a service credit event automatically. This method assumes that the decision to create the membership has been made and that the free initial points are always earned for this type of membership (i.e., regardless of the type of service created).
- You could use questions and miscellaneous fields for a campaign/package to determine a customer's eligibility for participation in the membership and for the initial free points. A column reference posting algorithm could create the membership and/or the service credit event for the free points based on the answers to the questions.
- Perhaps the initial free points are only earned after the first bill is generated. Use a bill completion algorithm to generate the initial points.

You may think of other plug-in spots that could be used to generate free initial points based on your business needs.

## Service Credits Earned Through Billing

For some memberships, you may accumulate points as a result of billed amounts for other services. For example, perhaps your customers earn one frequent flier mile for every $10 spent on the combined electricity, gas and water bills each month.

To accomplish this, you must design an algorithm to be executed at billing time. There are various plug-in spots executed at billing time that you may use, but the recommended plug-in is a post completion algorithm on the customer class. This plug-in is executed after all bill segments are frozen and most of the completion logic has occurred.

Your algorithm should determine the *service agreements that contribute to the membership* and calculate the service credit amount for those service agreements bill segments.

This algorithm should also consider what to do when bill segments that contributed to the event are canceled. The algorithm provide with the base product *CBCM-SC* checks to see if any canceled bill segments are referenced on any previous

events. If so, it includes the canceled amount on the new event. This may cause the new event to be a negative amount. The assumption is that over time, earned credits will compensate for the negative event amount. For a membership that *interfaces information to a third party*, it is assumed that the negative event amount is also interfaced.

## Service Credits Redeemed Through Billing

For some memberships, your customer may redeem their earned points by receiving a discount on their bill. For example, if your cable customer has earned one free pay-per-view movie, you can give them a credit the next time they get billed for a pay-per-view movie.

The base product has not provided any algorithms to credit a bill based on earned service credits. This section will identify considerations your implementers should follow when designing algorithms to redeem service credits through billing.

The recommendation is to credit the customer's bill by generating an adjustment using a pre-bill completion algorithm. This algorithm's responsibilities are as follows:

- Determine if the appropriate bill segment(s) contain the charges that need to be credited. For example, if the service credit is for a free pay-per-view movie, determine if the customer has been billed for a pay-per-view movie.
- Determine if the customer's current service credit balance for this program. For example, how many free pay-per-view movie credits are left?
- Create an adjustment to credit the appropriate service agreement by the eligible credit amount.
- Update the service credit membership balance by creating a new SC event with a credit for the number of points redeemed. Link the adjustment to the event as a contributed to FT .
- Consider cancel/rebill situations. If a cancel/rebill has occurred, determine if there is a change to the redeemed credits. For example, if the original bill had one pay-per-view movie that was credited and the new bill also has one pay-per-view movie, no change is needed to the service credit balance. If the original bill had more pay-per-view movies than the new bill, perhaps one or more redeemed service credit points should be reinstated. If the original bill had fewer pay-per-view movies than the new bill, perhaps more points should be redeemed.

You may wonder why we don't recommend crediting the customer's bill while generating the bill segment. For example, use pre-processing calculation rule to determine if any points should be redeemed and use a calculation rule to generate a bill calculation line with the credit amount.

The reason for this is that cancel/rebill logic is not straightforward. Algorithms executed during rate application should NOT perform any updates, such as updating the service credit membership balance. The balance should be updated using a bill segment freeze algorithm or a bill completion algorithm.

When a cancellation occurs, the service credit balance should be updated to reinstate the redeemed points. Again, this should occur when the cancellation is frozen or at bill completion time. If you perform a cancel/rebill, the calculation of the rebill segment does not have the up-to-date information about the service credit balance because the reinstatement of the points by the canceled segment has not occurred yet.

## Designing Your Rate Options for Capital Credits

The capital credit allocation background process relies on certain data configuration in order to function correctly. This section identifies the required data setup.

**FASTPATH:**
Refer to *Allocating Capital Credits* for more information.

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## Identifying SQ and Sales Information for Historical Bill Segments

To allocate capital credits, the background process retrieves billing history for each SA that contributes to the membership for the given fiscal year. The process needs to calculate the service quantity (SQ) amount billed and the sales amount billed for the SA in that year.

> **NOTE:**
> **Sales Amount**. The sales amount refers to the monetary amount billed. For a capital credit allocation, this amount would generally exclude taxes and may exclude other line item amounts from the bill.

In order to calculate the amounts correctly, the background process must determine which bill calculation lines for each bill segment contain the SQ and/or sales information. Characteristics on the bill calculation lines identify which bill lines should be used.

The rest of this section uses examples to illustrate how you may configure your rate options to support this.

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## Define Characteristics for SQ and Sales

Char Type for identifying bill lines that hold **SQ information**

- Char Type: CCA-SQ
- Description: Capital credit allocation usage
- Type of Char: Pre-defined
- Values: Y
- Char Entities: Calculation Rule, Bill Calculation Line

Char Type for identifying bill lines that hold **sales information**

- Char Type: CCA-SALES
- Description: Capital credit allocation sales
- Type of Char: Pre-defined
- Values: Y
- Char Entities: Calculation Rule, Bill Calculation Line

## Define Calculation Rules

Identify each rate schedule that may be linked to a service agreement that contributes to a capital credit membership.

For each of these rate schedules, identify the calculation rules whose resulting bill calculation line will contain a billable service quantity that should be included in the SQ calculation for allocating capital credits. For each calculation rule that qualifies, define the CCA-SQ char type (defined above) and a char value of Y .

For each rate schedule, identify the calculation rules whose resulting bill calculation line amount should be included in the sales calculation for allocating capital credits. For each calculation rule that qualifies, define the CCA-SALES char type (defined above) and a char value of Y .

**NOTE:**
**Characteristic Information**. The system automatically copies characteristic info from a calculation rule to its resulting bill calculation line if the char type entities include both calculation rule and bill calc line.

## Define Batch Control Parameters

The background process to allocate capital credits *CPCRALOC* receives the char type and char value to identify the bill calculation lines that contain the SQ and sales amounts. Once you have your characteristics defined, update your batch control to include these values as default parameter values.

# Designing Bill Factors for Credit Allocation

The *capital credit allocation* process uses an allocation factor in its calculation. A typical capital credit membership may define multiple subcategories, meaning that allocation amounts are calculated each year for the multiple subcategories. The calculation is the same for each subcategory, but the allocation factor differs.

The process has been designed to calculate the allocation for a single subcategory. If your organization requires allocations calculated for multiple subcategories, the process must be run for each subcategory. The allocation process receives a bill factor as an input parameter. As a result, a different bill factor should be set up to define the allocation factor for each subcategory.

For each subcategory, the allocation factor may differ further for the type of customer. For example, the allocation for a commercial customer may differ from the allocation factor for a residential customer. The allocation background process expects the bill factor for each subcategory to define a characteristic type of revenue class. The process determines each service agreement's revenue class by looking at the value defined on its SA type.

Following is an example of bill factors set up for a capital credit membership with two subcategories: transportation and generation.

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## Characteristic Type for Allocation Bill Factor

Char Type: REV-CLASS

Description: Revenue Class

Type of Char: Pre-defined

Values: (define all the valid revenue class values)

Char Entity: Bill Factor

### Bill Factor for Transportation

Bill Factor Id: CCAF-TRANS

Description: Transportation Allocation Factor

Char Type: REV-CLASS

Char Source: Characteristic Collection

Char Values: (for each year, the new transportation allocation factor for each revenue class must be defined)

### Bill Factor for Generation

Bill Factor Id: CCAF-GEN

Description: Generation Allocation Factor

Char Type: REV-CLASS

Char Source: Characteristic Collection

Char Values: (for each year, the new generation allocation factor for each revenue class must be defined)

**NOTE:**
**The characteristic source is characteristic collection.** It is the responsibility of the background process to determine the SA's revenue class and to pass this value into the bill factor routines to retrieve the correct bill factor value.

**Estimating Allocation Factors**. Often the company needs to estimate the allocation factors for the new fiscal year and may adjust the values several times until the calculated allocation amounts are satisfactory. Refer to *Allocating Capital Credit* for more information.

## Partial Retirement

In the cooperative business, it is common to never retire certain capital credit allocation amounts. The amounts that do not retire should be assigned their own subcategory.

When executing the retirement background process, the subcategory to retire may be input to the process. If you have certain subcategories that you do not retire, you would simply run the background process for the subcategories that do retire.

Cooperatives typically retire amounts and transfer the amounts to a beneficiary when a member dies. This is known as "estate retirement". Refer to *Service Credits for Capital Credit Memberships* for more information. If your business practice designates that certain subcategories of allocated amounts do not get retired, this probably holds true for estate retirement as well. If that is the case, your membership inactivation algorithm should be designed to only retire the appropriate amounts by subcategory.

## Interface Membership Information to a Third Party

For some memberships, you may accumulate points for a third party, for example accumulating frequent flier miles for an airline. For these types of memberships, you must interface the event information to the third party.

To interface information to a third party, you may choose one of the following options:

- Design an extract program to interface the information
- Use workflow and notification to interface the information via the XAI tool

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## Interface Via an Extract Program

The service credit event may indicate a batch code and batch run number. Design a program to extract event information to a third party. This extract program would select service credit events marked with its batch code and the current run number.

Your service credit event must define a completion algorithm that stamps the appropriate batch code and run number. The base product provides an algorithm type to perform this logic. Refer to *SCEC-BT* for more information.

## Use Workflow & Notification to Interface Info

Workflow and notification allows you to send information to a third party via an extract program or via XAI. The service credit event has its own logic for interfacing via an extract program, so you would use workflow and notification only if you need to interface to the third party via XAI.

**FASTPATH:**
Refer to *How To Design Outgoing Messages* for more information.

## Other Considerations For Interfacing Info to a Third Party

Because event information is extracted to a third party, you must consider how to handle adjustments to the event amount. For example, if your event is generated based on the creation of a bill segment, what should happen if that bill segment is cancelled?

You may want to prevent these types of events from getting canceled. Validation like this may be added via a user exit or using an event cancellation algorithm.

**NOTE:**
**Sample Algorithms**. The product does not provide any base algorithms to prevent an event from being canceled.

You should allow negative event amounts to be created so that this information may also be sent to the third party's system.

# Defining Loan Options

The topics in this section describe how to set up the system to enable loan functionality.

**NOTE:**

**Loans are optional.** The system configuration requirements described in this section are only relevant if your organization loans money to customers.

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# The Terms Of A Loan Are Stored On A Service Agreement

Loans are initiated by creating a loan service agreement for a customer. The loan service agreement (and its SA Type) contains the loan's terms:

- The **loan amount** is held in the service agreement's Total Amount to Bill.
- The **customer's periodic payment amount** is held in the service agreement's Recurring Charge Amount.
- The **number of amortization periods** (e.g., 36 months, 240 months, etc.) is held in the service agreement's Number of Payment Periods.
- If the **interest rate** is the same for all customers with this type of loan service agreement, the interest rate is defined on the service agreement's SA type (using a bill factor). A specific interest rate can be defaulted from a start option contract value. If a specific interest rate applies to the customer, the SA type's interest rate can be overridden by specifying a bill factor value on the customer's service agreement (where the bill factor value contains the specific interest rate for the customer).
- The SA type controls the **periodicity of the bills** (e.g., monthly or bi-weekly).

Because a loan is defined using a service agreement, the typical functionality that is controlled by the service agreement's SA type is supported, including:

- How and when it is billed.
- How payments are booked in the GL (and the payment priority relative to other service agreements).
- How its debt is monitored by credit and collections.
- How late payment charges are calculated.

Loan service agreements are created using *start / stop* just like all other service agreements. The start/stop transaction has special loan functionality that allows an operator to specify the service agreement-specific loan terms described above. A start option can be specified to override the SA type's interest bill factor.

**NOTE:**

**Automatic calculation of periodic payment amount / number of periods.** The system calculates a loan's periodic payment amount or number of payments (whichever is left blank). You can have the system do this on *Start/Stop Maintenance* (using the **Calculate** button that appears on the *start service confirmation window* ), and on *Loan - Main* (by clicking the **Calculate** button). Regardless of where you do this, the calculation is performed by an algorithm on the loan's SA type. Refer to the *LPDA-SI* algorithm type for more information about the base package algorithm.

# Payoff Balance and Current Balance for Loans

As described under *Current Amount versus Payoff Amount* , a loan service agreement's current balance and payoff balance differ during the lifetime of the loan. Current balance contains how much the customer owes to remain current (typically their periodic payment amount), and payoff balance contains the amount the customer would have to pay to payoff the loan (typically the principal balance plus any accrued interest charges).

Unlike other SAs, loans have two accounts receivable distribution codes: long term and short term. These two codes allow the general ledger to differentiate between unbilled loan receivables (long term) and billed loan receivables (short term). The current balance for a loan is always the amount of the short-term receivables. The payoff balance for a loan is always the net of the short-term receivables and the long-term receivables.

If the SA has a *special role* of Loan , the financial transaction algorithms supplied with the base package transfer the current amount between the long-term receivables and the short-term receivables in the GL. For example, when a bill segment is generated for the loan SA, the amount of the periodic payment is transferred from the long-term receivables to the short-term receivables. Don't worry, the examples in the following sections show exactly what these transactions look like.

An operator can see the how the bills, payments and adjustments have affected the GL, current balance and payoff balance using *SA Financial History* .

The following sections provide examples of how adjustments, bills and payments are recorded in the GL and the subsequent effect on the current and payoff balances. When reading the examples, remember that the payoff balance is always the net of the short-term receivable and the long-term receivable balances.

# Booking The Principal Amount Using An Adjustment

When a loan service agreement is activated (i.e., when its status changes from pending start to active ), an adjustment is created to book the principal amount. If the customer takes out a loan of 10,000, the adjustment's financial transaction looks as follows:

| Event | GL Accounting | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|
| Loan service agreement is activated (and an adjustment is created to book the principal) | Long Term Loan Receivable 10,000<br>Cash <10,000> | 0 | 10,000 | 0 | 10,000 |

This adjustment is issued if:

- The service agreement's SA type indicates a *special role* of Loan .
- The loan service agreement's Total Amount to Bill contains an amount (i.e., the loan amount).
- The loan service agreement was created using a *start option* on *Start/Stop Maintenance* AND the start option references an *adjustment type* and this adjustment type has been set up as follows:

- The adjustment type's distribution code should reference the GL account to credit (e.g., Cash).
- The adjustment type's FT algorithm reference Payoff Amt = Adj Amt / Current Amt = 0 (booking principal only impacts a customer's payoff balance).

Note that because this financial transaction doesn't have a current amount (the customer doesn't actually owe a current amount yet), there is no need to book anything to the short-term receivables distribution code.

## Loan Amortization Schedule Calculation

The amortization schedule is a projection of the amount of principal and interest in each payment over the life of the loan. The amortization schedule may change, for example if the interest rate changes or the customer makes an overpayment (reducing the principal balance).

A loan's amortization schedule is calculated when an operator clicks the **Calculate** button on *Loan - Main* . Please be aware that when this button is clicked, an algorithm plugged in on the loan *SA type* actually calculates the amortization schedule (refer to the algorithm type *LSCH-SI* for more information).

## Billing For Loans And Interest Calculation

A bill segment is produced for a loan when its service agreement's account is next billed.

Factors on a loan's SA type controls when a bill segment is produced for a loan. Typically SA types for loan service agreements are set up to use anniversary *calendar billing* . For this configuration:

- You must indicate the type of anniversary billing in the calendar billing option. Currently, we only support the Anniversary Future Billing (meaning that loans are billed in advance just like a classic home loan is). Refer to *Using The Anniversary Method* for more information about how this billing method controls the end date of the loan bill segment.
- You must reference *an anniversary billing frequency* consistent with the *recurring charge frequency* (e.g., monthly, quarterly, etc.).

To set up for a loan that is billed on a monthly basis, you would define the following fields in SA Type - Billing:

- **Use Calendar Billing**: Anniversary Future Billing
- **Anniversary Bill Frequency**: Monthly
- **Total Bill Amount**: Required
- **Recurring Charge**: Required
- **Recurring Charge Frequency**: Monthly
- **Total Amount To Bill Label**: Loan Amount
- **Recurring Chg Amt Label**: Payment Amount

If your type of loan must be billed on an exact date (for example, always on the 15th of the month) or with an exact number of days between each bill (for example, every 14 days), then your loan should be set up to use the calendar billing option of Use Bill Period . In order for your loan bills to be created on specific dates, the system makes the following assumptions:

- Your *bill cycle schedule* for the loan's account is defined with the dates that you want the loan to bill and is defined with the window start date equal to the window end date.
- You define a *bill period* schedule corresponding to your bill cycle schedule. Each bill period schedule's bill date should match your bill cycle window start date and each bill period schedule's bill segment end date should be set to the loan period end date.

- Considerations for the first bill. If the loan SA Type's Initial Start Date Option indicates that the first day of the service agreement should be billed, then the loan SA's start date should match the window start date of the next bill cycle schedule for the account. If the loan SA Type's Initial Start Date Option indicates that first day of the service agreement should not be included, then the loan SA's start date should be one day prior to the window start date of the next bill cycle schedule for the account.
- Define your *recurring charge frequency* to match the frequency of your bill periods.

How the bill segment affects the customer's balance, and how it affects the general ledger are controlled by several algorithms defined on the loan service agreement's *SA type* and *bill segment type* :

- The SA type's loan schedule algorithm controls how the *loan amortization schedule* is calculated.
- The SA type's loan interest charge algorithm controls how interest is calculated.
- The bill segment type's create algorithm controls how the bill lines are constructed.
- The bill segment type's financial algorithm controls how the general ledger is affected by the bill.

The second entry in the following table contains an example of the financial transaction produced by the base package algorithms (note, the first financial transaction in the table was described under *Booking The Principal Amount Using An Adjustment* ).

| Event | GL Accounting | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|
| Loan service agreement is activated | Long Term Loan Receivable 10000<br>Cash <10000> | 0 | 10,000 | 0 | 10,000<br>long-term: 10,000 |
| First bill segment is produced | Interest:<br>Long Term Loan Receivable 41.66<br>Interest Revenue <41.66><br>Transfer Long Term To Short Term:<br>Short Term Loan Receivable 438.71<br>Long Term Loan Receivable <438.71> | 438.71 | 41.66 | 438.71 | 10,041.66<br>short-term: 438.71<br>long-term: 9,602.95 |

Several important points are illustrated above:

- When a bill segment is produced for a loan service agreement, the following takes place (if you use a bill segment creation algorithm of Create Bill Segment for Loans ):
  - The loan SA type's bill segment creation algorithm calls the SA type's loan interest charge algorithm.
  - The base package loan interest charge algorithm calculates simple interest based on: 1) unbilled principal (i.e., the service agreement's payoff balance minus the current balance), 2) the number of billing periods covered by the bill, and 3) the *interest rate* . Refer to the algorithm type *LINT-SI* for more information about the base package interest calculation algorithm.

**NOTE:**
**No interest on interest and no interest on past due amounts.** Just like a classic home loan, the base package algorithms do not calculate interest on interest, nor do they calculate interest on past due amounts. If you want to levy a

late payment charge, use the SA type's late payment processing. If your organization calculates interest differently, you must develop your own algorithm(s).

- The SA type's bill segment creation algorithm uses the calculated interest to format the bill segment's bill lines. It creates one bill line to show the amount of interest in the payment, and another bill line to show the amount of principal. The principal amount is equal to the service agreement's periodic payment amount minus the amount of calculated interest.
- The financial transaction illustrated above is created if you use a bill segment financial algorithm of Payoff Amt = Interest / Current Amt = Bill Amount on the loan's bill segment type. The following explains how this algorithm works:
  - The SA's current balance increases by the amount of the loan's periodic payment amount (i.e., its recurring charge amount). In other words, the amount the customer thinks they owe increases by 438.71.
  - The SA's payoff balance increases by the amount of interest. In other words, if the customer wanted to payoff the loan, they'd owe 10,041.66.
  - The *Interest* portion of the GL accounting is straightforward (if you're an accountant). It simply takes the amount of interest and debits it to the SA type's receivable distribution code (long-term receivables) and credits it to the distribution code defined on the interest rate's bill factor (typically interest revenue).
  - The *Transfer* portion of the GL accounting transfers moneys from long-term receivables (i.e., the unbilled principal) to short term receivables (the billed portion of the debt). The amount transferred is equal to the FT's effect on the service agreement's current balance, allowing the general ledger to differentiate between unbilled loan receivables (long term) and billed loan receivables (short term). Remember that the payoff balance is the net of the short-term and long-term receivables.

# Paying What Is Owed

When a payment is made for a loan:

- The service agreement's payoff amount is reduced by the payment amount.
- The service agreement's current amount is reduced by the payment amount.

The events that happen when a customer makes a payment against a loan is controlled by the FT algorithm plugged in on the loan service agreement's payment segment type. We'll use an example to help explain how this algorithm works. The 3 rd entry in the following table illustrates the financial transaction produced when a payment is made (note, the first two financial transactions were described above).

| Event | GL Accounting | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|
| Loan service agreement is activated | Long Term Loan Receivable 10000<br>Cash <10000> | 0 | 10,000 | 0 | 10,000<br>long-term: 10,000 |
| First bill segment is produced | Interest:<br>Long Term Loan Receivable 41.66<br>Interest Revenue <41.66><br>Transfer Long Term To Short Term:<br>Short Term Loan Receivable 438.71 | 438.71 | 41.66 | 438.71 | 10,041.66<br>short-term: 438.71<br>long-term: 9,602.95 |

| | | | | | |
|---|---|---|---|---|---|
| | Long Term Loan Receivable <438.71> | | | | |
| Payment is made | Affect Cash | -438.71 | -438.71 | 0 | 9,602.95 |
| | Cash 438.71 | | | | short-term: 0 |
| | Long Term Loan Receivable <438.71> | | | | long-term: 9,602.95 |
| | Transfer Long Term To Short Term: | | | | |
| | Long Term Loan Receivable 438.71 | | | | |
| | Short Term Loan Receivable <438.71> | | | | |

The financial transaction illustrated above is created if you use a payment segment FT creation algorithm of Payoff Amt = Current Amt = Pay Amt on the loan's payment segment type. The following explains how this algorithm works:

- The SA's current balance decreases by the amount of the payment amount. In other words, the customer thinks they owe 0 after the payment. Note refer to *Overpayments* for information about how an overpayment affects the SA's balances and the general ledger.
- The SA's payoff balance decreases by the amount of the payment. In other words, if the customer wanted to payoff their loan, they'd owe 9,602.95.
- The *Cash* portion of the GL accounting is straightforward (if you're an accountant). It simply takes the amount of the payment and debits it to the payment segment type's distribution code (typically cash) and credits it to the SA type's receivable distribution code (long-term receivable).
- The *Transfer* portion of the GL accounting effectively reduces short-term receivables by the FT's effect on the customer's current balance. This reduction is handled by an offsetting increase to long-term receivables (to make up for reduction made when the cash was applied). Again, this differentiation between short-term and long-term receivables allows the general ledger to differentiate between unbilled loan receivables (long term) and billed loan receivables (short term).

# Overpayments On Loans

You can determine whether you want to accept loan overpayments. Overpayments reduce the principal amount (the amount owed on the loan), which follows the philosophy adopted by a typical home loan.

When the payment is made, any overpayments are distributed according to the overpayment distribution algorithm defined for the customer class. Any customer classes for which you want to allow loan overpayments should use an overpayment distribution algorithm that keeps the overpayment on the loan SA.

When the payment transaction is frozen, the system checks to see if there is a credit amount on the loan SA's current balance. If a credit exists, the customer has made an overpayment and an adjustment is created to zero out the current balance and transfer the amount of the credit from the SA's short-term receivable to long-term receivable. The adjustment may appear on the customer's next bill to show the additional amount paid against the principal.

The algorithm that controls this adjustment to remove the credit on current balance is plugged in on the loan service agreement's SA type and is applied on the SA Type - Payment Freeze system event.

The third and fourth entries in the following table illustrate an overpayment (note, the first two financial transactions were described above).

| Event | GL Accounting | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Loan service agreement is activated | Long Term Loan Receivable 10000<br>Cash <10000> | 0 | 10,000 | 0 | 10,000<br>long-term: 10,000 |
| First bill segment is produced | Interest:<br>Long Term Loan Receivable 41.66<br>Interest Revenue <41.66><br>Transfer Long Term To Short Term:<br>Short Term Loan Receivable 438.71<br>Long Term Loan Receivable <438.71> | 438.71 | 41.66 | 438.71 | 10,041.66<br>short-term: 438.71<br>long-term: 9,602.95 |
| Payment is made (with an overpayment of 200.00) | Affect Cash<br>Cash 638.71<br>Long Term Loan Receivable <638.71><br>Transfer Long Term To Short Term:<br>Long Term Loan Receivable 638.71<br>Short Term Loan Receivable <638.71> | -638.71 | -638.71 | -200.00 | 9,402.95<br>short-term: <200.00><br>long-term: 9,602.95 |
| Create adjustment to remove SA's credit. | Transfer Short Term Credit to Long Term:<br>Short Term Loan Receivable 200.00<br>Long Term Loan Receivable <200.00> | 200.00 | 0 | 0 | 9,402.95<br>short-term: 0<br>long-term: 9,402.95 |

In the third financial transaction illustrated above, the billed amount of the payment works essentially the same as that illustrated under *Paying What Is Owed*. If the Keep Overpayment on Loan SA algorithm is plugged in on the overpayment distribution event on the customer class, the overpayment amount is applied to the loan SA, creating a credit on the SA's current balance. The following explains how this algorithm works:

- If the account has an loan SA and there is an excess credit, the credit is applied to the loan SA (as long as this does not cause the loan SA to have a credit payoff balance).
- If there is not a loan SA to which the credit can be applied, the algorithm checks to see if there is an open excess credit SA for the account.
  - If so, the excess credit amount is applied to the excess credit SA.
  - If not, the algorithm creates an excess credit SA and applies the amount to this SA.

The fourth financial transaction illustrated above is created if the Create Adjustment to Remove SA's Credit algorithm is plugged in on the loan's SA type's payment freeze event. The following explains how this algorithm works:

- If the SA's current balance is less than zero, the algorithm creates a frozen adjustment that removes the credit by transferring the credit from the short-term receivable to the long-term receivable. This adjustment ID is captured on the pay segment so the adjustment can be canceled if the payment is later canceled. Note that the adjustment cancel

reason used by the system in this case is specified on the Financial Transaction Options *Feature Configuration* using the Adjustment Cancel Reason For Payment Linked To Adjustment option type.

- The SA's current balance increases by the amount of the credit transfer. In other words, the customer thinks they owe 0 after the transfer.
- The SA's payoff balance doesn't change because the payoff balance is always the net of the short-term and long-term receivables. In other words, if the customer wanted to payoff their loan, they'd still owe 9,402.95.

**NOTE:**
**Overpayments and interest.** The base package interest calculation algorithm (plugged in on the loan's SA type) does not take into consideration the exact date that the overpayment is made when calculating the interest for the period. It only takes into consideration the outstanding principal amount (payoff balance - current balance) at the time of the interest calculation.

# Adjusting Loan Amounts

You would issue ad hoc adjustments if you need to change a loan's payoff and/or current balance outside of the normal billing / payment functions.

An adjustment can:

- Reduce a loan's payoff balance.
- Reduce a loan's current balance (i.e., how much the customer thinks they currently owe).
- Reduce both the loan's payoff and current balance.

For adjustments that affect payoff amount only:

- These adjustments are used to change the principal owed, e.g., if an additional amount is loaned.
- The adjustment's adjustment type should reference the Payoff Amt = Adj / Current Amt = 0 FT algorithm.
- GL lines will be generated to reflect the change to principal.

For adjustments that reduce current amount only:

- These adjustments can be used to change the amount that the customer must pay as part of the next bill.
- The adjustment's adjustment type should reference the Payoff Amt = 0 / Current Amt = Adj Amount (no GL) FT algorithm.
- Typically, GL lines are not generated for FTs that only affect the customer's current balance. However, moneys must be transferred from long to short in the amount of the adjustment (as described above under *Payoff Balance and Current Balance for Loans*).

For adjustments that reduce both payoff and current amount:

- These adjustment types can be used to levy additional charges, such as late fees, or to correct interest calculations.
- The adjustment's adjustment type should reference the Payoff Amt = Adj / Current Amt = Adj FT algorithm.
- GL lines are generated to reflect the change to principal. In addition, GL lines must be generated to transfer money from long to short in the amount of the adjustment (as described above under *Payoff Balance and Current Balance for Loans*).

**NOTE:**
Adjustments that affect the principal balance (payoff balance - current balance) affect the term of the loan because interest is based on the principal balance.

**Adjustments can cause credit balances to exist.** If you credit the loan SA, it is possible for the current balance to become negative. You may need to create additional adjustments that affect the current amount, depending on whether the customer needs to pay this amount as part of the next payment.

# Writing Off Loans

Loans are written off using the standard write-off processing.

**FASTPATH:**
Refer to *The Big Picture Of Write Off Processing* for background information.

We illustrate the classic financial transactions that transpire to financially write-off a loan to help illustrate important points (these are the fourth and fifth entries in the following table):

| Event | GL Accounting | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|
| Loan service agreement is activated | Long Term Loan Receivable 1000<br>Cash <1000> | 0 | 10,000 | 0 | 10,000<br>long-term: 10,000 |
| First bill segment is produced | Interest:<br>Long Term Loan Receivable 41.66<br>Interest Revenue <41.66><br>Transfer Long Term To Short Term:<br>Short Term Loan Receivable 438.71<br>Long Term Loan Receivable <438.71> | 438.71 | 41.66 | 438.71 | 10,041.66<br>short-term: 438.71<br>long-term: 9,602.95 |
| Payment is made (with an overpayment of 200.00) | Affect Cash<br>Cash 638.71<br>Long Term Loan Receivable <638.71><br>Transfer Long Term To Short Term:<br>Long Term Loan Receivable 638.71<br>Short Term Loan Receivable <638.71> | -638.71 | -638.71 | -200.00 | 9,402.95<br>short-term: <200.00><br>long-term: 9,602.95 |
| Create adjustment to remove SA's credit. | Transfer Short Term Credit to Long Term:<br>Short Term Loan Receivable 200.00 | 200.00 | 0 | 0 | 9,402.95<br>short-term: 0<br>long-term: 9,402.95 |

| | | | | | |
|---|---|---|---|---|---|
| | Long Term Loan Receivable <200.00> | | | | |
| Sync up current with payoff balance | Transfer Long Term To Short Term:<br>Short Term Loan Receivable 9,402.95<br>Long Term Loan Receivable <9,402.95> | 9,402.95 | 0 | 9,402.95 | 9,402.95<br>short-term: 9,402.95<br>long-term: 0 |
| Transfer balance to a write-off SA | Transfer From Loan SA:<br>Write Off Xfer Clearing 9,402.95<br>Long Term Loan Receivable <9,402.95><br>Long Term Loan Receivable 9,402.95<br>Short Term Loan Receivable <9,402.95><br>Transfer To Write Off SA:<br>Bad Loans Expense 9,402.95<br>Write Off Xfer Clearing <9,402.95><br>Note, these will cause a balance of 9,402.55 to exist on the write-off service agreement. | -9,402.95 | -9,402.95 | 0 | 0 |

The only unusual portion of the last two financial transactions is the impact on short and long term receivables. Please see the examples above under *Billing For Loans And Interest Calculation* and *Paying What Is Owed* to understand how any impact to a loan's current balance causes this type of financial transfer to occur.

# Distribution Codes for Loans

As explained above under *Payoff Balance and Current Balance for Loans*, loans have two accounts receivable distribution codes: long term and short term. These two codes allow the general ledger to differentiate between unbilled loan receivables (long term) and billed loan receivables (short term). Both receivables distribution codes are defined on the loan SA type.

In addition, loans have a distribution code used to book interest revenue. The interest revenue distribution code is defined on the loan's bill factor value for a revenue class (defined on the loan's SA type). For example, on the bill factor you can use one distribution code to book interest revenue from the residential revenue class and another distribution code to book interest revenue from the commercial revenue class. In this example, you create two loan SA types, one for residential revenue and the other for commercial revenue.

Loans may also have a bad loan debt (expense) distribution code that is used when writing off a loan. The bad loan debt distribution code is defined on the loan's write-off service agreement type. Refer to *Defining Credit & Collections Options* for more information.

# Setting Up The System To Enable Loans

The above topics provided background information about how loans are supported in the system. The following discussion summarizes the various setup tasks alluded to above.

**Contents**



## Distribution Code

You must set up the following *distribution codes* :

- Long term receivables
- Short term receivables
- Interest revenue
- Bad loan debt

## Adjustment Types

The following adjustment types are needed:

- Activate a loan. This should reference a distribution code associated with cash or the cash equivalent and an FT algorithm of Payoff Amt = Adj / Current Amt = 0 .

**NOTE:**

**Creating Checks for Loan Amounts.** If you want the system to initiate a check to the customer for the loan amount, the loan activation adjustment type should indicate an **A/P Request Type Code**. Refer to *Controls The Interface To A/P & 1099 Reporting* for more information.

- Remove Credit (Overpayment). This adjustment should reference an FT algorithm of Payoff Amt = 0 / Current Amt = Adj Amount (no GL) . Even though this algorithm indicates that there is no effect on the GL, there is a special exception built in for loan SAs. The special exception creates GL details to transfer the current balance (short-term receivable) to the long-term receivable. Refer to *Overpayments* for more information.

  **NOTE:**
  **Printing Overpayments on Bills**. If you want the overpayment adjustment to appear on customers' bills, turn on **Print by Default** and enter a **Description on Bill** (e.g. "Additional Principal"). For more information, refer to *Controls Information Printed On The Bill*.

- Adjustment types to perform any of the adjustments described under *Adjusting Loan Amounts* .

## Adjustment Type Profile

Create an adjustment type profile that references the adjustment types used on a loan. Besides the above adjustment types, it should also reference adjustment types to levy late payment charges (if applicable), levy non-sufficient funds charges (if applicable), refund overpayments (if applicable), sync current balance with payoff balance at write-off time, transfer balances to a write-off service agreement, and write-down small balances.

## Algorithms

Add the following *algorithms*:

- Overpayment Distribution. This algorithm is later plugged in on the customer class for the Overpayment Distribution system event. Refer to the algorithm type *OVPY-LO-CSA* for more information about the base package algorithm.
- Bill Segment Creation for Loans. This algorithm is later plugged in on the loan's bill segment type. Refer to the algorithm type *BSBS-LO* for more information about the base package algorithm.
- Bill Segment Financial Transaction Creation for Loans. This algorithm is later plugged in on the loan's bill segment type. Refer to the algorithm type *BSBF-LO* for more information about the base package algorithm.
- Amortization Schedule. This algorithm is later plugged in on the SA type for the Loan Schedule system event. Refer to the algorithm type*LSCH-SI* for more information about the base package algorithm.
- Interest Calculation. This algorithm is later plugged in on the SA type for the Loan Interest Charge system event. Refer to the *LINT-SI* algorithm type for more information about the base package algorithm.
- Payment Periods/Payment Amount Calculation. This algorithm is later plugged in on the SA type for the Loan Periods and Amount system event. Refer to the algorithm type*LPDA-SI* for more information about the base package algorithm.
- Loan SA Payment Freeze. This algorithm has a parameter that must reference the Remove Credit adjustment type defined above. This algorithm is later plugged in on the SA type for the Payment Freeze system event. Refer to thealgorithm type *STPZ-RMVCR* for more information about the base package algorithm.

## Bill Factor

You must set up a *bill factor* that defines the interest rate. If you have different interest rates for different types of loans, you can create a separate bill factor for each or you can use start options to override the interest rate.

On the bill factor's *bill factor value* , make sure to reference the GL distribution code used to book interest revenue for the revenue class specified on the loan's SA type.

## Customer Class

Any *customer class* on which you want to allow overpayments for a loan must use the overpayment distribution algorithm defined above. The overpayment distribution algorithm keeps the overpayment on the loan SA rather than transferring it to an excess credit SA, allowing a subsequent adjustment to apply the overpayment to the principal balance.

## Bill Segment Type

Create a bill segment type that references the bill segment creation algorithm defined above and the FT creation algorithm defined above.

## Frequency

Create *frequency* codes to correspond to the frequency of your loans. When setting up your SA types, you must indicate a recurring charge frequency and, if you use the Anniversary Billing Option , you must indicate an anniversary frequency.

## Bill Period

If you use the Use Bill Period option, set up a bill period with an appropriate schedule of dates for billing your loan.

## Bill Cycle Schedule

If you use the Use Bill Period option, the bill cycle schedule for these types of loans should be defined with an appropriate schedule of dates for billing your loan.

## Collection, Severance and Write Off Processes

You should set up the appropriate credit and collections information. Refer to *Defining Credit & Collections Options* for more information.

## SA Type

You must set up a *SA type* for your loan service agreements (you may need multiple SA types if you have different business rules for different types of loans). The following points describe the minimal requirements for a loan SA type.

**Contents**

## SA Type - Main

Define the following options:

- **Distribution Code** should be a long-term receivable code.
- **Service Type** should references something like "Miscellaneous Service".
- Specify the **Revenue Class** that, together with the interest bill factor, determines the distribution code used to book the loan interest revenue.
- **Start Option** should be turned on.
- The Payment Segment Type should reference the Normal Payment . The base package payment segment financial algorithm ( Payoff Amt = Current Amt = Pay Amt) used for Normal Payment pay segment types creates the additional GL details to transfer the credit from long-term receivables to short-term receivables if the SA's special role is Loan.
- Turn on **Late Payment Charge** if applicable.
- Define an appropriate **Adj**ustment **Type (Synch Current)** that will cause current balance to be synchronized with payoff balance (if the loan is *written off* ).

## SA Type - Detail

Define the following options:

- **Special Role** is Loan .
- Specify the **Interest Bill Factor** set up above. You can use start options to override.
- Use **Override Interest Flag** to indicate whether the interest rate defined on the interest bill factor may be overridden at the SA level. If you select Allowed , the interest rate may be overridden by a contract value on a start option or the SA.
- Use the short-term receivable account defined above as the **Loan A/R Distribution Code**. If you do not want the system to differentiate between short-term receivables and long-term receivables, make the loan A/R distribution code the same as the distribution code (above).

## SA Type - Billing

**FASTPATH:**

For an overview of some of these options, be sure to refer to *Billing For Loans And Interest Calculation* for more information.

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Define the following options:

- The *Bill Segment Type* should reference the value created above.
- **Characteristic Premise Req**uired should not be checked. (A loan SA is not a premise-based service. SA types that have this box checked are filtered out of the SA type search when the start method is Start a SA, so users will never be able to start a loan SA that requires a characteristic premise.)
- **Use Calendar Billing** must equal Anniversary Future Billing or Use Bill Period .
- **Bill Period** is required for the Use Bill Period option.
- **Anniversary Billing Frequency** is required for the Anniversary Future Billing option and must equal the periodicity of the bills (monthly, weekly, etc.).
- **Total Bill Amount** is required (it holds the principal).
- **Total Amount To Bill Label** should reference something like "Loan Amount".
- **Recurring Charge** is required (it holds the periodic payment amount).
- **Recurring Chg Amt Label** should reference something like "Payment Amount".
- **Recurring Charge Frequency** is required (it defines the periodicity associated with the recurring charge amount) and must be the same as the bill period frequency or the anniversary billing frequency (based on your **Use Calendar Billing** option).

## SA Type - Rate

Turn off the **Rate Required** switch as loans do not use rates.

## SA Type - SP Type

Turn off the **Service Points Required** switch as loans do not have service points.

## SA Type - Adjustment Profile

**Adjustment Type Profile** should reference the profile set up above.

## SA Type - Credit and Collections

The credit and collections information should reference a **Severance Process Template** that simply expires the loan. The **Debt Class** and **Write Off Debt Class** should reference an appropriate value consistent with your credit and collections rules. Refer to *Defining Credit & Collections Options* for more information.

## SA Type - Algorithms

The Loan Schedule, Loan Interest Charge, Loan Periods, and Amounts and Payment Freeze *algorithms* defined above must be set up.

## Start Options

Loans require a start option to define the adjustment type that is used to create the adjustment to book the initial principal amount when the loan is activated. Loan start options can also specify default values for loan amount, payment amount, and number of periods.

Create at least one start option for each loan SA type. The following information should be defined:

- **Adjustment Type** should reference the adjustment type defined above to book principal.
- **Recurring Charge Amount** (Payment Amount) should only be defined if you have standard loan payments.
- **Total Amount To Bill** (Loan Amount) should only be defined if you have standard loan amounts.
- **Number of Payment Periods** should be the number of payment periods in the loan (if you have a standard loan period).
- If you want to define a set of standard APRs for a loan SA Type, set up a **Contract Value** on the Rate Info page. The **Bill Factor** should match the interest bill factor specified on the *SA Type* .

# Defining Non-billed Budget Options

A non-billed budget (NBB) is a payment plan that allows your customers to pay set amounts at specified intervals (e.g. every two weeks). Non-billed budgets are typically used when your company bills on an infrequent basis and you want to provide your customers with a mechanism to make smaller payments more frequently. As the name suggests, bills are not created for the non-billed budget's scheduled payments; customers must remember to make their payments at the scheduled intervals. The topics in this section describe how to design and set up non-billed budgets.

**NOTE:**
**Non-billed budgets are optional.** The system configuration requirements described in this section are only relevant if your organization offers non-billed budgets.

**Contents**



## What Is A Non-billed Budget?

A non-billed budget is a special type of budget or payment plan that encompasses three major elements:

- A set of scheduled payments
- The business rules used to recommend and potentially renew the payment schedule

- The business rules that govern the financial impact on the current and payoff balances of the SAs covered by the payment schedule

Non-billed budgets are managed via a service agreement whose SA type has a special role of Non-billed Budget . If an SA type has a special role of non-billed budget it must have one or more recommendation rules, and SAs of that type are allowed to have payment schedules.

# The Financial Impact Of Non-billed Budgets

When you set up the non-billed budget SA type, you can indicate whether the non-billed budget is monitored by the *account debt monitor* process. The following sections contain examples of financial transactions for non-billed budgets that are monitored by the account debt monitor.

> **NOTE:**
> **Unmonitored non-billed budgets.** SAs that are covered by unmonitored non-billed budgets are subject to different financial treatment than those that are monitored. The *financial transactions relevant for unmonitored non-billed budgets* are discussed later.

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# Current Amount For SAs Covered By A Non-billed Budget

As described under *Current Amount versus Payoff Amount* , the values of the current balance and payoff balance are the same for most financial transactions. One exception is for SAs that are covered by a non-billed budget in which case the current balance is always zero and the payoff balance is always the amount the customer really owes.

When a non-billed budget is activated or an SA is added to a non-billed budget, the system creates adjustments for all affected SAs to set the current amount equal to zero. The adjustment type that references the Payoff Amt = 0 / Current Amt = Adj Amount (no GL) algorithm is taken from the SA's SA type.

> **NOTE:**
> **Non-billed Budgets and Open Item Accounts.** If the non-billed budget is for an open item account, no match event is created for the financial transaction that reduces the current amount to zero. This FT must be manually matched if required.

The following example shows the effect of activating a non-billed budget that covers an electric SA with a current balance of 25. The transactions for the electric SA are illustrated on the right and the transactions for the non-billed budget SA are illustrated on the left.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Electric SA | | | | Non-billed Budget SA | | | |
| Starting balance | 0 | 0 | 25 | 25 | | | | |
| Non-billed budget is activated | -25 | 0 | 0 | 25 | | | | |

By setting the current balance for the covered SAs to zero, the SAs are insulated from the regular debt monitoring process. Depending on the non-billed budget *recommendation algorithm* , the payoff balance can be ignored, divided evenly between the scheduled payments or added to the first scheduled payment.

Activating a non-billed budget has no affect on its own current or payoff balances.

## Scheduled And Actual Payments On The Non-billed Budget

When a scheduled payment is due, an adjustment is created to increase the non-billed budget's current balance by the expected amount. The current balance on the SA can be monitored to ensure that payments are being made on time.

When the payment is made, the non-billed budget's current balance is reduced to zero and the non-billed budget's payoff balance reflects the accumulated credit from the payment. This accumulated credit is transferred to the covered SAs when the next bill for the account is completed.

The following example illustrates scheduled and actual payments for the non-billed budget in the previous example. The amount of the scheduled non-billed budget payments is 10. Note that the first two transactions were described above.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Electric SA | | | | Non-billed Budget SA | | | |
| Starting balance | 0 | 0 | 25 | 25 | | | | |
| Non-billed budget is activated | -25 | 0 | 0 | 25 | | | | |
| First scheduled payment is due | | | | | 10 | 0 | 10 | 0 |
| Payment | | | | | -10 | -10 | 0 | -10 |

An algorithm ( Process NBB Scheduled Payment ) plugged in on the non-billed budget SA type creates the appropriate financial transactions when the scheduled payment is due. The algorithm is called by the Non-billed Budget Scheduled Payment Processing ( *NBBPS*) background process.

The normal payment processing handles the adjustments created when the payment is made.

**NOTE:**
**Non-billed Budget Payment Cancellation.** If a payment is canceled, the financial transaction is reversed.

**Automatic Payments And Non-billed Budgets.** Users may set up a non-billed budget to use *automatic payments* by setting up the account's auto pay options. Users may also exclude the non-billed budget from automatic payment if the account is set up for automatic payment. The *NBB Scheduled Payment Automatic Payment Create* background process calls the *Auto Pay Creation* algorithm to create the auto payment for a non-billed budget.

## Overpayments for Non-billed Budgets

Typically, payments in excess of the non-billed budget's current balance are credited to an overpayment (excess credit) SA. When the next adjustment is created for a scheduled payment, the credit on the overpayment SA is used to relieve the non-billed budget current balance.

**NOTE:**
**Overpayment Distribution Algorithm.** The overpayment distribution is a function of the overpayment distribution algorithm plugged in on the account's customer class. We strongly recommend that the non-billed budget SA type be set up so that overpayment is not allowed. Any excess payments should go to an overpayment SA. For more information about overpayment distribution, refer to *Overpayment Segmentation*.

In the example below, the customer pays 20 for a scheduled payment instead of 10. The non-billed budget SA is illustrated on the right and the overpayment SA is illustrated on the left. The electric SA is not illustrated in the example below because scheduled payments, payments and overpayments have no effect on covered SAs. The first four transactions were illustrated above.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Non-billed Budget SA | | | | Overpayment SA | | | |
| Starting balance | | | | | | | | |
| Non-billed budget is activated | | | | | | | | |
| First scheduled payment is due | 10 | 0 | 10 | 0 | | | | |
| Payment | -10 | -10 | 0 | -10 | | | | |
| Second scheduled payment is due | 10 | 0 | 10 | -10 | | | | |
| Over-payment | -10 | -10 | 0 | -20 | -10 | -10 | -10 | -10 |
| Third scheduled payment is due | 10 | 0 | 10 | -20 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Transfer Adjustment | -10 | -10 | 0 | -30 | 10 | 10 | 0 | 0 |

After the Process NBB Scheduled Payment algorithm creates the next scheduled payment, it looks for a credit amount on the overpayment SA and creates an adjustment to transfer the credit balance (or the amount of the payment if the credit is more than the scheduled payment amount) from the overpayment SA to the non-billed budget SA. The overpayment transfer adjustment type and the overpayment SA type are specified as parameters to the algorithm.

## Underpayments For Non-billed Budgets

An insufficient payment or a canceled payment leaves a current balance on the non-billed budget SA.

In the example below, the customer makes a payment of 7 for the fourth scheduled payment. The example below does not show the overpayment SA (illustrated above). The first eight transactions are discussed above.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Electric SA | | | | Non-billed Budget SA | | | |
| Starting balance | 0 | 0 | 25 | 25 | | | | |
| Non-billed budget is activated | -25 | 0 | 0 | 25 | | | | |
| First scheduled payment is due | | | | | 10 | 0 | 10 | 0 |
| Payment | | | | | -10 | -10 | 0 | -10 |
| Second scheduled payment is due | | | | | 10 | 0 | 10 | -10 |
| Over-payment | | | | | -10 | -10 | 0 | -20 |
| Third scheduled payment is due | | | | | 10 | 0 | 10 | -20 |
| Transfer Adjustment | | | | | -10 | -10 | 0 | -30 |
| Fourth scheduled payment | | | | | 10 | 0 | 10 | -30 |
| Underpayment | | | | | -7 | -7 | 3 | -37 |

The Process NBB Scheduled Payment algorithm creates a trigger to ensure that the current balance is monitored by the account debt monitor. Refer to *Credit And Collections And Non-billed Budgets* for more information.

## Billing For SAs Covered By The Non-billed Budget

When the next bill for the account is completed, the credit on the non-billed budget is transferred to the covered SAs. The credit is prorated over the covered SAs according to the relative payoff balances on each SA.

In the example below, the electric SA's bill is 33. The first ten transactions are discussed above.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Electric SA | | | | Non-billed Budget SA | | | |
| Starting balance | 0 | 0 | 25 | 25 | | | | |
| Non-billed budget is activated | -25 | 0 | 0 | 25 | | | | |
| First scheduled payment is due | | | | | 10 | 0 | 10 | 0 |
| Payment | | | | | -10 | -10 | 0 | -10 |
| Second scheduled payment is due | | | | | 10 | 0 | 10 | -10 |
| Over-payment | | | | | -10 | -10 | 0 | -20 |
| Third scheduled payment is due | | | | | 10 | 0 | 10 | -20 |
| Transfer Adjustment | | | | | -10 | -10 | 0 | -30 |
| Fourth scheduled payment | | | | | 10 | 0 | 10 | -30 |
| Underpayment | | | | | -7 | -7 | 3 | -37 |
| Bill | 0 | 33 | 0 | 58 | | | | |
| Bill completion (transfer adjustment) | 0 | -37 | 0 | 21 | 0 | 37 | 3 | 0 |

When a bill segment financial transaction is created, the current amount is set to zero for SAs that are covered by the non-billed budget (if you use a bill segment FT algorithm of Payoff Amt = Bill Amt / Current Amt = Amt Due ). Though not evident by the name, the Payoff Amt = Bill Amt / Current Amt = Amt Due algorithm does set the current amount to zero

for monitored non-billed budgets. (For SAs with other roles, the current amount is equal to the amount due or the recurring charge.)

A bill completion algorithm transfers money from the non-billed budget to the covered SAs (if you plug in the NBB Credit Transfer bill completion algorithm on the non-billed budget SA type). The algorithm type supplied with the base package distributes the credit using the method described in *Distributing Non-billed Budget Credit*.

**NOTE:**
**Canceled Bill Segments.** No new processing occurs when a bill segment is canceled; any credit balance remains on the covered SA.

## Distributing Non-billed Budget Credit

Both the NBB Credit Transfer bill completion algorithm type and the non-billed budget SA stop algorithm type supplied with the base package use the same method of distributing a credit from a non-billed budget SA to the covered SAs. The following points describe how the credit is distributed:

- Covered SAs that are already in credit (due to some other circumstance, such as a cancellation and rebill) are excluded from the distribution.
- The distribution to each covered SA will not exceed its total payoff to ensure that none of the covered SAs have a credit balance.
- The credit is prorated over the covered SAs according to the relative payoff balances on each SA.
- The calculation of the payoff balance is adjusted to exclude the current balance to ensure that the credit is prorated over the debt covered by the budget, not any ad-hoc debt for the SA.

**NOTE:**
The current balance on covered SAs should always be zero. The only exception occurs if an adjustment has been added that directly affected the SA balance. In this case, the distribution assumes that the balance is outside the non-billed budget and needs to be paid separately.

- Any excess credit remains on the non-billed budget SA until the next distribution takes place or until the *non-billed budget SA is stopped*.
- The type of adjustments created is determined by the **Adjustment Type (Xfer)** specified on the non-billed budget SA type.

The examples in the table below illustrate the points above.

| NBB SA Credit | SA 1 Payoff | SA 1 Current | SA 2 Payoff | SA 2 Current | SA 1 Credit Xfer | SA 2 Credit Xfer |
|---|---|---|---|---|---|---|
| -100.00 | -100.00 | 0.00 | -200.00 | 0.00 | 0.00 | 0.00 |
| -100.00 | 150.00 | 0.00 | -50.00 | 0.00 | -100.00 | 0.00 |
| -300.00 | 150.00 | 0.00 | 50.00 | 0.00 | -150.00 | -50.00 |
| -100.00 | 150.00 | 0.00 | 250.00 | 0.00 | -37.50 | -62.50 |
| -100.00 | 150.00 | 0.00 | 250.00 | 50.00 | -42.86 | -57.14 |

The first example above shows that covered SAs with a credit balance are excluded from the distribution. Any excess credit remains on the non-billed budget.

The second example shows that one covered SA has a credit balance, so the entire credit is distributed to the remaining SA.

The third example shows the amount distributed to a covered SA does not exceed its payoff balance. Again, any excess credit remains on the non-billed budget SA.

The fourth example illustrates how the credit is prorated based on the payoff balance. The fifth example illustrates the same prorating but with a current balance on one of the SAs (SA 2). (Remember that the prorating excludes any current balance.)

The prorated amount is calculated by subtracting the current balance from the payoff balance then multiplying the result by the distribution amount and dividing by the total payoff owing of all covered SAs.

## Stopping an SA Covered By a Non-billed Budget

If a service agreement covered by a non-billed budget is stopped, the system must bring the current balance and payoff balance of the covered SA back in synch. The system creates an adjustment using the Synch Current adjustment type from the SA's SA type.

In the example below, the electric SA's payoff balance is 21. The first twelve transactions are discussed above.

| Event | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance | Effect On Current Balance | Effect On Payoff Balance | Current Balance | Payoff Balance |
|---|---|---|---|---|---|---|---|---|
| | Electric SA | | | | Non-billed Budget SA | | | |
| Starting balance | 0 | 0 | 25 | 25 | | | | |
| Non-billed budget is activated | -25 | 0 | 0 | 25 | | | | |
| First scheduled payment is due | | | | | 10 | 0 | 10 | 0 |
| Payment | | | | | -10 | -10 | 0 | -10 |
| Second scheduled payment is due | | | | | 10 | 0 | 10 | -10 |
| Over-payment | | | | | -10 | -10 | 0 | -20 |
| Third scheduled payment is due | | | | | 10 | 0 | 10 | -20 |
| Transfer Adjustment | | | | | -10 | -10 | 0 | -30 |
| Fourth scheduled payment | | | | | 10 | 0 | 10 | -30 |
| Underpayment | | | | | -7 | -7 | 3 | -37 |
| Bill | 0 | 33 | 0 | 58 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Bill completion (transfer adjustment) | 0 | -37 | 0 | 21 | 0 | 37 | 3 | 0 |
| SA is stopped | 21 | 0 | 21 | 21 | | | | |

**NOTE:**
In addition to synching the current and payoff balance, the SA being stopped is removed from the covered SAs collection. When the last covered SA is removed from the collection, the non-billed budget is also *stopped*.

# Financial Transactions For Unmonitored Non-billed Budgets

Some companies have the concept of non-billed budgets where the payments made by the customer are optional. This functionality is implemented as an unmonitored non-billed budget. Unmonitored non-billed budgets allow a customer to make optional prepayments towards a bill.

As explained previously, unmonitored non-billed budgets receive different financial treatment than monitored non-billed budgets. The financial transaction algorithms use the **Non-billed Budget Monitor** flag on the non-billed budget's SA type to create the appropriate financial transactions. The following table describes the differences in the financial treatment of monitored and unmonitored non-billed budgets.

| System Event | Monitored Non-billed Budgets | Unmonitored Non-billed Budgets |
|---|---|---|
| When a non-billed budget is activated or an SA is added to a non-billed budget... | The system creates adjustments for all affected SAs to set the current balance equal to zero. | The current balances for covered SAs are not zeroed. The activate SA and non-billed budget maintenance processing do not create any adjustments if the non-billed budget is unmonitored. |
| When a scheduled payment is due... | An adjustment is created to increase the non-billed budget's current balance by the expected amount. | There is no change to the non-billed budget's current balance; it is always zero. The scheduled payment processing background process does not execute the *NBB process scheduled payment algorithm*. |
| When the payment is made... | The non-billed budget's current balance is reduced to zero and the non-billed budget's payoff balance reflects the accumulated credit from the payment. | Typically the payments are distributed to an excess credit (overpayment) SA. Refer to *Distributing Payments for Unmonitored Non-billed Budgets* for more information. |
| When a bill segment financial transaction is created... | The current amount is set to zero for SAs that are covered by the non-billed budget. | The covered SAs' current amounts are equal to their payoff amounts. |
| At bill completion... | Money from the non-billed budget is transferred to the covered SAs. Customers may receive a bill for information purposes, but they are not required to pay it. | Money from the overpayment SA is transferred to the account's SAs. The customer is still liable to pay the outstanding balance. |
| When the non-billed budget is stopped or an SA is removed from a non-billed budget... | The system creates adjustments for all affected SAs to synchronize their current balances with their payoff balances, thus | There is no change to the current balances for covered SAs as the balances already reflect the actual current balance. |

removing the zero current balance and
replacing it with the actual current balance.

Unmonitored non-billed budgets also receive different credit and collections treatment. Refer to *Credit and Collections and Unmonitored Non-billed Budgets* for more information.

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## Distributing Payments for Unmonitored Non-billed Budgets

For non-billed budgets, payments are distributed according to the payment and overpayment algorithms on the customer class. The base package payment distribution algorithm applies a payment first towards any SAs that have overdue or current balances (refer to *Distributing A Payment* for more information). Since the unmonitored non-billed budget SA doesn't have a current balance, it is not considered by the payment distribution algorithm. If there aren't any SAs with a current balance, the overpayment distribution algorithm handles the remaining credit. You can elect to:

- Apply the overpayment to an excess credit SA. This is the method that we strongly recommend because all financial transactions are then a function of the normal payment, overpayment and billing processes.
- Apply the overpayment to the highest priority SA that is eligible for overpayment (as specified on the SA type). You can use this method to apply the overpayment to the unmonitored non-billed budget SA. If you use this method, you must also set up the system to *transfer the credit from the unmonitored non-billed budget*.

**NOTE:**
**Use An Excess Credit SA.** We strongly recommend that payments for unmonitored non-billed budgets are distributed to an excess credit SA. In this case, the non-billed budget is just a shell to hold the covered SAs and recommend a payment schedule; all financial transactions are a function of the normal payment, overpayment and billing processes.

**FASTPATH:**
Refer to *Overpayment Segmentation* for a detailed discussion of overpayment distribution options.

## Transferring Credit from Unmonitored Non-billed Budgets

If you distribute an overpayment to an unmonitored non-billed budget SA (i.e. the unmonitored non-billed budget maintains a credit balance instead of an overpayment SA), you must plug-in a bill completion algorithm on the SA type to transfer the credit balance to the covered SAs at bill completion time. The bill completion algorithm type ( *BCMP-NB*) supplied with the base package transfers the credit balance to the covered service agreements when the bill is completed. Additionally, the **Adjustment Type (Xfer)** on unmonitored non-billed budget SA types should reference a FT algorithm of Payoff Amt = Adj / Current Amt = Adj to ensure that the credit is removed from both the current and payoff balances.

**WARNING:**
You must create your own SA stop algorithm type for correctly stopping an unmonitored non-billed budget that maintains a credit balance. The SA stop algorithm that is supplied with the base package does NOT transfer remaining credit from the unmonitored non-billed budget SA. (The base package SA stop algorithm transfers the remaining credit using the overpayment distribution algorithm on the customer type, which you have set up to transfer to back to the unmonitored non-billed budget.)

# Designing Non-billed Budgets

The topics in this section describe functionality that you must consider when designing non-billed budgets.

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## Making SAs Eligible For Non-billed Budgets

A billable SA may be covered by a non-billed budget when its SA type is flagged as Eligible for Non-billed Budget .

All SAs that are eligible for non-billed budgets should reference a bill segment type that uses the Payoff Amt = Bill Amt / Current Amt = Amt Due bill segment FT algorithm. This algorithm sets the SA's current amount to zero if it is covered by a monitored non-billed budget.

A list of the SAs covered by a non-billed budget is maintained with the non-billed budget SA. This list is used at bill completion to determine the financial transactions that should occur.

## Designing Recommendation Rules

Users (and the renewal process) ask the system to recommend the scheduled payments for a non-billed budget. In general, this recommendation process must establish:

- The amount to be paid
- The dates on which the payments are due

We envision many different types of recommendation rules. For example:

- Recommend 26 scheduled payments to be made on a fortnightly basis that are due on Tuesdays.
- Recommend monthly payments that are due on the nearest workday after the 10th of the month.
- Recommend scheduled payments where the customer pays their annual charges in 10 out of 12 months where the payments are not due in November and December.
- Recommend bi-monthly payments where the payments are due on the first workday following the 5th and 20th of the month.

Additionally, the recommendation rules must determine how to handle any outstanding payoff balances for covered SAs. The true-up rule provided with the base package *payment schedule algorithm type* can ignore the payoff balance, divide the payoff balance evenly between the scheduled payments, or add the payoff balance to the first scheduled payment.

A recommendation rule comprises three elements:

- An algorithm to calculate an average daily amount (the *NBDA-DA* algorithm type provided with the base package uses premise billing history)

  **NOTE:**
  **Calculating an Amount for Non-utility SAs.** The algorithm type supplied with the base package only handles service-point oriented SAs. For example, the average daily amount algorithm calculates an average daily amount. For non-utility SAs, you must develop the appropriate algorithm types.

- Two algorithm types are provided with the base package to calculate a schedule of payments. *NBPS-MON* calculates a monthly schedule and *NBPS-PS* calculates a scheduled based on a specified number of days.
- A collection of default parameter values for the payment schedule algorithm type

A recommendation rule (based on the algorithm types provided with the base package) is illustrated below.

Rule: Weekly

Avg Daily Amt Alg: Use premise history

Pay Schedule Alg Type: Number of days

| Parameter | Value | Override |
|---|---|---|
| Number of days in period | 7 | Y |
| Number of payments | 52 | N |
| True-up rule | Spread | N |

***Weekly Payments Recommendation Rule***

**NOTE:**
**Additional Parameters.** Not all of the parameters associated with the weekly payment schedule algorithm type are illustrated. Refer to the *NBPS-PS* algorithm type for a detail description of the parameters.

The default parameter values for the payment schedule algorithm type may change over time, so the collection contains an effective date. If default values are changed, these changes do not affect non-billed budgets already in effect. Existing non-billed budgets keep the parameter values that were used when the non-billed budget was started.

A user may override the default parameter values for the payment schedule algorithm type to customize the schedule if an override is allowed for a parameter. Additionally, a user may edit the payment schedule details at any time (provided the payment has not yet been processed).

The parameter values used for the recommendation rule are kept with the non-billed budget SA, so that any customized parameter changes can be re-applied to a renewed non-billed budget. For example, the parameter that determines the payment due day may default to the first of the month. To customize the schedule, this value may be changed to the fifth of the month. This amended value is kept with the non-billed budget SA to ensure that the renewed budget follows the same monthly schedule.

**NOTE:**

Normally parameter values for an algorithm type are kept with the algorithm. Because the parameters may vary for each non-billed budget, the parameter values are kept with the SA in the case of non-billed budgets.

Refer to *Non-billed Budgets Recommendation Rule - Main* for information on creating recommendation rules.

## Example Recommendation Rules

The following examples may be helpful in designing and implementing your recommendation rules.

**NOTE:**
**Developing Your Own Payment Schedule Algorithms.** The base package comes supplied with a *monthly payment schedule algorithm type*. You can use this algorithm as an example when creating payment schedule algorithm types for your implementation.

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### Fortnightly Payments Recommendation Rule Example

The following diagram illustrates a recommendation rule where the customers pay every two weeks. The current balance for any covered SAs is added to the first payment.

Rule: Fortnightly

Avg Daily Amt Alg: Use premise history

Pay Schedule Alg Type: Number of days

| Parameter | Value | Override |
|---|---|---|
| Number of days in period | 14 | Y |
| Number of payments | 26 | N |
| True-up rule | Spread | N |

***Fortnightly Payments Recommendation Rule***

### Monthly Payments Recommendation Rule Example

The following diagram illustrates a recommendation rule where the customers pay twice monthly on the first of the month. The current balance for any covered SAs is spread out over the scheduled payments.

| Rule: Monthly | | |
|---|---|---|
| Avg Daily Amt Alg: Use premise history | | |
| Pay Schedule Alg Type: Monthly | | |
| **Parameter** | **Value** | **Override** |
| Day of month | 1 | Y |
| Number of payments | 12 | N |
| True-up rule | Spread | N |

***Monthly Payments Recommendation Rule***

## Ten Out of Twelve Months Recommendation Rule Example

The following diagram illustrates a recommendation rule where the customers pay one a month except for months during a holiday season (November and December). The current balance for any covered SAs is added to the first payment.

| Rule: 10 of 12 | | |
|---|---|---|
| Avg Daily Amt Alg: Use premise history | | |
| Pay Schedule Alg Type: X out of Y months | | |
| **Parameter** | **Value** | **Override** |
| Total number of months | 12 | N |
| Months with no payment | 11,12 | Y |
| True-up rule | 1st pay | N |

***Ten Out of Twelve Months Recommendation Rule***

# Activating Non-billed Budgets

You can plug in an algorithm (of type *SACR-AT*) on the SA Creation system event on the non-billed budget SA type to automatically activate the non-billed budget (i.e. transition it from pending start to active status). If you don't use a SA Creation algorithm to activate the non-billed budget, it is activated the next time the *SA activation background process* runs.

When a non-billed budget is activated, you can perform special processing using an algorithm plugged in on the SA Activation system event on the non-billed budget SA type. The special processing can be developed to do anything that you would like, for example you could:

- Create a customer contact that with an appropriate letter template can generate a letter to inform the customer of their payment amount and payment schedule.
- Initiate the creation of a payment coupon book for a customer.

The system comes supplied with a sample algorithm type (called *SAAT-CC*) that simply creates a customer contact to indicate that the non-billed budget is activated.

## Renewing Non-billed Budgets

A non-billed budget can be renewed either manually or via a background process. When the non-billed budget SA is created, the expiration date, renewal date and the recommendation rule used to create the initial budget are kept with the SA. A renewal flag on the non-billed budget SA type controls if a renewal is required, optional or not allowed. If renewal is required, a user must specify a renewal date when creating the service agreement. The renewal date is defaulted on to an SA based on the valued of the **Days Before Expiration for Renewal** field on the SA type.

An algorithm on the SA type can customize the processing required to renew an SA.

The *SA renewal background process*:

- Executes the SA renewal algorithm (specified on the SA type) when the renewal date is reached (i.e., it is on or before the process date). The base package comes with an algorithm type ( *SARN-NB*) that determines the current recommendation rule for a non-billed budget and executes the associated payment schedule algorithm using the non-billed budget SA-specific parameter values to generate a new schedule. It returns new expiration and renewal dates.
- If the renewal algorithm is successful, the renewal and expiration date fields on the SA are updated with the new values.
- If the renewal process is not successful, a To Do list entry (of type *TD-SARN*) is created for the account and SA.

The new payment schedule that is returned from the renewal process for a non-billed budget is appended to the current schedule.

A user can manually launch the renewal process for a non-billed budget SA by clicking the **Renew NBB** button on the *non-billed budget maintenance page* .

## Expiring Non-billed Budgets

Non-billed budget service agreements may specify an expiration date. The *SA expiration background process* initiates the stop process for all pending start or active SAs where the expiration date is reached (before or on the process date).

## Stopping Non-billed Budgets

When a non-billed budget stop is initiated, either on request or because it has expired and is not being renewed, the non-billed budget is transitioned to pending stop status. You can plug in an algorithm (of type *SAIS-ST*) on the SA Stop Initiation system event on the non-billed budget SA type to automatically finalize and stop the SA (i.e. transition it to stopped status). If you don't use a SA Stop Initiation algorithm, the non-billed budget is stopped the next time the *SA activation background process* runs.

To finalize a pending stop SA, the system first calls the stop SA algorithm plugged-in on the SA Stop system event on the SA type. The stop SA algorithm type ( *SAST-NB*) supplied with the base package:

- Distributes any credit on the non-billed budget to the covered SAs (using the method described in *Distributing Non-billed Budget Credit*)
- Distributes any excess credit remaining on the non-billed budget using the *overpayment distribution* algorithm for the account's customer class and the overpayment transfer adjustment type (specified as a parameter to the algorithm)
- Creates a trigger to cause the account to be reviewed by the account debt monitor
- Creates a customer contact (if the customer contact class and customer contact type parameters are populated)

**WARNING:**

If you do not plug in an SA stop algorithm that transfers the credit balance from the non-billed budget to its covered SAs (or an excess credit SA), the stopped non-billed budget may have a credit balance. You must then manually distribute this credit.

After the SA stop algorithm is finished, the SA stop processing performs the following steps if the SA type has a special role of non-billed budget:

- If the non-billed budget is monitored, create adjustments to synchronize the current and payoff balance of covered SAs using the **Adj. Type (Synch Current)** adjustment type from the covered SAs' SA types
- Remove the covered SAs from the non-billed budget
- Remove all the scheduled payments from the non-billed budget
- Create an adjustment to synchronize current and payoff on the non-billed budget SA using the **Adj. Type (Synch Current)** adjustment type from the non-billed budget's SA type

**NOTE:**
Synchronizing current and payoff effectively sets the current amount to zero on the non-billed budget SA, as the payoff amount should have been reduced to zero by the distribution and overpayment processing in the algorithm for SA Stop.

**FASTPATH:**
Refer to *The Lifecycle Of A Service Agreement* for more information about how a pending stop SA is stopped and closed .

## Automatic Payment and Non-billed Budgets

If a customer wants to pay their non-billed budget scheduled payments automatically, the account must be set up for automatic payment. In addition, the non-billed budget must indicate that automatic payment is being used.

**FASTPATH:**
Refer to *How To Set Up Automatic Payment For A Non-billed Budget* for more information.

When this is done, a background process referred to as NBBAPAY creates automatic payments on the scheduled payment date by calling the automatic payment creation algorithm plugged in on the installation record.

**NOTE:**
You must ensure that your auto pay creation algorithm supports non-billed budget scheduled payments. The *APAY-CREATE* algorithm type supplied with the base package supports non-billed budget scheduled payments.

## Credit and Collections and Non-billed Budgets

Unless the non-billed budget is *unmonitored*, the *account debt monitor* (ADM) monitors a non-billed budget SA's current amount just as it does for any other SA. The *scheduled payment algorithm* creates a trigger to ensure that the account debt monitor reviews the account the next time it runs. The review date on the trigger record is set to the process business date.

A separate *debt class* is needed for non-billed budget SA types, thus allowing you to define collection class controls, debt criteria and collection process templates specifically for non-billed budgets. The debt criteria should be set up to trigger a collection process when the arrears amount exceeds $0.01 for more than n payment periods plus the number of grace days that you want to allow.

The collection process template can perform any of the events in standard collection processes, such as sending letters to customers and creating severance processes. At a minimum, the collection process template should be set up to start a severance process for all service agreements in the debt class. (Since the debt class is specifically for non-billed budgets, the non-billed budget is the only SA that will be subject to a severance process.)

The non-billed budget severance process template should include the following event types:

- Populate a characteristic on the SA to indicate that the SA is broken. The base package comes supplied with a severance event algorithm type ( *SVEV-NB*) that sets an SA characteristic to indicate that it was "severed".
- *Expire Severance Agreement* to move the SA to the pending stop state.

When the system subsequently stops the non-billed budget, the system removes the covered SAs from the non-billed budget and synchronizes their current balances with their payoff balances. Since the SAs have current balances again, they are subject to the account debt monitor, which can start subsequent collection processes for any of the SAs that meet the debt criteria for their debt class.

**FASTPATH:**
Refer to *Stopping Non-billed Budgets* for a complete description of the events that occur when a non-billed budget is stopped.

Customers can catch up on their payments and avoid having their non-billed budget broken as long as their current balance doesn't violate the debt criteria for the non-billed budget's collection process.

## Credit and Collections and Unmonitored Non-billed Budgets

If the **Non-billed Budget Monitor** flag on the non-billed budget's SA type is set to Unmonitored , the *NBB Scheduled Payment Processing* background process does not create a trigger for the account debt monitor. Additionally, the non-billed budget's current amount is always equal to zero, so it never violates any debt collection criteria. We recommend using a debt class that has the **Eligible for Collection** flag turned off, such as the N/A debt class.

For unmonitored non-billed budgets, the current balance is kept on the covered SAs so they are subject to the account debt monitor and any debt criteria for their SA types' debt classes. For more information, refer to *Financial Transactions for Unmonitored Non-billed Budgets*.

## Non-billed Budget Status

A non-billed budget SA's status is just like any other SA's status. In addition, you can use a characteristic to keep an explicit status relevant to the non-billed budget:

- A base package severance event algorithm type ( *SVEV-NB*) creates a characteristic value to indicate if a non-billed budget is "broken" (i.e. stopped as a result of a severance process).
- A base package break non-billed budget algorithm type ( *NBBR-BRK*) creates a characteristic value to indicate if a non-billed budget is "canceled" (i.e. manually stopped by a user).

An active non-billed budget implicitly has a "kept" status (i.e. all scheduled payments have been made).

## Alerts For Non-billed Budgets

The system provides *alerts* to highlight the existence of non-billed budgets. These alerts are important to assist the customer service representatives:

- An alert is displayed if the account has a non-billed budget that is not stopped (e.g., pending start , active or pending stop ).
- When a user denies a non-billed budget (for whatever reason), the user should create a *customer contact* with a given *customer contact type*. This type of alert prevents the customer from shopping around. An existing alert algorithm type ( *CC BY TYPCL*) can highlight these customer contacts.
- For customers who are permanently forbidden from having a non-billed budget, the user should put a permanent *alert on the account*.
- Use an algorithm to highlight cancelled or severed non-billed budgets with an entry in the alert zone. The algorithm type to do this is not provided. Use *PP BY STATUS* and *CCAL-WF* as examples of how to create this type of algorithm.

**FASTPATH:**
For more information about introducing alert conditions on Control Central, refer to *Installation Options - Algorithms*.

# Non-billed Budget Recommendation Rule

Recommendation rules are used to recommend scheduled payments for non-billed budgets. For information about designing recommendation rules, refer to *Designing Recommendation Rules*.

To define recommendation rules, navigate to **Admin** > **NBB Recommendation Rule** > **Add.**

**Description of Page**

Enter an easily recognizable **Recommendation Rule** code and **Description** for each recommendation rule.

Specify the **Average Daily Amount Algorithm** used to calculate the average daily amount for this recommendation rule.

Specify the **Payment Schedule Algorithm Type** used to create the recommended payment scheduled for non-billed budgets that use this recommendation rule. The Payment Schedule Algorithm Type cannot be modified if a non-billed budget SA that is not stopped or cancelled is using this recommendation rule.

**Payment Schedule Parameters** enables you to define collections of default parameter values for the payment schedule algorithm type that are effective dated. For each collection:

- **Effective Date** defines the date on which the collection of parameter values becomes effective.
- **NBB Rule ParameterValue** specifies the default value of each parameter supplied to the algorithm. Note that the *payment schedule algorithm type* controls the number and type of parameters.
- **Override Flag** indicates whether the user can override the default value for the parameter.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_NB_RULE*.

# Setting Up The System To Enable Non-billed Budgets

The above topics provided background information about how non-billed budgets are supported in the system. The topics in this section describe how to set up the system to enable non-billed budget functionality.

**NOTE:**
**Example Setup.** This section describes typical non-billed budget configurations. Your set up and configuration may differ depending on your business needs. This section is provided for guidance only. Read the descriptions of non-billed budget functionality above to understand the implications of the described setup.

**Contents**



## NBB Distribution Codes

You must set up a Non-billed Budget Clearance *distribution code* that is used on the non-billed budget SA type to credit non-billed payments.

## NBB Adjustment Types

**NOTE:**
**Non-billed Budget Financial Transaction Algorithms.** The non-billed budget adjustment types use the standard FT algorithm types that are provided with the base package. If you have not yet defined algorithms for these types in your system, do so before creating the non-billed budget adjustment types.

The following adjustment types are needed:

- Add SA To Non-billed Budget. This adjustment type should reference an FT algorithm of Payoff Amt = 0 / Current Amt = Adj Amount (no GL). Because the adjustment affects the current balance only, there is no entry in the GL. This adjustment type is referenced on **Adjustment Type (Current=0)** on SA types that are eligible for non-billed budgets. Note that this adjustment type is never used if the SA is added to an unmonitored non-billed budget.
- Bill Complete for Monitored Non-billed Budget. This adjustment type should reference a distribution code used for balance transfer clearing. It should reference a FT algorithm of Payoff Amt = Adj / Current Amt = 0 . This adjustment type is referenced on **Adjustment Type (Xfer)** on SA types that are monitored non-billed budgets.
- Synch Balance for Non-billed Budget. This adjustment type should be set up for **Sync. Current Amount** and should reference a FT algorithm of Payoff Amt = 0 / Current Amt = Adj Amount (no GL) . This adjustment type is referenced on the **Adj. Type (Synch Current)** on non-billed budget SA types. It is used when a non-billed budget SA is stopped to synch the current balance with the payoff balance.
- Scheduled Payment. This adjustment type should reference an FT algorithm of Payoff Amt = 0 / Current Amt = Adj Amount (no GL). Because the adjustment affects the current balance only, there is no entry in the GL. This adjustment type is referenced on the non-billed budget process scheduled payment algorithm.
- Overpayment Transfer. This adjustment type should reference a transfer distribution code and a FT algorithm of Payoff Amt = Adj / Current Amt = Adj . This adjustment is referenced on the non-billed budget process scheduled payment

algorithm and the stop non-billed budget algorithm. Note that if there is already a transfer adjustment type created in your system, you do not need to create a new one.

If you are setting up an unmonitored non-billed budget that maintains a credit balance (as opposed to maintaining the credit balance on an overpayment SA), you need to create an adjustment type for Bill Complete for Unmonitored Non-billed Budget. (Refer to *Transferring Credit from Unmonitored Non-billed Budgets* for more information.) The adjustment type should reference a transfer distribution code and a FT algorithm of Payoff Amt = Adj / Current Amt = Adj . This adjustment type is referenced on **Adjustment Type (Xfer)** on SA types that are unmonitored non-billed budgets.

## NBB Adjustment Type Profiles

Create an adjustment type profile for non-billed budgets that references the following adjustment types:

- Bill complete for monitored non-billed budget
- Bill complete for unmonitored non-billed budget (if used)
- Synch balance for non-billed budget
- Scheduled payment
- Overpayment transfer

Create an adjustment type profile for eligible SAs that references the following adjustment types:

- Add SAs to monitored non-billed budgets
- Bill complete for monitored non-billed budget
- Bill complete for unmonitored non-billed budget (if used)

**NOTE:**
**Bill Complete Adjustment Types.** Because the bill complete adjustment types transfer amounts between two SAs, they must be in profiles for both non-billed budget and eligible SA types.

**Overpayment Transfer Adjustment Type.** The overpayment transfer adjustment type created above is used to transfer funds from an excess credit SA to a non-billed budget when the scheduled payment is processed. It is also used to transfer excess funds from a non-billed budget that is being closed to an excess credit SA. The transfer adjustment should therefore be added to an adjustment type profile that is referenced on the excess credit SA type.

## NBB Characteristic Types

Create a non-billed budget status characteristic type that specifies Service Agreement as its characteristic entity. The characteristic type should include the following predefined values:

- Non-billed Budget Canceled
- Non-billed Budget Severed

## NBB Customer Contact Class And Types

Create a non-billed budget customer contact class. The contact class may include the following customer contact types:

- Non-billed Budget Activate
- Non-billed Budget Renewal

- Non-billed Budget Stop

**NOTE:**
**Customer Contact Letters.** If you want to send letters to your customers when a contact of any of these types is created, you must create an appropriate *letter template* and attach it to the contact type.

## NBB Algorithms

You must define the following *algorithms*:

- On *NBB recommendation rule*, the Non-billed Budget Daily Amount Calculation. Refer to the *NBDA-DA* algorithm type for more information about the base package algorithm.
- On *SA type*:
  - Non-billed Budget Process Scheduled Payment. This algorithm has parameters that must reference the Scheduled Payment and Overpayment Transfer adjustment types defined above. Another parameter references an overpayment SA type (that you may need to create if there is not already one in your system). Refer to the *NBPA-PS* algorithm type for more information about the base package algorithm.
  - Non-billed Budget SA Renewal. Refer to the *SARN-NB* algorithm type for more information about the base package algorithm.
  - Break Non-billed Budget SA. Refer to the *NBBR-BRK* algorithm type for more information about the base package algorithm.
  - SA Activation - automatically activate SA (if you want to automatically activated non-billed budgets when they are created). Refer to the *SACR-AT* algorithm type for more information about the base package algorithm. Note that this same algorithm may be used on many SA types.
  - SA Activation - create customer contact (if you want the system to create a customer contact when NBB SAs are activated). Refer to the *SAAT-CC* algorithm type for more information about the base package algorithm.
  - SA Stop - automatically stop SA (if you want to automatically transition non-billed budgets from pending stop to stop when their stop is initiated). Refer to the *SAIS-ST* algorithm type for more information about the base package algorithm. Note that this same algorithm may be used on many SA types.
  - SA Stop - Stop Non-billed Budget. Refer to the *SAST-NB* algorithm type for more information about the base package algorithm.
  - Bill Completion - Non-billed Budget Credit Transfer. Refer to the *BCMP-NB* algorithm type for more information about the base package algorithm.
- On *bill segment type*, the Bill FT Algorithm (for all SAs that are eligible for NBB). Refer to the *BSBF-BA* algorithm type for more information about the base package algorithm. Note this is the standard bill FT algorithm type used for common bill transactions. It supports bill FT for non-billed budgets and other SA types. You only need to create it if it doesn't already exist in your system.
- On *severance event type*, an algorithm for Non-billed Budget Severance. Refer to the *SVEV-NB* algorithm type for more information about the base package algorithm.

**NOTE:**
**Payment Schedule Algorithm Types.** For non-billed budget payment schedule algorithm types, you need to define the algorithm types (if you add your own algorithm types). You do not need to define algorithms because the parameter values for the algorithm are defaulted on the recommendation rule and stored with the non-billed budget SA. (Normally the algorithm holds the parameter values.) Refer to the *NBPS-MON* algorithm type for more information about the base package payment schedule algorithm.

## NBB Debt Class And Collection Process

Set up a separate debt class, collection class control, collection process template and severance process template for non-billed budgets according to the information in *Credit and Collections and Non-billed Budgets*.

## SA Types for SAs Covered by NBBs

You must modify the SA type for any SAs that you want to allow to be covered by a non-billed budget.

- Verify that the specified **Bill Segment Type** (on the Billing page) references a financial transaction algorithm to set the current amount to zero for monitored non-billed budgets. The FT creation algorithm type *BSBF-BA* (i.e., Payoff Amt = Bill Amt / Current Amt = Amt Due ) supplied with the base package sets the current amount to zero for SAs that are covered by monitored non-billed budgets, though this is not evident by the name. (For SAs that are not covered by a non-billed budget, the current amount is equal to the amount due or the recurring charge.) Refer to *Billing For SAs Covered By The Non-billed Budget* for more information.
- Set the **Eligible for Non Billed Budget** flag (on the Billing page) to Eligible for Non-billed Budget .
- Populate the **Adjustment Type (Current = 0)** (on the Detail page) to indicate the adjustment to be used to zero out the current amount on the covered SAs when the non-billed budget SA is activated. Use the Add SA To Non-billed Budget *adjustment* created above. This adjustment type is only called for SAs that are covered by a monitored non-billed budget.
- Reference an **Adjustment Type Profile** (on the Adjustment Profile page) that includes the Add SA To Non-billed Budget adjustment type referenced in the **Adjustment Type (Current = 0)** field above.
- If not already specified (for write off), an **Adj. Type (Synch Current)** (on the Main page) is also required. It is used to synchronize (make equal) the current amount with the payoff amount when the SA is removed from (i.e. no longer covered by) a non-billed budget.

## NBB Recommendation Rules

Set up any *NBB Recommendation Rules* that you want to be available for your non-billed budget SAs. Use any Non-billed Budget Daily Amount Calculation algorithms defined above. Also use the Non-billed Budget Monthly Payment Schedule ( *NBPS-MON*) algorithm types and specify the default parameters.

## Non-billed Budget SA Types

You must set up a *SA types* for your non-billed budget service agreements. You may need multiple non-billed budget SA types if you have different business rules for different types of non-billed budgets, for example, if you have both monitored and unmonitored non-billed budgets or if you support non-billed budgets with different renewal requirements. The following points provide guidelines for creating a non-billed budget SA type.

**Contents**

*SA Type - SP Type (NBB)*

*SA Type - Adjustment Profile (NBB)*

*SA Type - Credit and Collections (NBB)*

*SA Type - Algorithms (NBB)*

*SA Type - NBB Recommendation Rule (NBB)*

## SA Type - Main (NBB)

**Service Type** should reference something like "Miscellaneous Service".

**Distribution Code** should be the one you set up to book credits for non-billed budgets.

**Revenue Class** should be set to N/A . (Revenue classes are not applicable because non-billed budgets do not apply a rate and revenue classes are only relevant for SA types that use a rate.)

The **Payment Segment Type** should reference the Normal Payment .

**Do Not Overpay** should be on. Any excess payments should go to the overpayment SA, not the non-billed budget SA.

**Late Payment Charge** is not applicable and should not be turned on because non-billed budgets are not billed.

**Adj. Type (Synch Current)** should reference the Synch Balance for Non-billed Budget adjustment type created above.

## SA Type - Detail (NBB)

- **Special Role** is Non-billed Budget .
- **Adjustment Type (Xfer)** must be populated to indicate the adjustment to be used for transferring accumulated credit from the non-billed budget SA to the covered SAs. This field is not used for unmonitored non-billed budgets.
- **Renewal** may be optional, not allowed, or required depending on your business processes.
- If Renewal is required, specify the **Days Before Expiration for Renewal**.
- **Non-billed Budget Monitoring** must indicate whether the non-billed budget is monitored by the account debt monitor.

## SA Type - Billing (NBB)

Non-billed budget SAs do not get billed, so the **Eligible for Billing** flag should be off.

Additionally, the **Characteristic Premise Required** should not be checked for non-billed budgets.

## SA Type - Rate (NBB)

Non-billed budget SAs do not use rates, so the **Rate Required** flag should be off.

## SA Type - SP Type (NBB)

Non-billed budget SAs do not have service points, so the **Service Points Required** flag should be off.

## SA Type - Adjustment Profile (NBB)

**Adjustment Type Profile** should reference the *adjustment type profile* for non-billed budgets (set up above).

## SA Type - Credit and Collections (NBB)

The credit and collections information should reference a **Severance Process Template** that calls the Non-billed Budget Severance algorithm created above and expires the non-billed budget SA. The **Debt Class** should reference an appropriate value consistent with your credit and collections rules. Typically, monitored non-billed budgets should be in their own debt class. Unmonitored non-billed budgets should have a **Debt Class** that is not Eligible for Collection .

The **Write Off Debt Class** is not applicable because the non-billed budget contains no debt to be written off. Reference a debt class such as N/A. Refer to *Defining Credit & Collections Options* for more information.

## SA Type - Algorithms (NBB)

The SA type *algorithms* defined above must be set up:

- The Non-billed Budget Credit Transfer algorithm created above should be specified for the Bill Completion system event (not used on unmonitored non-billed budgets).
- The Break Non-billed Budget SA algorithm created above should be specified for the Break NBB SA system event.
- The Non-billed Budget Process Scheduled Payment algorithm created above should be specified for the Process NBB Scheduled Payment system event (not used on unmonitored non-billed budgets).
- The Non-billed Budget SA Renewal algorithm created above should be specified for the SA Renewal system event.
- If you created the Automatic SA Activation algorithm above, it should be specified for the SA Creation system event.
- The Non-billed Budget SA Activation algorithm created above should be specified for the SA Activation system event.
- If you created the Automatic SA Stop algorithm above, it should be specified for the SA Stop Initiation system event.
- The Stop Non-billed Budget algorithm created above should be specified for the SA Stop system event.

## SA Type - NBB Recommendation Rule (NBB)

Add the recommendation rules defined above that are valid for SAs of this type. Also, indicate which recommendation rule should be used as the default.

# NBB Background Processes

Ensure that the following background processes are scheduled:

- Non-billed Budget Scheduled Payment Processing ( *NBBPS*)
- Non-billed Budget Scheduled Payment Automatic Payment Create ( *NBBAPAY*)
- Service Agreement Renewal ( *SARENEW*)
- Stop Expired Service Agreements ( *SAEXPIRE*)

# Defining Quotation Options

This section describes tables that must be set up before quotations can be created.

**FASTPATH:**
For more information, refer to *The Big Picture of Quotations*.

**Contents**



## Setting Up SA Types For Quotes

The topics in this section describe additional setup responsibilities required on SA types that can have proposal service agreements.

**NOTE:**
**Assumption.** We have assumed that you've already designed your SA types for the services that you sell. If you haven't done this, refer to *Defining Service Agreement Types* .

**Contents**



### Enabling The Automatic Generation Of Billing Scenarios

As described under *Proposal SAs Contain Billing Scenarios And Template Consumption* , a proposal SA requires billing scenarios before a quote detail can be generated. The system will automatically create billing scenarios when a proposal SA is created if you plug-in the appropriate Proposal SA Creation algorithm on each such *SA type*. Refer to *PSAC-CBS* for an example algorithm (note, this algorithm can be used to create billing scenarios for both interval and non-interval service agreements).

### Enabling The Generation Of Simulated Bill Segments

As described under *Creating Quotes And Quote Details*, in order for the system to generate simulated bill segments for a proposal SA, you must plug-in a Proposal SA Bill Segment Generation algorithm on the proposal SA's *SA type*. Refer to

*CBSP-AR* for an example algorithm that creates a simulated bill segments for each billing scenario linked to the proposal SA by calling rate application.

**NOTE:**
**Interval pricing service agreements.** If you have proposal SAs that require the derivation of interval profiles from other interval profiles, you must also plug-in another Proposal SA Bill Segment Generation on the interval *SA type*. Refer to *CBSP-IDDRV* for an example algorithm that performs derivation. When you plug-in this type of algorithm, don't forget to use a sequence number less than the one that generates the simulated bill segments (see above); otherwise, the derived interval profiles won't exist when rate application is called.

## Enabling The Creation Of A Real SA When A Quote Detail Is Accepted

As described under *Accepting / Declining Quote Details*, in order for the system to create a real SA when a proposal SA is accepted, you must plug-in a Proposal SA Acceptance algorithm on the proposal SA's *SA type*. Refer to *PSAA-PS* for an example algorithm that creates a real SA by copying the proposal SA.

**NOTE:**
**Interval pricing service agreements.** If the service agreement has SA-specific interval profiles, time-of-use maps, or contract options, it's important that you setup your Proposal SA Acceptance algorithm to create fresh interval profiles, time-of-use maps and contract options when the real SA is created (there's a parameter on *PSAA-PS* that will do this). Refer to *Proposal SAs And Interval Consumption* for more information.

## Setting Up Quote Route Types

Quote route types control how quotes are *routed* to customers and prospects. To define a quote route type, open **Admin** > **Quote Route Type.**

**FASTPATH:**
Refer to *Printing Quotes* for more information about how quotes are routed to customers and prospects.

### Description of Page

Enter a unique **Quote Route Type** and **Description** for every quote route type.

**Quote Routing Method** controls the type of information that may be defined when the respective **Quote Route Type** is selected on *Account - Person Information*. The following options are available:

- Postal . Use this method if the routing is via the postal service.
- Fax . Use this method if the routing is via fax.
- Email . Use this method if the routing is via email.

**NOTE:**
The values for **Quote Routing Method** are customizable using the *Lookup* table. This field name is QTE_RTG_METH_FLG .

- The next two fields control how quotes that are routed using this method are *printed* (both in batch and online).
  - Use **Batch Control** to define the process that creates the flat file that is passed to your quote printing software. Refer to *Technical Implementation of Printing Quotes In Batch* for more information about these processes.

- Use **Extract Algorithm** to define the plug-in that constructs the "flat file records" that contain the information merged onto quotes routed using this method. Refer to *Printing Quotes* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_QTE_RTE_TYPE*.

## Setting Up Terms and Conditions

As described under *Legal Terms and Conditions May Be Specified On SAs* , your *SA type start options* can reference terms and conditions (T&C's) that should be defaulted onto new service agreements (both real and proposal). Each T&C is identified with a terms and condition code. To define a terms and conditions code, open **Admin** > **Terms and Conditions** > **Add.**

> **NOTE:**
> **T&C print order.** The value of the T&C code controls the order in which the T&C appears on the printed quote. This means you should assign these codes in some type of structured format (e.g., 01...) if you would like them to appear in a certain order.

**Description of Page**

Enter a unique **Terms and Condition** code and **Description**. Use **Text** to describe the exact terms.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TC*.

## Setting Up Decline Reasons

A proposal SA decline reason must be supplied when a proposal SA is declined. Open **Admin** > **Proposal SA Decline Reason** to define your reason codes.

**Description of Page**

Enter an easily recognizable **Decline Reason** and **Description** for each proposal SA decline reason.

**Where Used**

Decline reasons are used when a *quote detail is declined*.

## Setting Up Customer Classes For Quotes

An optional plug-in spot exists on *customer class* where you can introduce additional logic to be executed when a quote is completed for an account that belongs to this customer class. The base package comes supplied with a sample algorithm that creates a workflow process when a quote is completed (refer to the algorithm *QTEC-WP* for more information).

# Defining Case Management Options

Case management functionality is a highly configurable tool your organization can use to manage many situations, including (but certainly not limited to) the following:

- a high-bill complaint,
- a bankruptcy,
- an inspection of a premise,
- a customer's request for literature,
- an application for new service,
- a contractor's request to extend a line,
- a customer's rejection of a quote,
- a customer's request to change service providers on a future date,
- the processing of a market message in a deregulated environment,
- ... (the list is only limited by your time and imagination)

Obviously the steps involved in the resolution of the above cases are very different. The topics in this section describe how to configure the system to manage your cases as per your organization's desires.

**NOTE:**
**Separate module.** The Case Management functionality is associated with a separate module. If the Case Management module is not applicable to your business you may turn it off. Refer to *Turn Off A Function Module* for more information.

**FASTPATH:**
Refer to *Case Management* for a description of how end-users use cases.

**Contents**



# The Big Picture Of Cases

The topics in this section provide background information about how to configure the system to support your case management requirements.

**Contents**



## Case Type Controls Everything

Whenever a user creates a case, they must specify the type of case (e.g., high-bill complaint, literature request, etc.). The case type controls how the case is handled.

Case types hold the business rules that control cases. Since these business rules can sometimes be quite complicated, setting up case types requires planning and foresight. The topics in this section describe the type of business rules that can be configured on your case types.

**Contents**



## Person / Account / Premise Applicability

Some types of cases may be person-oriented, others may be premise-oriented, and still others may be account-oriented. For example:

- Cases used to keep track of a literature request would reference the person who requested the literature.
- Cases used to keep track of the inspection of a property would reference the premise being inspected.
- Cases used to keep track of a high-bill complaint would reference the account associated with this bill(s) being disputed.

When you set up a case type, you define if its cases must reference a person, account, and/or premise. Note, any combination of these objects is permitted on a case.

## Contact Information Applicability

When a case is created, you may want to keep track of how to contact its originator. For example, you may want to record the originator's email address or phone number. When you set up a case type, you define if contact information is required, optional or not allowed on its cases.

## Business Object Association

A case type may reference a Business Object, which serves as a link between cases of that type and the options that are associated with the business object.

## Additional Information

Some of your cases may require additional information (in the form of *characteristics*). For example, a high-bill complaint may require at least one bill. When you set up a case type, you can define the additional fields that are required. In addition, you can define default values for these fields.

The case functionality also allows you to require characteristics when a case enters a given state. Refer to *Required Fields Before A Case Enters A State* for the details.

**NOTE:**
**Requiring supporting documents.** Because any *type of characteristic* can be referenced on a case, you can require references to supporting documents by requiring a file location characteristic.

## Access Rights

You can take advantage of the system's *security* to restrict cases of a given type to certain users. For example, you can restrict high-bill complaints to specific user groups.

The following points describe how to implement this type of security:

- Create an *application service* for each type of case you need to secure
- Define the access modes Add, Inquire and Change for each application service
- Define the applicable application service on each case type
- Link the appropriate *user groups* to each application service
  - For user groups that are allowed to add cases of a given type, define Add as a valid access mode.
  - For user groups that are allowed to view cases of a given type, define Inquire as a valid access mode
  - For user groups that are allowed to change cases of a given type, define Change as a valid access mode

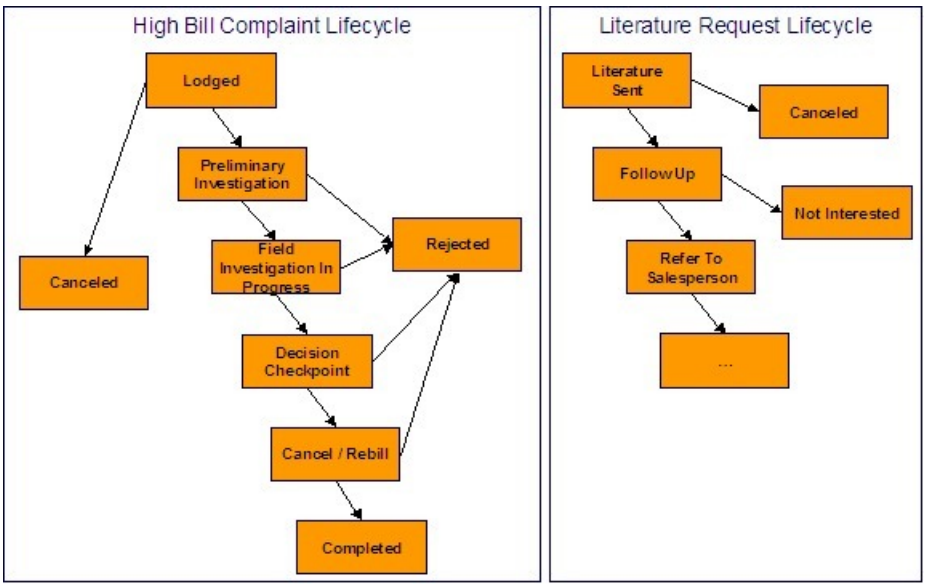
If you restrict access to a case type's cases, you can further restrict which users can work on cases given the status of the case. Refer to *Which Users Can Transition A Case* for more information.

**NOTE:**
**Restricting access to cases is optional.** If you don't specify an application service on a case type, all users (who have access to the case transaction) may access its cases.

## Lifecycle

Many objects in the system have predefined lifecycles whose rules are governed by the base-package and cannot be changed. For example, a service agreement starts out in the Pending Start state and eventually becomes Closed when it's been final billed (and paid). You can't change the system to allow a service agreement to starts its life in the Closed state.

The lifecycle of cases is not governed by the base package. Rather, you define the lifecycle of your cases when you set up their case types. Examine the following diagrams; the one on the left shows the potential lifecycle of a case that manages a high-bill complaint, the one on the right shows the potential lifecycle of a case that manages a customer's literature request.




***Potential Lifecycles Of Two Types Of Cases***

---

**NOTE:**
**Just examples.** The above lifecycles are just examples. When you set up your case types, you must define the valid states for your case type.

---

The topics that follow describe important concepts that are illustrated in the above diagrams.

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## Valid States versus State Transition Rules

The orange boxes in the above diagram show the potential valid states a given case can have. The lines between the boxes indicate the state transition rules. These rules govern the states a case can move to while it's in a given state. For example, the above diagram indicates a high bill complaint that's in the Lodged state can be either Canceled or moved into the Preliminary Investigation state.

When you set up a case type, you define both its valid states and the state transition rules.

## Transitory States

You can define a state in a case type as **Transitory** if you do not wish the case to exist in a particular state. For example, let's assume that an algorithm is associated with the Decision Checkpoint state (Enter Processing) that would automatically determine the next state for the case (i.e. Cancel/Rebill or Reject ) and also contains logic to transition the case accordingly. In this scenario, you may not ever want the case to exist in the Decision Checkpoint state, so that a user won't ever see a high bill complaint in that state. If the other states were marked as non-transitory , and an error were to occur during the transition from Decision Checkpoint to Cancel/Rebill , the case would roll back any changes to data made in the Cancel/Rebill (Enter Processing) state along with the changes made in the Decision Checkpoint state, and would end up in the Field Investigation In Progress state - the last non-transitory state prior to Decision Checkpoint .

## One Initial State and Multiple Final States

When you set up a case type's states, you must pick one as the initial state. The initial state is the state assigned to new cases of a given type. For example, high-bill complaint cases have an initial state of Lodged , whereas literature request cases have an initial state of Literature Sent .

You must also define which statuses are considered to be "final". When a case enters a "final" state, it is complete and no further action is necessary. You might want to think of the "final" states as the potential outcomes of a case. For example, a high-bill complaint has potential outcomes of Completed , Rejected , and Canceled .

The "final" states are used by the system to differentiate between open and closed cases. For example, an alert highlights when the person / account / premise in context has open cases (this alert only exists if you've plugged-in the appropriate installation *alert*).

## Allowing A Case To Be Reopened

You can set up your state transition rules to allow a case to be reopened (i.e., to be moved from a final state to a non-final state). Neither of the above examples allows this, but it is possible if you configure a case type accordingly.

## Make Sure To Have A Canceled State

The system does not allow you to delete a case. Therefore, if you want to support logical deletion, you should have a status of Canceled early in a case type's lifecycle. Doing this allows a user to cancel (i.e., logically delete) a case.

**NOTE:**
**Cancel reason.** You might want to consider setting up your case types to require a cancel reason (in the form of a *predefined value characteristic*) when a user cancels a case. Refer to *Required Fields Before A Case Enters A State* for more information.

## Buttons Are Used To Transition A Case From Status To Status

When a case is displayed on *Case - Main*, a separate button is shown for each state into which the case can be transitioned. For example, a high-bill complaint case that is in the Lodged state would show two buttons: **Start Investigation** and **Cancel**. If the user presses the **Start Investigation** button, the case is transitioned to the Preliminary Investigation state. If the user presses the **Cancel** button, the case is moved to the Canceled state.

You may define the text displayed on the button differently for each state transition. This allows the action description to be varied according to the previous status. For example, the button to transition from New to Active may be labeled **Activate**, but the button to change from Closed to Active may be labeled **Reactivate**.

Refer to *Which Users Can Transition A Case* for instructions describing how to restrict users to specific actions.

## State Transitions Are Audited

The system maintains an audit trail whenever a case transitions from one state to another. This audit is shown in the case's *log*.

## Reports and Analytics Highlight Productivity

When you set up a case type's lifecycle, keep in mind that several reports and analytics highlight how long it took cases to transition into a state. For example, you can use a report to see how long it took high-bill complaints to be completed (or initially actioned or ...). Refer to the *Reports* chapter for the details of case reports.

# Status-Specific Business Rules

As described in *Lifecycle*, when you set up a case type, you define the possible states its cases can pass through. The following topics describe business rules that can be configured for each state.

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## A Script That Helps A User Work Through A Case

You can define a *Business Process Assistant script* that helps a user work a case while it's in a given state. For example, when you set up the Preliminary Investigation state for the high-bill complaint case type, you can define a script. A user can then easily launch this script to help them work through a case in this state.

Please keep the following in mind when you're designing how to integrate BPA scripts with your cases:

- You can have a different script for each state. For example, you could develop a script to help a user work on a case while it's in the Preliminary Investigation state and a different script to help them work in a case while it's in the Decision Checkpoint state.
- Rather than make a user launch a script by pressing a hyperlink on the *case page*, you can have the system automatically launch the script while the case is in a given state. Refer to *Script Launching Option* for more information.
- You can also have the system automatically launch a script when a user selects a To Do entry. Refer to *Launching Scripts When To Do Entries Are Selected* for more information.

**FASTPATH:**

Refer to *Scripts and Cases* for more information about how to streamline your case processing with scripts.

## Required Fields Before A Case Enters A State

You can define additional fields (i.e., characteristics) that are required before a case can enter a given state. For example,

- You can indicate a high-bill complaint must reference at least one bill before it enters the Preliminary Investigation state.
- You can indicate a case must reference a cancel reason before it enters the Canceled state.

You do this by indicating that *characteristics* (that were optional when the case was added) are required when a case enters a given state.

## Validation Before A Case Enters A State

You can define validation that executes before a case can enter a given state. For example, you can indicate the case must have been assigned a responsible user before it can enter the Preliminary Investigation state. This validation logic is held in algorithms that are plugged in on the case type and therefore you can define any type of validation.

## Additional Processing When Entering A State

You can define additional processing that should happen when a case enters a given state. For example, you can have a *letter* created when a high-bill complaint case is Rejected . Similarly, you can have a *To Do entry* created when a high bill complaint enters the Preliminary Investigation state. This additional processing is held in algorithms that are plugged in on the case type and therefore you can define any type of additional processing.

You can also incorporate state transitioning logic within routines that are executed when a case enters a state, so that you do not need to rely upon CASETRAN to transition your cases. For example, when the state entry routines of the Preliminary Investigation status for a high-bill complaint are executed, they may be designed to transition the case into either the Rejected or Field Investigation In Progress state without waiting. Note that your Exit Validation and Exit Processing logic, if configured for the case state, will still be executed as part of the state transition. Auto-Transition logic for this state will be ignored during this transition.

## Validation Before A Case Exits A State

You can define validation that executes before a case can exit a given state. For example, you might want to check the account's balance is less than a given value before a case can exit a given state. This validation logic is held in algorithms that are plugged in on the case type and therefore you can define any type of validation.

## Additional Processing When Exiting A State

You can define additional processing that should happen when a case exits a given state. For example, you can have a *To Do entry* automatically completed when a high bill complaint leaves the Decision Checkpoint state. This additional processing is held in algorithms that are plugged in on the case type and therefore you can define any type of additional processing.

## Automatic Transition Rules

You can define rules that automatically transition a case into a different state. For example, you can indicate a literature request should be transitioned to the Follow Up state 1 week after the literature is sent. Similarly, you can indicate a high-bill complaint should transition to the Decision Checkpoint state after the fieldwork is complete. These rules are held in algorithms that are plugged in on the case type and therefore you can define any type of automatic transition rules.

Cases in a state with automatic transition rules are monitored by the *CASETRAN* background process. Each time this program runs, the respective automatic transition plug-in is called for each such case and it transitions the case if the condition applies.

**NOTE:**
**When to execute CASETRAN.** Because your automatic transition rules will be dependent on your business requirements, you need to think carefully about when you run the *CASETRAN* background process. For example, if you have automatic transition rules that transition a case to a new state when a related field activity is completed, you would want to schedule this job to run after field activities are uploaded. If you have rules to transition a case after a customer pays a deposit, you'd want to schedule this job to run after payments are uploaded. Bottom line - your business rules will dictate the frequency of execution.

When the user adds a new case or changes the state of a case manually the system attempts to auto-transition the case to subsequent statuses as necessary. If auto-transition rules apply to the new state (and to subsequent ones) they would be executed right away. In other words, you don't need to wait for the auto-transition background process to be executed. An indication that the case was auto-transitioned online is displayed right below the action buttons section.

**NOTE:**
**Auto-Transition Errors.** Online auto-transition is performed recursively committing each successful state transition to the database. It is performed up to 100 times or until an error is encountered during the process. If this happens, auto-transition stops at the last **non-transitory** state into which a successful transition had occurred. Two case log entries will be generated automatically - one containing the message that a transition error has occurred, and a second containing the actual error message. A To Do entry will also be generated automatically upon rollback. The type of this To Do entry will be taken from 1) the Case Transition Exception To Do Type **option** for the **Business Object** associated with the case type, and if this is not populated, 2) the Exception To Do Type indicated on the Case Options Feature Configuration. All of the above error handling is true for both batch and online processing of cases.

**NOTE:**
**Triggering Auto-Transition.** If you have a customized process that affects the state of a case and you want the case to be auto-transitioned right away, i.e. not wait for the next scheduled *CASETRAN* background process to execute, you can customize that process to trigger auto-transition for the specific case, or you can put the state transition logic into the routines that execute at state entry time.

## Script Launching Option

You can define whether the script associated with a given state is to be automatically launched while the case is in that state. The system supports the following options:

- Launch the script only if no script is currently active.
- Always launch the script unless this specific script is currently active.

**WARNING:**

With this option, if a script is currently open in the page's BPA script area then it will be automatically closed and the case script will open.

- Do not automatically launch the script.

You do this by plugging-in a Script Launching algorithm for the given state. If no such plug-in is provided the script is not automatically launched.

## Which Users Can Transition A Case Into A State

If you have *restricted access* to a case type, you can further restrict which user groups are allowed to transition a case into specific states. For example, you can control which user group can transition a high bill complaint into the Preliminary Investigation state. The following points describe how this is done:

- Define actions on the *application service* defined on the case type. You must define an action for each status that you need to secure.
- Define each status's corresponding action. Note, you only need to link a status to an action if it's secured. Any user with *access* to the case type can perform statuses that aren't linked to actions.
- Define the transition role for each status's valid next status. You can assign valid next statuses to be reachable via system (only), or system and user.
- Define which *user groups* have access to the actions (i.e., statuses). In addition, these user groups should have access to the Change action.

## Responsible User Applicability

Some of your cases may require a "responsible user". This is the user who has overall responsibility for the case. When you set up a case type, you define if a responsible user is required, optional or not allowed on its cases.

The following points describe how to set up the system if a responsible user is not required when a case is first created, but is later in its lifecycle:

- Indicate that a responsible user is optional on the case type
- Plug-in either an *exit validation* or *entry validation* algorithm on one of the case type's states to require a responsible user at some point in a case's lifecycle

**NOTE:**
**Address To Do entries to the responsible user.** If you use the *base-package algorithm* to create a To Do entry when a case enters a given state, you can indicate that the To Do entry should be addressed to the responsible user on the case.

# Scripts and Cases

There are three ways *Business Process Assistant scripts* can be used to manage cases:

- You can create a BPA script to help users create a case. For example, a script can help a user create a new high-bill complaint.
- Using a script to create a case can save a user a lot of time (and training efforts). This is because the script can automatically populate many fields on the case based on answers to questions.

Refer to *Initiating Scripts* for a description of how end-users initiate scripts.

- You can create a script to help users work on a case when it's in a given state. Refer to *A Script That Helps A User Work A Case* for more information.
- You can *set up your case types to create To Do entries* to notify users when cases exist that require their attention. Users can complete many of these ToDo entries without assistance. However, you can set up the system to automatically launch a script when a user selects a ToDo entry. For example, consider a ToDo entry that highlights a high-bill complaint that requires investigation. You can set up the system to execute a specific script when a user selects this ToDo entry. This script might guide the user through the investigation process (and help them update the case). Refer to *Executing A Script When A To Do Entry Is Selected* for more information.

# To Do's and Cases

The topics in this section provide background information about how to facilitate case management with *To Do entries*.

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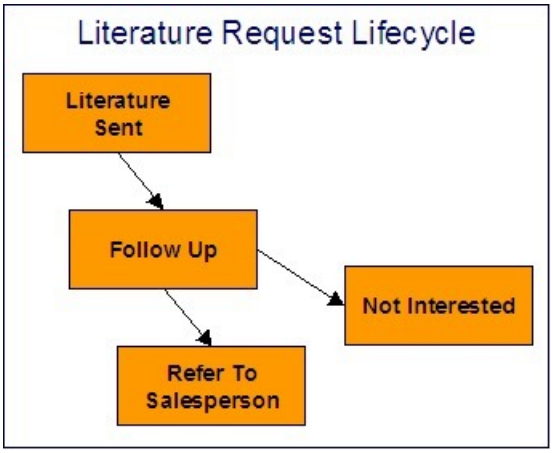
## Creating and Completing To Do Entries

You can configure your case types to create and complete *To Do entries* when a case enters or exits a state. Let's use the following *lifecycle diagram* to illustrate a potential use of To Do's:




Let's assume the following:

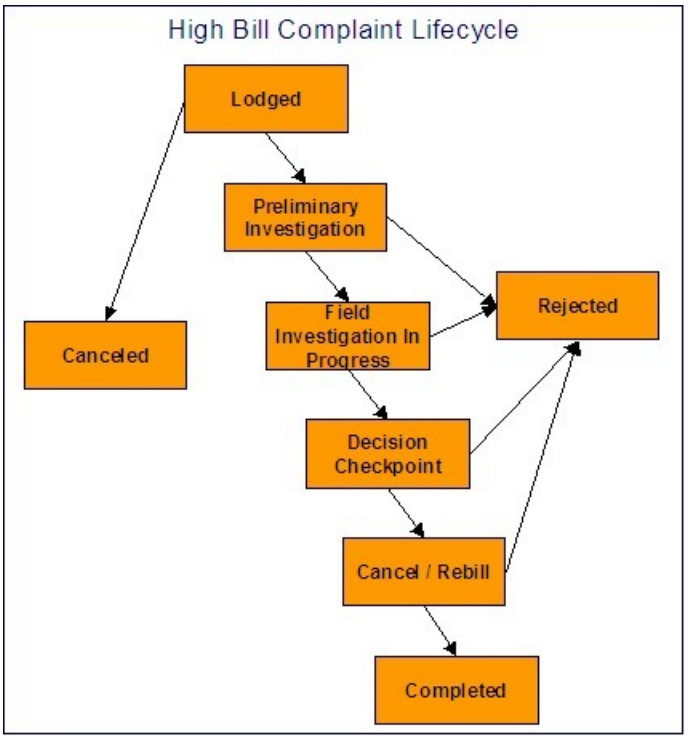
- You want a To Do entry created when a literature request case enters the Follow Up state. You want this To Do automatically completed when the case enters either the Refer To Salesperson or Not Interested states. Note, we refer to this as the "first" To Do entry below.
- You want a different To Do entry created when a case enters the Refer To Salesperson state. You do not want the system to automatically complete this entry (the sales person must manually do this). Note, we refer to this as the "second" To Do entry below.

To implement the above, you would set up a case type as follows:

- Plug-in an *entry processing* algorithm on the Follow Up status to create the first To Do entry.
- Plug-in an *exit processing* algorithm on the Follow Up status to complete the first To Do entry.

- Plug-in an *entry processing* algorithm on the Refer To Salesperson status to create the second To Do entry.

While the case type illustrated above had a single To Do entry "active" at any point in time, you can easily configure a case type to have multiple To Do entries active at any point in time. Let's use the following lifecycle diagram to illustrate this point:




Let's assume the following:

- You want a To Do entry created when a high bill complaint is created and you want it completed when the case reaches the Canceled , Rejected or Approved states. This To Do entry could be used by a supervisor to monitor the number of high-bill complaints being worked. Note, we refer to this as the "first" To Do entry below.
- You want a different To Do entry created when the case enters the Preliminary Investigation state and you want this entry automatically completed when the case leaves this state. Note, we refer to this as the "second" To Do entry below.
- You want a different To Do entry created when the case enters the Decision Checkpoint state and you want this entry automatically completed when the case leaves this state. Note, we refer to this as the "third" To Do entry below.

To implement the above, you would set up the case type as follows:

- Plug-in an *entry processing* algorithm on the Lodged status to create the first To Do entry. Plug-in an *entry processing* algorithm on the Canceled , Rejected and Completed statuses to complete this entry.
- Plug-in an *entry processing* algorithm on the Preliminary Investigation status to create the second To Do entry. Plug-in an *exit processing* algorithm on the Preliminary Investigation status to complete this entry. We elected to use an exit processing algorithm because we only have to plug it in on one status. If we'd used an entry processing algorithm, we would need to plug it in on the 2 statuses into which a Preliminary Investigation status can transition.
- Plug-in an *entry processing* algorithm on the Decision Checkpoint status to create the third To Do entry. Plug-in an *exit processing* algorithm on the Decision Checkpoint status to complete this entry.

## Launching Scripts When To Do Entries Are Selected

You can set up your case types to create To Do entries to notify users when cases exist that require their attention. Users can complete many of these To Do entries without assistance. However, you can set up the system to automatically launch a script when a user selects a To Do entry. For example, consider a To Do entry that highlights a high-bill complaint that requires investigation. You can set up the system to execute a specific script when a user selects this type of To Do entry. This script might guide the user through the investigation process. Refer to *Executing A Script When A To Do Entry Is Selected* for more information.

## All To Do Entries Are Visible

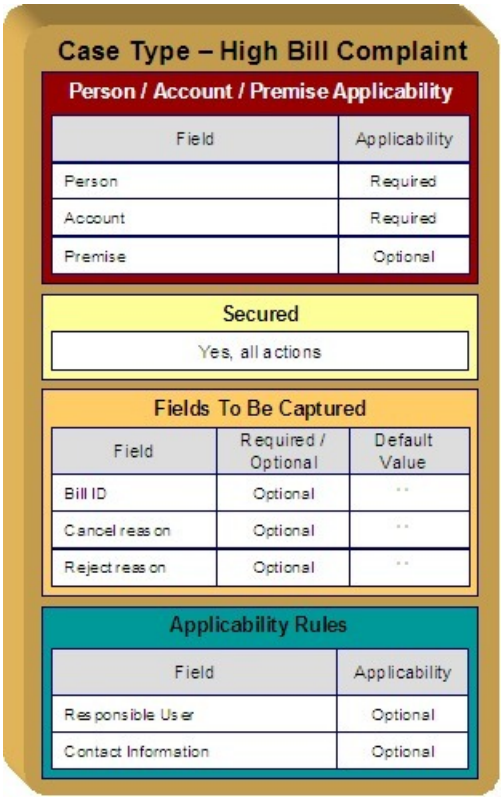
When a case is displayed on *Case Maintenance*, the system summarizes the number of To Do entries associated with the case (if you've *set up your To Do types* appropriately).

# Examples of Case Types

The topics that follow provide examples of case types related to several business processes. Use the information in this section to form an intuitive understanding of case types. After attaining this understanding, you'll be ready to design your own case types.

## High Bill Complaint

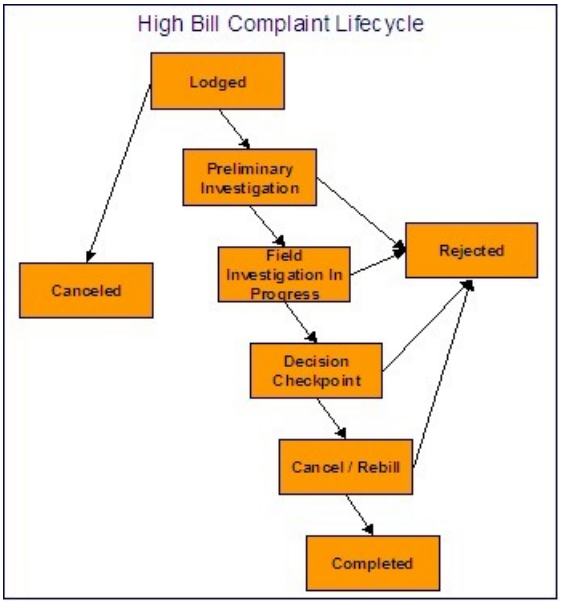
Some organizations will set up a case to manage a high-bill complaint. The following diagram illustrates how such a case type might look:




Note the following about the High Bill Complaint case type:

- Notice that we set up the case type to require a person and an account, but premise is optional. This is because a bill can span multiple premises and knowing the premise isn't so important on cases of this type.
- We need to restrict high-bill complaints to specific user groups. This means we need to *set up a specific application service* for this case type (that has a separate "action" for each status).
- Cases of this type have 3 additional fields over their lifetime. Notice the following:
  - The **Bill ID** characteristic is set up to be optional. This is because we've assumed that sometimes a high-bill complaint case can be lodged when you can't find the bill in question and you still want to log the case.
  - Later in this section, you'll see that we've configured the Preliminary Investigation status to require a **Bill ID** before a case can enter this state.
  - Both the **High Bill Complaint Cancel Reason** and **Reject Reason** are optional. Later in this section, you'll see that we've configured the Canceled and Rejected statuses to require these fields, respectively.
- Cases of this type do not need a **Responsible User** when first created. Later in this section, you'll see how we've configured the Preliminary Investigation status to require a **Responsible User** before a case can enter this state.
- Cases of this type do not need **Contact Information**. This was a subjective decision and depends on your organization's philosophy.

The topics that follow describe each of the statuses in a high-bill complaint's *lifecycle*. We have assumed the following state transition rules:

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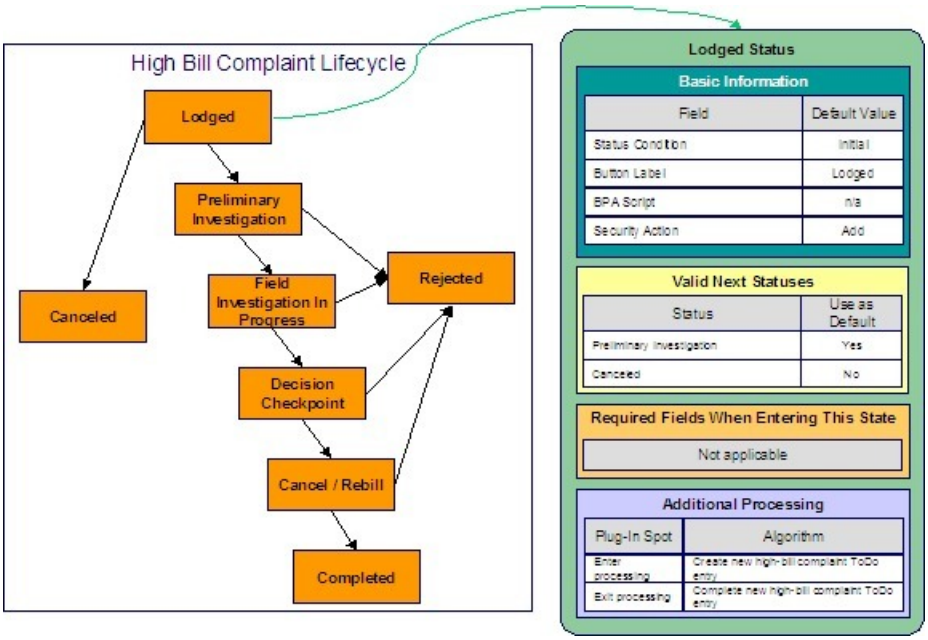
## Lodged High Bill Complaint

The following is an example of the configuration of the Lodged status for high bill complaint cases.

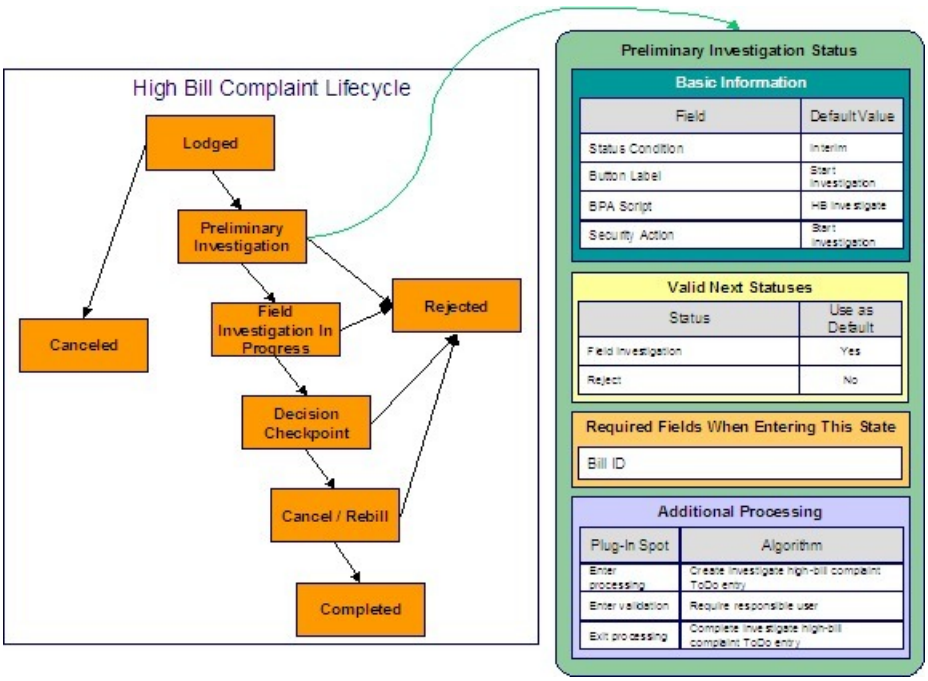



Note the following about this status:

- Lodged is the initial state. The initial state is the state populated on new cases of a given type. Remember that only one status can be defined as the initial state.
- It has a button label even though it's the initial state. The above diagram doesn't allow a user to ever transition a case into this state and therefore there will never be a button with such a label. However, it's a required field just in case you change your business rules.
- We have decided not to use a BPA script to help a user work on a high-bill complaint when it's in this state (this is probably not the best decision as BPA scripts can be quite useful).
- We have associated the Add action with this status. This means that only users with rights to the add action for the application service defined on the case type can add cases of this type.
- Notice that Valid Next Statuses are what restricts a case in this state to be transitioned to the Canceled and Preliminary Investigation states.
- Notice that the Additional Processing plug-ins create and complete a To Do entry when a case enters and exits this state, respectively.

## Preliminary Investigation High Bill Complaint

The following is an example of the configuration of the Preliminary Investigation status for high bill complaint cases.

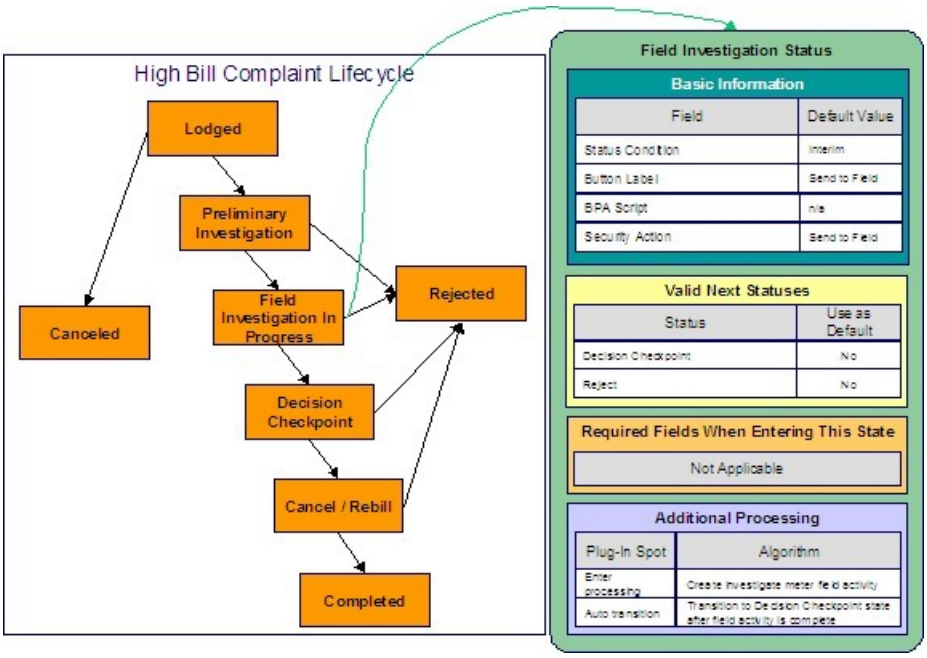



Note the following about this status:

- Preliminary Investigation is an interim state (meaning that it's not an initial or final state).
- It has a button label of **Start Investigation**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Lodged state as this is the only state that can transition into the Preliminary Investigation state.
- We have decided not to specify a BPA script on this status. Rather, we're going to set up the To Do type used to highlight cases in this state to automatically launch an appropriate BPA script when a user selects the To Do entry.
- We have associated the Start Investigation action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that Valid Next Statuses are what restricts a case in this state to be transitioned to the Field Investigation and Rejected states.
- Notice that a **Bill ID** must be specified on the case before it can be moved into this state.
- Notice that the Additional Processing plug-ins do the following:
  - Create and complete a To Do entry when a case enters and exits this state, respectively
  - Require a responsible user before a case can enter this state

## Field Investigation High Bill Complaint

The following is an example of the configuration of the Field Investigation In Progress status for high bill complaint cases.

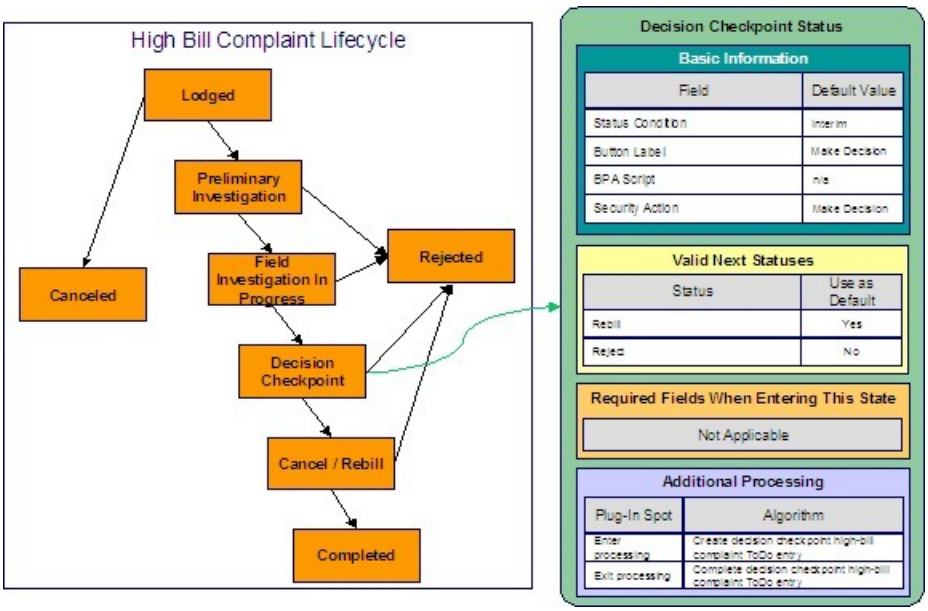



Note the following about this status:

- Field Investigation In Progress is an interim state (meaning that it's not an initial or final state).
- It has a button label of **Send to Field**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Preliminary Investigation state as this is the only state that can transition into the Field Investigation in Progress state.
- We have decided not to specify a BPA script on this status because users don't work cases in this state (see the Additional Processing notes below for why this is the case).
- We have associated the Send to Field action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that Valid Next Statuses are what restricts a case in this state to be transitioned to the Decision Checkpoint and Rejected states.
- Notice that the Additional Processing plug-ins do the following:
  - Create a field activity when a case enters this state
  - Cause the case to automatically transition to the Decision Checkpoint state when the field activity is completed

## Decision Checkpoint High Bill Complaint

The following is an example of the configuration of the Decision Checkpoint status for high bill complaint cases.

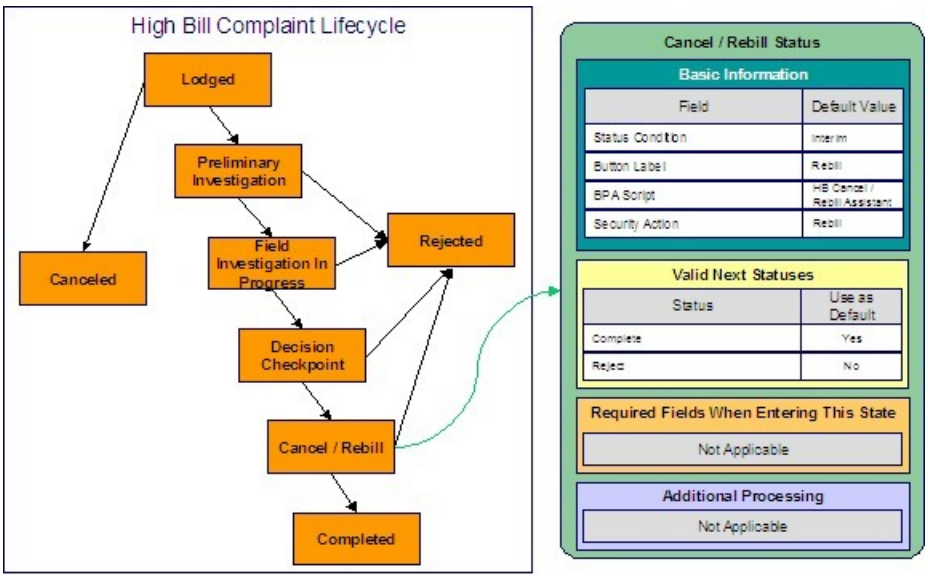



Note the following about this status:

- Decision Checkpoint is an interim state (meaning that it's not an initial or final state).
- It has a button label of **Make Decision**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Field Investigation in Progress state as this is the only state that can transition into the Decision Checkpoint state.
- We have decided not to specify a BPA script on this status. Rather, we're going to set up the To Do type used to highlight cases in this state to automatically launch an appropriate BPA script when a user selects the To Do entry.
- We have associated the Make Decision action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state. Because the system will automatically transition cases into this state when the related field activity is complete, users will probably never press this button (and you may wish to prevent users from pressing this button be restricting security rights to the related action).
- Notice that Valid Next Statuses are what restricts a case in this state to be transitioned to the Cancel / Rebill and Rejected states.
- Notice that the Additional Processing plug-ins create and complete a To Do entry when a case enters and exits this state, respectively.

## Cancel Rebill High Bill Complaint

The following is an example of the configuration of the Cancel / Rebill status for high bill complaint cases.

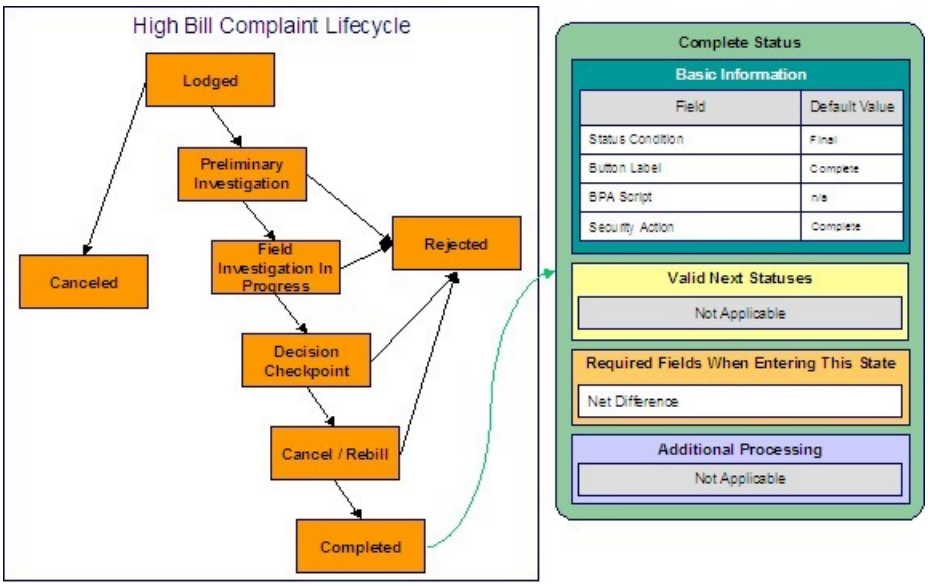



Note the following about this status:

- Cancel / Rebill is an interim state (meaning that it's not an initial or final state).
- It has a button label of **Cancel / Rebill**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Decision Checkpoint state as this is the only state that can transition into the Cancel / Rebill state.
- We have referenced a BPA script that can assist a user in the cancel / rebill efforts.
- We have associated the Rebill action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that Valid Next Statuses are what restricts a case in this state to be transitioned to the Completed and Rejected states.

## Completed High Bill Complaint

The following is an example of the configuration of the Completed status for high bill complaint cases.

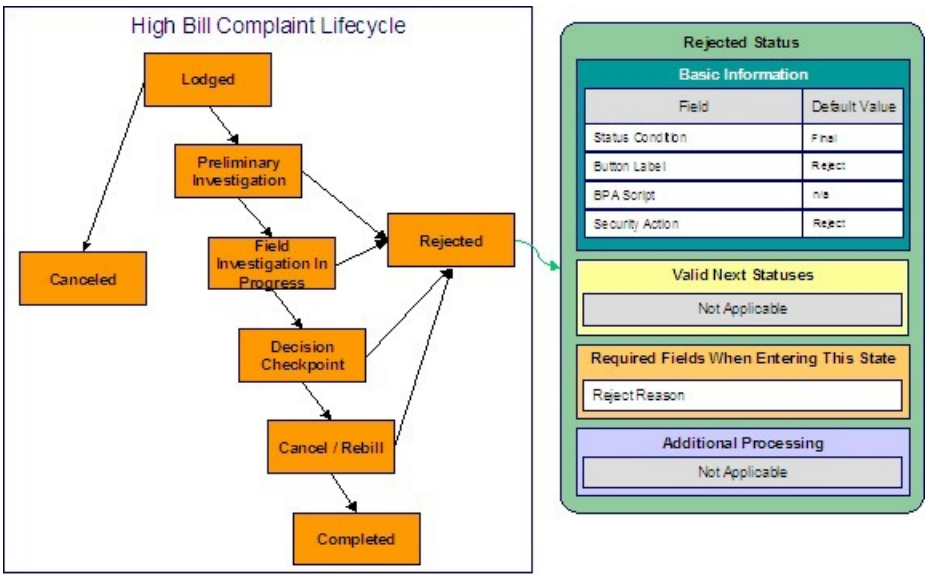



Note the following about this status:

- Completed is a final state (meaning that no further action is necessary).
- It has a button label of **Complete**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Cancel / Rebill state as this is the only state that can transition into the Completed state.
- We have not referenced a BPA script because this is a final state (and no additional user action is necessary).
- We have associated the Complete action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that there are no Valid Next Statuses (because this is a final state). If you wanted to allow a Completed case to be reopened, you would need to define the state into which a Completed case could be transitioned.
- Notice that the **Net Difference** must be specified on the case before it can be moved into this state. This would be the difference to the customer's balance after the cancel rebill took place.

## Rejected High Bill Complaint

The following is an example of the configuration of the Rejected status for high bill complaint cases.

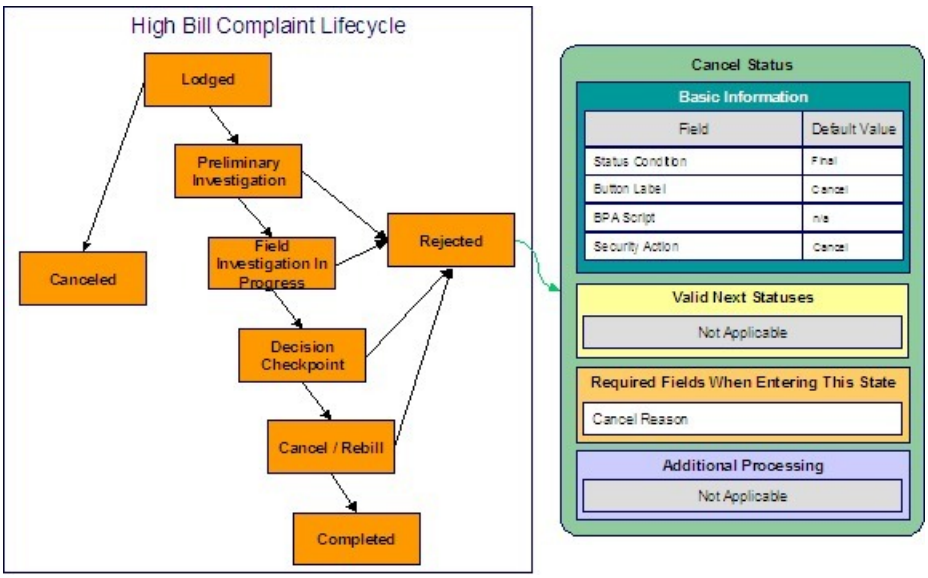



Note the following about this status:

- Rejected is a final state (meaning that no further action is necessary).
- It has a button label of **Reject**. This is the label on the button that a user presses to move a case into this state. This button will appear on cases that are in the Preliminary Investigation , Field Investigation in Progress , Decision Checkpoint and Cancel / Rebill states.
- We have not referenced a BPA script because this is a final state (and no additional user action is necessary).
- We have associated the Reject action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that there are no Valid Next Statuses (because this is a final state). If you wanted to allow a Rejected case to be reopened, you would need to define the state into which a Rejected case could be transitioned.
- Notice that a **Reject Reason** must be specified on the case before it can be moved into this state.

## Canceled High Bill Complaint

The following is an example of the configuration of the Canceled status for high bill complaint cases.




Note the following about this status:

- Canceled is a final state (meaning that no further action is necessary).
- It has a button label of **Cancel**. This is the label on the button that a user presses to move a case into this state. This button will only appear on cases that are in the Lodged state as this is the only state that can transition into the Completed state.
- We have not referenced a BPA script because this is a final state (and no additional user action is necessary).
- We have associated the Cancel action with this status. This means that only users with rights to this action for the application service defined on the case type can move a case into this state.
- Notice that there are no Valid Next Statuses (because this is a final state). If you wanted to allow a Canceled case to be reopened, you would need to define the state into which a Canceled case could be transitioned.
- Notice that a **Cancel Reason** must be specified on the case before it can be moved into this state.

# Setting Up Case Management Options

The topics in this section describe how to set up the system to enable case management.

**WARNING:**
The following topics assume you thoroughly understand the concepts described under *The Big Picture Of Cases*.

**Contents**

# Installation Options

**Contents**



## Case Info May Be Formatted By An Algorithm

An algorithm may be plugged in on the *installation record* to format the standard case information that appears throughout the system. Refer to *CSIN-DFLT* for an example of this algorithm.

This algorithm may be further overridden by a "Case information" plug-in on the *Case Type*. Refer to *C1-CT-INFO* for an example of this algorithm.

## Alert Info Is Controlled By An Installation Algorithm

An algorithm that is plugged in on the *installation record* is responsible for formatting the alerts that highlight if the person / account / premise in context has open cases. Refer to *CCAL-CASE* for an example of this algorithm.

# Setting Up Application Services

As described under *Access Rights*, you can prevent unauthorized users from accessing cases. The following points describe how to implement this type of security:

- Create an *application service* for each case type that needs to be secured
- Create an action on the application service for each status you need to secure
- Link the valid *user groups* to the application service and define which actions they can perform
- Define the application service on the *case type*
- Define the related action for each status on the *case type / status*

# Setting Up Scripts

As described under *Scripts and Cases*, BPA scripts can facilitate the creation and working of cases. Refer to the *Defining Script Options* for instructions describing how to set up scripts.

# Setting Up To Do Types

As described under *To Do's and Cases*, To Do entries can be used to highlight cases that require user attention.

The following points provide a high-level description of how to create (and complete) To Do entries for a case type:

- Create a To Do type for each different type of To Do entry used during a case's lifecycle

- On the To Do type, think carefully about the roles whose users can work on the entries
- Also consider if you would like a BPA script launched when a user selects the entry

- Specify the To Do type on the appropriate *entry processing* or *exit processing* algorithm
- If you want the system to automatically complete To Do entries, specify the To Do type on the appropriate *entry processing* or *exit processing* algorithm

Please be aware that the case maintenance transaction highlights the number of open and being worked To Do entries linked to the case being displayed on the page. However, the system can only do this if the To Do entries reference a *foreign-key characteristic* whose foreign key references the case table. If you use the *CSEN-TD* algorithm to create To Do entries when a case enters a given state, this algorithm will do this for you if:

- You have set up a *foreign-key characteristic type* whose *foreign key* references the case table
- In addition, the characteristic type must reference a characteristic entity of To Do Entry

## Setting Up Characteristic Types

As described under *Additional Information*, some of your cases may require additional information (in the form of *characteristics*). If this is true, you must set up the characteristic types before setting up the case types.

Refer to *Setting Up To Do Types* for instructions regarding a characteristic type that must be set up in order for the system to know the To Do entries that are associated with a case.

If you use the *CSEN-CC* algorithm to create customer contacts when a case enters a given state, you should set up a *foreign-key characteristic type* as follows:

- Its *foreign key* must reference the case table
- In addition, the characteristic type must reference a characteristic entity of Customer Contact

## Setting Up Case Types

The case type maintenance transaction is used to maintain your case types. The topics in this section describe how to use this transaction.

**FASTPATH:**
Refer to *The Big Picture Of Cases* for more information about how a case type encapsulates the business rules that govern a case.

**Contents**



## Case Type - Main

Use this page to define basic information about a case type.

Open the case type page by selecting **Admin** > **Case Type** > **AddS.**

**NOTE:**
**Recommendation.** Before using this transaction, we strongly recommend that you review the *Examples of Case Types*.

Main Information

Enter a unique **Case Type** code and **Description** for the case type.

Use **Long Description** to provide a more detailed explanation of the purpose of the case type.

**Person Usage** controls the applicability of a person on cases of this type. Select Required if a person must be defined on this type of case. Select Optional if a person can optionally be defined on this type of case. Select Not Allowed if a person is not allowed on this type of case.

**Account Usage** controls the applicability of an account on cases of this type. Select Required if an account must be defined on this type of case. Select Optional if an account can optionally be defined on this type of case. Select Not Allowed if an account is not allowed on this type of case.

**Premise Usage** controls the applicability of a premise on cases of this type. Select Required if a premise must be defined on this type of case. Select Optional if a premise can optionally be defined on this type of case. Select Not Allowed if a premise is not allowed on this type of case.

If you need to restrict access to cases of this type to specific user groups, reference the appropriate **Application Service**. Refer to *Setting Up Application Services* for the details of how to secure access to your cases.

If you are configuring a case type to handle the processing of data defined via a **Business Object**, associating the case type with a business object serves to link the properties of the business object (e.g. BO options) with cases of that type. Refer to *Business Objects* for further information. In addition, refer to *Automatic Transition Rules* for information on the role of BO options in case auto-transition errors.

**Responsible User Usage** controls the applicability of a responsible user on cases of this type. Select Required if a responsible user must be defined on this type of case. Select Optional if a responsible user can optionally be defined on this type of case. Select Not Allowed if a responsible user is not allowed on this type of case. Refer to *Responsible User Applicability* for more information.

**Contact Information Fields**

There are three contact information fields: **Contact Person & Method Usage**, **Contact Instructions Usage**, and **Callback Phone Usage**. These fields are used to determine whether or not each type of contact information must be entered on case records with this case type. Select Required if the contact information must be entered, select Optional if the user can choose whether or not to include the contact information on this type of case, or select Not Allowed if the contact information cannot be entered on this type of case.

**Algorithms**

The **Algorithms** grid contains algorithms that control functions for cases of this type. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence Number** and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Case Information | Optional | We use the term "Case information" to describe the basic information that appears throughout the system to describe a case. The data that appears in "case information" is constructed using this algorithm. |

| | |
|---|---|
| | Plug an algorithm into this spot to override the "Case information" algorithm on installation options or the system default "Case information" if no such algorithm is defined on installation options.<br>Click *here* to see the algorithm types available for this system event. |

**Case Type Tree**

The tree summarizes the case type's lifecycle. You can use the hyperlinks to transfer you to the **Lifecycle** tab with the corresponding status displayed.

## Case Type - Case Characteristics

To define characteristics that can be defined for cases of this type, open **Admin** > **Case Type** > **Search** and navigate to the **Case Characteristics** page.

**Description of Page**

Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on cases of this type. Turn on the **Default** switch to default the **Characteristic Type** when cases of this type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** box is checked. Refer to *Required Fields Before A Case Enters A State* for a description of how you can make option characteristics required at later stages in a case's lifecycle.

## Case Type - Lifecycle

Case types that involve multiple users and multiple potential outcomes have complex lifecycles. Before you can design a case type's lifecycle, it's important that you thoroughly understand the concepts described under *Lifecycle* and *Status-Specific Business Rules*. After thoroughly understanding these concepts, we recommend you perform the following design steps:

- Draw a "state transition diagram" as illustrated above under *Lifecycle*. Keep in mind that if your state transition diagram is complex, your cases will be complex. While some cases warrant complexity, you should always ask yourself if there aren't better ways to achieve the desired results if your first effort results in complexity.
- Determine which characteristics (if any) are required during each stage of a case's lifecycle
- Determine when To Do entries (if any) should be created (and completed) during a case's lifecycle
- Determine additional validation (if any) that should be executed before a case enters and exits each state
- Determine additional processing (if any) that should transpire when a case enters or exits each state
- Determine if scripts are warranted to help users work the cases and, if so, design the scripts for each applicable state

When the above tasks are complete, you will be ready to set up a case type's lifecycle.

Open the Lifecycle page by selecting **Admin** > **Case Type** > **Search** and navigate to the **Lifecycle** page.

> **NOTE:**
> You can navigate to a status by clicking on the respective node in the tree on the Main tab. You can also use the hyperlinks in the Next Statuses grid to display a specific status in the accordion.

Main Information

The **Status** accordion contains an entry for every status in the case type's *lifecycle*.

Use **Status** to define the unique identifier of the status. This is NOT the status's description, it is simply the unique identifier used by the system.

Use **Description** to define the label that appears on the lifecycle accordion as well as the status displayed on the case.

Use **Script** to reference a BPA script that can assist a user work on a case while it's in this status. Refer to *A Script That Helps A User Work Through A Case* for the details.

Use **Access Mode** to define the action associated with this status. This field is disabled if an application service is not specified on the Main page. Refer to *Access Rights* for the details of how to use this field to restrict which users can transition a case into this state.

Use **Batch** to specify a batch control that will auto-transition the case. Any case in a status configured with a batch control will be transitioned when the batch job runs (rather than when *CASETRAN* is executed). For this purpose, batch process *C1-CSTRS* ( **Case Scheduled Transition**) is supplied with base package, which will execute all Exit Status logic for the current status, and Enter Status logic for the destination status. You may choose to create a batch process with your own transition logic.

**NOTE:**
If you wish to defer transitioning a case in a particular status until the batch process on your case type status is executed, you should not populate an Auto-Transition algorithm on that status. Otherwise, CASETRAN will transition the case according to your Auto-Transition logic.

Use **Comment** to describe the status. This is for your internal documentation requirements.

Use **Sequence** to define the relative order of this status in the tree on the Main page.

Use **Status Condition** to define if this status is an Initial , Interim or Final state. Refer to *One Initial State and Multiple Final States* for more information about how this field is used.

Use **Transitory State** to indicate whether a case should ever exist in this state. Only Initial or Interim states can have a transitory state value of No .

The **Alert Flag** is used to indicate whether or not an alert should be displayed for customers with cases in the state. (The alert is shown via the base package Installation - Alert algorithm.)

Algorithms

The **Algorithms** grid contains algorithms that control important functions for cases of this type. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence Number** and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** (note, all system event's are optional and you can define an unlimited number of algorithms for each event).

| System Event | Description |
|---|---|
| Auto Transition | This algorithm is executed to determine if a case that's in this state should be transitioned into another state. Refer to *Automatic Transition Rules* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Enter Processing | This algorithm holds additional processing that is executed when a case is transitioned into this state. You can also specify state transition |

| | |
|---|---|
| | logic within Enter Processing routines. Refer to *Additional Processing When Entering A State* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Enter Validation | This algorithm holds validation logic that executes before a case can enter a given state. Refer to *Validation Before A Case Enters A State* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Exit Processing | This algorithm holds additional processing that is executed when a case is transitioned out of this state. Refer to *Additional Processing When Exiting A State* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Exit Validation | This algorithm holds validation logic that executes before a case can by transitioned out of a given state. Refer to *Validation Before A Case Exits A State* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Script Launching | This algorithm sets the script launching option for the script associated with a given state, if any. Refer to *Script Launching Option* for the details.<br>Click *here* to see the algorithm types available for this system event. |

### Next Statuses

Use the **Next Statuses** grid to define the statuses a user can transition a case into while it's in this state. Refer to *Valid States versus State Transition Rules* for more information. Please note the following about this grid:

- Use **Action Label** to indicate the verbiage to display on the action button used to transition to this status.
- **Sequence** controls the order of the buttons that appear on *Case - Main*. Refer to *Buttons Are Used To Transition A Case Into A State* for more information.
- **Use as Default** controls which button (if any) is the default button.
- **Transition Condition** may be configured to identify a common transition path for cases of this type in the current state. This transition condition may then be referenced across multiple case types. You'll need to add values to Look Up table field **TR_COND_FLG** that fit the typical transitions for your case types (e.g. Ok , Error , etc.).

By assigning the transition condition value to a given "next status", you can design your Enter State transition or Auto-Transition logic to utilize those flag values *without specifying a status particular to a given case type*. Thus, similar logic may be used across a range of case types to transition a case into, for example, the next Ok state for the case's current status.

- **Transition Role** controls whether only the System or both System and User have the ability to transition a case into a given "next status".
- You can use the status description hyperlink to open the Status accordion to the respective status.
- When you initially set up a case type, none of the statuses will reside on the database and therefore you can't use the search to define a "next status". We recommend working as follows to facilitate the definition of this information:
  - Leave the Next Statuses grid blank when you initially define a case type's statuses
  - After all statuses have been saved on the database, update each status to define its Next Statuses (this way, you can use the search to select the status).

### Required Characteristics

Use the **Required Characteristics** grid to define characteristics that are required when a case enters this state. Only Optional characteristics defined on the main page appear in this grid. Refer to *Required Fields Before A Case Enters A State* for more information.

# Workflow and Notification Options

We use the term "notification" to reference the electronic transactions that you exchange with third parties when:

- They need information about a customer
- They need to change something about a customer

For example, an energy service provider sends a notification to an electric distribution company when a customer elects to use them as their energy provider.

When a notification is received, the system responds by creating a workflow process. The workflow process contains workflow events. These events perform the processing necessary to execute the notification.

Workflow processing is difficult to explain because its flexible design can be used to automate many different types of multi-event processes. For example,

- You can use workflow processing to manage the events associated with the inspection of a new premise.
- You can use workflow processing to manage the events that transpire in a deregulated market when a customer wants to switch energy service providers.

**WARNING:**
Setting up the workflow process control tables is as challenging as your organization's business rules. If you don't have automated workflow processes, you don't have to setup anything. If you have sophisticated workflow processing requirements, your setup process will be more challenging.

The topics in this section describe tables that control your automated workflow and notification processing.

**Contents**



## The Big Picture Of Workflow Processing

**FASTPATH:**
Refer to *The Lifecycle Of A Workflow Process And Its Events* for more information about workflow processes.

## The Big Picture Of Workflow Events

This section describes the various types of workflow events and their lifecycle:

**Contents**

## How Are Workflow Events Created?

Workflow events may be created as follows:

- The process that uploads notification requests creates a workflow process to implement the notification request. The workflow process has one or more workflow event(s). The number and type of events is controlled by the workflow process template associated with the workflow process. Refer to *What Type Of Workflow Process Is Created?* for more information about how notification requests cause workflow processes to be created.
- Workflow events will be created when an operator creates an ad hoc workflow process. The number and type of workflow events are controlled by the workflow process template associated with the workflow process.
- An ad hoc workflow event may be created and linked to an existing workflow process by an operator at their discretion.
- The system may be customized to create a workflow process when something noteworthy happens in the system. Refer to *System Conditions May Trigger Notification and Workflow* for more information.

**NOTE:**
**Bottom line.** Most workflow events are created by the system when it creates a workflow process to implement an incoming notification. If you need to create an ad hoc workflow event, you can either create a workflow process using a template that contains the desired event OR link the desired event to an existing workflow process.

**FASTPATH:**
For more information about creating ad hoc workflow processes and events, refer to *Workflow Process Maintenance*.

## Executing Workflow Events On Their Trigger Date

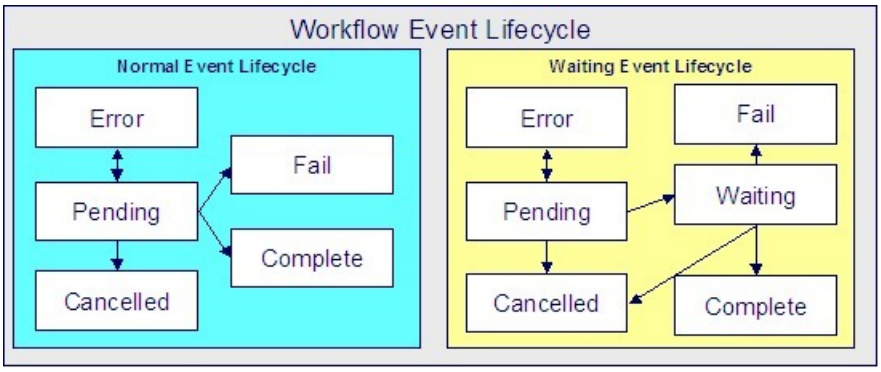
When the background process (referred to as WFET ) executes a workflow event on its trigger date, it calls the activation algorithm associated with the event's event type. Because you can add and change activation algorithms at will, the variety of workflow events is infinite.

**FASTPATH:**
Refer to *Designing Workflow Event Types* for more information about activation algorithms.

## Workflow Event Lifecycle

The lifecycle of a workflow event is dependent on whether the event has to wait on something before it can complete or fail. For example, an event that creates a field activity has to wait until the field activity is performed before it can be considered complete .

The following diagram shows the possible lifecycle of a workflow event:




The following points explain the lifecycle of workflow events of the *normal* variety:

- *Normal* events are initially created in the pending state.
- On a pending event's trigger date, the workflow event activation process (referred to as WFET ) executes the event's activation algorithm.
- An event's activation algorithm may cause a pending event to become in error . For example, if an event used to create a field activity can't find a valid service point, the algorithm could change the status of the event to be in error . A user should correct the cause of the error and then change the event's status back to pending . The pending event will be processed the next time the activation program runs.
- An event's activation algorithm may cause a pending event to fail . For example, if an event used to validate a notification detects invalid information (e.g., an incoming notification is missing the customer's account number), the event will fail .
- A pending event becomes complete when the event's activity is successful. For example, if an event used to validate a notification determines the notification is valid, the event will complete . A user may manually change the status to complete if the event type indicates that manual completion is allowed.

**FASTPATH:**
For more information about a workflow event's trigger date, refer to *Workflow Event Dependencies & Trigger Date*.

- A pending event will be cancelled automatically by the system if the workflow process is cancelled (a workflow process will be cancelled if an event fails or at the discretion of an operator). A user may cancel an event at will. Refer to *How Are Workflow Events Canceled* for more information.

The following points explain the lifecycle of workflow events of the *waiting* variety:

- *Waiting* events are initially created in the pending state.
- On a pending event's trigger date, the system executes the event. For example, if an event is used to create a "special read" field activity, on the event's trigger date, the field activity is created.
- An event's activation algorithm may cause a pending event to become in error . For example, if an event used to create a field activity can't find a valid service point, the algorithm could change the status of the event to be in error . A user should correct the cause of the error and then change the event's status back to pending . The pending event will be processed the next time the activation program runs.
- If the activation algorithm did not cause the event to become in error , the event's status is changed to waiting while the system waits for the field activity to be performed.

**FASTPATH:**

For more information about a workflow event's trigger date, refer to *Workflow Event Dependencies & Trigger Date*. For more information about what an event might wait on, refer to *Waiting Events And Their Waiting Process*.

- A waiting event becomes complete when the system sees that the thing that it's waiting for is finished.
- A waiting event fails when the system sees that the thing that it's waiting for didn't complete successfully. For example, an event that sends a confirmation request to a service provider asking if it's OK for a customer to switch suppliers would fail if the service provider denies the request.
- A waiting event will be cancelled automatically by the system if the workflow process is cancelled (a workflow process will be cancelled if an event fails or at the discretion of an operator).
- A pending event will be cancelled automatically by the system if the workflow process is cancelled (a workflow process will be cancelled if an event fails or at the discretion of an operator).

**FASTPATH:**
Refer to *Workflow Processes Can Have Multiple Branches* for more information about event transition in a process with multiple branches.

## Workflow Event Dependencies & Trigger Date

The trigger date of most workflow events is blank when they are first created. This is because the trigger date can only be set when ALL of the preceding workflow events on which it depends are complete. An example will help explain why this design is necessary. Consider the following example that shows a simple workflow process and its events:

| Event Number | Workflow Event | Dependent On Event(s) | Trigger Date Set To X Calendar Days After Completion Of Preceding Events |
|---|---|---|---|
| 10 | Validate new customer notification | N/A - first event | 0 |
| 20 | Set up new customer and meter | 10 | 0 |
| 30 | Send notification confirming new customer | 20 | 0 |
| 40 | Send welcome letter | 20 | 0 |

This workflow process is meant to implement the following:

- On the first day, validate the incoming notification (the one that tells us about a new customer).
- If validation is successful, set up the new customer and their meter in the system.
- After the new customer and meter are set up, send a notification to the requester that everything has been set up. Also, send a letter to the customer.

The problem is that you don't want to execute event 20 until event 10 is complete. This is achieved by indicating event 20 is dependent on event 10. The system will only populate event 20's trigger date when event 10 is complete. Similarly, you can't set the trigger dates of events 30 and 40 unit the customer has been set up (event 20). So, when you set up a workflow event, you must indicate the dependent events. If you only want the next event to trigger X days after the completion of earlier events, you can indicate such.

**NOTE:**
**Bottom line.** The trigger date of a workflow event is set to the current date plus X days where X is the number of calendar days defined on the workflow event. If this date is not a workday for your organization, the trigger date will

be set to the next workday. If the resultant date is the current date (because X is zero), the event will be activated immediately.

**FASTPATH:**
Refer to *How Are Workflow Events Completed?* for information about how these events are executed.

## Workflow Events May Be In Error

As explained under *Workflow Event Lifecycle*, when the background process WFET executes an event's activation algorithm, this algorithm may cause a pending event to become in error . For example, if an event used to create a field activity can't find a valid service point, the algorithm could change the status of the event to be in error .

For every workflow event that's in error, a record is written to the *workflow event exception* table. To view the errors,

A user should correct the cause of the error and then change the event's status back to pending . The pending event will be processed the next time the activation process runs.

**FASTPATH:**
Refer to *Errors versus Failure* for information to help you differentiate between events that have failed versus those that are in error .

## Some Workflow Events May Fail

Some workflow events may fail. For example:

- An event that validates an incoming notification may result in failure if the notification contains invalid information.
- An event that asks for the confirmation from a distribution company may fail if the distribution company rejects the request.

**FASTPATH:**
Refer to *Errors versus Failure* for information to help you differentiate between events that have failed versus those that are in error .

The background process that is responsible for activating events (referred to as WFET ) is the process that can cause an event to fail (failure can happen during the activation algorithm on the workflow event). When an event fails, the system:

- Updates the workflow process with message number and message parameters describing the validation problem.
- Sets the status of the event to Failed.
- Cancels the workflow process and its outstanding events.
- Calls the failure algorithm defined on the event's event type.

It's important to note that some types of events can't fail and therefore don't have a failure algorithm. For example, an event that creates a field activity can't fail, neither can an event that creates a welcome letter.

**FASTPATH:**
Refer to *Workflow Processes Can Have Multiple Branches* for more information about event failure in a process with multiple branches.

## Errors versus Failure

As explained under *Workflow Event Lifecycle*, an event's activation algorithm may cause a pending event to become in error or to fail (amongst other things). You control the exact state when you design your workflow event type activation algorithms.

The main differences between these two states is as follows:

- As described under *Some Workflow Events May Fail*, a failed event causes the entire workflow process to fail (and it cannot be restarted).
- As described under *Workflow Events May Be In Error*, a user can correct the cause of an error event's error and then change the event's status back to pending . The pending event will be processed the next time the activation process runs.

You should follow the following guidelines when designing your validation logic in your workflow event activation algorithms:

- If the cause of the problem is correctable by a user, you should set the state of the event to be in error .
- If the cause of the problem is not correctable by a user (e.g., you were interfaced information that cannot be corrected by your users), you should set the state of the event to fail .

## Waiting Events And Their Waiting Process

Some events have to wait until something else happens before they can be Completed (or Fail ). These types of events exist in the Wait state until the thing they are waiting for happens. For example, consider an event that creates a field activity - it has to wait until the field activity is complete before it can itself Complete .

Every type of event that waits for something else to happen before it completes or fails must have a corresponding background process that monitors the thing on which the event is waiting. We refer to background processes that perform this monitoring as Waiting Processes.

There will be a Waiting Process for every type of event that has to wait for something to happen. The specific background process is defined on the workflow event type. For more information, refer to *Designing Workflow Event Types*.

The following points describe the responsibilities of a Waiting Process:

- Check on the thing on which the event is waiting. For example,
  - An event that creates a field activity has a Waiting Process that checks on the state of the field activity.
  - An event that creates a request to confirm a customer's request to switch suppliers has a Waiting Process that checks if the confirmation is accepted or rejected.
- Change the state of the event to Complete or Fail based on what transpired. For example,
  - When the field activity completes, the Waiting event can Complete
  - The acceptance or rejection is received, the Waiting event can Complete or Fail
- Detect that the event has been waiting too long and do something. For example, the Waiting Process could:
  - Create a To Do entry (this might be useful if you need an operator to do something)
  - or, create an outgoing notification informing the sender of the incoming notification that something is wrong
  - or, Fail / Complete the event (you may be able to automatically assume success or failure if an event waits longer than a predefined limit)

- or, execute the event again and reset the base time on the event (this might be useful if the event initiates an outgoing notification to ask permission from some other service provider - if it waits too long, you could simply create another outgoing notification)
- or, whatever else you can think of developing in the process

## How Are Workflow Events Canceled?

The background process that is responsible for activating events (referred to as WFET ) automatically cancels workflow events when an event fails .

A pending event will be cancelled automatically by the system if the workflow process is cancelled (a workflow process will be cancelled if an event fails or at the discretion of an operator).

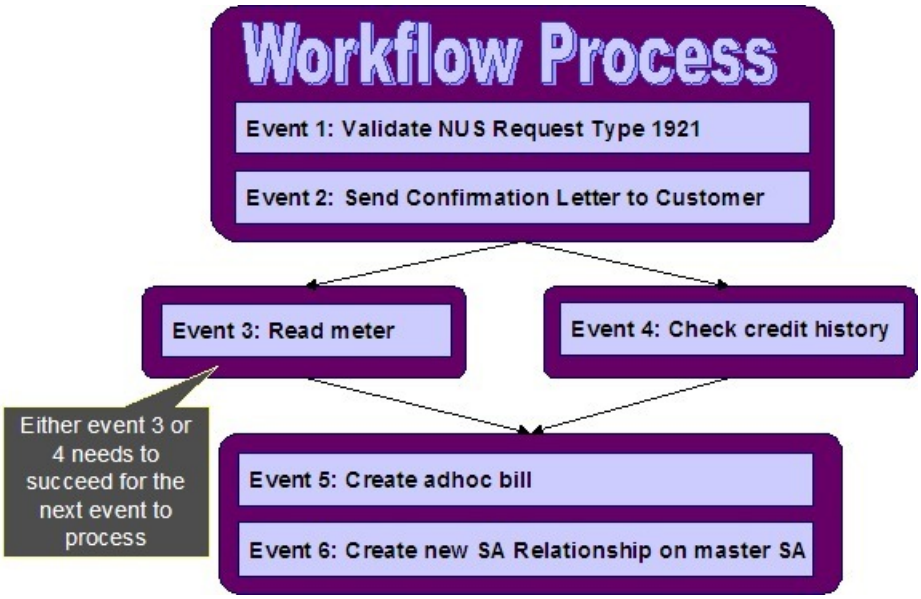
In addition, an operator may cancel a workflow event at will.

An event will be cancelled by the background process that is responsible for activating events (referred to as WFET ) when it detects that ALL of its earlier, dependent events are cancelled. This is important to understand if your organization has *Workflow Processes With Multiple Branches*.

## Workflow Processes Can Have Multiple Branches

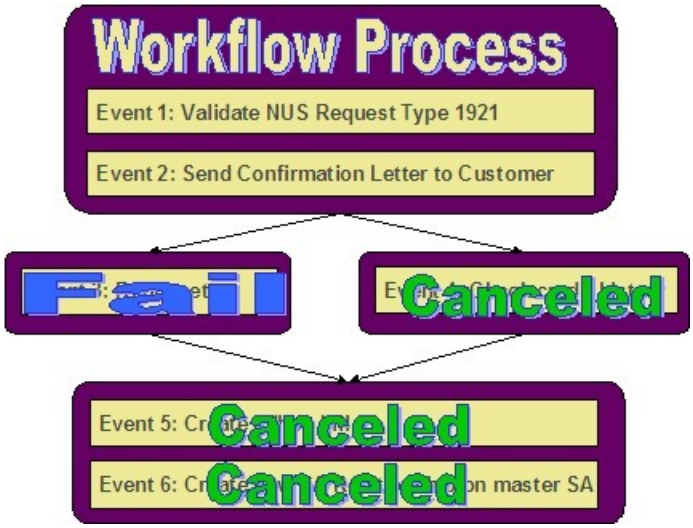
Using the workflow event dependencies, a workflow process may have multiple branches. There are several reasons why you may want to set up a process to contain multiple branches:

- There may be events that can run in parallel. This is useful if the related tasks take time to execute. For example "Read Meter" and "Send Confirmation and Wait for Response". Both can be executed in parallel and event 5 will execute based on the outcome of events 3 and 4. The following is an example of such a workflow process.

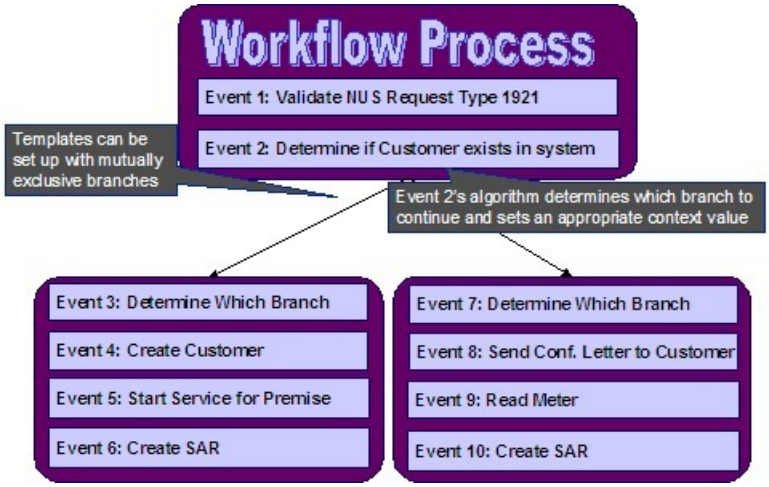



In the example above, if event 3 is canceled and event 4 completes, (or if event 4 is canceled and event 3 completes), event 5 will proceed. However, if both event 3 and event 4 are canceled, all remaining events will be canceled.

It should be noted that if either event 3 or 4 fails, ALL events in the process will be canceled, including events in a different branch.




- You may have a business process that has some common events and some events that are mutually exclusive. Rather than setting up several processes, you can set up one process that branches based on specific criteria. For example, perhaps you get to a certain point in a process that differs based on whether or not a meter is installed. If there is a meter, you follow one branch and if there is no meter, you follow a different branch.

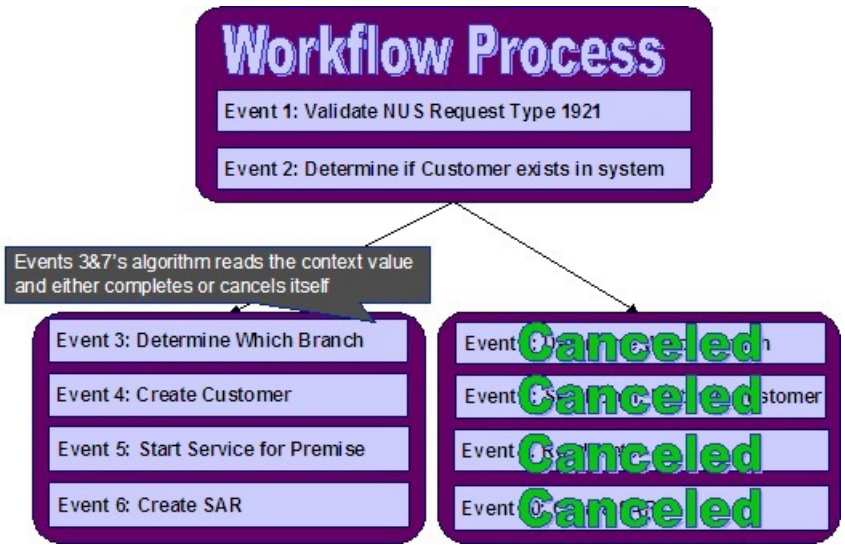



In the above example, event 2 determines if the workflow process is associated with an existing customer or a new customer.

- For a new customer; events 3, 4, 5 and 6 are executed.
- For an existing customer, events 7, 8, 9 and 10 are executed.

Event 2 does this by creating an entry in the Context collection indicating which branch should continue. (For example Context Type / Value of BRANCH / A ). Events 3 and 7 should be special events whose purpose is to read the BRANCH context type and determine if its branch should continue or be canceled.

In this example, Event 3's algorithm will continue if the context value for BRANCH is A and Event 7 will only continue if the context value for BRANCH is B .




**NOTE:**
The above diagram and description indicates the use of context records to determine which branch to continue. If your implementation chooses to use characteristics instead, the same logic above may be implemented using characteristics as well.

## The Big Picture of Notification Processing

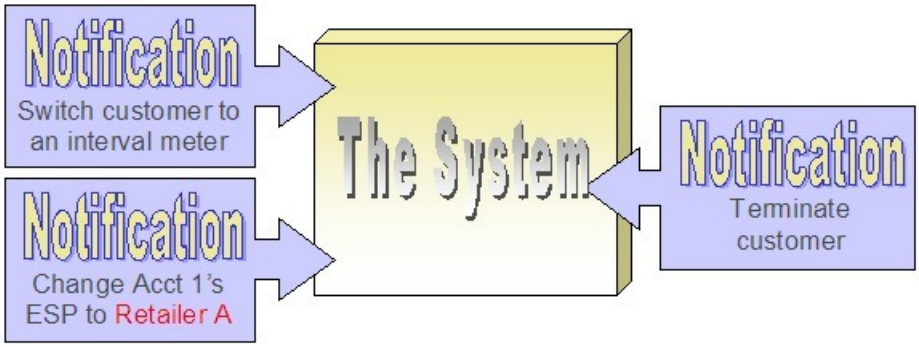
We use the term "notification" to reference the electronic transactions that you exchange with third parties when:

- They need information about a customer.
- They need to change something about a customer.

For example, an electric service provider may send a notification to an electric distribution company when a customer elects to use them as their energy provider.

You may have to support a wide variety of notifications. For example:

- You may receive a notification that tells you to switch a customer's energy service provider to a different provider (if you are a distribution company).
- You may receive a notification that asks for the last 24 months of consumption history for a customer (if you maintain consumption).
- Etc.



When a notification is received, the system responds by creating a workflow process. The related workflow process contains workflow events and it is the events that actually do whatever needs to be done (e.g., change the customer's service provider, create field activities, stop service, etc.).

In addition to incoming notifications, the system creates outgoing notifications when:

- It needs to respond to an incoming notification. For example, if an incoming notification requests a customer's consumption history, the system must send the consumption history by creating an outgoing notification.
- It needs to apprise a third party that something has changed about the customer. For example, if a customer stops service, the system must tell the various service providers of such.

The topics in this section describe how notifications are interfaced into and out of the system.

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## Uploading Notifications Into The System

The following diagram illustrates the steps involved in the uploading of notifications into the system.


When a notification's electronic transaction is received, it must be inserted into the notification upload staging (NUS) table. Why? Because the system periodically looks for pending records in the NUS table and attempts to create a workflow process to implement the notification's request.

It's important to be aware that the events in a workflow process execute the notification request. To help solidify this concept, consider this - the first event in a workflow process typically validates the attributes on the NUS record.

**FASTPATH:**
Refer to *Notification Upload Background Process* for more information about the upload process.

## What Type Of Workflow Process Is Created?

Given that you can receive many different types of notifications (e.g., return consumption, switch supplier, stop service), it should make sense that each type of notification upload staging (NUS) record will probably require a different type of workflow process to implement its request. The system uses the NUS record sender's external system Id and a notification upload type to determine the type of workflow process. This works as follows:

- Every external system references a workflow process profile.
- A workflow process profile defines the type of workflow process template to use to process a given notification upload type.

**NOTE:**
**Different workflow processes for the same type of notification.** It's probably obvious why different notification types result in different workflow processes. You may wonder why different workflow processes would be needed by two senders who submit the same type of notification? The reason is that different senders may have different types of computer systems that handle their notification processing (or no computer system at all). For example, you may have to respond by fax to a sender who doesn't have a sophisticated computer system, whereas you may send an electronic transaction to a sender who is technically advanced. The system allows you to create different workflow process profiles for each response mechanism (e.g., sophisticated vs. fax). You then associate the appropriate workflow process with each sender.

## How Are Notifications Sent Out Of The System?

In addition to processing incoming notifications from third parties, the system also sends notifications to third parties to provide them with information (and to ask them for information). It is also possible to use notifications to send information to other applications within your company.

A Notification Download Staging (NDS) record is created for every notification that is sent to the outside world. NDS records are created by workflow events (i.e., the event's activation algorithm creates a NDS record). Consider the following examples:

- Many workflow processes exist to process incoming notifications. These processes typically contain workflow events that create –NDS records to communicate with service providers. If you look at the workflow processes described under *Designing Workflow Process Templates*, you will see many such examples.
- When something noteworthy happens, the system may need to tell a third party about it. Or perhaps you have third party software, which contains information from the system and your company needs to keep the information in sync.

**FASTPATH:**
Refer to *System Conditions May Trigger Notification and Workflow* for more information about triggering notification download staging records from within the system.

## Notification and XAI

NDS records may also be processed using the XAI tool. Refer to Outgoing Messages for an overview of communicating outgoing messages via XAI.

The remaining sections describe the capability to send outgoing messages from the system to another application using the Notification and Workflow engine and XAI.

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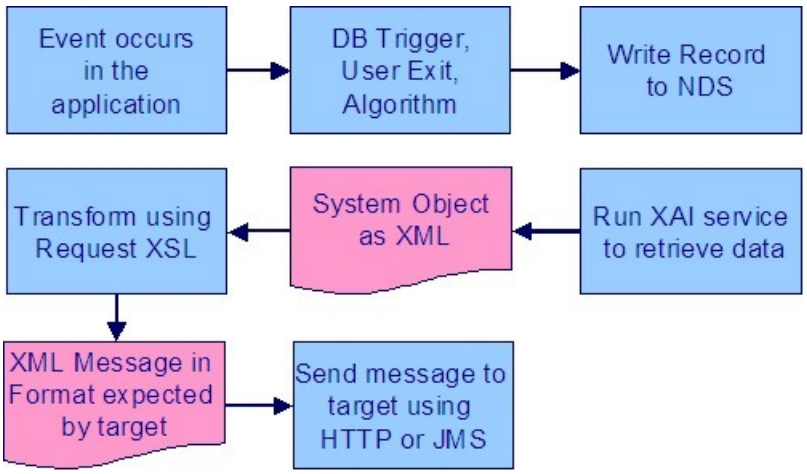
## Near-Real Time Outgoing Messages

The following diagram illustrates the flow of near-real time messages:



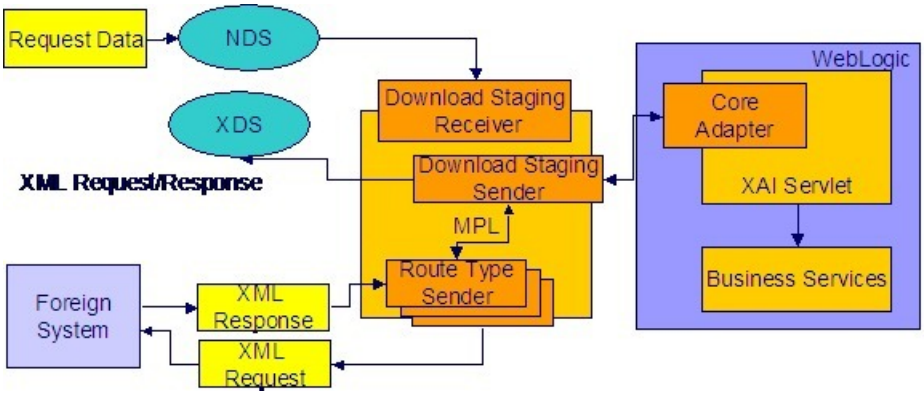

The following points describe the diagram

- When an event occurs in the system, you can initiate an outgoing message by storing a *notification download staging* (NDS) record. NDS records for outgoing messages have a special processing method flag of XAI .

**FASTPATH:**
Refer to *System Conditions May Trigger Notification and Workflow* for information about creating notification download staging records.

- Once a message is stored on the NDS table, the download staging receiver reads it and invokes XAI to extract data from your product. An XAI inbound service is used to retrieve the full information for the object related to the message.
- The download staging sender takes the response from the executer (the system object as XML) and continues the processing. It uses a request XSL on the route type to transform the message to a format expected by the target. It then sends the message to the target using the sender on the XAI route type.

The following diagram illustrates the process:




The responsibilities of the download staging receiver and download staging sender are provided in detail below.

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Download Receiver

The download staging *receiver* processes records in the NDS table that have a processing method flag equal to XAI and a status of either pending or retry . It also uses the priority flag on the NDS type and the creation date/time on the NDS to process records according to their priority.

The process is referred to as "near real time" because your download staging receiver should be continuously checking for new records in the NDS table.

When it finds a record, it invokes XAI (via the *executer*) providing the XAI inbound service.

The following section provides more information about the NDS lifecycle.

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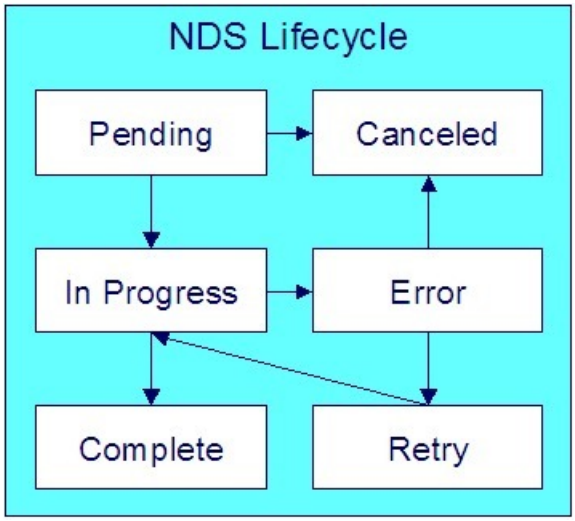
Lifecycle of Notification Download Staging

The download receiver processes NDS records based on their status. The following diagram describes the lifecycle of an XAI type NDS.




The following points describe the diagram:

- Records are created in pending status. A user may transition the record to the canceled state.
- The MPL processes records in pending and retry status. While the record is being processed, it is changed to in progress .
- Based on the results of the processing, records could be transitioned to error or complete .

**NOTE:**
An NDS is set to error if there is a problem with the NDS or if any of its related XDS records are in error.

- A user may cancel a record in the error state or change the status to retry to have the MPL try again.

Building the XML Request

To build the XML request for the outgoing message, the download receiver needs the following information:

- The XML request and response schemas used to retrieve information about the record related to the request. For example, if the outgoing message is to inform an external system that a person's name has changed, the XML request schema must retrieve the appropriate person record.
  The *NDS type* related to the NDS defines an XAI Inbound Service that references an appropriate XML request schema.
- The data related to the request. In this example, the NDS record should be stored with the ID of the person record that changed.

The person ID is stored as NDS context, with an appropriate Context Type, like PERID .

- XPATH information to tell the system where to plug in the related data into the request schema. In this example, when building the XML request, the person id must be plugged into the appropriate location in the XML request schema prior to executing the request.
  The *NDS type* related to this NDS defines a collection of context types. For each context type, you define an *XPATH* used to indicate where to substitute the context data.

Refer to *Configuring the System for NDS Messages* for more information.

Once the request schema is build, the receiver invokes XAI (via the executer) to execute the XML request. In our example, it calls the appropriate Person service and the XML response includes the extracted person information.

D ownload Staging Sender

This piece is somewhat confusing, because the download staging sender behaves differently than other senders. *Senders* are typically responsible for

- Routing a request to an appropriate target
- In the case of the upload staging sender and the staging control sender, the sender is responsible for updating the status of the appropriate table.
  In the case of the download staging sender, it's responsible for processing the "response" to the XAI executer, whose task was to build the XML request.
- If there is a problem executing the request, the download staging sender updates the NDS record in error and creates an *NDS exception* record.
- If the executer was successful, the "response" is an XML request in a format understood by your product. The sender must perform the following steps to help process the outgoing message:
- Transform the request to a format expected by the target system(s)
- Route the outgoing message to the target
- Create an XAI download staging record for each message sent out. (There is typically only one, but it is possible for the outgoing message to have *multiple destinations*.)

If any errors are found during any of these steps, the status of the NDS record is set to error and a record is written to the *NDS exception* table. If the error is related to routing the message, the XDS is created in error and a record is written to the *XDS exception* table.

---

**NOTE:**
**Configuration required**. The above explanation assumes that you have correctly configured your download staging receiver to reference the download staging sender. Refer to *Designing Responses for a Receiver* for more information.

**Routing Optional**. It is possible that an *NDS message does not require routing* information. In this case the download staging sender simply updates the NDS record's status

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The following sections provide further detail.

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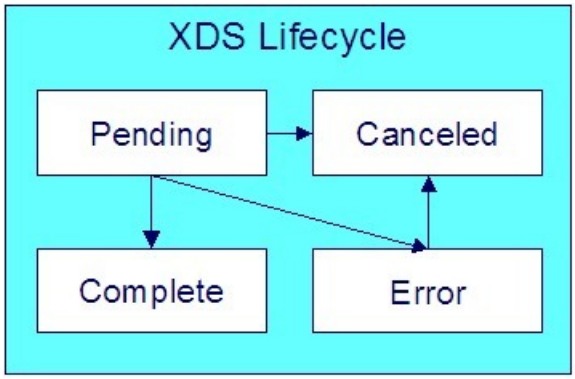
Lifecycle of XAI Download Staging

The following diagram illustrates the lifecycle of an XAI download staging record.




An XAI download staging record is created in one of the following ways:

- When the download staging sender continues the processing for the outgoing message, it attempts to transform and route a message for each XAI route type indicated on the notification download profile. An XDS is created to record the message sent.
- If the message was sent successfully, the XDS is created in complete status.
- If an error occurred when sending the message, the XDS is created in error status and an *XAI download exception* is created.

**NOTE:**
**Automatic Resend**. If you have configured the system for *automatic resend* and the system detects that the error is due to the sender being unavailable, no XDS record is created in this case.

- When the system attempts to send a message *real time* but the external system is unavailable, the system may create a pending NDS and a pending XDS record.
- A user may cancel a pending or error XDS record.

If you have resolved the error for an XAI download staging record, change the status of the related NDS record to retry. When MPL processes the NDS again, it deletes all XDS records in error and attempts to send them again.

Transform the Request

The download staging sender takes the XML response with the extracted data and attempts to transform into a format accepted by the target. It needs an appropriate *XSL transformation* script.

The XSLT is defined on an *XAI Route Type*, which is referenced on the *download profile* of the service provider referenced by the notification download staging record.

**NOTE:**
The NDS context information is available to the XSL. Refer to *Substitution Parameter for NDS Messages* for more information.

Routing the Message

In addition to defining the appropriate XSL transformation scripts, the XAI route type also references a *sender* that tells the system how to route the message, for example it may be routed using a JMS queue.

**NOTE:**
**Inactive Senders**. If the message is targeted to an inactive sender and you have enabled *automatic resend*, the message is ignored and an MPL log entry is created indicating that the message was not sent.

If the target supports synchronous communication (for example, an HTTP sender), the *route type* may be configured to receive an acknowledgement. This indicates to the download staging sender to wait for a response from the sender on the route type.

The download staging sender creates an appropriate XDS record with the XML request document and with a status of complete or error based on the results of the communication with the target. If the target has sent a synchronous response, the XML response is also posted on the XDS.

**NOTE:**
**Automatic Resend**. If you have configured the system for *automatic resend* and the system detects that the error is due to the sender being unavailable, no XDS record is created in this case and the NDS remains in pending .

If the target supports synchronous communication, you may indicate that a response to the outgoing message also requires action. For example, perhaps the outgoing message to an external system causes a new record to be created in that system. The response to the message may require an update to our initiating record to post the external system's identifier for the record on their side.

To enable this logic, you must check the Post Response switch on the *route type*. If this has been checked, the download staging sender creates an XAI upload staging record (and a staging control record) and it links the XDS record as a foreign key. The XUS record is processed along with other uploaded messages, to invoke an appropriate service.

**NOTE:**
**XML Response**. If the Post Response switch on the route type is turned on, the XML response that is captured is the XML that results after applying the Response XSL. If the Post Response switch is not turned on (i.e., the response is a simple acknowledgement), XML response is posted without applying a Response XSL. (In fact, for simple acknowledgements, there is no need for a Response XSL.)

**Asynchronous Responses**. Refer to *Asynchronous Responses to NDS Messages* for information about processing responses to messages sent asynchronously.

**FASTPATH:**
Refer to *Configuring the System for NDS Messages* for more information about setting up these controls.

Multiple Message Destinations

If your message must be sent to more than one external system, a different XAI route type is required for each system that the message must be sent to so that the sender and XSLT for each external system can be defined.

The recommended procedure for sending a message to multiple destinations is to

- Generate an NDS for each destination where each NDS defines the same NDS type but different service providers. In other words, the service provider represents the destination.
- Each service provider references a *notification download profile* where the appropriate XAI route type is defined for each NDS type.
- When this NDS record is processed, the sender information defined for the XAI route type is used to route the message appropriately and an XAI download staging (XDS) record is created.

Note that it is possible for the download profile's formatting method to reference more than one XAI route type. This is perhaps another configuration that could be used to send a message to multiple destinations. In this case an XDS record is created for each XAI route type to track the XML request. However, it is not possible to track *asynchronous responses* to multiple messages using this mechanism. Defining multiple route types for a download profile formatting method should only be done if you do not expect an asynchronous response.

A n NDS Message That Doesn't Require Routing

If an NDS message is being sent to one of your own external systems and this system may be accessed directly, you could design your message such that XAI routing is not necessary. For this scenario, the assumption is that the application service that is invoked by the XAI inbound service completes all the necessary steps to update the external system.

If this is the case, you are not required to define an XAI Route Type on the appropriate notification download profile entry. In addition, no message sender is required for this external system.

The download staging sender's sole responsibility for a message of this type is to update the NDS status.

Asynchronous Responses to NDS Messages

If you send an asynchronous NDS message and you expect a response, the response is received as an inbound message. In order to recognize that an inbound message is a response to an NDS message, there must be some handshaking. In other words our system must pass a unique identifier of our message to the external system and the external system must include that identifier in the response.

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Populating the Unique Message Identifier

As described in *Building the XML Request*, the information that may be included in the XML request we build is information linked to the NDS record as context. Therefore, the unique identifier you want to send to the external system must be stored as a context record. (Let's call this context type Message ID). Because the notification download staging ID is a unique identifier, you may choose to populate Message ID with the NDS ID. However, it is possible that the external system requires an identifier in a different format. For example, the NDS ID is a 12-byte number. Perhaps the external system can only receive a 10-byte number for the Message ID.

It is the responsibility of the mechanism that creates the NDS record (i.e., the algorithm or user exit or database trigger) to create a context entry for Message ID with an appropriate value that is compatible with the target system.

When creating your XML request schema, if you expect a response to your message, you must include the message ID as an attribute in the XML request. Because the message id is not part of the product information that your request schema is extracting, it should be defined as a *private attribute*. Once the XML is created, it is the responsibility of the XSL to transform the Message ID into the target specific XML element.

**NOTE:**
**Only One Route Type**. Because the unique Message ID for an NDS message is linked to the NDS record via context, it is not possible for the system to handle multiple route types (and therefore multiple senders) for a single message IF an asynchronous response is expected. The reason is because all senders receive the same unique Message ID and if each sender responds, the system is not able to determine which response is received for which sender.

Recognizing the Inbound Message Response

When the external system sends an asynchronous response to your NDS message, it is received as an *inbound message*. This inbound message must include the Message ID that you sent so that you can recognize this as a response. In addition, the XSL transformation must populate the identifier of the external system sending the message.

The following points describe the detail related to receiving an inbound message:

- When a response comes in, the message is translated using an XSLT script. The XSLT must map the message ID, which is the unique identifier of the NDS message that this is a response to, to the XML element MessageID . It must create an attribute with the XML element ReplyToMessageSource populating the value with an appropriate *external system*. This value should correspond to the external system code of the service provider related to the NDS message.
- The XML request of the inbound message is processed as normal.
- The existence of the special message elements in the XSL indicates to XAI that XML response processing is required. It looks for a complete NDS with a service provider whose external id matches the ReplyToMessageSource and with a context type of Message ID whose context value matches XAI Message ID .

- When the correct NDS is found, the system finds the related XAI download staging record and populates the XML response with the XML request of the incoming message.
- If the XDS request is not associated already with a response or the latest associated response is in error status stamp the current response on the XDS request record.
- If the response came into the system as an XAI upload staging (XUS) record, the foreign key to the XDS record (NDS ID and XAI route type) to which it is responding is linked to the XUS.
- If the response did not come in as an XAI upload staging record (for example, it came in via JMS queue), an XAI upload staging record and an XAI staging control record are created in complete status as an audit and the foreign key to the XDS record is linked to the XUS.

**NOTE:**
**Errors Linking the XDS**. If the system has a problem finding the appropriate XDS record to link to the incoming response, the inbound message is still processed. A log entry is added to the XAI trace file reporting the error in identifying the correct XDS record.

## Real Time Outgoing Messages

This section describes the capability to send real time messages from the system to another application. The functionality works in conjunction with the near real time NDS message configuration.

## Real Time Message Engine

The system provides an "engine" to communicate real time messages to an external system. This engine may be invoked by a user exit on any user interface in the system. The real time message engine receives an NDS type and a service provider as input. Using this information, the engine finds the appropriate XAI route type for the service provider's notification download profile. The route type indicates the XSLT and the XAI sender.

**NOTE:**
**HTTP Sender**. In the current release of the product, only senders that communicate via HTTP are supported.

Unlike near real time messages, the XAI inbound service referenced on the NDS type is not used to build the XML request. Rather, the user exit that invokes the engine is responsible for extracting the appropriate data and passing to the engine a formatted XML document. The XSLT referenced on the route type should map attributes from XML document into a format expected by the target system.

The following points describe how the real time engine works:

- Once the XML request is built, the message is sent out based on the XAI route type's sender information.
- The system waits for a response for a predefined time out limit defined as a context entry on the *sender*.
- When the response is received, the engine transforms the message using the response XSL defined on the route type.
- The XML response is then passed back to the user exit that called the engine. The user exit processes the response as needed.

**NOTE:**
As described in Routing the Message, the route type includes a flag to indicate to the system if a response requires additional action. If so, an XUS is created. The real time message engine does not support this logic. It expects the user exit to process the response as needed.

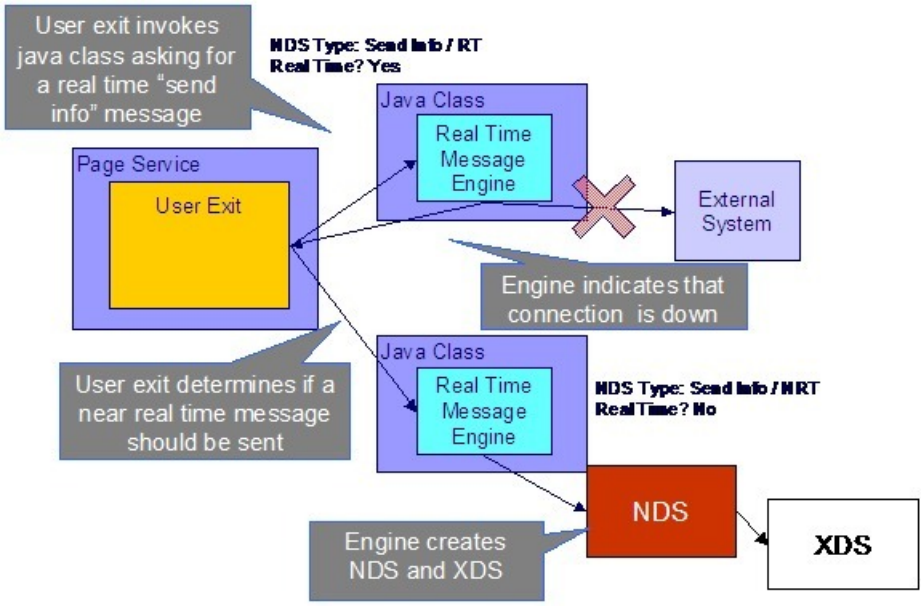
## Sending Real Time Messages in Near Real Time

If the connection is not available when the real time engine attempts to communicate with the target, the engine may post the message to the download staging tables to send in "near real time" when the target system is available again.

Messages should only be posted to the staging table if the user does not need to wait for a response in real time. Consider the following examples:

- A real time message is used to request information from an external system to display to a user on a page. If the connection is down, it does not make sense to store a near real time message for this case because the user is not able to wait for the response to the request.
- There is a connection problem when the user attempts to send information to an external system. In this case, perhaps it makes sense to store a near real time message so that the information is sent to the external system when the connection is restored.

**NOTE:**
The real time message engine does not make the decision to post a message near real time when the communication is unavailable. The responsibility lives solely with the user exit that calls the java class that invokes the engine. The following diagram illustrates a possible interaction between the user exit and the message engine:




The following points describe the diagram:

- When the user exit is informed that the real time message could not be sent, it is the responsibility of the user exit to decide if the engine should be invoked again to create a near real time message.
- The NDS type used for near real time messages is different than the one used for real time messages. The reason is because the XSL transformation script is different for real time vs. near real time.
- The NDS is created and marked pending .
- The XDS record is created and marked pending . The XML message that is ready to be sent to the sender is posted as the XML request for the XDS.

Because the XML request is already built, the NDS type used for the NDS should reference a special XAI inbound service. This service basically tells the download staging sender that the XDS already exists and doesn't need to be created.

# System Conditions May Trigger Notification and Workflow

**NOTE:**
**Outbound Messages**. The mechanism for triggering communication to an external system described here does not take advantage of the configurable business object functionality that enables outbound messages to be triggered from a server-based script. Refer to *Near Real Time Outbound Message* for more information about communicating with an external system using outbound messages.

There may be many noteworthy occurrences in the system, which should trigger the notification and workflow process.

Some of these occurrences may need to be communicated to an external system. Examples of when this may occur are as follows:

- You use an external software package, which uses information from the system and you need to send a message to this software package when certain attributes of the customer change.
- You need to inform third parties when something changes about a customer. For example, if you are a distribution company, you probably advise a customer's energy supply company when their meter is changed or when the customer stops. Or if a customer, who has been referred to a collection agency, makes a payment, you will need to inform the agency of the payment.

In many scenarios, you may want more than just a notification to be sent out, but you would also require a workflow process. For example, perhaps when a customer's mailing address changes, you want to a) send a confirmation letter to the customer's old address and their new address; b) inform a third party service provider about the change; and c) send the update to an external marketing system. In this case, the act of changing the mailing address could trigger a workflow process, which would perform the above steps.

You may have other scenarios where a noteworthy condition in the system should trigger a workflow process, which does not require a notification to be sent out of the system. For example, perhaps your company follows a sophisticated procedure for starting service, which requires certain events to transpire before other events can occur. You could create a workflow process, which gets triggered upon starting service to handle this sophistication.

In summary, when something occurs in the system, you may need to

- Create a notification download staging (NDS) record. You would do this if you only need to send a message to an external system.
- Create a notification upload staging (NUS) record. You would do this if you need to trigger a workflow process to do one or more steps. One of the workflow events in this process could create a NDS if an external system needs to be informed.

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## Creating a Notification Download Staging Record

To create an NDS record directly, you need the following information:

- Service Provider (who will receive the outbound message)
- NDS Type

You also need to populate relevant data using either context or characteristics. For example, if a change to a person's name should trigger an outbound message, the Person ID must be referenced.

The process that creates the NDS must determine the appropriate service provider that should receive this information based on the business rules. As for the NDS type, this is typically "hard-coded" based on what has occurred to trigger the outbound message. For example, if the customer's name changed, then the NDS Type is set to something like "Name Change".

For any NDS records automatically created by the system in sample algorithms or in system processes, the NDS type is not hard-coded. Rather, the system uses a download type condition flag value to look up the appropriate NDS type. As a result, if an implementation chooses to use these sample algorithms, but prefers to use a different NDS type, it is possible. When designing your own NDS types that are referenced by NDS records created based on system conditions, you may choose to create new download type condition flag values as well.

Refer to *Designing Notification Download Types* and *Setting Up Notification Download Types* for more information.

## Creating a Notification Upload Staging Record

To create an NUS record directly, you need the following information:

- External System (to point to a service provider)
- NUS Type

You also need to populate relevant data using either context or characteristics. For example, if a change to a person's name should trigger a letter to the customer and an outbound message, the Person ID must be referenced.

The process that creates the NUS must determine the appropriate external system based on the business rules. If the steps that need to be taken as a result of this system condition are based on an internal practice, the external system could be something like "SYSTEM". That external system would reference an appropriate workflow process profile that defines the appropriate workflow process based on the NUS type.

Determining the NUS type is similar to determining the NDS type as described in the previous section.

Refer to *Designing Notification Upload Types* and *Setting Up Notification Upload Types* for more information.

## Triggering Notification & Workflow from the Application

You and your implementers must determine the noteworthy events that should trigger workflow and/or outgoing notifications based on your business practice. For example, you may communicate all meter exchanges and customer address changes to the customer's various service providers.

Next, you must assess how you are going to create the appropriate records:

- Determine if there is a plug-in spot that exists where you can create an algorithm to trigger the NUS or NDS. For example, if canceling a service agreement should trigger a notification, an SA Cancel algorithm plugged in to the SA type may be used.
- If there is no plug-in spot, determine if there is a user exit at the appropriate place for you to trigger the creation of an NUS or NDS
- You may also decide to use a database trigger to create the NUS or NDS

Once you have determined how and when to trigger the creation of notification records, have your implementers create the CM code to do the work.

## The Lifecycle of Notification Download Staging

If a download staging record is routed to the outside world via XAI, a status is assigned to the download staging record.

Refer to *Lifecycle of Notification Download Staging* for more information.

# Creating Notification and Workflow Procedures

A workflow process is created by copying the events defined on a workflow process template (a workflow process template contains the standard events).

**NOTE:**
**Workflow processes can be used for any multi-event process.** While this section describes how to design workflow processes to support incoming and outgoing notifications, workflow processes can be used for other multi-step processes. For example, you can use a workflow process to manage the steps involved with the installation and inspection of backflow devices at a water service point.

The topics in this section describe how to design and setup the tables that control your notification and workflow processing.

**FASTPATH:**
For more information about notification and workflow processing, see *The Big Picture Of Workflow Events* and *The Big Picture Of Notification Processing*.

**WARNING:**
There are innumerable ways to design your notification and workflow procedures. Some designs will result in easy long-term maintenance, others will result in maintenance headaches. In this section, we provide information to help you understand the ramifications of the various options. Before you set up your production procedures, we encourage you to gain an intuitive understanding of these options by using the system to prototype the alternatives.

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# Designing Notification Upload & Workflow Procedures

The topics in this section describe how to design the tables that control your notification upload and workflow processing.

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## Designing Workflow Process Profiles

The following sections describe how to design a workflow process profile. A workflow process profile controls the type of workflow process that will be created to process your incoming notifications. If you plan to use workflow processes outside of the notification upload process, you can skip to *Designing Workflow Process Templates*.

You associate a workflow process profile with one or more external system. Whenever a notification is received from an external system, the system uses the workflow process profile to determine the type of workflow process to create to implement the notification.

The easiest way to design a workflow process profile is to choose a representative external system and design a workflow process profile for it by filling in the matrices below. After you've designed a profile, determine how many other external systems can use it. Then design the next external system's profile and determine who can reuse it. Repeat this process until all your external systems have a profile. Once the profiles are designed, you're ready to set up the workflow control tables.

**FASTPATH:**
Refer to *The Big Picture Of Notification Processing* for more information about how workflow processes are used to implement incoming notifications.

The topics discussed below will gradually complete the following matrix using a simple case-study. We recommend that you use the following matrix as your guide. When the matrix is complete, you're ready to set up a workflow process profile.

| WF Process Criteria |
| --- |
| Notif. Upload Type |
| |
| |
| |
| |

## Designing Notification Upload Types

You will need one notification upload type for every type of notification your organization can receive from the various service providers. To "design" your notification upload types, you document the codes used by external systems to identify the transaction types on their notification upload staging records.

We have populated the Notification Upload Type column with a few classic examples that can be received by a distribution company:

| WF Process Criteria |
| --- |
| Notif. Upload Type |
| Retrieve a customer's consumption history |
| Switch a customer to a different service supplier |
| Switch customer to an interval meter |
| |

**NOTE:**
It is recommended that the unique identifier of your Notification Upload Types match the "transaction types" that are referenced on incoming notifications. If it is not possible to do this, the process that creates the upload staging records must map the external transaction types to the notification upload types that you define in the system.

In addition, as described in *System Conditions May Trigger Notification and Workflow*, you should evaluate any condition that should cause an NUS to be created (to eventually create a workflow). A new NUS Type should be defined for each condition. For each of these, consider creating a new value for the upload condition flag so that the NUS type is not hard-coded in the system process that creates the NUS.

## Navigating to Related NUS Extension

When designing the types of notifications your organization may receive, you must determine where you plan to store the detailed information related to the incoming transaction: as context linked to the NUS, as characteristics linked to the NUS or by using an extension record.

**FASTPATH:**
Refer to *Process X - Populate Notification Upload Staging* for information about the different options available.

If you choose to capture the detailed information in a new extension record with a new user interface, then in order to be able to drill down to the related extension record, the following steps are required.

- Add a new *lookup* value for your new extension record for the field NT_UP_EXTSN_FLG . (This step is needed regardless of whether you want to drill down to the related record.)
- Add a *navigation option* pointing to the appropriate navigation key for your new transaction. This navigation option must reference a usage type of notification upload type .
- Indicate the appropriate lookup value and navigation option on the appropriate notification upload type.

## Designing Workflow Process Criteria

The matrix's second dimension is dependent on workflow criteria algorithms. Workflow criteria are confusing. Think of them as optional conditions that, if met, will cause a different type of workflow process to be started when a given notification upload type is received.

You must define a Default criterion in case none of the override criteria are met. You MAY have override criteria if different situations result in different types of workflow processes. For example, let's assume some notification upload types have different workflow processes for industrial customers as compared to all other types of customer. This assumption necessitates the introduction of an override workflow process criteria; we'll call it Industrial Customer .

| WF Process Criteria | Default | Industrial Customer |
|---|---|---|
| Notif. Upload Type | | |
| Retrieve a customer's consumption history | | |
| Switch a customer to a different service supplier | | |
| Switch customer to an interval meter | | |

**NOTE:**

**The workflow process criteria are limited by your imagination (and business requirements).** We have provided the workflow process criteria you see above as an example; we don't expect you'll be able to use the exact conditions we supply. Your conditions will be based on any number of factors.

**New workflow process criteria may require programming.** See *How To Add A New Algorithm* for more information.

## Designing Workflow Processes To Process Incoming Notifications

The next step involves populating each cell in the matrix with the workflow events that should be executed when the system receives a notification identified with a given notification upload type. If override criteria aren't relevant for a given notification upload type, we will mark the cell as "N/A".

| WF Process Criteria<br>Notif. Upload Type | Default | Industrial Customer |
|---|---|---|
| Retrieve a customer's consumption history | Validate notification - consumption history request<br>Confirm requester is a valid service provider for the customer's service.<br>Create notification download - send consumption history | N/A (meaning that industrial customers use the Default criteria) |
| Switch a customer to a different service supplier | Validate notification - supplier switch<br>Confirm requester is a valid service provider for the customer's service.<br>Check with current supplier if the switch is allowed.<br>Switch suppliers. | N/A (meaning that industrial customers use the Default criteria) |
| Switch customer to an interval meter | Validate notification - change customer to an interval meter<br>Create notification download - reject request (only industrial customers can have an interval meter) | Validate notification - change customer to an interval meter<br>Confirm requester is a valid service provider for the customer's service.<br>Create field activity to exchange current meter.<br>Change rate on exchange date. |

**NOTE:**
Notice that the first event in each cell typically validates the notification upload staging record.

At this point, the matrix is complete. Before you're ready to design your workflow process templates you must design the processes described in the next section.

## Designing Workflow Processes To Deal With Invalid Sender or Notification Upload Type

The system needs to know the type of workflow process to create when a notification is uploaded that does not contain a valid External System or Notification Upload Type (these two fields are the ones that control the type of workflow process

that's created to process the uploaded notification). When these conditions are detected by the notification upload process, most utilities create an outgoing notification rejecting the uploaded notification when such conditions transpire. We've shown these in the following table.

| Notification Condition | Workflow Process Events |
|---|---|
| Unknown Notification ID | Create notification download - reject notification, bad external system |
| Unknown Notification (Upload) Type | Create notification download - reject notification, bad notification upload type |

**NOTE:**
**These processes are not in a workflow process profile.** The above workflow process templates are not referenced in a workflow process profile. Rather, when you create these workflow process templates you label them with a **Notification Condition** of Unknown Notification ID or Unknown Notification Type . The notification upload process will then create workflow process when these events transpire.

## Designing Workflow Process Templates

The following table shows the workflow process templates referenced in the previous section's matrix. Adjacent to each process is its events and an indication of when they are triggered.

| Workflow Process Template | Event Number | Workflow Event Type | Dependent On Event(s) | Trigger Date Set To X Calendar Days After Completion Of Dependent Events |
|---|---|---|---|---|
| Retrieve a customer's consumption | 10 | Validate notification - consumption history request | N/A - first event | 0 |
| | 20 | Confirm requester is a valid service provider for the customer's service | 10 | 0 |
| | 30 | Create notification download - send consumption history | 20 | 0 |
| Switch a customer to a different service supplier | 10 | Validate notification - supplier switch | N/A - first event | 0 |
| | 20 | Confirm requester is a valid service provider for the customer's service | 10 | 0 |
| | 30 | Check with current supplier if the switch is allowed | 20 | 0 |
| | 40 | Switch suppliers | 30 | 0 |
| Switch customer to an interval meter | 10 | Validate notification - interval meter switch | N/A - first event | 0 |
| | 20 | Confirm requester is a valid service provider for the customer's service | 10 | 0 |

| | | | | |
|---|---|---|---|---|
| | 30 | Create field activity to exchange current meter | 20 | 0 |
| | 40 | Change rate on exchange date | 30 | 0 |
| Reject interval meter switch | 10 | Validate notification - interval meter switch | N/A - first event | 0 |
| | 20 | Create notification download - reject request | 10 | 0 |
| Reject bad notification upload type | 10 | Create notification download - reject request | N/A - first event | 0 |
| Reject bad external system | 10 | Create notification download - reject request | N/A - first event | 0 |

**NOTE:**
The workflow process for "Reject bad notification upload type" should reference the Notification Condition Unknown Notification Type . The workflow process for "Reject bad external system" should reference the Notification Condition Unknown Notification ID .

## Designing Workflow Event Types

If we extract each unique event type from the above table, we end up with the following:

| Workflow Event Type |
|---|
| Validate notification - consumption history request |
| Confirm requester is a valid service provider for the customer's service |
| Create notification download - send consumption history |
| Validate notification - supplier switch |
| Current supplier confirmation |
| Switch supplier |
| Validate notification - interval meter switch |
| Create field activity to exchange meter |
| Change rate |
| Create notification download - reject request |

Next, we have to determine the algorithm that will be used when each event is activated on its trigger date. We call this algorithm the *activation algorithm*. An activation algorithm is a stand-alone routine that does whatever you need done when an event is activated. We have populated the following table with brief descriptions of the types of activation algorithms you'd need for the above workflow events.

**NOTE:**
**The activation algorithms are limited by your imagination (and business requirements).** We have provided the activation algorithms you see below as an example; we don't expect you'll be able to use the exact algorithms that we

supply. Your algorithms will be based on any number of factors. Be aware that new activation algorithms may require programming. See *How To Add A New Algorithm* for more information.

| Workflow Event Type | Activation Algorithm |
|---|---|
| Validate notification - consumption history request | Validate consumption history request |
| Confirm requester is a valid service provider for the customer's service | Confirm service provider is valid requester |
| Create notification download - send consumption history | Create notification download - send consumption history |
| Validate notification - supplier switch | Validate supplier switch request |
| Current supplier confirmation | Create notification download - check if it's OK to switch customer from current supplier |
| Switch supplier | Switch supplier |
| Validate notification - interval meter switch | Validate interval meter switch request |
| Create field activity to exchange meter | Create field activity - exchange meter |
| Change rate | Change rate |
| Create notification download - reject request | Create notification download - reject request |

Next, we have to determine which types of events can fail. Refer to *Some Workflow Events May Fail* for background information failure. For those types of events that can fail, we will indicate their *failure algorithm* in the table. A failure algorithm is a stand-alone routine that does whatever you need none when an event fails. We have populated the following table with brief descriptions of the types of failure algorithms you'd need for the above workflow events.

**NOTE:**
**The failure algorithms are limited by your imagination (and business requirements).** We have provided the failure algorithms you see below as an example; we don't expect you'll be able to use the exact algorithms that we supply. Your algorithms will be based on any number of factors. Be aware that new failure algorithms may require programming. See *How To Add A New Algorithm* for more information.

| Workflow Event Type | Activation Algorithm | Failure Algorithm |
|---|---|---|
| Validate notification - consumption history request | Validate consumption history request | Create notification download - invalid request |
| Confirm requester is a valid service provider for the customer's service | Confirm service provider is valid requester | Create notification download - invalid requester |
| Create notification download - send consumption history | Create notification download - send consumption history | N/A |
| Validate notification - supplier switch | Validate supplier switch request | Create notification download - invalid request |
| Current supplier confirmation | Create notification download - check if it's OK to switch customer from current supplier | Create notification download - reject request due to supplier rejection |
| Switch supplier | Switch supplier | N/A |
| Validate notification - interval meter switch | Validate interval meter switch request | Create notification download - invalid request |
| Create field activity to exchange meter | Create field activity - exchange meter | N/A |
| Change rate | Change rate | N/A |
| Create notification download - reject request | Create notification download - reject request | N/A |

And finally, for those events whose activation algorithm puts them into a wait state, we have to determine the waiting process that monitors the waiting events. Refer to *Waiting Events And Their Waiting Process* for more information about waiting.

**NOTE:**
**The waiting processes are limited by your imagination (and business requirements).** We have provided the waiting processes you see below as an example; you may not be able to use the exact processes that we supply as your processes will be based on any number of factors. Be aware that a new waiting process will require programming.

| Workflow Event Type | Activation Algorithm | Failure Algorithm | Waiting Process |
|---|---|---|---|
| Validate notification - consumption history request | Validate consumption history request | Create notification download - invalid request | N/A |
| Confirm requester is a valid service provider for the customer's service | Confirm service provider is valid requester | Create notification download - invalid requester | N/A |
| Create notification download - send consumption history | Create notification download - send consumption history | N/A | N/A |
| Validate notification - supplier switch | Validate supplier switch request | Create notification download - invalid request | N/A |
| Current supplier confirmation | Create notification download - check if it's OK to switch customer from current supplier | Create notification download - reject request due to supplier rejection | Check if supplier has accepted process |
| Switch supplier | Switch supplier | N/A | N/A |
| Validate notification - interval meter switch | Validate interval meter switch request | Create notification download - invalid request | N/A |
| Create field activity to exchange meter | Create field activity - exchange meter | N/A | Check if field activity is complete |
| Change rate | Change rate | N/A | N/A |
| Create notification download - reject request | Create notification download - reject request | N/A | N/A |

## Designing External Systems

As described under *What Type Of Workflow Process Is Created?*, every notification upload staging (NUS) record contains an external system. An external system is the unique identifier of the sender of the notification.

To "design" your external systems, document the external id's (e.g., DUNS number) of your service providers. The following table contains a sample:

| External System | Description |
|---|---|
| 102910 | Energy Supplier, Inc. |
| 392191 | Cheap Power, Inc. |

The above example would result in 2 external systems - 102910 and 392191.

**NOTE:**

It's obvious, but worth stressing, that the External System should be the exact number referenced on notifications sent by a sender.

---

# Designing Notification Downloads

The system creates outgoing notifications when:

- It needs to respond to an incoming notification. For example, if an incoming notification requests a customer's consumption history, the system must send the consumption history by creating an outgoing notification.
- It needs to apprise a third party that something has changed about the customer or their meter. For example, if a customer stops service, the system must tell the various service providers of such.
- It needs to exchange information with another application in the company, for example a CRM system.

A Notification Download Staging (NDS) record is created for every notification that is sent to the outside world.

The topics in this section describe how to design the tables that control your notification download processing.

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## Designing Workflow Processes To Support Outgoing Notifications

As described under *How Are Notifications Sent Out Of The System?* notifications are sent out via Notification Download Staging (NDS) records. NDS records are created by workflow events (i.e., the event's activation algorithm creates notification download records). There are two types of workflow processes that contain these types of workflow events:

- Many workflow processes exist to process incoming notifications. These processes typically contain workflow events that create –NDS records to communicate with service providers. If you look at the workflow processes described under *Designing Workflow Process Templates*, you will see many such examples.
- When something noteworthy happens, the system may need to tell a third party about it. As described in *System Conditions May Trigger Notification and Workflow*, you may decide that the noteworthy condition should cause a workflow process to be created where one or more of the workflow events can create an NDS. The following table shows representative workflow process templates of this type.

| Workflow Process Template | Event Number | Workflow Event Type | Dependent On Event(s) | Trigger Date Set To X Days After Completion Of Dependent Events |
|---|---|---|---|---|
| Stop service | 10 | Create notification download - inform all parties that customer is stopping service | N/A - first event | 0 |
| Meter exchange | 10 | Create notification download - inform all | N/A - first event | 0 |

| | |
|---|---|
| | parties that meter has been changed |

After documenting these types of workflow process templates, follow the instructions under *Designing Workflow Event Types* to add any new types of events to the list.

## Designing Your External System Feature Configuration

For certain types of external systems, your application may define options used to configure the interaction between your product and your external system. The feature configuration table is used to define some settings applicable to the interaction with your external system, for example:

- The Options grid allows you to define information needed to communicate with the external system. For example, if you interface with an external workforce management system for booking appointments, a feature configuration for the WFM system may use an option to define whether or not the user can manually define an appointment.
- The Messages collection allows you to map each message that you may receive from the external system to a corresponding *message* in this system.

**NOTE:**
**Recommendation.** We recommend creating a new message for every message that is being mapped. This ensures that changes to future base product messages do not affect the integration.

## Define the Message Sender

If an of your messages are routed to an external system via XAI, the message must also be associated with an *XAI Sender*, which tells the system how to send the message.

**NOTE:**
**Sender Optional**. If the NDS message does not require routing, you are not required to define a message sender.

## Designing Notif. Download Types

You will need one notification download type for every type of notification your organization can send to service providers. To "design" your notification download types, list:

- Every outgoing notification that you documented under *Designing Workflow Event Types*.
- Every outgoing notification that you documented under *Designing Workflow Processes To Support Outgoing Notifications*.
- Every outgoing notification that may be triggered from within the system as described in *System Conditions May Trigger Notification and Workflow*. For each of these, consider creating a new value for the download type condition flag so that the download type is not hard-coded in the system process that creates the NDS.

We have populated the Notification Download Type column with a few classic examples:

| Notification Download Type | Download Type Condition Flag |
|---|---|
| Inform all parties that customer is stopping service | CUSTSTOP |
| Inform all parties that meter has been changed | METERCH |

| |
|---|
| Send consumption history |
| Check if it's OK to switch customer from current supplier |
| Reject request |

You should also consider the priority of each NDS type with respect to the other types.

Once you know the different types of download notifications, you have to determine the physical method used to route the notification to the third party. Refer to *Designing Notification Download Profiles* for how to do this.

If the outbound notification may be routed via XAI, you must define an *XAI inbound service*. This is used by the XAI MPL to retrieve information about the record related to the outbound message.

**FASTPATH:**
Refer to *Configuring the System for XAI Messages* for more information on designing your XAI outgoing messages.

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## Designing Context Values for the NDS Type

A notification download staging record must reference some "relevant data" that allows the extract process or the XAI MPL process to retrieve the data needed to send to the external system. For example, if the person's name has changed, the NDS must reference the Person Id. When formatting the data to send to an external system, the appropriate process would take the person ID and retrieve the data needed to send to the external system.

The NDS may use either the context collection or the characteristics collection to enter this "relevant data". If you choose to use context, you may decide to define the context types for the NDS type (although it is not required).

If NDS records of this type are interfaced through XAI, then the context types and corresponding XPATH values are required for every piece of data that is required to call an application service to build the extract. The XPATH indicates the relative path in the XML document where the field value will be placed when building the XML document.

**FASTPATH:**
Refer to *Configuring the System for XAI Messages* for more information on designing your XAI outbound messages.

## Configuring the System for XAI Messages

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Designing Your Real Time Messages

Consider the following integration scenario. A page in your product is configured to send information to an external system real time. If the connection is down, the user is warned and may authorize that the message is sent in near real time. The following sections describe how to design the control tables needed for both scenarios.

Designing the Real Time Message XSL

During implementation, you will determine the information required to send to the external system. The real time message engine is passed all the data available in the page model as an XML document. The request XSL must be designed to map this data into a format expected by the target.

In addition, you should create two response XSLs to transform the message received from the target system.

- One XSL is used for real time responses. The XSL transforms the message into a format understood by the page service user exit. Note that any updates to a system business object as a result of the response is the responsibility of the user exit that called the real time message engine.
- One XSL is used for non-real time responses. In this case, if the response should update a system object, the response must trigger an XUS to update the system object. Therefore, the XSL must map the response into an XML request that reference the appropriate service to update the system object.

Designing the Real Time Message Route Types

For this scenario, you must create two route types.

- Create an *XAI Route Type* for the real time message. Indicate the sender, the request XSL and the response XSL used for real time responses.

  **NOTE:**
  The sender referenced on the route type should be one that supports synchronous communication (such as an HTTP sender).

- Create an XAI route type for the near real time message. Indicate the sender, the request XSL and the response XSL used for near real time responses. Mark the route type to check the flags Receive Acknowledge and Post Response. These flags indicate to XAI that a response should be received and that additional processing is required.

Designing the Real Time Message NDS Types and Download Profile

For this scenario you must create two NDS types

- One NDS type is used for the real time message. Indicate an appropriate notification download condition. This allows the mechanism that creates the NDS to refer to this condition rather than hard-coding the NDS type.
- One NDS type is used for the near real time message. This NDS type must reference a special XAI inbound service used to indicate to the download staging sender that the XDS does not need to be created.

  **NOTE:**
  **Download Condition**. The real time message engine receives the NDS type as input. It is the user exit's responsibility to determine the appropriate NDS type based on a notification download condition.

You'll need to create an entry in the service provider's *notification download profile* for each NDS type. Set the processing method to XAI and indicate the appropriate route type (real time or near real time) created above.

Designing the Near Real Time Response

To process a response to the near real time message, you must also design the XAI inbound service to be used to process the response.

- The XSL transformation scripts that are referenced by the inbound service should populate the appropriate XML elements to allow XAI to recognize that the inbound message is a response.

- Otherwise, the inbound service should be designed to process this message as appropriate. For example, if the response should update the status of the record that initiated the outgoing request, the inbound service should reference the appropriate schema to update the appropriate record.

## Designing Near Real Time NDS Messages

As described above, near real time NDS messages require you to define:

- A *download staging receiver* to process records on the NDS table.
- A download staging *sender* to process "responses" to the download staging receiver.

The following sections identify other control table design issues.

Consider the following integration scenario. A change to a certain type of record in your product should trigger a message to an external system to inform that system of the change. This will be a near real time message and we expect an asynchronous response.

**Contents**



Designing the XML Request and Inbound Service

You should work with the external system to determine the information they require for this message. If a system service already exists to extract all the required information, you may use that service. However, it's possible that you would need to create a new service to extract the information you need.

Your implementers must create an appropriate service and then use the *schema editor* to create request and response schemas based on this service.

> **NOTE:**
> **Message ID**. If you expect an asynchronous response to this message, the request and response schemas must include a private attribute to hold the MessageID .

Create an XAI inbound service for extracting the appropriate information and building the XML request.

Designing the Near Real Time NDS Type

Define an appropriate NDS type. The information defined here is required to successfully build the XML request.

- Indicate the XAI Inbound Service created above.
- Indicate an appropriate notification download condition. This allows the mechanism that creates the NDS to refer to this condition rather than hard-coding the NDS type.
- Use the notification download type context to identify the data required to build the request to invoke the XAI Inbound Service for this download type. In our case, context types must be defined for the business object id and the message id. Use the *XPATH* to indicate the relative page for this element in the request schema.

| Context Type | XPATH |
|---|---|
| Maintenance Object ID | //ExtractInfoService/ExtractInfoHeader@MaintenanceObjectID |
| Message ID | //ExtractInfoService/ExtractInfoHeader/MessageID |

Designing the Near Real Time Route Type

You must create an *XAI Route Type*. The route type identifies the sender for routing the message and the XSL transformation script required to transform the request into a format expected by the sender.

If the sender supports synchronous communication, you must check the Receive Acknowledge and Post Response flags to successfully process the response. Our scenario indicated that we expect an asynchronous response so we'll leave these flags unchecked.

> **NOTE:**
> **Routing Optional**. If the message does not require routing, you are not required to define an XAI route type.

Designing the Response

If you expect a response to the message sent, you must also design the XAI inbound service to be used to process the response.

- The XSL transformation scripts that are referenced by the inbound service should populate the appropriate XML elements to allow XAI to recognize that the inbound message is a response.
- Otherwise, the inbound service should be designed to process this message as appropriate. For example, if the response should update the status of the record that initiated the outgoing request, the inbound service should reference the appropriate schema to update the appropriate record.

## Designing Notif. Download Profiles

A notification download profile controls how the system routes notifications to third parties. You associate a notification download profile with one or more service providers. Whenever a notification is sent to a service provider, the system uses the notification download profile to determine the interface method and the format of notifications.

> **NOTE:**
> **A notification download profile corresponds with a protocol used to route notifications to service providers.** If you electronically route all notifications using the same protocol (for example, all service providers in a given jurisdiction may conform to the same record formatting and routing method), you will have a single notification download profile. If you have to route notifications using different protocols to different providers, you will need one notification download profile per protocol.

Using the notification download profile, you can define which outgoing messages are sent as an XML document via the XAI tool and which are sent in batch format. When a message is designated as being sent via the XAI tool, then you typically define XAI routing information. If a message is designated as being sent via batch, then you must indicate the formatting algorithm used by the extract program.

> **NOTE:**
> **XAI Routing Information Optional**. You may indicate that the message should be routed via XAI, but enter no XAI Routing information. You may do this when you are interfacing with one of your own external systems and where the system may be accessed directly. In this scenario, you are using the XAI functionality to communicate between systems using XML documents, but you don't need the routing logic within XAI. Refer to *An NDS Message That Doesn't Require Routing* for more information.

The easiest way to design a notification download profile is to choose a representative service provider and design a notification download profile for it by filling in the following matrix. After you've designed a profile, determine how many other service providers can use it. Then design the next service provider's profile and determine who can reuse it. Repeat this process until all your service providers have a profile. Once the profiles are designed, you're ready to set up the control tables.

| Background Process used for batch messages | Notification Download Type | Processing Method | XAI Route Type | Format Method |
|---|---|---|---|---|
| File Transfer | Inform all parties that customer is stopping service | Batch | | Format Stop |
| | Inform all parties that meter has been changed | XAI | Meter Change | |
| | Send consumption history | Batch | | Format Consumption |
| | Check if it's OK to switch customer from current supplier | XAI | Confirm Switch | |
| | Reject request | XAI | Reject | |

Notice that you define the background process at the profile level, but you indicate for each download type whether it will be processed via batch or via XAI. If at least one of the processing methods is batch, then a background process must be entered, otherwise it's not applicable.

Also note that it is possible to link more than one XAI route type to each notification download type formatting method. However, this is not recommended if you expect an *asynchronous response to the NDS message*.

After you've designed notification download profiles to cover every protocol, you are ready to set up the control tables.

**FASTPATH:**
Refer to *Notification Download Background Processes*.

# Setting Up Notification and Workflow Procedures

In the previous sections, *Designing Notification Upload & Workflow Procedures* and *Designing Notification Downloads*, we presented a case study that illustrated a mythical organization's workflow procedures. In this section, we'll explain how to set up the control tables to implement these procedures.

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## Setting Up Workflow Event Types

Workflow event types control what is done by a given workflow event. Open **Admin** > **Workflow Event Type** > **Add** to define your workflow event types.

**FASTPATH:**
Refer to *Designing Workflow Event Types* f **or more information**.

**Description of Page**

Enter a unique **Workflow Event Type** and **Description** for the event type.

Turn on **Allow Manual Completion** if an operator is allowed to change the status of workflow events of this type to Complete .

The **Event Activation Algorithm** is used by the system when it activates a workflow event of this type. Refer to *Executing Workflow Events On Their Trigger Date* and *Designing Workflow Event Types* for more information. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms*).
- On this algorithm, reference an Algorithm Type that is associated with workflow event activation. The system comes supplied with several sample algorithm types that should be used as a sample if you have to write a new algorithm type. Click *here* to see the algorithm types available for this system event.

The **Event Failure Algorithm** is used by the system when a workflow event of this type fails. This algorithm need only be defined if events of this type can fail. Refer to *Some Workflow Events May Fail* and *Designing Workflow Event Types* for more information. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that is associated with workflow event failure. The system comes supplied with several sample algorithm types that should be used as a sample if you have to write a new algorithm type. Click *here* to see the algorithm types available for this system event.

The **Wait Process** is the background process responsible for monitoring workflow events of this type that are in the Waiting state. Refer to *Waiting Events And Their Waiting Process* for more information.

**Where Used**

Follow this link to view the tables that reference *CI_WF_EVT_TYPE* in the data dictionary schema viewer.

## Setting Up Workflow Process Templates

A workflow process template defines the workflow events that will be created when a workflow process is created using a template.

**FASTPATH:**
Refer to *Designing Workflow Process Templates***for more information**.

**Contents**



## Workflow Process Template - Main

Open **Admin** > **Workflow Process Template** > **Add** to define your workflow process templates.

**Description of Page**

Enter a unique **Workflow Process Template** code and **Description** for the workflow process template.

The system needs to know the type of workflow process to create when a notification is uploaded that does not contain a valid External System or Notification Upload Type (these two fields are the ones that control the type of workflow process that's created to process the uploaded notification). If you create workflow process templates and label them with a **Notification Condition** of Unknown Notification ID or Unknown Notification Type , the notification upload process will create a respective workflow process when either of the above conditions are discovered. Note: most utilities create an outgoing notification rejecting the uploaded notification when such conditions transpire. The notification condition field is also available for use by your plug-in algorithms for any purpose where you need to identify a specific workflow process.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is WF_PROC_COND_FLG.

Use **Comments.** to describe the workflow process template.

When a workflow process is created, the system links one or more workflow events to it. The information in the **Workflow Responses** scroll defines these events and when they will be triggered. The following fields are required for each event:

**Event Sequence.** Sequence controls the order in which the workflow events are executed. The sequence number is system-assigned and cannot be changed. If you have to insert a workflow event between two existing events, you'll have to remove the latter events, insert the new event, and then re-specify the removed events.

**Workflow Event Type.** Specify the type of workflow event to be generated. The event type's description is displayed adjacent.

**Dependent on Other Events.** Turn this indicator on if the trigger date of the event can only be determined after earlier events are complete. Refer to *Workflow Event Dependencies & Trigger Date* for more information. If this switch is on, you must define the events on which this response depends in the **Dependent on Other Events** grid.

**Days After Previous Response.** Specify the number of calendar days after the completion of the dependent events on which the workflow event will be triggered. If this event is not dependent on the completion of other events, this field contains the number of calendar days after the creation of the workflow process that the related workflow event will be triggered.

When the **Dependent on Other Events** switch is on, a grid appears in which you specify the events on which this event is dependent. The following fields are required for each event:

**Sequence.** Sequence is system-assigned and cannot be specified or changed.

**Dependent on Sequence.** Specify the sequence number of the workflow event type on which the above workflow event depends.

**Workflow Event Type.** The system displays the ID of dependent workflow event in this column.

**FASTPATH:**
For more information about workflow event templates, see *Setting Up Workflow Event Types*. For more information about trigger dates, see *Workflow Event Dependencies & Trigger Date*.

**Where Used**

A Workflow Process Profile references one or more workflow process templates. Refer to *Setting Up Workflow Process Profiles* for more information.

A Workflow Process references a workflow process template. Refer to *Workflow Process - Main* for more information.

## Workflow Process Template - Template Tree

Open **Admin** > **Workflow Process Template** > **Search** and navigate to the **Template Tree** page to view information about your workflow process template.

**Description of Page**

This page is dedicated to a *tree* that shows the events linked to the workflow process and information about the event dependencies. You can use this tree to both view high-level information about these objects and to transfer to the respective page in which an object is maintained.

## Setting Up Notification Upload Types

Every notification upload staging record has a notification upload type. This code is one of several fields that control the type of workflow process used to process the incoming notification. Open **Admin** > **Notification Upload Type** to define your notification upload types.

> **FASTPATH:**
> Refer to *Designing Notification Upload Types* f **or more information**.

**Description of Page**

Enter a recognizable **Notification Upload Type** and **Description**.

Enter a value for the **Upload Condition Flag** when a system condition should trigger the creation of a notification record. Refer to *System Conditions May Trigger Notification and Workflow* for more information.

> **NOTE:**
> The values for this field are customizable using the Lookup table. This field name is NT_UP_TY_COND_FLG.

If NUS records of this type will be associated with an **Extension** record, indicate the extension here along with its **Navigation Option** to allow a user to navigate to the correct extension record when viewing the notification upload staging record. Refer to *Navigating to Related NUS Extension* for more information.

**Where Used**

A *Notification Upload Staging* record must reference a notification upload type.

A *Workflow Process Profile* references one or more notification upload types.

## Setting Up External Systems

Every notification upload staging record references the system that sent the message. The external system is one of several fields that control the type of workflow process used to process the incoming notification. Refer to *External Systems* for more information.

## Setting Up Workflow Process Profiles

The system uses a workflow process profile to determine the type of workflow process to create for incoming notifications sent by the service provider. A workflow process profile is associated with one or more service providers. Open **Admin** > **Workflow Process Profile** > **Add** to define your workflow process profiles.

> **FASTPATH:**
> Refer to *Designing Workflow Process Profiles***for more information**.

**Description of Page**

Define a unique ID and **Description** for each workflow **Process Profile**.

The information in the grid defines the type of workflow process that will be created for each **Notification Upload Type**. The type of workflow process may differ depending on special criteria. For example, you may have a different workflow process if the customer is industrial (as compared to commercial and residential). You must define Default criteria in case none of the override criteria are met (the Default criteria should have the lowest priority). You MAY have override criteria if different situations result in different types of workflow processes.

The following fields are required for each criterion:

**Priority** The priority controls the order in which the system determines if the respective workflow process should be used to process notifications of a given type. Higher priorities are checked before lower priorities.

> **NOTE:**
> The values for this field are customizable using the Lookup table.

**Criteria Algorithm** Select the algorithm to be used to check if the workflow process should be initiated for notifications of a given type. If a condition is met, a workflow process is created using the associated workflow process template.

If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that determines if an incoming notification should be processed using the associated **Workflow Process Template**. The system comes supplied with a sample algorithm type called that should be used as a sample if you have to write a new algorithm type. Click *here* to see the algorithm types available for this system event.

> **IMPORTANT:**
> You must have at least one entry in this collection otherwise the system will not start a workflow process when an incoming notification of this type is received. This entry should have the lowest priority code and should reference a **Criteria Algorithm** that references the default workflow criteria algorithm type.

**Workflow Process Template** Specify the workflow process template to use to process incoming notifications identified with the notification upload type.

> **FASTPATH:**
> Refer to *Designing Workflow Process Criteria* for more information.

## Setting Up Notification Download Types

Every notification download staging record has a notification download type. This code controls the format of the record that is sent to a service provider. Open **Admin** > **Notification Download Type** to define your notification download types.

> **FASTPATH:**
> Refer to *Designing Notification Download Types* f **or more information**.

**Contents**



## Notification Download Type - Main

Every notification download staging record has a notification download type. This code controls the format of the record that is sent to a service provider. Open **Admin** > **Notification Download Type** to define your notification download types.

**Description of Page**

Enter a unique **Notification Download Type** and **Description.**

Specify the **XAI In Service Name** that will be called for this NDS type if the download profile formatting method indicates that this download type will be processed by XAI.

Enter a value for the **Download Type Condition Flag** when a system condition should trigger the creation of a notification record. Refer to *System Conditions May Trigger Notification and Workflow* for more information.

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is NT_DWN_TY_COND_FLG.

Indicate the relative **Priority** for processing NDS records of this type with respect to other types. This value defaults to Priority 90 - Lowest .

**NOTE:**
The values for this field are customizable using the Lookup table. This field name is NT_DWN_TY_PRIO_FLG.

## Notification Download Type - Context

If the notification download staging record is communicated to the external system through XAI, the NDS context is used to help build the XML document.

**Description of Page**

The context collection functionality allows you to define a collection of **Context Types** that should be defined for a notification download staging record of this type. When the NDS record is created, with its collection of these Context Types, the Context Values would correspond to system data related to this NDS record. In addition, you may specify a **Context Value** if this is a constant value for NDS records of this type.

The **XPATH** is used by XAI NDS Types. For each context type, use the XPATH to indicate the relative path in the XML document where the field value will be placed when building the XML document.

**Where Used**

A Notification Download Staging record must reference a notification download type. Refer to *Process X - Populate Notification Upload Staging* for more information.

A Notification Download Profile references one or more notification download types. Refer to *Setting Up Notification Download Profiles* for more information.

## XAI Route Type

Use this page to define information required by the XAI tool to send outgoing messages. Navigate to this page using **Admin** > **XAI Route Type** > **Add.**

**Description of Page**

Enter the **XAI Route Type**, which defines the information required for outgoing messages, which use the XAI tool. Enter a **Description** for this route type.

The **XSL Request** is the schema used to transform information from the format produced by the system to a format understood by the sender, who receives a message of this type.

The **XSL Response** is the schema used to transform information from the format sent to us by the sender, who responds to this message into a format understood by the system.

Use the **XAISender** to indicate where messages of this type should be sent.

> **FASTPATH:**
> Refer to *Message Sender* for more information.

Check the **Receive Acknowledge** box if the system expects to receive a synchronous response to outgoing messages of this type.

Check the **Post Response** box if a synchronous response to an outgoing message requires something to occur in the system. If the box is checked, a response to a message of this type causes an *XAI upload staging* record to be created. That record is processed along with other uploaded messages, to invoke an appropriate service.

**Where Used**

All outgoing messages are sent through the notification download staging record. Information related to the formatting of messages is defined on a notification download profile.

## Setting Up Notification Download Profiles

A notification download profile controls how the system routes notifications to service providers. You associate a notification download profile with one or more service providers. Whenever a notification is sent to a service provider, the system uses the notification download profile to determine the interface method and the format of notifications.

Open **Admin** > **Notification Download Profile** > **Add** to define your notification download profiles.

> **FASTPATH:**
> Refer to *Designing Notification Download Profiles* for more information.

**Description of Page**

Define a unique ID and **Description** for each **Download Profile**.

Use **NDS Extract Process** to define the background process that creates notification download records and interfaces them out of the system.

The information in the scroll controls how the **Extract Process** formats an interface record for each **Notification Download Type**. In addition to defining a **Description** and **Comments**, you must define the **Processing Method**. The valid values are XAI and Batch .

If your processing method is Batch , you need to define the **Notification Format Algorithm** that actually formats the interface record. If you haven't done so already, you must set up this algorithm in the system. To do this:

- Create a new algorithm (refer to *Setting Up Algorithms* ).
- On this algorithm, reference an Algorithm Type that is associated with workflow event failure. The system comes supplied with several sample algorithm types that should be used as a sample if you have to write a new algorithm type. Click *here* to see the algorithm types available for this system event.

If your processing method is XAI , you may define one or more **XAI Route Types**. The *XAI Route Type* describes how the message should be formatted and the destination of the message.

# Defining Umbrella Agreement Options

Your organization may use umbrella agreement functionality to manage many situations, including (but not limited to) the following:

- Creating a "negotiated contract" with a large customer with many sites.
- Creating a "negotiated contract" with all customers in a common geographic area, for example a specific city or an apartment complex
- Grouping and managing the proposal service agreements created during the quoting process
- Managing the renewal process for special contracts
- Applying override rate terms to one or more service agreements for a given effective period
- more...

**NOTE:**
**Separately module.** The umbrella agreement functionality is part of the Contract Management module. If this module is not applicable to your business you may turn it off. Refer to *Turn Off A Function Module* for more information.

**Contents**



# The Big Picture Of Umbrella Agreements

The topics in this section provide background information about how to configure the system to support your umbrella agreement requirements.

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## Renewable Umbrella Agreements

When defining your umbrella agreement types, you must determine if umbrella agreements of this type are renewable. If so, you must set the renewal flag on the UA type to Renewable and determine the number of days prior to the end date of the umbrella agreement that the renewal process should start.

In addition, you must decide on your renewal procedure and design an appropriate renewal *algorithm*. You may use one of the sample renewal algorithms provided by the system.

- The sample algorithm *URNW-TD* creates a To Do entry. Using this algorithm you can direct the To Do entry to an appropriate role to determine if the umbrella agreement should be renewed. If the umbrella agreement is associated with an account management group, the To Do entry could be assigned to a role defined for that AMG.
- The sample algorithm *URNW-CA* creates a *case*. Using this algorithm you can create an appropriate case to help track the steps required for renewing an umbrella agreement.

If the base algorithms do not provide the logic your organization needs, you may create a new algorithm.

**NOTE:**

It is the responsibility of the renewal algorithm to change the renewal date as per the business requirements. If renewal requires manual review, the algorithm should reset the date to blank. If the algorithm can determine a new renewal date, the date should be changed to the appropriate value.

## Terms Of Service Covered Entities

For each terms of service type you design, consider whether or not a TOS created for this type should reference one or more entities in the system that are "covered" by the terms of service. Following are some examples of covered entities:

- A special contract is created for all the McDonalds franchises in your service area. When creating the terms of service record for the umbrella agreement used for this contract, you want the user to link the person record representing the McDonalds corporate entity as a covered entity for the TOS.
- An umbrella agreement is created for a large customer with several types of services. Perhaps you want to group the services in the contract based on type of service. The service type may be set up as a covered entity.

The covered entities could also be used to denote eligibility. Refer to *Linking To A UA For A Group Of Premises* for an example of using the covered entity collection for eligibility.

The covered entities are actually characteristics. You must define the desired characteristic types if they do not already exist. In this case, they would be foreign key characteristic types. The characteristic types that you want to use must reference a characteristic entity of TOS covered entity .

A terms of service record may only reference covered entity types that you designate on the TOS type record. When designing the covered entities that are allowed for TOS records of a given type, you may also configure the TOS type to indicate that one or more covered entity types are required.

Refer to *Terms Of Service Type - Main* for more information.

## Overriding Rate Terms

If your organization has business rules that require a service agreement's rate terms to be overridden, you can accomplish this using umbrella agreements and terms of service records. There are two levels of overriding that are possible:

- Override rate schedule
- Override other terms on the rate, including contract riders, contract terms and tax exemptions

To override any rate terms, the service agreement must be linked to a terms of service record that references a template service agreement. In addition, you must configure settings in the system to indicate whether or not overriding of terms is allowed.

- The *SA type* for the customer's service agreement indicates whether or not the rate schedule may be overridden using the rate source flag.
  - If the rate source value is Check TOS First, then SA , when applying the rate, the system determines if the SA is linked to a TOS effective at the time of the bill with a template SA. If so, the rate schedule on the template SA is used.
  - If the rate source value is Check SA Only , when applying the rate, the always uses the rate schedule on the customer's SA (regardless of whether or not the SA is linked to a TOS effective at the time of the bill with a template SA).
- If any bill factor on one of calculation rule indicates that it is eligible for tax exemptions, contract terms or contract riders, the terms of service usage flag on the bill factor indicates where the system should look for the appropriate value. The flag tells the system to find applicable information either on the TOS's template SA only, on the customer's SA only or it should first check the TOS, then check the customer's SA.

The following table illustrates the different scenarios possible when configuring your bill factors and the resulting behavior. The term "standard behavior" in the tables below indicate that the standard behavior as described in *Defining Bill Factors* is followed.

| | TOS Usage | Template SA | Customer SA | BF Char Source |
|---|---|---|---|---|
| Contract Rider Applicability is checked | Check TOS First, then SA | Found | Not checked | If source = SA, the template SA's characteristic collection is checked. If source <> SA, the standard behavior is followed. |
| | | Not Found | Found | If source = SA, the customer SA's characteristic collection is checked. If source <> SA, the standard behavior is followed |
| | | Not Found | Not Found | N/A |
| | Check TOS Only | Found | Not checked | If source = SA, the template SA's characteristic collection is checked. If source <> SA, the standard behavior is followed |
| | | Not Found | Not checked | N/A |
| | Check SA Only | Not checked | Standard behavior | |

| | TOS Usage | Template SA | Customer SA | BF Value Source | BF Char Source |
|---|---|---|---|---|---|
| Value in Contract Term is checked | Check TOS First, then SA | Found | Not checked | Template SA | N/A |
| | | Not Found | Found | Customer SA | N/A |
| | | Not Found | Not Found | Bill Factor Value (based on Char Source) | If source = SA, the template SA's characteristic collection is checked. If source <> SA, the standard behavior is followed |
| | Check TOS Only | Found | Not checked | Template SA | N/A |
| | | Not Found | Not checked | Bill Factor Value (based on Char Source) | If source = SA, the template SA's characteristic collection is checked. If source <> SA, the standard behavior is followed |
| | Check SA Only | Not checked | Standard behavior | | |

| | TOS Usage | Template SA | Customer SA | BF Value Source |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Tax Exemption is checked | Check TOS First, then SA | Found | Not checked | Template SA |
| | | Not Found | Found | Customer SA |
| | | Not Found | Not Found | No value |
| | Check TOS Only | Found | Not checked | Template SA |
| | | Not Found | Not checked | No value |
| | Check SA Only | Not checked | Standard behavior | |

Note that *proration* logic is followed for the above functionality as expected. For example, imagine that a bill factor with Value in Contract Terms is proratable and the TOS usage value is Check TOS First, then SA . If the template SA has a contract value that is only in effect for the first 10 days of a bill, that value is used for the first 10 days and the remaining days in the bill take the value from the SA (if applicable) or the bill factor value as per the table rules above.

**NOTE:**
When designing your terms of service type, you must indicate whether a template service agreement is optional , required or not allowed . When the template SA is required, the user setting up the TOS record for this TOS type must link the correct service agreement as the template SA. If a new template service agreement is required, the new SA must be created first.

# Setting Up Umbrella Agreement Options

The topics in this section describe how to set up umbrella agreement options.

**Contents**



# Configure SA Types for Umbrella Agreements

For each type of service agreement that may be linked to a terms of service record, you must configure the Rate Source for the *SA type* to indicate if the rate should always be taken from the service agreement ( Check SA Only ) or if the rate should be taken from the terms of service record for the service agreement, if any ( Check TOS First, then SA ).

**FASTPATH:**
Refer to *Overriding Rate Terms* for more information.

**NOTE:**
The rate source is only visible on SA type if the Contract Management module is not *turned off*.

## Configure Bill Factors for Umbrella Agreements

For each bill factor that has a value in contract term, contract rider applicability or tax exemption applicability, you must indicate where the system should look for a value when a service agreement is linked to a terms of service with a template SA and where this bill factor is referenced by the rate being applied. Using the terms of service usage flag, tell the system to Check TOS Only , Check SA Only or Check TOS First, then SA .

**FASTPATH:**
Refer to *Overriding Rate Terms* for more information.

**NOTE:**
The terms of service usage flag is only visible on bill factor if the Contract Management module is not *turned off*.

## Configure A Campaign To Link An SA To A Terms Of Service

The system provides a pair of column reference algorithm types that support linking a new service agreement to an existing terms of service record via an *order*. The pair includes a validation algorithm type *CRVL-SATOS* and a posting algorithm type *CRPS-SATOS*.

In order to take advantage of this functionality, you must:

- Create an algorithm for each of the above algorithm types. Only one algorithm is needed for each algorithm type because there are no parameters for either one.
- Setup a unique *column reference* for the terms of service ID column reference code and plug in the new validation and posting algorithms on the record.
- For campaigns whose orders link a new service agreement to an existing umbrella agreement, make sure to define a *miscellaneous field* for the terms of service ID. Note, the miscellaneous field must reference the column reference that you setup above.

Based on your business practice, you may want to further configure your campaign / package for linking a service agreement to an existing terms of service. Refer to *Linking A Service Agreement To A TOS Through Orders* for more information.

## Setting Up Umbrella Agreement Types

The umbrella agreement type transaction is used to maintain your UA types. The topics in this section describe how to use this transaction.

**Contents**



## Umbrella Agreement Type - Main

Open **Admin** > **Umbrella Agreement Type** > **Add** to define basic information about an umbrella agreement type.

**Description of Page**

Enter a unique **Umbrella Agreement Type** code and **Description** for the UA type.

Use **Renewal** to indicate whether an umbrella agreement of this type is Renewable or Not Renewable . For renewable UA types, indicate the **Renewal Days Before Expiration**. The renewal date for umbrella agreements of this type are calculated based on this number of days before the end date.

Use the characteristics collection to define characteristics that can be defined for umbrella agreements of a given type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on umbrella agreements of a given type. Turn on the **Default** switch to default the **Characteristic Type** when umbrella agreements of the given type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

> **NOTE:**
> **Characteristic Types.** You can only choose characteristic types defined as permissible on an umbrella agreement record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

Enter the valid **Terms of Service Type**s that may be referenced for umbrella agreements of this type.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_UA_TYPE*.

## Umbrella Agreement Type - Algorithms

Open **Admin** > **Umbrella Agreement Type** > **Search** and navigate to the **Algorithms** page.

**Description of Page**

The grid contains **Algorithms** that control important functions in the system. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (descriptions of all possible events are provided below).
- Specify the **Sequence** and **Algorithm** for each system event. You can set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** for which you can define algorithms.

| System Event | Description |
|---|---|
| UA Renewal | Algorithms of this type are executed by the UARENEW background process when an umbrella agreement has reached its renewal date.<br>Only one renewal algorithm is allowed for a given UA type.<br>Click *here* to see the algorithm types available for this system event. |

## Setting Up Terms Of Service Types

The terms of service type transaction is used to maintain your TOS types. The topics in this section describe how to use this transaction.

**Contents**

## Terms Of Service Type - Main

Open **Admin** > **Terms of Service Type** > **Add** to define basic information about terms of service types.

**Description of Page**

Enter a unique **Terms of Service Type** code and **Description** for the TOS type.

Use **Template SA Usage** to indicate whether a template SA is Optional , Required or Not Allowed . Refer to *Overriding Rate Terms* for more information about using template SAs.

Use the characteristics collection to define characteristics that can be defined for terms of service records of a given type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on terms of service records of a given type. Turn on the **Default** switch to default the **Characteristic Type** when terms of service records of the given type are created. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

> **NOTE:**
> **Characteristic Types.** You can only choose characteristic types defined as permissible on a terms of service record. Refer to *Setting Up Characteristic Types & Their Values* for more information.

Use the **Covered Entities** collection to define the types of entities that are "covered" by terms of service records of this type. Refer to *Terms Of Service Covered Entities* for more information

> **NOTE:**
> **Characteristic Types.** You can only choose characteristic types defined as permissible for TOS covered entity. Refer to *Setting Up Characteristic Types & Their Values* for more information.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TOS_TYPE*.

## Terms Of Service Type - UA Types

Open **Admin** > **Terms of Service Type** > **Add** and navigate to the **UA Types** page.

**Description of Page**

Enter the valid **Umbrella Agreement Type**s that may reference this terms of service type.

# Setting Up TOS Cancel Reasons

Whenever a terms of service record is canceled, a cancel reason must be specified. Open **Admin** > **TOS Cancel Reason** to specify such cancellation reasons.

**Description of Page**

Enter an easily recognizable **TOS Cancel Reason** and **Description** for the terms of service cancellation reason.

# Umbrella Agreements Configuration Examples

This section provides examples of how you would configure the system to support various business scenarios.

## Linking A Service Agreement To A TOS Through Orders

As described in *Configure A Campaign To Link An SA To A Terms Of Service*, the system has provided a pair of column reference algorithms to enable your users to link a new service agreement to an existing terms of service record (and its umbrella agreement) when starting service via the order transaction.

When designing your campaign and packages to use this option, consider the scenarios where you may use this to determine whether or not you require additional configuration. The following topics describe some possible scenarios.

**Contents**



### Linking To A UA For A Given Account

Imagine that you would use this logic when an important customer is starting additional service and has an existing umbrella agreement for other services that the new service should be added to. The user creating the order is probably the account manager for that account and would know the correct terms of service record to link the new service to.

For this scenario, you do not need to provide any "help" to the user to indicate that linking to a TOS is an option or to help select the correct TOS. You simply need to ensure that the campaign that would be used by this account manager to start service for the important customer simply includes a question / miscellaneous field to *link the SA to the terms of service*.

### Linking To A UA For A Group Of Premises

Imagine you have created an umbrella agreement for a group of premises that are not actively managed by a specific user. For example, perhaps there are several apartment complexes that have negotiated a special rate with your company. When new customers sign up for service at a premise that belongs to one of these apartments, the user should be informed that there is a special contract for this premise. The user may also need help selecting the correct terms of service record. To accomplish this logic, you must define additional algorithms to help your users.

For example, perhaps your standard campaign for residential electric customers includes a package to be used by premises linked to one of these apartment buildings and should only be eligible to one of those premises. You must create an eligibility algorithm for this package. Its logic could be designed based on the following assumptions:

- The qualifying premises are linked to a parent premise
- The parent premise is linked to the appropriate terms of service record in its covered entity collection

The eligibility algorithm checks to see if the order's premise is linked to a parent premise that is referenced on a terms of service record for an umbrella agreement that is currently in effect. It could also be restricted to search for a specific umbrella agreement type or terms of service type if appropriate.

**NOTE:**

The campaign for this scenario must include a question / miscellaneous field to *link the SA to the terms of service*. It should be configured with an applicability of only applicable on package . The package that is used to include the SA into the terms of service for the apartment complex would include this question / miscellaneous field.

Once the user chooses this package, user is prompted to provide the correct terms of service record via the question / miscellaneous field. To help the user, you should create a column reference retrieval algorithm to default the correct terms of service record for this premise. It would use the same logic as the eligibility algorithm described above. In other words, it would find the parent premise for this premise and then find the terms of service record covered entity collection includes this parent premise and whose umbrella agreement is currently in effect.

# Reports Addendum

This chapter is an addendum to the general *Defining and Designing Reports* chapter. This addendum describes the sample reports that are provided with Oracle Utilities Customer Care and Billing.

## Description of Sample Reports

This section provides an overview of each sample report supplied with Oracle Utilities Customer Care and Billing that may be found in the demonstration database. They may be used by your organization as they are or as a starting point for creating a *new report*.

**NOTE:**
**Account Security**. The sample reports provided with the product do NOT incorporate account security. If a user has been given security to view the report, then all the data in the report is available for viewing.

**Contents**

*To Do Entries - CI_TDENTR*

*Umbrella Agreement Summary - CI_UASUMM*

*Unbilled Revenues - CI_UBLREV*

*Vacant Premises with Consumption - CI_VACANT*

# Active Severance Processes - CI_ACSVPR

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | Start date to use for reporting severance processes. If not defined, start date is set to 1900-01-01. |
| End Date | P_TO_DT | End date to use for reporting active severance processes. If not defined to date is set to the current date. |

### Report Description

This report is used to aid in the monitoring of active severance processes. The report details are used to review how the company is doing as far as the collection of outstanding debt, as well as to monitor the progress of currently active severance processes.

The report selects active severance processes whose creation date is between the input start and end dates.

# Bill Print in BI Publisher - CI_BILLPR

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| CC&B user | P_USER_ID | No default value. Required. Returns an error message if user ID is null, empty or does not exist in database. |
| Batch Switch | P_BATCH_SW | For a single bill print, Batch Switch is 'No' and for multiple bill print, Batch Switch is 'Yes'. |
| First Bill | **P_FROM_BILL_ID** | First Bill Id to print for the Bill Range. |
| Last Bill | **P_TO_BILL_ID** | Last Bill Id to print for the Bill Range. |
| Batch Code | **P_BATCH_CD** | Passed in by the system the report is submitted in batch. Only bills with a Bill Routing that references this batch code are selected. |
| Batch Number | **P_BATCH_NBR** | Passed in by the system the report is submitted in batch. Only bills with a Bill Routing that references this batch number are selected. |
| Extract Algorithm | **P_EXTRACT_ALG** | Passed in by the system the report is submitted in batch. Only bills with a Bill |

| | |
|---|---|
| | Routing whose bill route type references this extract algorithm are selected. |

**Report Description**

This report is used with BI Publisher to display all the information that appears on the customer's printed bill for the bill ID entered in the input parameters. Refer to the description of the parameters above. The bill is only displayed if the bill is complete.

See below for details of the information extracted for the report. In addition, the sample report layout provided for the base product includes:

- Payment coupon.
- Form for change of address.
- A graph of consumption for current charges.

The following sections highlight the data that is extracted for this report.

**Contents**



## Bill Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SORT_KEY | A12 | Primary sort for the report - currently sorted by Bill Id |
| BILL_ID | A12 | CI_BILL |
| SEQNO | N5 | CI_BILL_ROUTING |
| PER_ID | A10 | CI_BILL_ROUTING |
| NBR_BILL_COPIES | N1 | CI_BILL_ROUTING |
| ENTITY_NAME1 | A64 | CI_BILL_ROUTING. Mailing Entity Name 1. |
| ENTITY_NAME2 | A64 | CI_BILL_ROUTING. Mailing Entity Name 2. |
| ENTITY_NAME3 | A64 | CI_BILL_ROUTING. Mailing Entity Name 3. |
| COUNTRY | A3 | CI_BILL_ROUTING |
| ADDRESS1 | A254 | CI_BILL_ROUTING |

| | | |
|---|---|---|
| ADDRESS2 | A254 | CI_BILL_ROUTING |
| ADDRESS3 | A254 | CI_BILL_ROUTING |
| ADDRESS4 | A254 | CI_BILL_ROUTING |
| CITY | A30 | CI_BILL_ROUTING |
| COUNTY | A30 | CI_BILL_ROUTING |
| STATE | A6 | CI_BILL_ROUTING |
| POSTAL | A12 | CI_BILL_ROUTING |
| IN_CITY_LIMIT | A1 | CI_BILL_ROUTING |
| BATCH_CD | A8 | CI_BILL_ROUTING |
| BATCH_NBR | N10 | CI_BILL_ROUTING |
| NO_BATCH_PRT_SW | A1 | CI_BILL_ROUTING |
| ACCT_ID | A10 | CI_BILL |
| BILL_STAT_FLG | A2 | CI_BILL |
| BILL_DT | Date | CI_BILL |
| DUE_DT | Date | CI_BILL |
| ACCT_ENTITY_NAME | A64 | Get Main Person from CI_PER_NAME. Account Entity Name |
| LANGUAGE_CD | A3 | Person's Language from CI_PER |
| CURRENCY_CD | A3 | CI_ACCT |
| CUR_SYMBOL | A4 | CI_CURRENCY_CD |
| DECIMAL_POSITIONS | N1 | CI_CURRENCY_CD |
| CUR_POS_FLG | A2 | CI_CURRENCY_CD |
| OPEN_ITEM_SW | A1 | CI_CUST_CL |
| BILL_COPY | A1 | Bill copy number |

## Bill Segment Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| BSEG_ID | A12 | CI_BSEG |
| SA_ID | A10 | CI_BSEG |
| START_DT | Date | CI_BSEG |
| END_DT | Date | CI_BSEG |
| BILL_CYC_CD | A4 | CI_BSEG |
| WIN_START_DT | Date | CI_BSEG |
| EST_SW | A1 | CI_BSEG |
| CLOSING_BSEG_SW | A1 | CI_BSEG |
| PREM_ID | A10 | CI_BSEG |
| CIS_DIVISION | A5 | CI_SA |

| | | |
|---|---|---|
| SA_TYPE_CD | A8 | CI_SA |
| SAT_DESCR | A60 | CI_SA_TYPE_L |
| BILL_PRT_PRIO_FLG | A2 | CI_SA_TYPE |
| GRAPH_UOM_CD | A4 | CI_SA_TYPE |
| HEADER_SEQ | N3 | CI_BSEG_CALC |
| BCALC_START_DT | Date | CI_BSEG_CALC |
| BCALC_END_DT | Date | CI_BSEG_CALC |
| RS_CD | A8 | CI_BSEG_CALC |
| EFFDT | Date | CI_BSEG_CALC |
| BILLABLE_CHG_ID | A12 | CI_BSEG_CALC |
| CALC_AMT | N15.2 | CI_BSEG_CALC |
| BCALC_DESC_BILL | A80 | CI_BSEG_CALC |
| SEQNO | N5 | CI_BSEG_CALC_LN |
| PRT_SW | A1 | CI_BSEG_CALC_LN |
| APP_IN_SUMM_SW | A1 | CI_BSEG_CALC_LN |
| CALC_LN_AMT | N15.2 | CI_BSEG_CALC_LN |
| DST_ID | A10 | CI_BSEG_CALC_LN |
| MSR_PEAK_QTY_SW | A1 | CI_BSEG_CALC_LN |
| DESCR_LN | A80 | CI_BSEG_CALC_LN |
| STATE | A6 | CI_PREM |
| CITY | A30 | CI_PREM |
| POSTAL | A12 | CI_PREM |
| SIBLING_ID | A12 | CI_FT |

## Account Summary Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| CURRENCY_CD | A3 | Derived from CI_BILL_SA or CI_FT. |
| SUM_CUR_AMT | S15.2 | Get Bill's Current Balance from CI_BILL_SA<br>Bill's Current Charge from CI_FT<br>Bill's Current Correction Charge from CI_FT<br>Bill's Current Adjustment from CI_FT<br>Bill's Current Payment from CI_FT |
| SUM_TOT_AMT | S15.2 | Get Bill's Total Balance from CI_BILL_SA<br>Bill's Total Charge from CI_FT<br>Bill's Total Correction Charge from CI_FT<br>Bill's Total Adjustment from CI_FT<br>Bill's Total Payment from CI_FT |

| | | |
|---|---|---|
| BILL_PRT_FLG | A4 | Set as follows:<br>ASBL - Indicator for Bill's Balance from CI_BILL_SA<br>ASBS - Indicator for Bill's Current Charge from CI_FT<br>ASBC - Indicator for Bill's Correction from CI_FT<br>ASAD - Indicator for Bill's Adjustment from CI_FT<br>ASPS - Indicator for Bill's Payment from CI_FT |

## Current Charge Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SUM_CUR_AMT | S15.2 | Derived from CI_FT (Only the current charge bill segments.) |
| SUM_TOT_AMT | S15.2 | Derived from CI_FT (Only the current charge bill segments.) |
| CURRENCY_CD | A3 | CI_BILL_SA or CI_FT |
| DEBT_CL_CD | A4 | Debt Class of SA Type |
| DESCR | A60 | Debt Class Description |

## Premise Information

One record for every premise linked to the bill.

| Field Name | Format | Source/Value/Description |
|---|---|---|
| PREM_ID | A10 | Premise Id obtained from Bill Segment |
| PREM_TYPE_CD | A8 | CI_PREM |
| LL_ID | A10 | CI_PREM |
| MAIL_ADDR_SW | A1 | CI_PREM |
| TREND_AREA_CD, | A8 | CI_PREM |
| COUNTRY | A3 | CI_PREM |
| ADDRESS1 | A254 | CI_PREM |
| ADDRESS2 | A254 | CI_PREM |
| ADDRESS3 | A254 | CI_PREM |
| ADDRESS4 | A254 | CI_PREM |
| CITY | A30 | CI_PREM |

| | | |
|---|---|---|
| NUM1 | A6 | CI_PREM |
| NUM2 | A4 | CI_PREM |
| HOUSE_TYPE | A2 | CI_PREM |
| COUNTY | A30 | CI_PREM |
| STATE | A6 | CI_PREM |
| POSTAL | A12 | CI_PREM |
| GEO_CODE | A11 | CI_PREM |
| IN_CITY_LIMIT | A1 | CI_PREM |

## Auto Pay Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| BILL_ID | A12 | CI_APAY_CLR_STG |
| APAY_SRC_CD | A12 | CI_APAY_CLR_STG |
| EXT_ACCT_ID | A50 | CI_APAY_CLR_STG |
| SCHED_EXTRACT_DT | Date | CI_APAY_CLR_STG. The date that the automatic payment will be downloaded. |
| APAY_SRC_NAME | A30 | CI_APAY_SRC_L |
| APAY_SRC_DESCR | A60 | CI_APAY_SRC_L |
| TNDR_TYPE_DESCR | A60 | CI_TENDER_TYPE_L |
| TENDER_TYPE_CD | A4 | CI_TENDER_TYPE |

## Bill Segment Readings

| Field Name | Format | Source/Value/Description |
|---|---|---|
| BSEG_ID | A12 | CI_BSEG_READ |
| SP_ID | A10 | CI_BSEG_READ |
| SEQNO | N5 | CI_BSEG_READ |
| REG_CONST | S12.6 | CI_BSEG_READ |
| USAGE_FLG | A2 | CI_BSEG_READ |
| USE_PCT | S3 | CI_BSEG_READ |
| HOW_TO_USE_FLG | A2 | CI_BSEG_READ |
| MSR_PEAK_QTY_SW | A1 | CI_BSEG_READ |
| UOM_CD | A4 | CI_BSEG_READ |
| TOU_CD | A8 | CI_BSEG_READ |
| SQI_CD | A8 | CI_BSEG_READ |
| START_REG_READ_ID | A12 | CI_BSEG_READ |

| | | |
|---|---|---|
| START_READ_DTTM | DTTM | CI_BSEG_READ |
| START_REG_READING | S15.6 | CI_BSEG_READ |
| END_REG_READ_ID | A12 | CI_BSEG_READ |
| END_READ_DTTM | DTTM | CI_BSEG_READ |
| END_REG_READING | S15.6 | CI_BSEG_READ |
| MSR_QTY | S18.6 | CI_BSEG_READ |
| FINAL_UOM_CD | A4 | CI_BSEG_READ |
| FINAL_TOU_CD | A8 | CI_BSEG_READ |
| FINAL_SQI_CD | A8 | CI_BSEG_READ |
| FINAL_REG_QTY | S18.6 | CI_BSEG_READ |
| BADGE_NBR | A30 | CI_MTR |
| NBR_OF_DGTS_RGT | S2 | CI_REG |

## Bill Segment Consumption History

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SA_ID | A10 | CI_BSEG |
| START_DT | Date | CI_BSEG |
| BSEG_ID | A12 | CI_BSEG |
| END_DT | Date | CI_BSEG |
| UOM_CD | A4 | CI_BSEG_SQ |
| TOU_CD | A8 | CI_BSEG_SQ |
| SQI_CD | A8 | CI_BSEG_SQ |
| QTY | S18.6 | Service Quantity from CI_BSEG_SQ |

## Payment Information

One record for every payment linked to the bill.

| Field Name | Format | Source/Value/Description |
|---|---|---|
| PAY_DT | Date | CI_PAY_EVENT |
| FT_TYPE_FLG | A2 | Pay or Pay Cancel ('PS' or 'PX') |
| CAN_RSN_CD | A4 | CI_PAY |
| CURRENCY_CD | A3 | CI_FT. |
| CUR_AMT | S15.2 | Derived from CI_FT. Sum of CUR_AMT for the bill with FT Type Flag = (PS or PX) and Show on Bill Switch = 'Yes' |

| | | |
|---|---|---|
| TOT_AMT | S15.2 | Derived from CI_FT. Sum of CUR_AMT for the bill with FT Type Flag = (PS or PX) and Show on Bill Switch = 'Yes' |
| TOT_PREV_BAL | S15.2 | Calculated as Previous Balance = Ending Balance - (current charges + payments + adjustments + corrections) |
| PAY_CAN_RSN_DESCR | A60 | Description of cancel reason code. (Note, that this is retrieved in a special stored procedure that retrieves all the cancel reason codes and descriptions.) |

## Adjustment Information

One record for every adjustment linked to the bill.

| Field Name | Format | Source/Value/Description |
|---|---|---|
| BILL_ID | A12 | CI_FT |
| ACCOUNTING_DT | Date | CI_FT |
| ARS_DT | Date | CI_FT |
| PARENT_ID | A12 | CI_FT |
| SIBLING_ID | A12 | CI_FT |
| FT_ID | A12 | CI_FT |
| CUR_AMT | S15.2 | CI_FT |
| TOT_AMT | S15.2 | CI_FT |
| FT_TYPE_FLG | A2 | Adjustment or Adjustment Cancel ('AD' or 'AX') |
| SHOW_ON_BILL_SW | A1 | CI_FT |
| CURRENCY_CD | A3 | CI_FT |
| XFERRED_OUT_SW | A1 | CI_FT |
| ADJ_TYPE_CD | A8 | CI_ADJ |
| CAN_RSN_CD | A4 | CI_ADJ |
| SA_ID | A10 | CI_ADJ |
| CHAR_PREM_ID | A10 | CI_SA |
| DESCR_ON_BILL | A80 | CI_ADJ_TYPE_L |
| ADJ_CAN_RSN_DESCR | A60 | Description of cancel reason code. (Note that this is retrieved in a special stored procedure that retrieves all the cancel reason codes and descriptions.) |

## Bill Message Information

One record for every bill message linked to the bill.

| Field Name | Format | Source/Value/Description |
|---|---|---|
| MSG_PRIORITY_FLG | A12 | CI_BILL_SA or CI_FT |
| INSERT_CD | S15.2 | CI_BILL_SA or CI_FT |
| MSG_ON_BILL | S15.2 | CI_BILL_SA or CI_FT |

## Billed Revenues by Rate - CI_BILREV

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Accounting Period | P_ACCT_PERIOD | Defines the accounting period used for the report. A valid fiscal year and accounting period for a valid accounting calendar must be provided. |
| Account Type Characteristic | P_CHAR_TYPE | Defines a Characteristic Type for a characteristic linked to the Distribution Code to define an Account Type. |
| Account Type | P_REV_ACCTY_CHAR | Account Type Char Value for Revenue related GL Accounts. The char type defined for this parameter should match the Char Type code defined as parameter #2. The parameter value indicated for this parameter should be one that represents revenue accounts. |

### Report Description

This is an analysis report for the billed revenues for an accounting period according to the various rates, which were in effect in the system. The information in this report helps to adjust rates in order to achieve better financial results and comply with regulations and market trends.

This report selects all records in the financial transaction GL collection that satisfy the following criteria:

- The financial transaction is frozen.
- The Accounting Date on the financial transaction within input accounting period (parameter 1)
- The distribution code associated with the GL entry has a characteristic type and value that matches the input Account Type Characteristic and Account Type (parameters 2 & 3)

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_FT table on ACCOUNTING_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow

of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

## Case Statistics By Case Type - CI_CSESTS

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | See the report's description for how this field is used.<br>If start date is not specified, it is defaulted to 7 days prior to the end date. |
| End Date | P_TO_DT | See the report's description for how this field is used.<br>If end date is not specified, it is defaulted to the current processing date. |
| Case Condition (Open, Closed) | P_COND_FLG | If specified, only cases in this condition are included in the report. If left blank, the reports produces statistics for both open and closed cases. |

### Report Description

This report provides two types of statistics:

1. Open cases whose creation date falls between the input Start Date and End Date (inclusive)

2. Closed cases whose closing date falls between the input Start Date and End Date (inclusive)

The third parameter is only used if you want to restrict the statistics to only open or closed cases. If you leave this parameter blank, both open and closed statistics will be produced.

The following information is provided in graphical format:

- Number of cases by case type
- Percentage of cases by case type

## Case Statistics for a Given Status - CI_CSESGS

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | See the report's description for how this field is used.<br>If start date is not specified, it is defaulted to 7 days prior to the end date. |
| End Date | P_TO_DT | See the report's description for how this field is used. |

| | | |
|---|---|---|
| | | If end date is not specified, it is defaulted to the current processing date. |
| Case Type/Status | P_CASE_STATUS_CD | This is the desired Case Type and Status that will be reported on. |
| Responsible User | P_CASE_OWNER | If specified, only cases with this responsible user are included in the report. |
| First Bucket High Limit | P_B1_LIMIT | Cases that took <= this number of days to reach the given status will be grouped together for statistical reporting. |
| Second Bucket High Limit | P_B2_LIMIT | Cases that took <= this number of days but more than the first bucket high limit to reach the given status will be grouped together for statistics reporting. |
| Third Bucket High Limit | P_B3_LIMIT | Cases that took <= this number of days but more than the second bucket high limit to reach the given status will be grouped together for statistics reporting. Cases that took more than this number of days are included in another group. |

### Report Description

This report shows cases of a given case type that transitioned to a given status during a given date range.

Graphs are printed to show the number and percentage of cases grouped by the time it took to reach the status. These statistics are grouped into age buckets whose size is controlled by the last 3 parameters.

Summary statistics are also printed showing the minimum, maximum, average and median times for these cases.

## Collection Summary - CI_CLLSUM

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | If from date is not set, the default is one month prior to the current date. |
| End Date | P_TO_DT | End date of the date range. If not defined by user, it is set to one month after the current date |

### Report Description

This report provides detailed monthly summary information of all collection activities. The report is typically used by a collection department for resource planning and performance review purposes.

This report selects pending and completed collection events whose event trigger date falls between the input start and end dates.

## Customer Contacts by Type - CI_CUSTCN

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | Start date to use for reporting customer contacts. If not defined, the start date is set to the current date minus 7 days. |
| End Date | P_TO_DT | End date to use for reporting customer contacts. If not defined, End Date is set to the current date. |
| Customer Contact Class / Type | P_CC_TYPE_CD | Specify a Customer Contact Class / Type to restrict the report output to a specific class / type. |

### Report Description

This report lists all customer contacts in the system created within the input date range. You may optionally restrict the report to customer contacts for a given Customer Contact Class / Type (parameter 3).

**NOTE:**
**Graphs.** The information on this report is shown in both textual and graphical formats.

**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_CC table on CC_DTTM to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

## Customers with Life-Support / Sensitive-Load - CI_PMLSSL

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Service Type | P_SERVICE_TYPE | Service type used to restrict the report to premises with services of this type. |

### Report Description

This reports displays a detailed list of premises that are coded with Life-Support (LS) or Sensitive-Load (SL) information. It may optionally restrict the output to premises with service points for input service type.

This information is used by a company to make sure that customers at these premises are dealt with appropriately in the case of an outage (planned and unplanned) or service cut due to non-payment.

The report provides detailed information about the premise and the related facility elements providing service to that premise (e.g. substation, feeder and node for electric service).

**NOTE:**
If ANY person connected to an account has an LS/SL indication in the Person record, then all the premises connected to this account will be treated as LS/SL. This means, for example, that a premise connected to an account that has a 3rd party guarantor with LS/SL is treated as a premise with LS/SL.

# Field Order Print in BI Publisher- CI_FOPRNT

**NOTE:**
Field Order Print in batch for BI Publisher is not supported yet.

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| CC&B user | P_USER_ID | No default value. Required. Returns an error message if user ID is null, empty or does not exist in database. |
| Batch Switch | P_BATCH_SW | For a single FO print, Batch Switch is 'No' and for multiple FO print, Batch Switch is 'Yes'. |
| First FO | **P_FROM_FO_ID** | First FO ID to print for the FO Range. |
| Last FO | **P_TO_FO_ID** | Last FO ID to print for the FO Range. |
| Batch Code | **P_BATCH_CD** | Batch Code passed in by the system the report is submitted in batch. Only field orders that reference this batch code are selected. |
| Batch Number | **P_BATCH_NBR** | Batch Code passed in by the system the report is submitted in batch. Only field orders that reference this batch number are selected. |
| Extract Algorithm | **P_EXTRACT_ALG** | Passed in by the system the report is submitted in batch. Only field orders whose dispatch groups reference this FO extract algorithm are selected. |

### Report Description

This report is used with BI Publisher to display the Field Order information for the field order ID entered in the input parameters. Refer to the description of the parameters above. The field order will only be displayed if the field order's status is dispatched.

The following sections highlight the data that is extracted for this report.

### Contents

## Field Order Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| LANGUAGE_CD | A3 | SC_USER |
| SORT_KEY | A10 | FO Id |
| FO_ID | A10 | CI_FO |
| PREM_ID | A10 | CI_FO |
| FO_SCHED_DTTM | Date | CI_FO.SCHED_DTTM |
| FO_STATUS_FLG | A2 | CI_FO |
| WORK_DTTM | Date | CI_FO |
| DISP_GRP_CD | A8 | CI_FO |
| REP_CD | A8 | CI_FO |
| WORKED_BY | A8 | CI_FO |
| EXTRACT_NEXT_SW | A1 | CI_FO |
| EXTRACT_DTTM | Date | CI_FO |
| FO_DESCR | A254 | CI_FO.DESCR254 |
| BATCH_CD | A8 | CI_FO_STG_DWN |
| BATCH_NBR | N10 | CI_FO_STG_DWN |
| FA_ID | A10 | CI_FA |
| SP_ID | A10 | CI_FA |
| FA_TYPE_CD | A8 | CI_FA |
| FA_PRIORITY_FLG | A2 | CI_FA |
| FA_CREATED_BY_FLG | A2 | CI_FA |
| FA_SCHED_DTTM | Date | CI_FA.SCHED_DTTM |
| FA_STATUS_FLG | A2 | CI_FA |
| ELIG_DISPATCH_SW | A1 | CI_FA |
| CRE_DTTM | Date | CI_FA |
| INSTRUCTIONS | A254 | CI_FA |
| TEST_SEL_ID | A10 | CI_FA |
| FA_DESCR | A254 | CI_FA.DESCR254 |
| FA_CAN_RSN_CD | A8 | CI_FA_STEP |
| STEP_SEQ_NBR | N3 | CI_FA_STEP |
| FA_STEP_TY_ACT_FLG | A2 | CI_FA_STEP |
| STP_ENTITY_FLG | A4 | CI_FA_STEP |
| SP_MTR_HIST_ID | A10 | CI_FA_STEP |
| SP_ITEM_HIST_ID | A10 | CI_FA_STEP |
| MR_ID | A12 | CI_FA_STEP |

| | | |
|---|---|---|
| MTR_CFG_MTR_ID | A10 | CI_FA_STEP |
| MTR_ID | A10 | CI_FA_STEP |
| ITEM_ID | A10 | CI_FA_STEP |
| CC_ID | A10 | CI_FA_STEP |
| SPAWNED_FA_ID | A10 | CI_FA_STEP |
| ACCT_ID | A10 | CI_FA_STEP |
| DV_TEST_ID | A10 | CI_FA_STEP |
| PREM_TYPE_CD | A8 | CI_PREM |
| LL_ID | A10 | CI_PREM |
| MAIL_ADDR_SW | A1 | CI_PREM |
| KEY_SW | A1 | CI_PREM |
| KEY_ID | A10 | CI_PREM |
| OK_TO_ENTER_SW | A1 | CI_PREM |
| MR_INSTR_CD | A4 | CI_PREM |
| MR_INSTR_DETAILS | A250 | CI_PREM |
| MR_WARN_CD | A4 | CI_PREM |
| TREND_AREA_CD | A8 | CI_PREM |
| COUNTRY | A3 | CI_PREM |
| ADDRESS1 | A254 | CI_PREM |
| ADDRESS2 | A254 | CI_PREM |
| ADDRESS3 | A254 | CI_PREM |
| ADDRESS4 | A254 | CI_PREM |
| CITY | A30 | CI_PREM |
| NUM1 | A6 | CI_PREM |
| NUM2 | A5 | CI_PREM |
| HOUSE_TYPE | A2 | CI_PREM |
| COUNTY | A30 | CI_PREM |
| STATE | A6 | CI_PREM |
| POSTAL | A12 | CI_PREM |
| GEO_CODE | A11 | CI_PREM |
| IN_CITY_LIMIT | A1 | CI_PREM |
| FA_STEP_TY_DESCR | A60 | CI_LOOKUP.DESCR / FA Step Type Action Flag |
| OPTIONAL_SW | A1 | CI_FA_STEP_TYPE |
| FA_STEP_TYPE_DESCR | A60 | CI_FA_STEP_TYPE_L.DESCR |
| REP_DESCR | A60 | CI_REP_L.DESCR |
| FA_TYPE_DESCR | A60 | CI_FA_TYPE_L.DESCR |
| DISP_GRP_DESCR | A60 | CI_DISP_GRP_L.DESCR |
| LL_ACCT_ID | A10 | CI_LANDLORD.ACCT_ID |
| LL_DESCR | A60 | CI_LANDLORD_L.DESCR |

| | | |
|---|---|---|
| MR_WARN_DESCR | A60 | CI_MR_WARN_L.DESCR |
| MR_INSTR_DESCR | A60 | CI_MR_INSTR_L.DESCR |

## Account / Person Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| PREM_ID | A10 | CI_FO |
| ACCT_ID | A10 | CI_SA |
| MAIN_CUST_SW | A1 | CI_ACCT_PER |
| PER_ID | A10 | CI_ACCT_PER |
| ACCT_REL_TYPE_CD | A8 | CI_ACCT_PER |
| ENTITY_NAME | A64 | CI_PER_NAME |
| LS_SL_FLG | A2 | CI_PER |
| LS_SL_DESCR | A254 | CI_PER |

## Person Phone Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| PER_ID | A10 | CI_ACCT_PER - Primary person |
| SEQ_NUM | N3 | CI_PER_PHONE |
| PHONE_TYPE_CD | A12 | CI_PER_PHONE |
| COUNTRY_CODE | A3 | CI_PER_PHONE |
| PHONE | A24 | CI_PER_PHONE |
| EXTENSION | A6 | CI_PER_PHONE |
| DESCR | A60 | CI_PHONE_TYPE_L |

## Premise Geo Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| PREM_ID | A10 | CI_FO |
| GEO_TYPE_CD | A8 | CI_PREM_GEO |
| GEO_VAL | A50 | CI_PREM_GEO |
| GEO_TYPE_DESCR | A60 | CI_GEO_TYPE_L.DESCR |

## SP Type Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| SP_DESCR | A254 | CI_SP.DESCR254 |
| SP_TYPE_CD | A8 | CI_SP |
| SP_TYPE_DESCR | A60 | CI_SP_TYPE_L.DESCR |
| SP_SUBTYPE_FLG | A2 | CI_SP_TYPE |
| SP_SUBTYPE_DESCR | A60 | CI_LOOKUP/SP Subtype Flag |
| SP_STATUS_FLG | A2 | CI_SP |
| INSTALL_DT | Date | CI_SP |
| SP_SRC_STATUS_FLG | A2 | CI_SP |
| DISCON_LOC_CD | A4 | CI_SP |
| DISCON_LOC_DESCR | A60 | CI_DISCON_LOC_L |
| MR_CYC_CD | A4 | CI_SP |
| MR_CYC_DESCR | A60 | CI_MR_CYC_L |
| MTR_LOC_CD | A4 | CI_SP |
| MTR_LOC_DESCR | A60 | CI_MTR_LOC_L |
| MTR_LOC_DETAILS | A250 | CI_SP |
| FAC_LVL_1_CD | A8 | CI_SP |
| FAC_LVL_1_DESCR | A60 | CI_FAC_LVL_1_L.DESCR |
| FAC_LVL_2_CD | A8 | CI_SP |
| FAC_LVL_2_DESCR | A60 | CI_FAC_LVL_3_L.DESCR |
| FAC_LVL_3_CD | A8 | CI_SP |
| FAC_LVL_3_DESCR | A60 | CI_FAC_LVL_3_L.DESCR |

## SP Installed Meter Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| SP_MTR_HIST_ID | A10 | CI_SP_MTR_HIST |
| MTR_CONFIG_ID | A10 | CI_SP_MTR_HIST |
| EFF_DTTM | Date | CI_MTR_CONFIG |
| MTR_ID | A10 | CI_MTR_CONFIG |
| INSTALL_DTTM | Date | CI_MR.READ_DTTM |
| READ_DTTM | Date | CI_MR |

| | | |
|---|---|---|
| BADGE_NBR | A30 | CI_MTR |
| MTR_TYPE_CD | A8 | CI_MTR |
| MTR_STATUS_FLG | A2 | CI_MTR |
| MFG_CD | A8 | CI_MTR |
| MODEL_CD | A8 | CI_MTR |
| SERIAL_NBR | A16 | CI_MTR |
| RECEIVE_DT | Date | CI_MTR |
| MTR_DESCR | A254 | CI_MTR.DESCR254 |
| REG_ID | A10 | CI_REG |
| READ_SEQ | N2 | CI_REG |
| UOM_CD | A4 | CI_REG |
| TOU_CD | A8 | CI_REG |
| REG_CONST | N12.6 | CI_REG |
| CONSUM_SUB_FLG | A2 | CI_REG |
| HOW_TO_USE_FLG | A2 | CI_REG |
| NBR_OF_DGTS_LFT | N2 | CI_REG |
| NBR_OF_DGTS_RGT | N2 | CI_REG |
| FULL_SCALE | N18.7 | CI_REG |
| READ_OUT_TYPE_CD | A8 | CI_REG |
| PROTOCOL_CD | A8 | CI_REG |
| TOLERANCE | N14.5 | CI_REG |
| REG_READ_ID | A12 | CI_REG_READ |
| MR_ID | A12 | CI_REG_READ |
| READ_TYPE_FLG | A2 | CI_REG_READ |
| REG_READING | N15.6 | CI_REG_READ |
| MTR_TYPE_DESCR | A60 | CI_MTR_TYPE_L.DESCR |
| MFG_DESCR | A60 | CI_MFG_L.DESCR |
| MODEL_DESCR | A60 | CI_MODEL_L.DESCR |

## SP Installed Item Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| SP_ITEM_HIST_ID | A10 | CI_SP_ITEM_HIST |
| ITEM_ID | A10 | CI_SP_ITEM_HIST |
| INSTALL_DTTM | Date | CI_SP_ITEM_EVT.EVENT_DTTM |
| BADGE_NBR | A30 | CI_ITEM |
| ITEM_TYPE_CD | A8 | CI_ITEM |

| | | |
|---|---|---|
| ITEM_STATUS_FLG | A2 | CI_ITEM |
| MFG_CD | A8 | CI_ITEM |
| MODEL_CD | A8 | CI_ITEM |
| SERIAL_NBR | A16 | CI_ITEM |
| RECEIVE_DT | Date | CI_ITEM |
| ITEM_DESCR | A254 | CI_ITEM.DESCR254 |
| ITEM_TYPE_DESCR | A60 | CI_ITEM_TYPE_L.DESCR |
| MFG_DESCR | A60 | CI_MFG_L.DESCR |
| MODEL_DESCR | A60 | CI_MODEL_L.DESCR |

## SP Geo Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| GEO_TYPE_CD | A8 | CI_SP_GEO |
| GEO_VAL | A50 | CI_SP_GEO |
| GEO_TYPE_DESCR | A60 | CI_GEO_TYPE_L.DESCR |

## SP Characteristics Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| CHAR_TYPE_CD | A8 | CI_SP_CHAR |
| EFFDT | Date | CI_SP_CHAR |
| CHAR_VAL | A16 | CI_SP_CHAR |
| ADHOC_CHAR_VAL | A254 | CI_SP_CHAR |
| CHAR_VAL_FK1 | A50 | CI_SP_CHAR |
| CHAR_VAL_FK2 | A50 | CI_SP_CHAR |
| CHAR_VAL_FK3 | A50 | CI_SP_CHAR |
| CHAR_VAL_FK4 | A50 | CI_SP_CHAR |
| CHAR_VAL_FK5 | A50 | CI_SP_CHAR |
| CHAR_TYPE_FLG | A4 | CI_CHAR_TYPE |
| FK_REF_CD | A8 | CI_CHAR_TYPE |
| CHAR_TYPE_DESCR | A60 | CI_CHAR_TYPE_L.DESCR |

## SP Multi Item Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| SP_ID | A10 | CI_FA |
| EFFDT | Date | CI_MULT_ITEM |
| ITEM_TYPE_CD | A8 | CI_MULT_ITEM |
| ITEM_CNT | N11,2 | CI_MULT_ITEM |
| ITEM_TYPE_DESCR | A60 | CI_ITEM_TYPE_L.DESCR |

## FA Severance Process Information

| Field Name | Format | Source/Value/Description |
|---|---|---|
| FA_ID | A10 | CI_FA |
| SEV_PROC_ID | A10 | CI_SEV_PROC |
| SA_ID | A10 | CI_SEV_PROC |
| SEV_ARS_DT | Date | CI_SEV_PROC |
| ACCT_ID | A10 | CI_SA |

## GL Accounting Summary - CI_GLACSM

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Accounting Period | P_ACCT_PERIOD | Defines the accounting period used for the report. A valid fiscal year and accounting period for a valid accounting calendar must be provided. |
| Account Type Characteristic | P_CHAR_TYPE | Defines a Characteristic Type for a characteristic linked to the Distribution Code to define an Account Type. The account types for the GL accounts are used for grouping the output to the report. |

### Report Description

This is a financial audit report used to check the financial details in Oracle Utilities Customer Care and Billing for an accounting period against the GL system. The report summarizes all financial transaction (FT) information for a given accounting period according to the different operating and GL divisions and according to various levels of the account GL information.

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_FT table on ACCOUNTING_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

# Letter Print - BI Publisher Sample Welcome Letters - CI_LTRGN_ENG REPORT

**NOTE:**
Generating letters in batch is not supported yet.

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Batch Switch | P_BATCH_SW | For reports accessed online, set the switch to 'No'. Otherwise, it should be set to 'Yes'. |
| Customer Contact | P_CC_ID | References the customer contact associated with the main customer linked to the account. |

### Report Description

This sample report template for BI Publisher produces letters that are not associated with any other object (i.e., the template does not have to extract information from another object to merge into a letter). You can use this template as a welcome letter for a new customer.

By default, the English versions of the report templates are provided with the base product. If multilingual report templates are required, your implementation should provide reports for each language. When a letter is generated, the system uses the report template based on the customer's language.

The address and name for the company are extracted from the *installation options*. The text for the letter is defined in the report layout and not provided by Oracle Utilities Customer Care and Billing. Reports are printed according to the customer's language definition and not based on the user's language definition.

This sample report uses the following text:

Welcome to %1. You have been filed with ID Number %2.

We hope to provide you with our best possible service. If you experience any problems or have any questions, please contact one of our customer service representatives at (800)1234567.

%1 is the company name stored as a message on the *installation options*.

%2 is Person Id stored on the Customer Contact.

# Meter Reads Performance - CI_MTREAD

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|

| | | |
|---|---|---|
| Accounting Period | P_ACCT_PERIOD | Defines the accounting period used for the report. A valid fiscal year and accounting period for a valid accounting calendar must be provided. |

### Report Description

This report selects bill segments for the input accounting period and displays the total number of read meters and unread meters for these bill segments grouped by route type.

Meters that are considered read are meters whose register reads have a status of Regular or Verified . Meters that are considered unread are meters whose register reads have a status of System Estimate , Office Estimate , System Prorate or Billing Force .

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_FT table on ACCOUNTING_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

## Open Cases By Type - CI_CSEOPN

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | See the report's description for how this field is used.<br>If start date is not specified, it is defaulted to 7 days prior to the end date. |
| End Date | P_TO_DT | See the report's description for how this field is used.<br>If end date is not specified, it is defaulted to the current processing date. |
| Case Type | P_CASE_TYPE_CD | If specified, only cases of this type are included in the report. |
| Responsible User | P_CASE_OWNER | If specified, only cases with this responsible user are included in the report. |
| First Bucket High Limit | P_B1_LIMIT | Cases that are open for less than or equal to this number of days will be grouped together for statistical reporting. |
| Second Bucket High Limit | P_B2_LIMIT | Cases that are open less than or equal to this number of days but more than the first bucket high limit will be grouped together for statistics reporting. |
| Third Bucket High Limit | P_B3_LIMIT | Cases that are open less than or equal to this number of days but more than the second bucket high limit will be grouped together for |

| | | |
|---|---|---|
| | | statistics reporting. Cases that took more than this number of days are included in another group. |

### Report Description

This is a report on open cases that were created between a given date range.

The report can be limited to a specific type and/or responsible user.

For each case type, the report shows the following:

- Number of open cases by age bucket (the last 3 parameters control the size (in days) of each bucket)
- Percentage of open cases by age bucket
- Details of the open cases

## Payments Balance - CI_PMTBAL

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | Report gets all the payments that have been received during a given date range (from and to date parameters).<br>If start date is not defined by the user, it is set to 7 days prior to the current date. |
| End Date | P_TO_DT | End date of the date range. If not defined by user it is set to the current date |

### Report Description

This report provides an overall view of all payments created within the input date range. It is typically used for financial control and audit purposes. The report provides summary information about valid payments received and about canceled payment. Data is summarized by the tender source and the type of payment.

## Receivables Aging - CI_RCVAGA

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Cutoff Date | P_CUTOFF_DATE | The date from which the arrears buckets are calculated. If no value is entered, the default is the current date minus 7 days. |
| First Bucket High Limit | P_B1_LIMIT | High limit of first bucket. |
| Second Bucket High Limit | P_B2_LIMIT | High limit of second bucket. |
| Third Bucket High Limit | P_B3_LIMIT | High limit of third bucket. |

### Report Description

This report lists all accounts and their arrears information as of the input cutoff date using a balance forward accounting method.

Outstanding debt is placed into the buckets provided as input using the age of the debt as of the cutoff date. Credits are applied to the oldest debt first. For each account a separate bucket is used to display new charges. In addition, the total accounts receivable balance is displayed for each account.

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_FT table on ARS_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

# Tax Payables Analysis - CI_TXPYBL

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Start Date | P_FROM_DT | Show summary of the tax amounts starting from this date. If not specified, the system will default this value to the current date minus 7 days. |
| End Date | P_TO_DT | Show summary of the tax amounts up to this date.<br>If not specified, the system will default this value to the current date. |
| Account Type Characteristic | P_CHAR_TYPE | Defines a Characteristic Type for a characteristic linked to the Distribution Code to define an Account Type. |
| Account Type | P_TAX_ACCTY_CHAR | Account Type Char Value for tax related GL Accounts. The char type defined for this parameter should match the Char Type code defined as parameter #3. The parameter value indicated for this parameter should be one that represents tax liability accounts. |

### Report Description

This report displays a summary of the tax amounts that were levied by the company to customers within the input date range. It also includes the tax exemption information for that period.

This report select all records in the financial transaction GL collection that satisfy the following criteria:

- The financial transaction is frozen.
- The Accounting Date on the financial transaction within the input date range
- The distribution code associated with the GL entry has a characteristic type and value that matches the input Account Type Characteristic and Account Type (parameters 3 & 4)

The report also provides tax exemption information for bill segments whose financial transactions satisfy the above criteria. The tax exemption information is retrieved by looking at the bill calculation lines associated with the FT's bill segment.

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_FT table on ACCOUNTING_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

# To Do Entries - CI_TDENTR

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| ToDo Entry Status | P_ENTRY_STATUS_FLG | Defines if the To Do entries on the report should be limited to those with a given status value. If this parameter is left blank, the report will show all open and being worked To Do entries. |
| ToDo Type | P_TD_TYPE_CD | Defines if the To Do entries on the report should be limited to those of a given ToDo type. If this parameter is left blank, the report will show all ToDo type that have at least one open or being worked entry. |

### Report Description

The report shows open and being worked To Do entries.

You can limit the report to entries in a given status by specifying the desired **To Do Status** (open or being worked). If you don't specify a status, all open and being worked To Do entries will appear on this report.

You can also limit the report to entries of a given To Do Type by specifying the desired To Do Type . If you don't specify a To Do Type, all To Do Types with at least one entry in the open / being worked state will appear on this report.

**NOTE:**
**Graphs.** The information on this report is shown in both textual and graphical formats.

# Umbrella Agreement Summary - CI_UASUMM

### Parameters

At least one parameter is required. If the umbrella agreement is entered, no other parameter value is allowed. The report definition uses the validation algorithm *RPTV-UASUMM* to check these conditions.

| Parameter | Parameter Code | Description |
|---|---|---|
| Umbrella Agreement | P_UA_ID | Specify the Umbrella Agreement to restrict the report to this umbrella agreement (regardless of its status). |

| | | |
|---|---|---|
| | | When this parameter is specified, all other parameters are not allowed. |
| Account Management Group | P_AMG | Specify a value for this parameter to restrict the report to umbrella agreements related to this Account Management Group. |
| Umbrella Agreement Characteristic Type | P_CHAR_TYPE | Specify a value for this parameter to restrict the report to completed umbrella agreements related to this Characteristic type and value (parameter 4). |
| Umbrella Agreement Characteristic Value | P_CHAR_VALUE | Specify a value for this parameter to restrict the report to completed umbrella agreements related to this Characteristic type (parameter 3) and value. |
| Number of Days Before Expiration | P_EXPIRE_IN_X_DAYS | Specify a value for this parameter to restrict the report to completed umbrella agreements whose End Date is on or before the current date less the Number of Days before Expiration. |

### Report Description

This report provides summary information about one or more *umbrella agreements*.

If the user does not supply an umbrella agreement ID, but enters one or more of the other parameters, the report only selects umbrella agreements that match the input criteria AND the match the following criteria:

- The status of the umbrella agreement is complete
- The start and end dates of the umbrella agreement include the current date

The report does not include canceled terms of service records or canceled service agreements linked to the above umbrella agreements.

For each umbrella agreement that is included in the report, the output includes information about the umbrella agreement, its collection of terms of service records and for each TOS record, its collection of service agreements.

In addition, the report includes the following graphs:

- Umbrella agreement summary graph showing billing history by accounting period for the effective dates of the umbrella agreement for all service agreements linked to the umbrella agreement's terms of service records.
- Terms of service summary graph showing billing history by accounting period for the effective dates of the umbrella agreement for all its service agreements

## Unbilled Revenues - CI_UBLREV

### Parameters

| Parameter | Parameter Code | Description |
|---|---|---|
| Accounting Period | P_ACCT_PERIOD | Defines the accounting period used for the report. A valid fiscal year and accounting period for a valid accounting calendar must be provided. |

| | | |
|---|---|---|
| Account Type Characteristic | P_CHAR_TYPE | Defines a Characteristic Type for a characteristic linked to the Distribution Code to define an Account Type. |
| Account Type | P_REV_ACCTY_CHAR | Account Type Char Value for Revenue related GL Accounts. The char type defined for this parameter should match the Char Type code defined as parameter #2. The parameter value indicated for this parameter should be one that represents revenue accounts. |

**Report Description**

This report provides a simplified calculation of estimated unbilled revenue for a given month.

It processes frozen financial transactions associated with bill segments and canceled bill segments whose bill segment end date is within the **Accounting Period** (parameter 1). It determines the billed revenue for the FT and then uses this information to calculate the unbilled revenue.

To determine "revenue", the report summarizes amounts posted to any distribution code with a characteristic entry that matches the input **Account Type Characteristic** type and **Account Type** characteristic value (parameters 2 and 3).

The estimate for the unbilled portion is calculated as (Bill Amount / Number of Days in the Bill Period) * Number of Unbilled Days for the Accounting Period.

For example, consider a bill segment on a monthly-billed cycle for the period of 3/10/03 - 4/9/03, and for $150 (revenue part of the bill). Assume we are in the April/03 accounting period, which covers 4/1/03 through 4/30/03. This means 21 days are unbilled for April. The unbilled revenue is calculated as 150/31*21 = $101.61.

The following are some points to note about this report.

- If the report runs for an historical date, it still estimates the unbilled revenue portion based on the above formula even if actual data exists. In other words, it will not try to find actual bills for subsequent months. As a result, this report always shows what would have been the estimated unbilled revenue for a particular month if that month is the most recent one.
- Services can be billed monthly bi-monthly, quarterly or in any desired frequency. This report only performs the revenue recognition estimation using actual bills that were created in the report's accounting period. As a result, it does not estimate unbilled revenue for accounts that were not billed in any portion of the input accounting period.
- Revenue recognition practices are unique and may vary from customer to customer. In a given month we can produce current bills (e.g. for electric service) or future bills (e.g. cable services). In addition in some cases we can have bills that started before the accounting period and ending after it (for example in a cancel-rebill situation). This report will only estimate unbilled revenues for bills with the accounting period equals to the report's accounting period.

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_BSEG table on START_DT, END_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any affect on the production environment.

# Vacant Premises with Consumption - CI_VACANT

**Report Description**

This report shows all premises that are considered vacant, and provides information about the level of consumption, the period of vacancy, and the service point and register information.

This report selects service points that are linked to a service agreement that is either canceled or closed . The report excludes any service points that have never been linked to a service agreement. If consumption has been registered at such a service point since the end date of the service agreement, the service point's details are displayed.

This report may be used by the utility to investigate sites where problems such as service theft or leakage may be occurring.

**NOTE:**
**Performance Consideration.** If your implementation chooses to use this report, you may consider adding an index to the CI_SA_SP on STOP_DT to aid in performance. When making this decision, carefully weigh the benefit of improving report performance against the possible degradation to the performance of day-to-day processing as a result of defining a new index. In addition, many companies opt to create a reporting database that is a shadow of production to ensure that indexes defined to benefit reports may be created without any effect on the production environment.

# Security Addendum

This chapter is an addendum to the general *Defining Security and User Options* chapter. This addendum describes security functionality that is specific to Oracle Utilities Customer Care and Billing.

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## Implementing Account Security

**CAUTION:**
This section assumes you understand *The Big Picture of Row Security*.

When you create an account, you must define which users can access the account's information. For example,

- If you have customers in two geographic territories, you may need to restrict access to accounts based on the office that manages each territory. For example, only users in the northern office may manage accounts in the northern territory.
- If you have industrial and residential customers, you may need to restrict access to these different customer segments based on the skill set of the users. For example, some users are skilled in dealing with industrial customers, while others are skilled in dealing with residential customers.

By granting a user access rights to an account, you are actually granting the user access rights to the account's bills, payment, adjustments, orders, etc.

**FASTPATH:**
Refer to *If You Do Not Practice Account Security* for setup instructions if your organization doesn't practice account security.

**NOTE:**

**Account security may also affect persons and premises.** Refer to *Persons Can Also Be Secured* for how access to person information is also restricted by account security. Refer to *Premises Can Also Be Secured* for how access to premise information is also restricted by account security.

The topics in this section describe how to implement account security.

**Contents**



## Persons Can Also Be Secured

It's important to be aware that persons can also be secured as a result of "account security". It works like this:

- If a person is linked to at least one account, users will not be allowed access to the person (or the person's related information) unless they have access to at least one of the person's accounts.
- If a person is not linked to any accounts (a rare situation), any user may access the person.

**NOTE:**
**How are persons linked to accounts?** A person is linked to an account when an account is created using the methods described under *How To Add A New Customer From Control Central* and *Order User Interface Flow*. In addition, you may manually link and unlink persons from account using the *Account - Person* page.

## Premises Can Also Be Secured

It's important to be aware that premises can also be secured as a result of "account security". It works like this:

- If a premise is linked to at least one account, users will not be allowed access to the premise (or the premise's related information) unless they have access to at least one of the premise's accounts.
- If a premise is not linked to an account (a rare situation), then all users may access the premise.

**NOTE:**
**How are premises linked to accounts?** A premise is indirectly linked to an account. For the purpose of access restriction, we deem a premise as being linked to an account if at least one of its service points is linked to at least one of the account's service agreements.

## Data Becomes Invisible When Access Is Restricted

The following points summarize the impact of a user not having access to an account.

## Account Security and Control Central

This section summarizes the impact of account security on *Control Central*:

- Searches are affected as follows:
- An account will only be visible if a user has access to the account's access group.
- Persons that are not linked to accounts will be visible to all users.
- If a person is linked to an account, the person will only be visible if the user has access to at least one of the person's accounts.
- Premises that are not linked to accounts will be visible to all users.
- If a premise is linked to an account, the premise will only be visible if the user has access to at least one of the premise's accounts.
- The alerts that highlight the existence of "multiple relationships" are not impacted by account security. Specifically:
- The alert Person has multiple accounts will appear if the selected person is linked to multiple accounts, even if the user doesn't have access to every account. Note well, the person couldn't have been selected if the user didn't have access rights to at least one account.
- The alert Premise has multiple accounts will appear if the selected premise is linked to multiple account, even if the user doesn't have access to every account. Note well, the premise couldn't have been selected if the user didn't have access rights to at least one account.
- Only accounts to which the user has access will be displayed in the person tree.
- Only accounts to which the user has access will be displayed in the account tree.
- All other pages contain information related to Control Central's current account context. The current account context can never reference an inaccessible account and therefore these pages are not impacted by account security.

**NOTE:** If your implementation wishes to allow users to search for all accounts through Control Central without validating the user's access rights, this can be configured by setting up the **Search All Account** option type on the Customer Information Options feature configuration. If the user tries to select an account without having the required access, they will not be able to navigate to the Account Information tab on Control Central for the selected account.

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## Account Security and Searches (and Maintenance Pages)

Searches are the gateway to the information that appears on maintenance pages. In general, account-related information is suppressed when a user doesn't have access rights to the account. This suppression is true for rows that directly reference an account AND for rows that indirectly reference an account. For example:

- A user can only see bills associated with accounts to which they have access rights.
- A user can only see financial transactions associated with service agreements that are, in turn, associated with accounts to which they have access rights.

**NOTE:**

**Person and premise searches are also impacted.** Keep in mind that information will be suppress from both person and premise-oriented searches if the person / premise is related to accounts. Refer to *Persons Can Also Be Secured* for how access to person information is also restricted by account security. Refer to *Premises Can Also Be Secured* for how access to premise information is also restricted by account security.

## Account Security and To Do Lists

Account security does NOT impact the information that appears in a user's To Do list. Rather, we have assumed that your To Do roles (and the users assigned to these roles) are consistent with your account security requirements. This can result in anomalies. For example, it's possible for a supervisor to assign a bill segment error to a user who doesn't have access to the bill segment's account. This user will then see the related To Do entry in their Bill Segments In Error To Do list. However, when they drill down on the entry, account security will manifest itself (i.e., the user won't be able to display the bill segment that's in error). This happens because the drill down causes the bill segment search logic to execute. This logic inhibits the selection of bill segments if the user can't access the related account.

To minimize these anomalies, we recommend the following:

- Setup *To Do Roles* consistent with your Data Access Roles.
- Setup *Account Management Groups* that are consistent with your Access Groups.
- Setup default To Do Roles on your Account Management Groups for each *To Do type*.

## Restricted Transactions

The following table lists all transactions that have some type of account security. The following notation is used to describe the type of account security:

- **Account-oriented.** This notation is used if the respective transaction uses basic account security (i.e., the user must belong to at least one data access role that has access to the account's access group in order to see the information).
- **Person-oriented.** This notation is used if the respective transaction uses person-oriented account security. Refer to *Persons Can Also Be Secured* for more information.
- **Premise-oriented.** This notation is used if the respective transaction uses premise-oriented account security. Refer to *Premises Can Also Be Secured* for more information.
- None of the above. Some unusual transactions have unusual implementations of account security. These are described below.

| Transaction | Type of Account Security |
|---|---|
| Account | Account-oriented |
| Account Bill / Payment History | Account-oriented |
| Account Financial History | Account-oriented |
| Account Interval Info | Account-oriented |
| Account Payment History | Account-oriented |
| Account Person Replicator | Account-oriented |
| Account SAs for Debt Class | Account-oriented |
| Adjustment | Account-oriented |
| Adjustment Calculation Line Characteristics | Account-oriented |
| Appointment | Premise-oriented |

| | |
|---|---|
| Bill | Account-oriented |
| Bill Print Group | Person-oriented |
| Bill Segment | Account-oriented |
| Billable Charge | Account-oriented |
| Budget Review | Account-oriented |
| Case | Account-oriented, Person-oriented and Premise-oriented |
| Collection Agency Referral | Account-oriented |
| Collection Process | Account-oriented |
| Contract Option | Account-oriented |
| Control Central | Account-oriented, Person-oriented and Premise-oriented |
| Customer Contact | Person-oriented |
| Cut Process | Account-oriented |
| Declaration | Account-oriented |
| Deposit Review | Account-oriented |
| Field Activity | Premise-oriented |
| Field Order | Premise-oriented |
| Financial Transaction | Account-oriented |
| Financial Transaction on a Bill | Account-oriented |
| Financial Transaction on a Payment | Account-oriented |
| Interval Profile | Account-oriented (for SA-specific profiles) |
| Landlord Agreement | Account-oriented |
| Loan | Account-oriented |
| Match Event | Account-oriented |
| Multi-Cancel/Rebill | Account-oriented |
| Non-billed Budget | Account-oriented |
| Order | Account-oriented, Person-oriented and Premise-oriented |
| Overdue Process | Account-oriented |
| Pay Plan | Account-oriented |
| Payment | Account-oriented |
| Payment Arrangement | Account-oriented |
| Payment Arrangement for Bills | Account-oriented |
| Payment Event | The user must have access to ALL accounts linked to the payment event. |
| Payment Event Quick Add | The user must have access to ALL accounts linked to the payment event(s). |
| Payment Quick Add | Account-oriented |
| Payment / Tender Search | Account-oriented |
| Person | Person-oriented |
| Premise | Premise-oriented |
| Premise Management | Premise-oriented |

| | |
|---|---|
| Quote | Account-oriented |
| SA Billing History | Account-oriented |
| SA Cash Accounting Balance | Account-oriented |
| SA Financial History | Account-oriented |
| SA Relationship | Account-oriented |
| Service Agreement | Account-oriented |
| Service Credit Event | The user must have access to ALL accounts linked to the service credit membership that has the service credit event. |
| Service Credit Membership | The user must have access to ALL accounts linked to the service credit membership. |
| Service Provider SA Relationship | Account-oriented |
| Severance Process | Account-oriented |
| Start/Stop | Account-oriented |
| Statement | The user can see the statement if they have access to at least one account on the statement's statement construct. |
| Statement Construct | The user can see the statement if they have access to at least one account on the statement construct. |
| Terms of Service | Account-oriented (User must have access to at least one account linked to the SA collection in the TOS.) |
| TOU Map | Account-oriented (for SA-specific TOU maps) |
| Umbrella Agreement | Account-oriented (User must have access to at least one account linked to the SA collection in the UA's TOS.) |
| Write Off | Account-oriented |
| Write Off Process | Account-oriented |

# Account Security Case Studies

The topics in this section contain examples of how to implement account security. Use these examples to form an intuitive understanding of these objects. Once this intuition is obtained, you'll be ready to design the account security objects for your own company.

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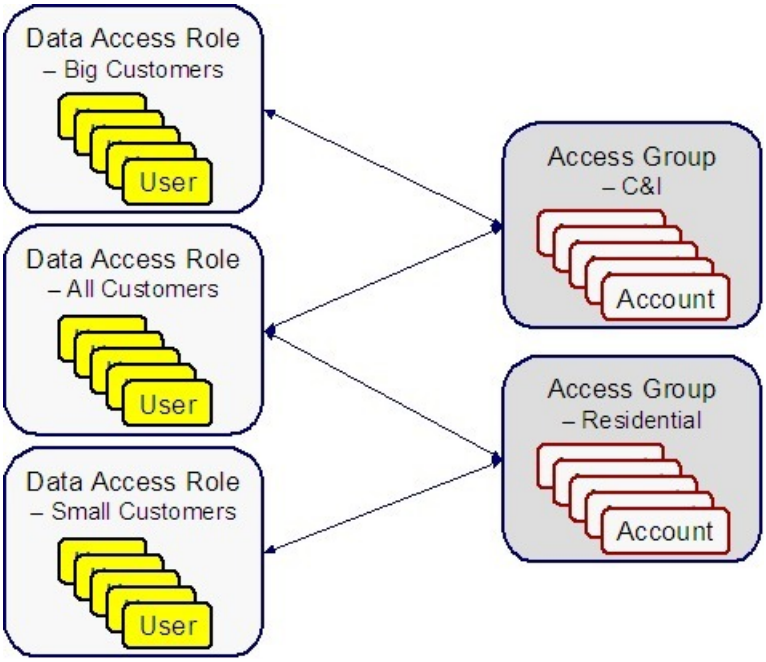
## Securing Accounts Based On Customer Class

Assume the following security requirement exists:

- You have two broad groups of accounts:
- Residential accounts.
- Commercial / Industrial accounts.

- Users can be classified as have one of the following access rights:
  - May access all accounts.
  - May only access residential accounts.
  - May only access commercial / industrial accounts.

The following diagram illustrates the access groups and data access roles required to implement these requirements:




Notice the following about the above:

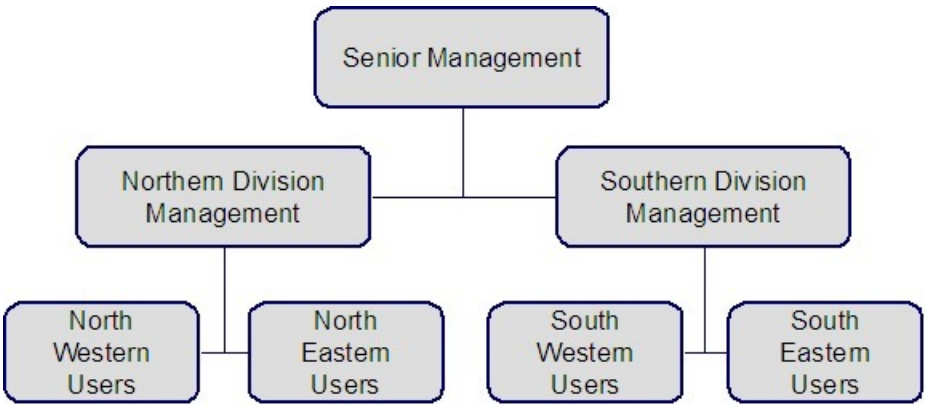
- There are 2 access groups because access to accounts is based on whether the account is considered to be residential or commercial/industrial.
- The Big Customers data access role is only linked to the C&I access group.
- The Small Customers data access role is only linked to the Residential access group.
- The All Customers access role is linked to both the C&I and Residential access groups. Users with this role can therefore access all accounts.

## Securing Accounts Based On Region

Assume that accounts are classified as belonging to one of the following regions:

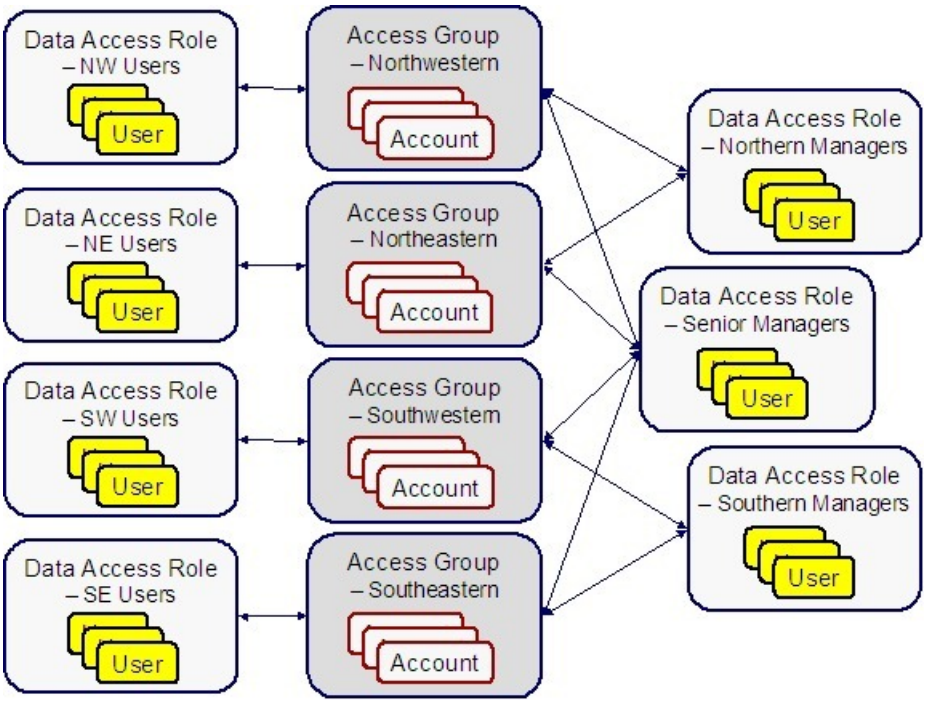
- Northwestern
- Northeastern
- Southwestern
- Southeastern

Assume the following company hierarchy exists:




- Senior Management has access to all customers
- Northern Division Management has access to all customers in the Northwestern and Northeastern divisions.
- Southern Division Management has access to all customers in the Southwestern and Southeastern divisions.
- Northwestern Users have access to all customers in the Northwestern division.
- Northeastern Users have access to all customers in the Northeastern division.
- Southwestern Users have access to all customers in the Southwestern division.
- Southeastern Users have access to all customers in the Southeastern division.

The following diagram illustrates the access groups and data access roles required to implement these requirements:




Notice the following about the above:

- There are 4 access groups because access to accounts is based on the region in which they are located (and there are 4 regions).
- There are 7 data access roles because each component of every layer of the access hierarchy requires a separate data access role.

## The Default Access Group

There are two ways an access group can be assigned to an account:

- The base package will default an account's access group based on the user who adds the account. It uses the user's *default access group* to do this.
- If you can conceive of a rule to assign an appropriate access group to a newly added account, you can have your programming staff introduce a user exit to the account row program to implement this rule. For example, a user exit could be developed that assigns an access group to an account based on its customer class. The name of the user-exit is AFTER-MOVE-CORR-ADD and the name of the account row program is CIPCACCR.

**WARNING:**
Regardless of the method used to assign an account's access group, please be aware that the user who adds an account must have access to this access group.

**NOTE:**
**Subsequent changes to an account's access group.** A user may change an account's access group to any access group to which they have access.

## If You Do Not Practice Account Security

If you do not restrict access to accounts (i.e., all users can access all accounts), you must set up one access group and one data access role and then indicate all users are part of this role. You should also define the access group as the default access group on all of your users (so that new accounts are all labeled with this access group).

## Masking Sensitive Data

Refer to *Masking Data* for instructions describing how to configure the system to mask sensitive data like a customer's social security number or bank account number. If your implementation intends to mask any of the information that appears in the *Customer Information Zone* please navigate to this zone's documentation for special instructions.

## Encrypting Sensitive Data

This section describes how to configure encryption for fields that store specific sensitive data in the application, such as credit card / bank account numbers, social security number and MICR ID. Encrypting data may be necessary if your implementation wants to meet security standards such as those for credit card transactions, as specified by the Payment Card Industry Security Standards Council.

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# Field Encryption

This section describes how to configure encryption for fields that store specific sensitive data.

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## Setting Up a Keystore

A keystore is required to be set up in the system for the encryption functionality. For details about setting up the keystore in the system, see the Installation Guide.

## Creating an Encryption Feature Configuration

To configure field encryption for specific sensitive data, you must create a feature configuration with a Feature Type of **Encryption.** The Options for the feature configuration specify the specific fields to be encrypted along with additional information.

**NOTE:** You can create only one encryption feature configuration with a Feature Type of **Encryption** in the application.

The encryption feature configuration has the following option types:

- **Algorithm Info:** Defines the encryption algorithm information. Although the encryption algorithm to use with a given key is available from the key in the keystore, there is sometimes a need to provide additional information to the algorithm that might be used during the encryption or decryption of data (e.g. providing defaults for the encryption mode and/or padding). For additional information about this option type, see the detailed description for the option type on the encryption feature configuration page.
- **Field Encryption:** Defines the specific field to be encrypted, along with additional information. You can add a field encryption option for each field that you want to encrypt. The format for the field encryption option depends on whether the data is accessed by a page maintenance service call where a table name and field name is defined, or by a schema-based object call. For additional information about this option type, see the detailed description for the option type on the encryption feature configuration page.

For more information about feature configurations, see *Defining Feature Configurations* in the *Oracle Utilities Application Framework Administration Guide*.

## Base Package Supported Fields for Encryption

This section describes how to configure the encryption feature configuration to encrypt specific supported fields in the C1-owned base package. Examples include credit card / bank account numbers, social security number and MICR ID.

Before you can encrypt data, you must create an encryption feature configuration if one does not already exist. See *Creating an Encryption Feature Configuration* for details.

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*MICR ID Encryption*

*Person ID Number Encryption*

## External Account ID and Credit Card Number Encryption

On the encryption feature configuration, create a field encryption option for the Account Automatic Payment table using the following table/field variables in the option value:

- table='CI_ACCT_APAY', field='EXT_ACCT_ID', encryptedField='ENCR_EXT_ACCT_ID'

When this field is configured for encryption, the application will display the masked value to the user. For information on configuring this option, see the detailed description for the Field Encryption option type on the encryption feature configuration page.

**NOTE:**

- The External Account ID field also exists on other tables such as Auto Pay Clearing Staging table (CI_APAY_CLR_STG) and the Payment Event Upload Staging table (CI_PEVT_DTL_ST). Feature configuration options do not need to be configured for the External Account ID field on these tables as the field on these related tables is encrypted based on the feature configuration specified above for the Account Automatic Payment table (CI_ACCT_APAY).
- A customer's bank account ID or credit card number may also be stored in a column when an order is completed. A field encryption feature configuration for the Order Field table (CI_ENRL_FLD) does not need to be configured if the customer's bank account ID or credit card number is referenced on this table. The encryption for the field should be handled by a Column Reference - Preprocessing algorithm. The base product provides an Encrypt Account Auto Pay External Account Id Column Reference Value algorithm type for this purpose.
- A field encryption feature configuration option needs to be configured for each schema field to be encrypted that represents a customer's bank account ID or credit card number. If the value of an encrypted schema field will later be populated on or compared against an encrypted table field, the schema field and the table field must share the same key alias.

## Bank Account Number Encryption

On the encryption feature configuration, create a field encryption option for the Bank Account table using the following table/field variables in the option value:

- table='CI_BANK_ACCOUNT', field='ACCOUNT_NBR', encryptedField='ENCR_ACCOUNT_NBR'

When this field is configured for encryption, the application will display the masked value to the user. For information on configuring this option, see the detailed description for the Field Encryption option type on the encryption feature configuration page.

## MICR ID Encryption

On the encryption feature configuration, create field encryption options for MICR ID for the Payment Event Upload Staging, Payment Tender Staging and Payment tables using the following table/field variables in the option values:

- table='CI_PEVT_DTL_ST', field='MICR_ID', encryptedField='ENCR_MICR_ID', hashField='HASH_MICR_ID'
- table='CI_PAY_TNDR_ST', field='MICR_ID', encryptedField='ENCR_MICR_ID', hashField='HASH_MICR_ID'
- table='CI_PAY_TNDR', field='MICR_ID', encryptedField='ENCR_MICR_ID', hashField='HASH_MICR_ID'

When these fields are configured for encryption, the application will display the masked value to the user. Exact match searches for MICR ID is still supported when the field is configured for encryption. For information on configuring this option, see the detailed description for the Field Encryption option type on the encryption feature configuration page.

**NOTE:** Staging tables and master/transaction data tables must share the same key alias.

## Person ID Number Encryption

On the encryption feature configuration, create a field encryption option for the Person Identifier table using the following table/field variables in the option value:

- table='CI_PER_ID', field='PER_ID_NBR', encryptedField='ENCR_PER_ID_NBR', hashField='HASH_PER_ID_NBR', where='ID_TYPE_CD=SSN’

When this field is configured for encryption, the application will display the masked value to the user. Exact match searches for Person Identifier Number is still supported when the field is configured for encryption.

The example above uses an ID type of social security number (“SSN”). You must supply the ID type (ID_TYPE_CD) appropriate for your implementation. If you want to encrypt multiple ID types, you must configure a field encryption option type for each ID type. For information on configuring this option, see the detailed description for the Field Encryption option type on the encryption feature configuration page.

**NOTE:**

- The Person ID Number also exists on the Order Person ID table (CI_ENRL_PER_ID) table. Feature configuration options do not need to be configured for the Person ID Number field on this table as the field is encrypted based on the feature configuration specified above for the Person Identifier table (CI_PER_ID).
- The Person ID Number may also be stored in a column when an order is completed. A field encryption feature configuration for the Order Field table (CI_ENRL_FLD) does not need to be configured if the Person ID Number is referenced on this table. The encryption for the field should be handled by a Column Reference - Preprocessing algorithm. The base package provides an Encrypt Column Reference Value algorithm type for this purpose.
- A field encryption feature configuration option needs to be configured for each schema field to be encrypted that represents a Person ID Number. If the value of an encrypted schema field will later be populated on or compared against an encrypted table field, the schema field and the table field must share the same key alias.

## Encrypting Legacy Data

If you enable encryption in an existing implementation, you should run the encrypt legacy batch controls to encrypt legacy data that persists in the database:

- F1-ENCRT: Encrypt Legacy Table Field Data
- F1-ENCRS: Encrypt Legacy Schema Field Data
- C1-ECRVL: Encrypt Legacy Order Field Col Ref Value

Before executing the batch processes, you must have a keystore file in the system to hold the keys for encrypting data and define an encryption feature configuration that contains the details for the fields you want to encrypt.

# Defining Overdue Processing Options

The system periodically monitors how much your customers owe to ensure they haven't violated your collection rules. When a violation is detected, the system initiates the appropriate activities (e.g., letters, disconnect notices, collection agency referrals, and eventually write off). The topics in this section describe how to configure the system to manage your overdue processing requirements.

**NOTE:**

The o verdue processing module has been designed to collect on virtually anything from an unpaid bill to an unmatched financial transaction. You tell the system what you collect on by configuring the various overdue processing control tables. In this release, the base-package is delivered with algorithms that support collecting on overdue bills. If your organization practices balance-forward accounting (i.e., collection is based on overdue service agreement balances), you will not use this functionality. Rather, you will use the functionality described under *Defining Credit and Collections Options*.

---

**WARNING:**
Setting up this module is as challenging as your organization's collection rules. If you have simple rules, the set up process will be straightforward. If your rules are complicated (e.g., they differ based on the type of customer, the age of debt, the type of service, etc.), your setup process will be more challenging.

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# Case Study - Collecting On Overdue Bills

The following topics introduce a case study that describes how overdue processing can be used to collect on overdue bills. This is just an example as virtually every aspect of overdue processing is configurable. Use this case study to familiarize yourself with the overdue processing core concepts.

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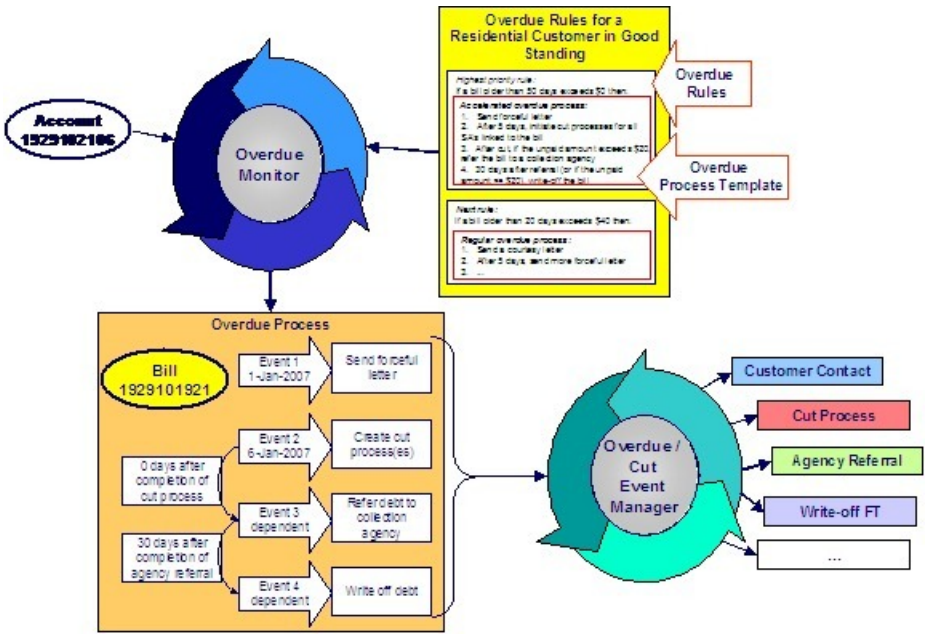
# Monitoring Overdue Bills

The following diagram illustrates the objects and processes involved with collecting overdue bills.




There are many important concepts illustrated above:

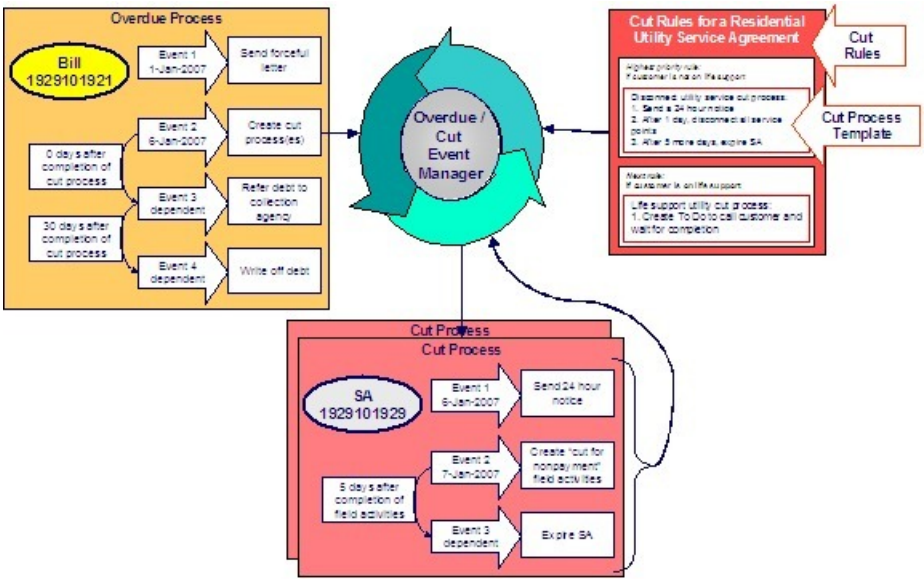
| | |
|---|---|
| The Overdue Monitor checks if your accounts have bills that violate your overdue rules | The *Overdue Monitor* is a background process that periodically reviews your account's financial obligations.<br><br>Note well: every account belongs to a collection class. There are two types of collection classes: those whose accounts are monitored by the *Account Debt Monitor*, and those that are monitored by the Overdue Monitor. This chapter describes the Overdue Monitor. |
| Overdue rules define when and how unpaid bills are collected | An account's *collection class overdue rules* have algorithms that monitor an account's financial obligations. These algorithms are invoked by the Overdue Monitor when it's *time to review* an account's obligations.<br><br>These algorithms can contain any type of criteria. However, most are defined using a combination of a threshold age and monetary amount. For example, a classic algorithm would check if a bill has unpaid financial transactions more than 20 days old that exceed $50.<br><br>In the case of bill-oriented collection, the monitoring algorithms look at each of the account's bills to determine if they are paid. Note, a bill is considered paid if its financial transactions (FTs) are linked to a balanced match event. If a monitoring algorithm finds an unpaid bill, it can check if it old enough (and large enough) to be considered a violation.<br><br>When you set up a monitoring algorithm, you define the type of overdue process that should be created when an overdue bill is detected. You do this by defining the appropriate "overdue process template". |
| An overdue process template defines how to handle an overdue bill | An *overdue process template* contains one or more *overdue event types*. These define the number and type of events that are created to prod the customer to pay. For example, you might set up an overdue process template with event types to send a series of letters followed up by a call. |

| | |
|---|---|
| | The overdue process template has contains the rules defining *when events are activated*.<br><br>The specific action that's performed by an overdue event is controlled by the Activation algorithm defined on its event type. Refer to *Overdue Event Type - Main* for a list of the various Activation algorithms delivered with the base package. |
| Multiple objects can be associated with a single process | The above diagram shows a single bill linked to an overdue process. It should be noted that an overdue process is capable of referencing multiple bills (or other objects).<br><br>Note well: while a single overdue process can reference many overdue objects, all such objects must be of the same type. For example, you cannot commingle bills and service agreements under a single overdue process. The type of object managed by an overdue process is defined on its *overdue process template*. |
| If a customer pays the bill, the overdue process is cancelled | If an overdue bill is paid, the *overdue process is canceled* real-time. You control if and how an overdue process is cancelled by setting up the appropriate rules on the *overdue process template*. |
| The Overdue / Cut Event Manager activates and triggers overdue events | The *Overdue / Cut Event Manager* is a background process that activates overdue events on the appropriate date. On this date, the event's Activation algorithm(s) are called.<br><br>This Overdue / Cut Event Manager also has the responsibility of recursively activating later events that are dependent on the completion of earlier events. |
| Events can be activated real-time | *Overdue Process - Main* has a button that allows users to activate (and recursively trigger) overdue events online / real-time. This means you don't have to wait for a batch job to activate events. |
| Overdue events can wait for related activities to complete | As described above, an overdue event's Activation algorithm can create virtually any object. What wasn't explained is that the event can be set up to *wait* for the ancillary object to finish before it completes. For example, an event can create a To Do entry and wait for it to complete before the next event is triggered. You can introduce plug-ins to create and wait on virtually any object.<br><br>While an overdue event is in the Wait state, the Overdue / Cut Event Manager monitors the state of the related object(s). When the related object completes, the event is transitioned to the Complete sate (thus triggering dependent overdue events). Please see *Some Events Wait For Something Before Completing* for more information. |

# Cutting Service Agreements

An overdue process may contain an overdue event that creates a cut process(es). A cut process is used to cut (i.e., stop) a service agreement. The following diagram illustrates the objects and processes involved with cutting a service agreement.

**NOTE:**
**Cut processes aren't required.** It's quite conceivable to design an overdue process that doesn't cut service. For example, the overdue process may just contain an event that creates a case and the case manages the collection activities.




| | |
|---|---|
| An overdue process may contain an overdue event that cuts (i.e., stops) service | If an overdue process's bill remains unpaid, one of the latter overdue events typically creates one or more *cut processes*. A cut process contains the activities to stop a service agreement (in the hopes that lack of service will inspire the customer to pay). It should be noted that a separate cut process is created for each service agreement. |
| Cut rules define how to sever service agreements | The system allows you to define rules to control the type of cut process created. For example, you may have a different cut process if the customer has life support equipment, or if it's winter, or ...<br><br>The cut rules are defined on the service agreement's *SA type*. This allows different rules for different types of service agreements. |
| Overdue events can "wait" for related activities to complete | When an overdue event creates cut process(es), it typically enters the Wait state. It enters this state as it is waiting for the cut process(es) to complete before it can itself complete. While in the Wait state, the Overdue / Cut Event Manager monitors the state of the related cut process(es). When the cut process(es) complete, the system transitions the originating overdue event to the Complete state (thus triggering dependent events). |
| A cut process template defines how to cut a service agreement | Cut processes and events are created using a *cut process template*. A cut process template defines the actions involved in cutting a given type of service agreement. A cut process template usually contains several cut events. These events are a series of letters and / or disconnection field activities that eventually result in the expiration of a service agreement if payment is not received.<br><br>An Activation algorithm controls the specific action associated with a cut event and therefore an event can do practically anything. Refer to *Cut Event Type - Main* for a list of the various Activation algorithms delivered with the base package. |
| Cut events are also managed by the Overdue / Cut Event Manager | The same *background process* that manages the activation of overdue events manages cut events. This means you only have to submit one batch job to activate and trigger both overdue and cut events. |

| | |
|---|---|
| Events can be activated real-time | *Cut Process - Main* has a button that allows users to activate (and recursively trigger) cut events online / real-time. This means you don't have to wait for a batch job to activate events. |
| Cut events can "wait" just like overdue events | Cut events support the ability to wait for something to complete just like overdue events. For example, if a cut event creates a field activity, it enters the Wait state. While in the Wait state, the Overdue / Cut Event Manager monitors the state of the related field activities. When the field activities complete, the system transitions the originating cut event to the Complete state.<br><br>And, just like for overdue events, the notion of a cut event creating something and then waiting for it to complete is not limited to field activities. For example, you could have a cut event create a To Do entry and wait for it to complete before the next event is triggered.<br><br>Please see *Some Events Wait For Something Before Completing* for more information. |
| After a service agreement is stopped, it will be final billed | Many cut processes are configured so their last cut event *expires the service agreement*. What happens at expiration depends on the type of service agreement. However, eventually the service agreement is transitioned into the Stopped state.<br><br>When the last active service agreement linked to an account is stopped, the system changes the account's bill cycle to bill that evening. If only one of many SAs is stopped, the SA will only be final billed as per the account's original bill cycle schedule. |
| If a customer doesn't pay their final bill, the final bill will be processed using a different type of overdue process | Final bills only differ from ongoing bills in that the service agreements associated with the bill's FTs are not active. This means that there is nothing to cut. This means that the type of overdue process used to handle a "final" bill should differ from that used to handle "ongoing" bills.<br><br>As described above, overdue rules define how unpaid bills are handled (both ongoing and final). We recommend configuring your overdue rules to use different overdue process templates for final versus ongoing bills. |
| The last overdue event typically causes the debt to be written off | Ultimately, if the overdue and cut events fail to inspire payment, the debt will be written off. The method used to write-off a bill is controlled by an overdue event Activation algorithm. |

# How Does The Overdue Monitor Work?

This section describes how the Overdue Monitor background process (batch control: C1-ADMOV ) uses your overdue rules to collect overdue debt.

**NOTE:**
**Recommendation.** We recommend that you familiarize yourself with the concepts described in the *case studies* before reading this section.

**Collecting overdue bills.** The examples in the following section frequently refer to how the Overdue Monitor is configured for an organization that collects on unpaid bills. It should be noted that these are just examples as the Overdue Monitor can be used to collect on virtually anything (if you create the appropriate plug-in algorithms).

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# Different Overdue Rules For Different Customers

The Overdue Monitor uses rules to control how it monitors an account's debt. The system allows you to define different rules for different combinations of collection class, division and currency code. For example,

- You probably have different collection rules for different jurisdictions (i.e., CIS Divisions). For example, if you have customers in different states / provinces, you may have different rules applied to each jurisdiction's debt. The **CIS division on each customer's account** defines the jurisdictional rules applied to the account's debt.
- You probably have different collection rules for different customer segments. For example, bills for large customers might be overdue if they are more than 10 days late, whereas small customers might have 24 days. You differentiate your customers in respect of the overdue via the **collection class on the customers' accounts**. An account's initial collection class is defaulted from its customer class. You may override an account's collection class at will.
- You will have different criteria for every currency in which you work because the monitoring process always compares a customer's debt against some value and this value must be denominated in the customer's currency. A customer's currency is defined using a **currency code on the account**.

The above means that every combination of CIS division, collection class, and currency code can have different rules. The following matrix is used to illustrate a sample organization's rules (note, we assume a single currency and therefore avoid the third dimension):

| **Account's Division** | **Account's Collection Class:**<br>Commercial Customer | **Account's Collection Class:**<br>Residential Customer |
|---|---|---|
| North | Highest Priority: If a bill exists with unpaid FT's > $0 that is older than 45 days, create the commercial 45 days late overdue process.<br>Next Priority: If a bill exists with unpaid FT's > $100 that is older than 30 days, create the commercial 30 days late overdue process. | Highest Priority: If a bill exists with unpaid FT's > $0 that is older than 50 days, create the accelerated overdue process for residential customers.<br>Lower Priority: If a bill exists with unpaid FT's > $25 that is older than 25 days, create the courtesy reminder overdue process for residential customers. |
| South | ... | ... |

Notice that there can be multiple criteria for each cell in the matrix. What differentiates one criteria from another is its priority. The higher priority criteria will be compared first. If the debt violates the criteria, the overdue process is initiated and no further comparisons are performed.

## Overdue Rules Are Embodied In Algorithms

Your organization's overdue rules are defined in algorithms plugged in on *Collection Class Overdue Rules* (in the Overdue Monitor Rule system event). When the Overdue Monitor analyzes an account, it uses the rules associated with the account's collection class, CIS division and currency code. To analyze an account, it simply invokes these algorithms in sequence order, i.e., the lower the sequence, the higher its priority.

An Overdue Monitor Rule algorithm has two responsibilities:

- it determines if an account violates its overdue rules,
- if so, it creates one or more overdue processes using an *overdue process template*

## When Is An Account Monitored?

The Overdue Monitor determines if an account violates your overdue rules at least every X days, where X is defined on the *Customer Class - Controls* associated with the account's customer class and division (in the field Min Credit Review Freq (Days)).

In addition, the Overdue Monitor examines an account's debt as follows:

- X days after an account's bill due date (X is defined in the field Credit Review Grace Days on *customer class control*).
- If a payment is canceled with a cancellation reason that indicates non-sufficient funds.
- If a payment arrangement is broken (assuming you use the base package's break payment arrangement plug-in). Refer to *Breaking A Bill Oriented Payment Arrangement* for more information.
- If a pay plan is broken. Refer to *The Pay Plan Monitor* for more information.
- If a *match event* is added, changed or deleted.
- When a written off bill is *reversed*.

**NOTE:**
**Additional events.** Your implementation can have other events trigger the analysis of an account by the Overdue Monitor. To do this, add logic to insert a row on the CI_ADM_RVW_SCH table when the event occurs. This row simply references the account ID to be reviewed and the desired review date.

## Collection Class Defines If And How Accounts Are Monitored

As described above, every account references a collection class. The collection class defines if and how its accounts are monitored. There are three options:

- The accounts are monitored by the *Account Debt Monitor*
- The accounts are monitored by the Overdue Monitor (this is described in this chapter).
- The accounts are not monitored for overdue debt.

**NOTE:**
**Migration.** If you plan to migrate from the Account Debt Monitor (ADM) method of collection to the Overdue Monitor method, a special Overdue Monitor algorithm ( *C1-ACT-CSW*) has been supplied that will skip accounts that are eligible for review by the Overdue Monitor if they have an active collection, severance or write-off process. This algorithm

should be plugged in the applicable Collection Class Overdue Rules so that it will be invoked first. This allows accounts with active ADM-oriented collection activities to work themselves through the system. When an account no longer has any active ADM-oriented activities, monitoring responsibilities will be assumed by the Overdue Monitor.

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# The Big Picture Of Overdue Processes

As described above, the Overdue Monitor subjects your accounts to overdue rules. If a rule is violated, an overdue process is created. The topics in this section provide background information about overdue processes.

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## How Are Overdue Processes Created?

As described *above*, the system creates an overdue process when an account violates your overdue rules. In addition, a user can manually create an overdue process at their discretion.

## The Components Of An Overdue Process

The following topics describe the major components of an overdue process.

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### Overdue Objects

When an overdue process is created, the system links the overdue object(s) to the process. For example, if an overdue bill is detected, the bill is linked to the overdue process.

When you set up an *overdue process template*, you define the type of object it collects on by defining the *foreign key characteristic type* used to reference the object. For example, when you set up an overdue process template to collect on bills, you define a foreign key characteristic type that references the bill object.

## Overdue Events

An overdue process has one or more overdue events. These events are the actions designed to encourage the customer to pay. For example, you might set up overdue events that:

- Send letters (via the creation of a customer contact)
- Create To Do entries
- Impact the account's credit rating
- Create a case (e.g., to seize the customer's assets)
- ... (the list is only limited by your imagination as algorithms are used to perform the event's actions)

You define the number and type of events by configuring *overdue process templates*. When the system creates an overdue process, it copies the events defined on the specified template.

It's important to note that all overdue events are created when the overdue process is created. A separate background process, the *Overdue / Cut Event Manager*, is responsible for activating, monitoring, and triggering overdue events. Activation of an event causes the system to do whatever the event indicates (e.g., send a letter, send a To Do entry to a user, start a cut process, refer debt to a collection agency, write-off debt, etc.).

## Overdue Log

Every overdue process has a log holding its history. Entries are added to the log when meaningful events occur, for example:

- When the process is created, a log entry is created to describe why the process was started.
- When an overdue event is activated, a log entry is created. These entries frequently contain a foreign key to the object that the event created so that users can easily drill down to the object from the log. For example, if an event creates a To Do entry, the To Do entry's foreign key is placed on the log and this allows a user to drill down on the log entry to see the To Do entry.
- When a process is canceled, a log entry is created to describe the circumstances of the cancellation (e.g., manual versus automated).
- Users can manually add log entries (you might want to think of these as "diary" entries) as desired.
- ...

Many of the base-package algorithms involved in overdue processing insert log entries so that a thorough audit trail is maintained. These algorithms have been designed to allow you to control the verbiage in each log entry by defining the desired message number using an algorithm parameter.

The log is viewable on the *Overdue Process - Log* page.

**NOTE:**

**More than just an audit trail.** The log entries are more than just an audit trail. The system makes use of the log entries to know what it did. For example, when an overdue event needs to monitor the state of the To Do entries that it created, it uses the log to determine the identity of these To Do entries.

## Experimenting With Alternative Overdue Process Templates

The system allows you to determine the efficacy of proposed overdue process templates using a small subset of customers before implementing the templates on the entire customer base. We use the term "champion / challenger" to reference this functionality.

We'll use an example to explain. Let's assume your prevailing overdue process template for residential customers starts with a "gentle reminder" letter followed 10 days later by a letter threatening collection agency referral if payment is not received. You may want to experiment with the impact of a change to this template. For example, you may want to change the "gentle reminder" to something more assertive and follow this up 5 days later with an even sterner warning. You can use the "champion / challenger" functionality to perform this experiment.

The following points describe how to implement "champion / challenger" functionality:

- Set up a "challenger" overdue process template for each template that you want to experiment with.
- Insert a new **Champion/Challenger** option on the Overdue Processing *Feature Configuration* for every champion template. Each option's value defines:
  - the "champion" overdue process template code
  - the "challenger" overdue process template code
  - the percentage of the time the system should use the "challenger" template
- Keep in mind that you can only experiment with one challenger template per champion template. For example, let's assume you have two prevailing overdue process templates - one for residential customers and another for commercial customers. You can experiment with different challenger templates for the residential and commercial templates. However, you cannot experiment with two different challenger templates for the residential champion template (i.e., a champion template can have 0 or 1 challenger template).

After setting up the above, your implementation's *Overdue Rule Plug-In* may include logic to use the challenger template X % of the time rather than the champion template. The sample plug-in provided in the base product, called *C1-CB-CR-RAT*, includes this logic.

If you are using the Oracle Utilities Business Intelligence product, you can configure analytic zones in innumerable ways to compare the efficacy of the champion versus the challenger. For example,

- You can set up a graph to show the average duration of each type of process.
- You can set up a graph to show the average dollars that were successfully collected.
- You can set up a dimensional scorecard to show how each template performed in different regions (or customer classes or ...).
- Etc (the list is limited by your imagination)

## Overdue Process Information Is Overridable

"Overdue process info" is the concatenated string of information that summarizes an overdue process throughout the user interface. The base-package logic constructs this string by concatenating the following information:

- The description of its overdue process template
- Its status

- For active processes, the number of days since it was created. For inactive processes, the number of days since it was inactivated.
- For active processes, the unpaid amount of the objects being collected

If you'd prefer a different info string, you can develop a new algorithm and plug-it in on your *overdue process templates*. This design allows some / all overdue process templates to have an override info string.

## Original and Unpaid Amounts

There are two amounts associated with each overdue object linked to an overdue process: its Original Amount and its Unpaid Amount. These amounts are used throughout overdue processing.

You control how these amounts are calculated by defining the appropriate algorithm on your *overdue process templates*. For example, you can plug in a base-package algorithm ( *C1-CUAOA*) if you collect on overdue bills and the original amount is the amount of financial transactions linked to the bill, and the unpaid amount is the sum of financial transactions that are not linked to balanced match events.

## Overdue Processes Are Highlighted Elsewhere

The topics in this section describe how other parts of the system highlight the existence of overdue and cut processes.

**Contents**



### Alert Zone

If you plug-in the appropriate alert algorithm ( *C1-OD-PROC*) on the Installation record, alert(s) will be shown for active overdue processes in the Alert Zone that appears in the Dashboard and on Control Central - Account Information.

### Credit and Collections Zone

The Credit and Collections zone on *Control Central - Account Information* shows active overdue and cut processes.

### Account Activity History Zone

The Account Activity History Zone on *Control Central - Account Information* shows pending and waiting events and inactive processes.

## How Are Overdue Processes Cancelled?

A user may cancel an overdue process at their discretion, online / real-time using *Overdue Process - Main*.

The system will automatically cancel an overdue process when the object(s) associated with the overdue process are sufficiently paid. Exactly when the system checks if an overdue process should be cancelled is dependent on your organization's billing and accounting rules. For example, if you practice *open-item accounting*, you'd want to analyze an account's active overdue processes whenever a match event is added, changed or deleted (as match events are the only objects that impact if debt is considered paid in an open-item world). The base-package supports this specific example. If you need additional events to check if an overdue process should be canceled (e.g., the creation of a pay plan), a base-package change MAY be necessary. Please check with customer support if you have questions.

Two algorithms plugged-in on the *overdue process template* handle the cancellation:

- The Cancel Criteria algorithm is responsible for determining if an overdue process should be canceled. Algorithms of this type analyze the outstanding debt on the objects linked to the overdue process and indicate whether a process can be cancelled.
- The Cancel Logic algorithm is responsible for actually canceling the process. The logic involved in cancellation can be quite sophisticated as canceling an overdue process can result in the cancellation of its pending events and cut processes.

**NOTE:**
**Why two algorithms?** The reason two algorithms are involved in cancellation is because we want the cancellation logic to be encapsulated in one place so it can be called during both manual and automated cancellation.

**Different logic for different templates.** Because both the Cancel Criteria and Cancel Logic algorithms are plugged-in on the overdue process's template, you can have different cancellation criteria and logic for different templates.

# Overdue Processes Are Created From Templates

As described above, you set up *overdue process templates* to define the types of events and when they are executed. When an overdue process is created, its events are created by copying the event types from an overdue process template. The remaining topics in this section provide background information to assist you in setting up your templates.

# The Big Picture Of Overdue Events

This section describes the various types of overdue events and their lifecycle.

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## How Are Overdue Events Created?

Overdue events are created as follows:

- The *Overdue Monitor* invokes Overdue Monitor Rules to periodically check your accounts (refer to *Overdue Rules Are Embodied In Algorithms* for how this works). An Overdue Monitor Rule creates an overdue process when an account violates your overdue rules. The overdue process has one or more overdue event(s). The number and type of events is controlled by the overdue process template specified on the Overdue Monitor Rule .

- Users can create an overdue process manually on *Overdue Process - Main*. To do this, they specify an overdue process template. The number and type of overdue events is defaulted from the template.
- An overdue event may be manually added to an existing overdue process by a user on *Overdue Process - Events*.

**NOTE:**
**Bottom line.** Most overdue events are created by the system when it creates an overdue process for delinquent obligations. If you need to create an ad hoc overdue event, you can either create an overdue process whose template contains the desired event OR link the desired event to an existing process.

## Overdue Events Can Do Many Things

An overdue event can perform a wide number of activities as the logic is embodied in an algorithm. The following points describe how this works:

- Every overdue event references an *overdue event type*.
- The overdue event type, in turn, references an Event Activation algorithm.
- The Event Activation algorithm is invoked when the event is *triggered*.

## Overdue Event Information Is Overridable

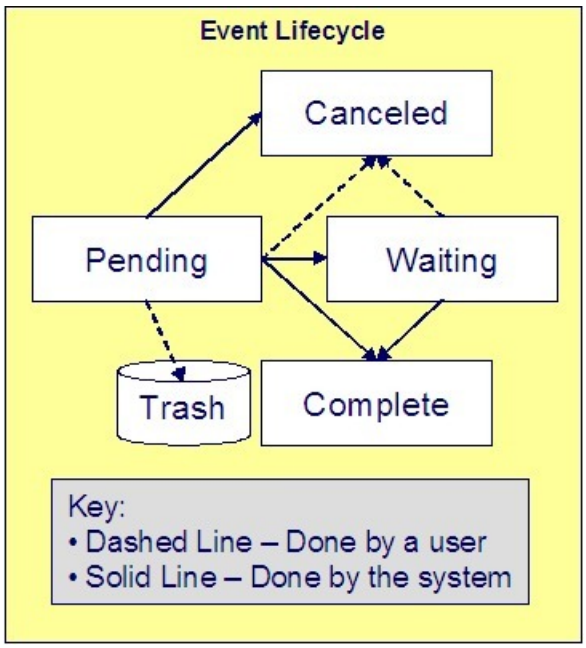
"Overdue event info" is the concatenated string of information that summarizes an overdue event throughout the system. The base-package logic constructs this string by concatenating the following information:

- The event type's description
- The event's status
- If it's pending :
  - If the event has a trigger date, the number of days until it's triggered plus the verbiage day(s) from today
  - Otherwise, the verbiage dependent on other events
- If it's waiting , the number of days, hours and minutes that it's been waiting
- If it's canceled , the cancel reason code's description
- If it's complete , the number of days, hours and minutes that it's been complete

If you'd prefer a different info string, you can develop a new algorithm and plug-it in on your event types. This design allows some / all event types to have an override info string.

## Overdue Event Lifecycle

The following diagram shows the possible lifecycle of an overdue event:




Overdue events are initially created in the Pending state. An event can take myriad paths after it's created; it all depends on how you've configured the system. The following topics describe an event's lifecycle:

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## How and When Events Are Activated

An overdue event contains the date is should be activated; this is referred to as its trigger date. On this date, the Overdue / Cut Event Manager (a background process ( C1-ODET )) invokes the Event Activation algorithm plugged-in on the event's event type. The Event Activation algorithm, in turn, will decide on the state in which to leave the overdue event (e.g., it may transition it to the Complete state or the Waiting state).

If a user can't wait for the Overdue / Cut Event Manager real-time, they can click a button on *Overdue Process - Main* to activate (and recursively trigger) events online / real-time.

You control how an event's trigger date is populated by configuring the *overdue process template*. You are given two choices when you link an event type to an overdue process template:

- You can indicate the event should be assigned a trigger date when it is first created. You'd use this approach on the first event and events with no dependencies on earlier events. The following points describe how to configure the overdue process template to do this:
  - Indicate the event type is NOT dependent on other events, and
  - Define the number of days after the process's creation to use when calculating the trigger date.
- You can indicate the event should be assigned a trigger date only after earlier events are Complete . This technique should be used whenever you have an event that is only executed after other events are Complete . The following points describe how to configure the overdue process template to do this:

- Indicate the event is dependent on other events, and
- Define the number of days after the completion / cancellation of all dependent event(s) that the trigger date should be set to. The Overdue / Cut Event Manager sets the trigger date on such an event when it detects that all of its dependent events are complete / canceled.

**NOTE:**
**Calendar vs Workdays.** When an overdue event is created by the system, its trigger date is set in accordance with your date arithmetic preferences. Refer to *Calendar vs. Work Days* for more information.

## Activating Events Should Add a Log Entry

As described *above*, an overdue process has a log holding a history of meaningful events in the process's life. Most Event Activation algorithms will add an entry to the process's log.

These log entries are more than just an audit trail as they also reference the objects that are created during activation. For example, if an activation algorithm creates a customer contact, the ID of the customer contact will be referenced on the log (and end-users will be able to drill down on the log entry to see the customer contact).

## Holding Events

You can prevent a pending event with a trigger date on / before the current date from activating by plugging-in a Hold Event Activation plug-in on the overdue process template. This might prove useful, for example, if you want to suspend an overdue process while a *case* used to investigate the assertion of a customer is outstanding. Then, when the case closes, the overdue process can start up where it left off.

This technique would prove useful, for example, if your users can grant ad hoc suspend periods (e.g., if a customer wants a few extra days to pay before a cutoff). To do this, create a case type that has two states: Open and Close. Make sure to set up the Open state to have an automatic transition algorithm to close the case after X days. Then, all a user has to do is create a case of this type when they want to provide a suspend period. When the suspend period is over and payment isn't received, the case will close and the overdue process will start up where it left off.

## Some Events Wait For Something Before They Activate

Consider this scenario - you want an overdue event to create a To Do entry so a user can authorize the next phase of an overdue process. When this event activates, the event's activation algorithm will create a To Do entry, but it will NOT transition the event to complete . Rather, the overdue event will exist in the waiting state. While in the waiting state, the Overdue / Cut Event Manager will monitor the state of the To Do entry. When the To Do entry completes, the original overdue event can transition to the complete state and then latter dependent events can be triggered. The following points describe how to configure the system to support this type of event:

- The event type's Event Activation algorithm should behave as follows:
  - It creates the object on which the overdue event waits.
  - It must link this object to the overdue process by creating a log entry where the prime-key of the related object is referenced (in a foreign-key characteristic). This log entry should also reference the event.
  - It should leave the overdue event in the waiting state.
- The event type must have a Monitor Waiting Event algorithm. This algorithm is invoked each time the *Overdue / Cut Event Manager* executes. If the related object has transitioned to a "final" state, the originating overdue event is transitioned to the complete state (and then latter dependent events are triggered).

**NOTE:**
**Bottom line.** Two algorithms must be set up on an overdue event type to implement waiting functionality: an Event Activation algorithm that creates the monitored object and a Monitor Waiting Event algorithm to check on the state of the monitored object. The Overdue / Cut Event Manager has the dual responsibility of activating the event and monitoring its related object for completion (and then triggering the dependent events when it completes).

While the above example illustrated how an overdue event could create and then monitor a To Do entry, you can use this functionality to create and monitor any object that has an initial and final state. If the base package does not contain the algorithms you need, simply develop new ones using the base-package algorithms as examples.

## How Are Events Canceled

A pending event will be cancelled automatically by the system when the overdue process is canceled. Refer to *How Are Overdue Processes Cancelled* for more information.

A user may cancel a pending or waiting event at their discretion.

Regardless of what triggers the cancellation, the Cancel Logic algorithm plugged in on the overdue event type handles the cancellation. This allows you to introduce additional cancellation logic should the need arise. Please note that the base package cancel algorithms insert a *log entry* when a user manually cancels an event.

# The Big Picture Of Cut Processes

While not required, many overdue processes will contain one or more events that will cut (i.e., stop) service. When such an event activates, it creates a "cut process". A cut process is very similar to an overdue process; the major difference is that a cut process is linked to a specific service agreement (the one being cut), whereas an overdue process is linked to the object(s) in arrears.

The topics in this section provide background information about cut processes.

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## How Are Cut Processes Created?

The activation of an overdue event can create one or more cut processes.

In addition, a user can manually create a cut process at their discretion using *Cut Process - Main*.

## Overdue Events Wait For The Cut Process To Conclude

Overdue events that create cut processes are perfect examples of events that *wait* for the object they create to complete before they, in turn, complete . After the cut process concludes, the originating overdue event will complete thus triggering its dependent events.

## Cut Processes Exist Under An Overdue Process

It's important to note that a cut process exists in respect of an overdue process. In other words, you can't create a cut process without referencing a parent overdue process. There are two reasons why:

- A cut process's overdue process defines the objects in arrears. It is these objects that are monitored to determine if the cut process (and overdue process) can be cancelled.
- The *log* associated with a cut process's overdue process contains the history of the cut process(es) and their events; there is no log specific to a cut process.

## The Components Of A Cut Process

Cut processes are simpler than overdue processes as they simply contain one or more "cut events". These events are the service agreement-specific actions designed to encourage the customer to pay. For example, you might set up cut events that:

- Create *field activities to cut service*
- Send letters (via the creation of a customer contact)
- Create To Do entries
- Impact the account's credit rating
- Create a case (e.g., to manage a customer with life support issues)
- ... (the list is only limited by your imagination as algorithms are used to perform the event's actions)

You define the number and type of events by configuring *cut process templates*. When the system creates a cut process, it copies the events defined on the related template.

It's important to note that all cut events are created when the cut process is created. The Overdue / Cut Event Manager is responsible for activating the cut events at the appropriate time. Activation of an event causes the system to do whatever the event indicates (e.g., send a letter, send a To Do entry to a user, create a field activity, etc.)

Cut processes do not have their own log as their history is maintained on the parent overdue process's *log*.

## Cut Process Information Is Overridable

"Cut process info" is the concatenated string of information that summarizes a cut process throughout the system. The base-package logic constructs this string by concatenating the following information:

- Its cut process template's description
- Its status

- For active processes, the number of days since it was created. For inactive processes, the number of days since it was inactivated.
- For active processes, the unpaid amount of the objects being collected on the cut process's overdue process

If you'd prefer a different info string, you can develop a new algorithm and plug-it in on your cut process templates. This design allows some / all cut process templates to have an override info string.

## How Are Cut Processes Cancelled?

A user may cancel a cut process at their discretion, online / real-time using *Cut Process - Main*.

The system will automatically cancel a cut process when the overdue process is cancelled.

Regardless of what triggers the cancellation, the Cancel Cut Process algorithm plugged in on the cut process's *template* handles the cancellation.

If a cut process is canceled and the cut process's events created field activities, the cancel logic embodied in the algorithm can be quite sophisticated. Refer to *Field Activities To Cut And Reconnect Service* for an example.

## Cut Processes and Events Are Created From Templates

When a cut process is created, its cut events are created by copying a cut process template's event types. Cut events follow the same lifecycle and possess the same behavior as *overdue events*.

# Cut Events Are Like Overdue Events

Cut events almost identical to *overdue events*. The major difference is that cut events exists under a cut process and therefore are oriented towards the cut process's service agreement. The following topics describe other differences between cut events and overdue events.

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## Field Activities To Cut and Reconnect Service

A cut process that's created for a service agreement whose service can be severed will typically contain a cut event that creates field activity(s) to cut service. The base-package cut event activation algorithm will create field activities for the service points linked to the service agreement being cut. The type of activity is defined on the *field activity type profile* defined on each service point's SP type. Please see *C1-CE-CR-FA* for the exact details of the base-package algorithm.

If the cut process is canceled after field activity(s) are created and before the cut process completes, different activities can transpire. The specifics of what happens are controlled by a Cancel Logic algorithm plugged in on the *cut process template*. The following points summarize how a base-package algorithm ( *C1-CP-DWFA*) works:

- It assembles all Pending , Held and Complete cut for nonpayment field activities (FA) created by the cut process (these are defined in the overdue process's *log*).
- Each FA is processed as follows:
  - If the FA is Pending or Held and it is not linked to a field order (i.e., it hasn't been dispatched):

    - The FA is cancelled
    - An entry is added to the overdue process log to indicate the cancellation
- If the FA is Pending or Held and it is linked to a field order (i.e., it has been dispatched):
    - A To Do entry is created (the To Do Type is defined on the algorithm)
- If the FA is Complete and the Cut Process's SA is pending start or active (i.e., it hasn't been expired yet):
    - Reconnect field activity(s) are created for every service point that had a cut for non-payment field activity. The type of activity is defined on the *field activity type profile* defined on each service point's SP type.

## A Cut Event Expires Service Agreements (and May Trigger Final Billing)

The last cut event is typically set up with an activation algorithm that expires the cut process's service agreement. If earlier cut events created "cut for non-payment" field activities, these field activities will be used as the basis for stopping service. Refer to *Finalizing Pending Stops* for how the system use the meter reads on these field activities as the "stop reads" on the service agreement. Note, you can see the field activities that are used to "cut" and "stop" service by viewing the Field Activities grid on *Service Agreement - Service Point*.

**NOTE:**
**Final billing.** When the last service agreement linked to an account is expired, the system will schedule the account for billing (outside of its normal bill cycle schedule).

## Write Offs Are Implemented Using Overdue Events

The system has been designed to allow overdue events on the original overdue process to write-off the objects being collected. Refer to *Writing Off Bills* for a case-study explaining how to do this.

## Calendar vs. Work Days

When you set up your overdue and cut process templates, you supply information that controls how each event's trigger date is calculated. You have two options:

- You can say that an event's trigger date can only be populated after earlier, dependent events are complete. For example, the 2 nd event (cut service) is triggered 2 days after the 1 st event is complete (48 hour warning letter).
- You can say that an event's trigger date is populated when the process is first created. You simply define the number of days after the start of the process when each such event should be triggered. For example, the 2 nd event (send cutoff warning) can be triggered 7 days after the start of the process.

In addition to the above, an option defined on the *Feature Configuration for Overdue Processing* plays a part in the calculation of an event's trigger date:

- If you set the option to use calendar days , the trigger date of events will be set to the first workday on / after the calculated date. For example, if you indicate that the 2 nd event is triggered 7 days after the 1 st event, the system will add 7 days to the 1 st event's completion date. It then checks if this is a workday (and not a holiday); if so, this is the trigger date of the event; if not, it assigns the trigger date to the next workday.
- If you set the option to use workdays , the trigger date will be calculated by counting workdays. For example, if you indicate that the 2 nd event is triggered 7 days after the 1 st event, the system will count 7 workdays and set the trigger date accordingly.

**NOTE:**
**Account's division controls the work calendar.** The system uses the above information in conjunction with the *work calendar* associated with the account's division to determine workdays.

# Bill-Oriented Collection - Advanced Topics

The topics in this section provide information on features designed to facilitate the collection of overdue bills.

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## Miscellaneous Bill-Oriented Collection Topics

The topics in this section provide background information about a variety of bill-oriented collection topics.

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### Highlights Of The Sample Overdue Monitor Rule Algorithm

A base-package Overdue Monitor Rule algorithm exists to support many different types of overdue rules (see *C1-CB-CR-RAT*). Keep in mind that multiple such algorithms can be plugged in on *Collection Class Overdue Rules*. When the *Overdue Monitor* analyzes an account, it calls these algorithms until there are no more to invoke (or until an algorithm tells it that there is nothing more to check). The following points describe its various options:

- **Different rules based on credit ratings.** You can set up algorithms to only be applied to accounts with a credit rating <= a given value. We anticipate such algorithms will be used in conjunction with other such algorithms to apply different rules based on the customer's credit rating.
- **Different rules based on an account or service agreement characteristic.** You can set up algorithms to only be applied if an account or one of its service agreements has a given characteristic type and value effective within the last X days. For example, you could set up an algorithm that would process an account if it had a broken payment arrangement service agreement within the last 365 days (broken payment arrangement service agreements are marked with a given char type and value). You could set up a different algorithm that treated strategic customers more leniently (given that the definition of "strategic" could be held in an account or service agreement characteristic).
- **Skipping a bill if it has a future postpone date.** You can set up algorithms to ignore an unpaid bill if it has a "postpone date" that's in the future. This date would be defined on the bill using an ad hoc characteristic. The characteristic type is defined as a parameter on the algorithm.
- **Special process for bills with disputed debt.** You can set up an algorithm to create a given type of overdue process if the bill has disputed debt. By "disputed debt", we mean a bill with a financial transaction that's linked to an unbalanced match event that's marked as Disputed .

- **Special process for bills with credit balances.** You can set up an algorithm to create a special overdue process if the bill's total charges are negative (i.e., a credit bill). Such bills should be very unusual as we strongly recommend that credit bills should have their credit balance applied to an overpayment service agreement during bill completion.
- **Different rules when all service agreements are inactive.** You can set up an algorithm that should only be applied if all service agreements are inactive. We anticipate this can be used to differ the type of overdue process as if an account does not have active service agreements; there is nothing to stop to encourage them to pay.
- **Different rules based on age and amount of a bill.** You can set up an algorithm to create different types of overdue processes based on the age and amount of the bills.

**NOTE:**
**You are not limited by the base-package's rules.** If your implementation requires options that are not supported by the base-package algorithm, simply develop your own.

## Holding A Process's Events

Refer to *Holding Events* for a description of how to prevent the activation of an overdue / cut processes events while a given condition is true. The condition is defined in an algorithm so you can set up the system to prevent event activation for practically any condition. For example, you might want to hold event activation while the bill's account has an active case (e.g., a user might set up a case to conduct an ad hoc investigation of billing discrepancies). When the case closes, you'd want the process to start up where it left off.

## Bill Info Shows Unpaid and Write-off Amounts

The base-package Bill Information algorithm (plugged in on the *Installation* record) is responsible for constructing a bill's summary information that appears throughout the system. This algorithm can be configured to show the unpaid and write-off amounts of each bill.

## Writing Off Bills

The topics in this section provide background information on how to write off bills.

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## After Service Is Cut, Write-Off Oriented Events Can Commence

After the last service agreement has been stopped, overdue events to manage the write-off of the overdue process's bill(s) should be triggered. Please note that a separate overdue process is NOT created to manage write-offs. Rather, events associated with the original overdue process will handle the write-off activities.

## Collection Agency Referrals

Before debt is written off, many implementations refer the unpaid bills to a collection agency. The following points describe how to implement this.

- Set up an overdue event type with an activation algorithm that refers an overdue process's bill(s) to a collection agency.
- When such an event is activated, the system creates a *Collection Referral* record for a collection agency. The specific agency to which the debt is referred is controlled by the event type's activation algorithm. The sample algorithm simply refers debt to the collection agency with the least amount of referred debt. If you prefer different logic, you must develop your own algorithm.
- A collection agency referral history record is linked to an account. It contains the amount of debt referred to the collection agency. It is the creation of this record that triggers the interface of information to the collection agency. The method used to interface the information to the agency is defined on the collection agency's record. Refer to *Setting Up Collection Agencies* for more information.
- If the collection agency is successful in obtaining the funds, a payment will be added. If the payment satisfies the cancel criteria defined on the overdue process template's cancellation plug-in, the overdue process will cancel. When an overdue process is cancelled, the cancel criteria on the overdue process's template are executed. We strongly recommend plugging in an algorithm that will cancel collection agency referrals when an overdue process is cancelled.
- If the collection agency is not successful in obtaining your funds after a given amount of time, you probably want to cancel the referral and write-off the debt. The cancellation of the referral will happen automatically if you set up your overdue process template to have an event that creates a collection agency cancellation X days after the referral. You can cancel a referral manually by simply creating a new collection agency referral history record (with a type of cancel ).
- Collection agencies are notified of the cancellation of a referral by the creation of a new collection agency referral history record (with a type of cancel). This record will be interfaced to the agency in the same manner used to interface a new referral (see above).

**NOTE:**
**Log entry.** The base-package overdue event activation algorithms that make and cancel collection agency referrals insert rows in the overdue process's *log* to audit these events.

## Writing Off Bills Will Create Write-Off Adjustments And Possibly A Match Event

Most overdue process templates will be configured to contain an event that writes-off the unpaid balance of bills.

**NOTE:**
**Processing is redirected to another algorithm.** The base-package overdue event activation algorithm that writes off bills simply redirects the call to the Write-Off Bill algorithm plugged in on the account's *Collection Class Overdue*

*Rules*. The reason for this redirection is because users can manually write-off a bill (using *Bill - Main*) and when they do this, we want to invoke the same logic as when an overdue process writes-off a bill.

The base-package Collection Class Overdue Rules - Write-Off Bill algorithm determines the amount that should be written off for each distribution code on each unpaid financial transaction. It then creates a separate adjustment for each service agreement where the lines on the adjustment contain the amount to be written off for each distribution code. If the unpaid financial transactions are not linked to a match event, the write-off adjustments plus the unpaid financial transactions will be linked to a new match event. If the unpaid financial transactions were linked to an unbalanced match event, the write-off adjustments will be added to the existing match event (thus making it balanced).

If partial payments were made against a bill, the amount written off will be prorated in light of the partial payments. For example, if 20% of a bill had been paid, 80% of each distribution code will be written off.

For example, assume the original bill's FT looked as follows (note, if the bill has multiple service agreements this will need to be done for each SA's FT's):

- Debit A/R $110.00
- Credit Flat Charge Revenue ($50)
- Credit Usage Revenue ($50)
- Credit City Tax Payable ($5)
- Credit State Tax Payable ($5)

Assume the customer had made a partial payment of $11 and it was matched to this FT. At write-off time, the system will create an adjustment whose adjustment lines will cause each distribution code to be written off by 90% (100% - $11 / $110). For example:

- Debit Flat Charge Revenue (or some W/O Expense) $45
- Debit Usage Revenue $45
- Debit City Tax Payable $4.50
- Debit State Tax Payable $4.50
- Credit A/R $99

This adjustment will then be linked to the original match event on which the payment was linked (thus making it Balanced ).

**NOTE:**
**Log entry.** The base-package overdue event activation algorithm that writes off bills inserts a row into the overdue process's *log* for each bill written off.

## Small Amount Write-Downs

Many organizations will write-down a bill whose value is small early in an overdue process. The base-package overdue event activation algorithm has parameters to support this requirement (this algorithm allows you to write-off an overdue process's bill(s) if their value is less than a threshold amount).

If your organization writes-down small amounts differently than large amount, simply set up an overdue event type to reference such an activation algorithm and position it in the appropriate place in the overdue process template.

## Bill Info Shows Written Off Amounts

The base-package Bill Information algorithm (plugged in on the *Installation* record) is responsible for constructing a bill's summary information that appears throughout the system. This algorithm can be configured to show the amount written-off for each bill.

## Online Write Off Of Bills Is Performed On Bill-Main

If a bill's account is associated with a *Collection Class Overdue Rule* that has a Write Off Bill algorithm, a button appears on *Bill - Main* if the bill hasn't been written off. When clicked, the Write Off Bill algorithm is invoked to write-off the bill.

## Online Reversal Of Written Off Bills Is Performed On Bill-Main

If a bill's account is associated with a *Collection Class Overdue Rule* that has a Write Off Bill algorithm, a button appears on *Bill - Main* if the bill has been written off. When clicked, the Write Off Bill algorithm is invoked (in reversal mode). The algorithm cancels the write-off adjustments (thus making the bill payable again). It also schedules the account for review by the *Overdue Monitor* the next time it runs.

## Write Offs And Overdue Process Cancellation

It should be stressed that writing-off a bill may cause an overdue process to be canceled because the bill's FT will be linked to a balanced match event (note, the specific *cancel criteria* are in a plug-in so this is not a hard rule).

The following points highlight interesting aspects of bill write-off and overdue process cancellation:

- If a user writes off a bill *real time* and the bill has an Active overdue process, the process's cancel criteria will be invoked. This typically results in the cancellation of the overdue process.
- If an overdue event writes off a bill, the state of the process depends on your cancel criteria and where the overdue event is positioned in the overdue process. For example,
  - Imagine an overdue process that has an overdue event that writes offs small amounts of debt early in the process. If such a process is applied against bill with a small amount of debt, the process will be canceled (when the event activates).
  - Contrast this to an overdue process where the last event writes off the bill. Because there are no other events to activate, the process will complete (i.e., it will not be canceled).

## An Alert Can Show Written Off Bills

A base-package Control Central Alert algorithm ( *C1-WO-BILL*) can be set up to highlight if the account in context has written off bills. This algorithm is plugged in on the *Installation* record.

# Bill-Oriented Payment Arrangements

A payment arrangement is an agreement with a customer to payoff severely overdue debt in **billed** installments. Bills sent to customers with payment arrangements contain charges for both their current services and their payment arrangement installment amount.

**NOTE:**

**Nomenclature.** Some organizations refer to payment arrangements as "current bill plus" agreements because the customer's bills contain charges for both their current debt plus their installment amount. After the customer has paid off their overdue debt, the payment arrangement closes and the customer's bills only contain charges for their current debt.

The topics in this section describe how to set up a payment arrangement and how the system monitors the ongoing arrangements.

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## Creating Payment Arrangements

When you create a payment arrangement, you are actually creating a service agreement. This service agreement is just like other service agreements in that:

- It holds debt.
- It is periodically billed (thus creating unmatched bill segment financial transactions).
- When a payment is received, the payment segment financial transactions are matched to the bill segment financial transactions.

Debt is transferred to a payment arrangement service agreement (PA SA) from the customer's delinquent bills at the inception of the payment arrangement.

When you transfer debt from the overdue bills to a PA SA, transfer adjustments are created to transfer debt from the delinquent SAs to the PA SA. Match events are created to link the "transfer from" adjustments to the original unpaid financial transactions (FT). When all FT's on a bill are linked to balanced match events, the bill is no longer considered overdue and any active overdue process (and its related cut processes) will be cancelled. Refer to *How Are Overdue Processes Canceled* for more information.

**NOTE:**
**Use the Payment Arrangement Transaction.** Use the *Payment Arrangement - Bill Oriented* to set up bill-oriented payment arrangements. This transaction creates a PA SA, transfers overdue bills to it, and sets up the installment amount. This transaction is also used if you need to break or cancel the payment arrangement.

## Installment, Payoff and Current Amounts

**WARNING:**
If you do not understand the difference between payoff balance and current balance, refer to *Current Amount versus Payoff Amount* .

When you set up a payment arrangement service agreement (PA SA), you transfer delinquent debt to the PA SA using transfer adjustments. After moneys are transferred, the system sets the PA SA's current balance to zero. At this point, there will be no overdue bills. If the customer neglects to pay bills containing charges associated with the payment arrangement, an overdue process will ensue.

PA SAs start their life with a non-zero payoff balance (i.e., they have debt when first started). This debt is transferred from the bills whose outstanding debt necessitated the creation of the PA SA.

The installment amount that the customer is billed is determined by the number of installments used to payoff the debt. For example, if the customer owes $500 and they want to pay this off in 10 installments, you'd set up the installment amount to be $50. The installment amount is saved on the PA SA's recurring charge amount. If the customer again falls into arrears on their bills, you can transfer additional bills to the PA SA. You can also change the installment amount as needed.

A PA SA's payoff balance typically differs from its current balance. The payoff balance is the amount of debt remaining to be paid off under the terms of the payment arrangement. The current balance is the installment amount that has been billed but not paid. For example, a customer who is paying off $500 with 10 installments of $50 would have an initial payoff balance of $500 and a current balance of $0. After the first bill, the PA SA would still have a payoff balance of $500, but its current balance would be $50. When the customer pays, the PA SA's payoff balance would fall to $450 and its current balance would return to $0.

The following table contains a financial example of a customer who sets up a payment arrangement to payoff $1,000 of debt in $10 installments.

| Event | Normal SA's GL Accounting | PA SA's GL Accounting | Normal SA's Current Balance | Normal SA's Payoff Balance | PA SA's Current Balance | PA SA's Payoff Balance |
|---|---|---|---|---|---|---|
| Prior to creation of payment arrangement | N/A | N/A | 1000 | 1000 | N/A | N/A |
| Transfer debt from normal SA(s) to PA SA | Xfer 1000<br>A/R <1000> | PA A/R 1000<br>Xfer <1000> | 0 | 0 | 1000 | 1000 |
| Set current balance to zero on PA SA | N/A | N/A | 0 | 0 | 0 | 1000 |
| Customer is billed ($50 for new debt and $10 of payment arrangement debt) | A/R 50<br>Revenue <50> | N/A | 50 | 50 | 10 | 1000 |
| Customer pays $60 | Cash 50<br>A/R <50> | Cash 10<br>PA A/R <10> | 0 | 0 | 0 | 990 |

When the customer pays off the payment arrangement debt, the system automatically closes the PA SA after it final bills (assuming the PA SA's SA type references a bill segment type that has a bill segment creation algorithm of Recurring Charge With Auto Stop ).

## Breaking A Bill-Oriented Payment Arrangement

If a customer neglects to pay a bill, an overdue process is created. If the bill contains charges from a payment arrangement, you'll want to "break" the payment arrangement. By "break", we mean cancel the arrangement and reinstate the debt under the originating bills. To do this, you must configure the *cut process template* used to cut the PA SA to contain a cut event that breaks the payment arrangement.

**NOTE:**
**Processing is redirected to another algorithm.** The base-package cut event activation algorithm that breaks a payment arrangement simply redirects the call to the Bill-Based Payment Arrangement algorithm plugged in on the account's

*Collection Class Overdue Rules*. The reason for this redirection is that users can manually break a payment arrangement (using *Payment Arrangement - Bill Oriented*). When they do this, we want to invoke the same logic as when a cut event activation algorithm breaks a payment arrangement.

---

The base-package Collection Class Overdue Rule - Bill-Based Payment Arrangement algorithm does the following:

- Creates "cancel adjustments" for all unpaid financial transactions associated with the payment arrangement (e.g., billed, but not paid installments).
- Cancels ALL adjustments that were used to transfer the debt to the payment arrangement. When these are cancelled, the original bills will become unpaid (and the debt will be rather old by this point).
- Syncs up current balance with payoff balance on the PA SA.
- Makes the PA SA pending stop and expires it (SA activation will stop the SA when it next runs).
- If there is a credit left on the PA SA (because payments were made against the arrangement), the credit will be distributed amongst the bills that contributed debt to it (the oldest bills are paid off first). This relief will occur via transfer adjustments from the PA SA to the original SAs.
- Note, if there is a debit left (e.g., because LPC were issued or some other type of adjustment was created by an operator), an error is issued as we don't handle new debit on a payment arrangement.
- Inserts a characteristic on the PA SA to indicate that it has been broken (you might want to use this to cause more strict overdue rules to be applied to accounts with broken payment arrangements).
- Marks the account so it will be reviewed by the *Overdue Monitor* the next time it runs.

---

**NOTE:**
**The PA SA must final bill before it closes.** It's important to note that the PA SA will only close after the PA SA is final billed. This is OK as it won't have any money left on it.

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When the Overdue Monitor next runs, it will analyze the account's reinstated bills. We recommend setting up a Collection Class Overdue Rule - Overdue Monitor Rule algorithm that has more stringent rules if the account has a broken payment arrangement within the last X days. The base-package algorithm ( *C1-CB-CR-RAT*) supports this type of processing.

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**NOTE:**
**Log entry.** The base-package overdue event activation algorithm that breaks a payment arrangement SA inserts a row into the overdue process's *log*.

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## Online Breaking

A user can click a button on the *Payment Arrangement - Bill Oriented* page to break a payment arrangement real time. When clicked, the Collection Class Overdue Rule - Bill-Based Payment Arrangement algorithm is called to break the payment arrangement. This is the same algorithm called when a cut event break a payment arrangement.

## Online Canceling

A user can click a button on the *Payment Arrangement - Bill Oriented* page to cancel a payment arrangement real time. Cancellation should be used when you want to "logically delete" a PA SA because it shouldn't have been created.

The logic described above for breaking a payment arrangement is executed when a user cancels a payment arrangement; the only difference is that the PA SA is marked with a different characteristic type / value than when it is broken. The "broken" characteristic type / value can be used to apply stricter rules to the account when it's next reviewed by the *Overdue Monitor*.

# Creating Overdue and Cut Procedures

Your overdue procedures define how your organization collects overdue debt. Your cut procedures define how your organization cuts (i.e., stops) service agreements when collection attempts fail. In this section, we describe how to set up the data that controls these procedures.

**WARNING:**
There are numerous ways to design your overdue and cut procedures. Some designs will result in easy long-term maintenance; others will result in maintenance headaches. In this section, we provide information to help you understand the ramifications of the various options. Before you set up your overdue and cut procedures, we encourage you to gain an intuitive understanding of these options by using the system to prototype the alternatives.

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# Designing Your Overdue Procedures

The design of your overdue procedures is an iterative process. Over time, you will develop skills that will allow you to skip some steps. However, when you're starting out, we recommend you use the following matrix as your guide. When the matrix is complete, you're ready to set up the overdue processing control tables.

| Account's Division | Account's Collection Class: | Account's Collection Class: |
|---|---|---|
| | | |

The topics discussed below will gradually complete this matrix using a simple case study.

**FASTPATH:**
For more information about how the information in this matrix is used to monitor your customers' debt, refer to *How Does The Overdue Monitor Work*.

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## Your Divisions Are Frequently Preordained

An account's division defines the jurisdiction whose rules govern the account. For example, an account's division controls how its payments are distributed, if / how late payment charges are levied, etc. Divisions have typically been designed in advance of designing your overdue rules.

In our example, we assume you have two divisions: North and South.

| Account's Division | Account's Collection Class: | Account's Collection Class: |
|---|---|---|
| North | | |
| South | | |

## Designing Your Collection Classes

Multiple collection classes are needed when your organization has different overdue rules and / or procedures based on the type of customer. If all customers are treated the same way, you'll have a single collection class (call it Generic ). However, if you're like many organizations, you will have multiple collection classes.

For example, for commercial/industrial customers, you probably don't worry until they owe you more than, say, $100 after 20 days. For residential customers, you probably don't worry until they owe you more than, say, $5 after 20 days. In this situation, you will have at least two collection classes: one for commercial/industrial customers, the other for residential customers.

In our example, we assume you have two collection classes: Residential and Commercial/Industrial.

| Account's Division | Account's Collection Class: | Account's Collection Class: |
|---|---|---|
| | Residential | Commercial/Industrial |
| North | | |
| South | | |

**NOTE:**
There are two very different ways to monitor your accounts for overdue debt. This chapter describes the method referred to as Overdue Processing. Refer to *Collection / Severance / Write Off* for a description of the other method. We anticipate that most organizations will only use a single method. If your organization opts to use both methods, you will need to set up the corresponding collection classes.

## Designing Overdue Monitoring Rules

At this point, we have the rows and columns defined in our matrix. Now it's time to work on the individual cells.

**NOTE:**
**Single currency.** We've assumed that your implementation works in a single currency. If this is not true, you will need to add a 3rd dimension that will have a value for each currency code.

Each cell will contain the rules that the *Overdue Monitor* uses to determine if an account has overdue debt. These rules will eventually be configured using one or more algorithms on *Collection Class Overdue Rules*.

| Account's Division | Account's Collection Class: | Account's Collection Class: |
|---|---|---|
| | Residential | Commercial/Industrial |

| | |
|---|---|
| North | |
| South | |

**NOTE:**
If the Overdue Monitor encounters an account whose collection class and division does not have overdue rules set up, it will issue an error.

Determining the rules in each cell can be straightforward or complicated; it depends on how your organization works. Our case study assumes the following:

- For residential debt (regardless of division) we have the following rules:
  - Highest priority. If a bill exists with unpaid FT's > $0 that is older than 50 days, create the "accelerated overdue process" for residential customers. We'll talk more about this process later.
  - Medium priority. If the account's has a broken payment arrangement within the last 60 days with an unpaid bill > $0 that is older than 20 days, create the "broken payment arrangement overdue process".
  - Lower priority. If a bill exists with unpaid FT's > $25 that is older than 25 days, create the "courtesy reminder overdue process" for residential customers. We'll talk more about this overdue process later.
- For commercial-industrial debt (regardless of division) we have the following rules:
  - Highest priority. If a bill exists with unpaid FT's > $0 that is older than 45 days, create the "commercial 45 days late overdue process". We'll talk more about this process later.
  - Medium priority. If the account's credit rating is < 550 and has an unpaid bill > $0 that is older than 20 days, create the "risky commercial customer overdue process".
  - Lower priority. If a bill exists with unpaid FT's > $100 that is older than 30 days, create the "commercial 30 days late overdue process". We'll talk more about this overdue process later.

Given the above, our matrix will look as follows:

| **Account's Division** | **Account's Collection Class:** Residential | **Account's Collection Class:** Commercial/Industrial |
|---|---|---|
| North | Highest Priority: If a bill exists with unpaid FT's > $0 that is older than 50 days, create the accelerated overdue process for residential customers.<br>Medium Priority: If the account has a broken payment arrangement within the last 60 days with an unpaid bill > $0 that is older than 20 days, create the broken payment arrangement overdue process.<br>Lowest Priority: If a bill exists with unpaid FT's > $25 that is older than 25 days, create the courtesy reminder overdue process for residential customers. | Highest Priority: If a bill exists with unpaid FT's > $0 that is older than 45 days, create the commercial 45 days late overdue process.<br>Medium priority. If the account's credit rating is < 550 and has an unpaid bill > $0 that is older than 20 days, create the risky commercial customer overdue process.<br>Lowest Priority: If a bill exists with unpaid FT's > $100 that is older than 30 days, create the commercial 30 days late overdue process. |
| South | Same as above | Same as above |

**NOTE:**
**The rules are limited by your imagination (and business requirements).** While the base-package Overdue Monitor Rule algorithm ( *C1-CB-CR-RAT*) supports the above scenarios, we'd like to stress these are just examples. Your implementation can operate using very different rules by either configuring the base-package algorithm (it has many

parameters that you can use to tailor your rules) OR by introducing a new algorithm. Refer to *Highlights Of The Sample Overdue Monitor Rule Algorithm* for the options delivered with the base-package.

## Designing Overdue Process Templates and Event Types

The following table shows a sample overdue process template for one of the rules in the Residential / North cell in the previous section's matrix.

| Overdue Process Template | Overdue Event Type | When Triggered |
|---|---|---|
| Accelerated overdue process for residential customers | Old debt letter | At inception of process |
| | Cut active service agreements | 10 days after inception |
| | Reduce customer's credit rating | 10 days after inception (i.e., at the same time the cut process is created) |
| | Write down small debt | 0 days after completion of the cut process(es) |
| | Refer debt to collection agent | 0 days after attempting the small write down (this means that either the small write-down or the agency referral will take place as if the write-down is successful, the bill's FTs will be matched to balanced match events and the overdue process will stop) |
| | Cancel collection agent referral | 45 days after referral |
| | Write-off debt | 0 days after collection agent cancellation |

You should create a similar table for each of the distinct overdue process templates in your matrix.

At this point, you've designed the distinct overdue process templates. Next, you'll need to design the algorithms that control their overdue processes:

- A template's Calculate Unpaid and Original Amount algorithm calculates the original and unpaid amounts of the objects being collected by a process. These values are used throughout the overdue processing module.
- A template's Cancel Criteria algorithm is executed to determine if a process should be cancelled. Refer to *How Are Overdue Processes Cancelled* for the details.
- A template's Cancel Logic algorithm is executed to cancel a process. Refer to *How Are Overdue Processes Cancelled* for the details. Please note that the logic embodied in this type of algorithm can be sophisticated because it is responsible for stopping an ongoing process's activities (e.g., this could involve cancelling field activities or cases). Cancellation algorithms are also responsible for inserting *log* entry(s).
- A template's Hold Event Activation algorithm is invoked to determine if the *Overdue / Cut Event Manager* should *suspend the activation* of the process's events.
- A template's Information algorithm is invoked to construct the *override "info string"*.

Next, extract each unique event type from the above table:

| Overdue Event Type | Action |
|---|---|
| Old debt letter | Create a customer contact |
| Cut active service agreement(s) | Start a cut process for every active SA with an unpaid FT on the bill |

| | |
|---|---|
| Reduce customer's credit rating | Insert an account credit rating history record |
| Write down small debt | Create write-down adjustments if unpaid debt is less than $x |
| Refer debt to collection agent | Create a collection agency referral |
| Cancel collection agent referral | Cancel the collection agency referral |
| Write off unpaid debt | Create adjustments to write-off unpaid debt |

At this point, you know the distinct event types. Next, you'll need to design the algorithms that control the lifecycle of each event type:

- The event type's Event Activation algorithm(s) are executed by the *Overdue / Cut Event Manager* on its trigger date. The following points describe the logic embodied in such an algorithm:
  - The activity that happens on the trigger date (e.g., creation of a customer contact, To Do, etc.). Refer to *Overdue Events Can Do Many Things* for the details.
  - Whether the event is transitioned into the Waiting or Complete state when it's triggered. Refer to *Some Events Can Wait* for the details.
  - How the log entry(s) associated with event activation will be constructed. The base-package algorithms allow you to control the verbiage in the log entry by defining the desired message number on the algorithm. This means that you may have to set up new messages. Refer to *Activating Events Should Add A Log Entry* for the details.
- The event type's Cancel Logic algorithm(s) are invoked when *an event is cancelled*. The following points describe the logic embodied in such an algorithm:
  - If the event is allowed to be canceled. This logic may be necessary if some conditions prevent events of this type from canceling. For example, you may want to prevent an event from canceling when there are later dependent events that aren't canceled.
  - Any ancillary actions that take place during cancellation.
  - How the *log entry(s)* associated with event cancellation will be constructed.
- The event type's Monitor Waiting Event algorithm(s) are invoked to *monitor a waiting event*. These algorithms are responsible for transitioning a Waiting event to Complete if the object on which it's waiting is complete.
- The event type's Event Information algorithm is invoked to construct the *override "info string"*.

Once you've designed each event type's algorithms, you're ready to design your cut processes.

## Designing Cut Process Templates and Event Types

While not required, many overdue processes will contain an overdue event that cuts (i.e., stops) service (in the hopes that stopping service will inspire the customer to pay). When such an event activates, it creates one or more cut process(es).

The system allows you to control if and how service is cut by setting up Cut Process Rule algorithms on your SA types. This allows different rules for different types of service agreements. In addition, because these rules are embodied in algorithms, a given SA type can have conditional logic that controls the type of cut process created. For example, you may have a different cut process if the customer has life support equipment, or if it's winter, or ...

> **NOTE:**
> **If a service agreements of a given type should never be cut.** If you have certain SA types that should never be cut, do NOT define an algorithm in the SA type's Cut Process Rule .

Determining your Cut Process Rules can be straightforward or complicated; it depends on how your organization works. Our case study assumes the following:

- For service agreements associated with metered service, we have the following rules:
  - Highest priority. If the customer has life support requirements, create "cut process in light of life support" process.
  - Lowest priority. Otherwise, create a "metered service" cut process.
- For service agreements associated with charitable contributions, create an "expiration only" cut process.

Once you've determined if / how each SA type is cut, you need to design your cut process templates (you'll need one for each unique method of cutting a service agreement). The following table shows the cut process templates referenced above. Adjacent to each process are its events and an indication of when they are triggered.

| Cut Process Template | Event Number | Cut Event Type | Dependent On Event(s) | Trigger Date Set To X Days After Completion Of Dependent Events |
|---|---|---|---|---|
| Metered service | 10 | Letter - 48 hour disconnect for non-payment warning | N/A - first event | 0 |
| | 20 | Field activity - disconnect for non-payment | 10 | 2 |
| | 30 | 'Service has been disconnected' letter | 20 | 0 |
| | 40 | Expire service agreement | 20 | 10 |
| Cut process in light of life support | 10 | Generate delinquent life support customer To Do entry (seeking approval for the cut) | N/A - first event | 0 |
| | 20 | Letter - 72 hour disconnect for non-payment warning | 10 | 0 |
| | 30 | Generate impending life support cutoff To Do entry to C&C rep | 20 | 3 |
| | 40 | Field activity - cut for non-payment | 30 | 0 |
| | 50 | Service has been disconnected letter | 40 | 0 |
| | 60 | Expire service agreement | 40 | 10 |
| Expiration only | 10 | Expire service agreement | N/A - first event | |

At this point, you've designed the distinct cut process templates. Next, you'll need to design the algorithms that control the lifecycle of their cut processes:

- A template's Cancel Logic algorithm is executed to cancel a process. In addition to cancelling the event, these algorithms are also responsible for inserting *log* entry(s).
- A template's Information algorithm is invoked to construct the *override "info string"*.

Next, extract each unique event type from the above table:

| Cut Event Type | Action |
|---|---|

| | |
|---|---|
| 48-hour warning letter | Create a customer contact - 48-hour warning letter (letters are created via customer contacts) |
| 72-hour warning letter | Create a customer contact - 72-hour warning letter |
| Disconnect for non payment | Create a cut for non-payment field activity |
| Permission to start a cut process for a life support customer | Create To Do seeking permission to send 72 hour letter |
| Permission to create a cut field activity for a life support cutoff | Create To Do seeking permission to issue a cut field activity |
| Service has been disconnected letter | Create a customer contact - service cut letter |
| Expire service agreement | Expire service agreement |

At this point, you know the distinct event types. Next, you'll need to design the algorithms that control the lifecycle of their events:

- The event type's Event Activation algorithm(s) are executed by the *Overdue / Cut Event Manager* on its trigger date. The following points describe the logic embodied in such an algorithm:
  - The activity that happens on the trigger date (e.g., creation of a customer contact, To Do, etc.). Refer to *Cut Events Can Do Many Things* for the details.
  - Whether the event is transitioned into the Waiting or Complete state when it's triggered. Refer to *Some Events Can Wait* for the details.
  - How the log entry(s) associated with event activation will be constructed. The base-package algorithms allow you to control the verbiage in the log entry by defining the desired message number on the algorithm. This means that you may have to set up new messages. Refer to *Activating Events Should Add A Log Entry* for the details.
- The event type's Cancel Logic algorithm(s) are invoked when *an event is cancelled*. The following points describe the logic embodied in such an algorithm:
  - If the event is allowed to be canceled. This logic may be necessary if some conditions prevent events of this type from canceling. For example, you may want to prevent an event from canceling when there are later dependent events that aren't canceled.
  - Any ancillary actions that take place during cancellation.
  - How the *log entry(s)* associated with event cancellation will be constructed.
- The event type's Monitor Waiting Event algorithm(s) are invoked to *monitor a waiting event*. These algorithms are responsible for transitioning a Waiting event to Complete if the object on which it's waiting is complete.
- The event type's Event Information algorithm is invoked to construct the *override "info string"*.

# Set Up Tasks

The above topics provided background information about how overdue processing works. The following discussion summarizes the various set up tasks.

**Contents**

*Collection Class Overdue Monitor Rules*

*Feature Configuration*

*Overdue and Cut Event Cancellation Reasons*

*Collection Agencies*

*Alert To Highlight Active Overdue Processes*

*Bill-Oriented Collection - Additional Set Up*

## Cut Event Types

You will find that most of the time spent setting up your cut event types is spent setting up the objects that are referenced on the cut event type algorithms. For example, if you use the base-package algorithms, you may need to set up the following:

- The various "types" for the objects created by the plug-ins. For example, if a cut event type creates a To Do entry, you must supply the desired To Do type.
- *Foreign key characteristic types* that are used to reference the ancillary objects in the *log entries* (e.g., if an event creates a customer contact, the log references this customer contact using a FK characteristic type). Note, many of these will exist in the base-package.
- *Messages* that are used to define the verbiage in the *log entries*. For example, if you use the base-package algorithm that creates a customer contact, you must supply the desired message category and number that contains the verbiage that appears in the log when customer contacts are created. Note, messages have been set up for all base-package algorithms (this means you should not have to set up new messages).
- Etc.

The only way to compile the complete list is to design the parameters for each cut event type algorithm. Refer to *Cut Event Type - Main* for the supported plug-in spots.

After you've set up the objects referenced on the algorithms, you can then set up the algorithms. Only then can you set up the cut event types.

## Cut Process Templates

After your cut event types exist, you can set up your cut process templates. You will find that most of the time spent setting up your cut process templates is spent setting up the objects that are referenced on the cut process template algorithms. Refer to *Cut Process Template - Main* for the supported system events.

## SA Type - Cut Process Rules

After you've created your cut process templates, you can set up the algorithms that hold your *cut process rules*. These are plugged-in on *SA Type - Algorithm* in the Cut Process Rule system event.

## Overdue Event Types

You will find that most of the time spent setting up your overdue event types is spent setting up the objects that are referenced on the overdue event type algorithms. For example, if you use the base-package algorithms, you will set up the following:

- The various "types" for the objects created by the plug-ins. For example,
  - If an overdue event type creates a To Do entry, you must set up the To Do type.
  - If an overdue event type creates a customer contact, you must set up the customer contact type.
  - If an overdue event type writes off debt, you must set up the adjustment types.
  - Etc.
- *Foreign key characteristic types* that are used to reference the ancillary objects in the *log entries* (e.g., if an event creates a customer contact, the log references this customer contact using a FK characteristic type). Note, many of these will exist in the base-package.
- *Messages* that are used to define the verbiage in the *log entries*. For example, if you use the base-package algorithm that creates a customer contact, you must supply the desired message category and number that contains the verbiage that appears in the log when customer contacts are created. Note, messages have been set up for all base-package algorithms (this means you should not have to set up new messages).
- Etc.

The only way to compile the complete list is to design the parameters for each overdue event type algorithm. Refer to *Overdue Event Type - Main* for the supported plug-in spots.

After you've set up the objects referenced on the algorithms, you can then set up the algorithms. Only then can you set up the overdue event types.

## Overdue Process Templates

After your overdue event types exist, you can set up your overdue process templates. You will find that most of the time spent setting up your overdue process templates is spent setting up the objects that are referenced on the overdue process template algorithms. Refer to *Overdue Process Template - Main* for the supported system events.

## Collection Classes

Set up *collection classes* as per your *overdue procedures*. Make sure to indicate that these collection classes use the Overdue collection method (only accounts linked to collection classes designated as using the Overdue collection method or processed by the Overdue Monitor).

## Collection Class Overdue Monitor Rules

After your overdue process templates exist, you can set up your Overdue Monitor Rules . These rules are algorithms plugged in on *Collection Class Overdue Rules*. You will find most of the time spent setting up these algorithms is spent setting up the objects referenced on the base-package algorithm.

## Feature Configuration

You must set up a *Feature Configuration* to define parameters that control various overdue processing options.

The following points describe the various **Option Types** that must be defined:

- Trigger Date: Y-Workdays, N-Calendar Days. This option controls how the system computes the trigger dates on overdue and cut events. Enter Y if the system should use workdays. Enter N if the system should use calendar days. Refer to *Calendar vs Work Days* for the details.
- Payment Arrangement Type (B/S/A). This option indicates whether your implementation uses the *Balance-Oriented Payment Arrangements* (value **S** ), *Bill-oriented Payment Arrangements* (value **B** ) or both (value **A** ). The value governs the navigation path for the payment arrangement lines in the *Account History* and *Credit & Collection* zones.
- Champion Template$Challenger Template$Percentage(1-100). You need only set up options of this type if your implementation implements *Champion / Challenger* functionality. Options of this type are entered in the format A $B$nnn where A is the overdue process template of the champion template, B is the overdue process template of the challenger template, and C is the percent of the time that the system should create the challenger template. The overdue monitor uses this option to override the champion overdue process template X% of the time with the challenger template. You may enter any number of these options (but only one per Champion Template).

## Overdue and Cut Event Cancellation Reasons

Overdue events can be cancelled automatically and manually (at the discretion of a user). Regardless of the method of cancellation, a cancellation reason must be supplied. You set up your overdue event cancellation reasons using *Overdue Event Cancellation Reason - Main* and *Cut Event Cancellation Reason - Main*.

## Collection Agencies

If you refer debt to collection agents, you must set up your *collection agencies*.

## Alert To Highlight Active Overdue Processes

If you want an alert to appear if the account has active overdue processes, you must configure an appropriate Control Central Alert algorithm ( *C1-OD-PROC*). This algorithm is plugged in on the *Installation* record.

## Bill-Oriented Collection - Additional Set Up

The topics in this section provide information on additional set up requirements if you collect on unpaid bills.

**Contents**



### One Bill Per Match Event

As mentioned earlier, a bill is considered paid if its financial transactions (FTs) are linked to a balanced match event. To determine a bill's outstanding amount, FTs from different bills cannot be commingled on the same match event (but it's OK

for a bill's FTs to be on multiple match events). If you stick by the rule of "just one bill per match event" you will then be able to determine the outstanding balance of a partially paid bill. However, if you mix more than one bill under a match event, a particular bill's balance may become indeterminate.

The following Open-Item algorithm types have been provided by the base package to help enforce this rule:

- The Distribute by Bill Due Date Payment Distribution algorithm ( *C1-PYDS-BDU*).
- The match by Bill ID Payment Distribution Override algorithm ( *C1-PDOV-PYBL*).
- The FT cancellation FT Freeze algorithm ( *C1-CFTZ-COFT*).

If any of your customized plug-ins and processes create match events, it is important that these too enforce this rule. You may want to refer to the base package algorithms as an example of how to do this.

## Bill-Based Payment Arrangements

If you set up *payment arrangements for unpaid bills*, you must configure the Bill-Based Payment Arrangement algorithm and plug it in on your *Collection Class Overdue Rules*.

It's important to set up the adjustment types used during payment arrangement creation to NOT print on bills. This is because the base-package algorithm will match the adjustments used to transfer debt to the payment arrangement with the adjustment used to reduce the payment arrangement's current amount by the amount of the transfer if all adjustment types are set up to not print.

## Bill-Based Write-off

If you *write-off unpaid bills*, you must set up the following:

- Set up the adjustment type that will be used to write-off an unpaid financial transaction. This adjustment type must be configured as follows:
  - **Adjustment Amount Type** must be Calculated Amount
  - Its distribution code is irrelevant as a separate calculation line will be created for each distribution code on the FT's that is written off and these lines will reference the appropriate distribution code.
  - It must reference an adjustment type char type / value that identifies it as one used to write-off a bill's FTs
  - The following algorithms must be defined on the adjustment type:
- The Generate Adjustment system event must reference an algorithm that has the responsibility of determining how to write-off a FT. This algorithm should be determining the FT's GL details and creating a separate adjustment calculation line for each GL detail. The base package is supplied with a sample algorithm that does this ( *C1-ADJG-WO*).
- The Adjustment Financial Transaction system event should reference an algorithm that impacts current, payoff and the GL by the amount being written off.
  - The distribution codes referenced on the financial transactions must be set up with a characteristic that holds the distribution code used to write-off the original amounts. For example,
    - Distribution codes used to record tax liabilities will typically reference the same distribution code for write-off (most organizations reverse tax liabilities at write-off time)
    - Distribution codes used to record revenue will typically reference a write-off distribution code used to record a write-off expense.
    - Distribution codes used to record receivables will typically not reference a write-off distribution code because receivables are implicitly written off when revenue and tax liabilities are written off.

- Set up an adjustment cancellation code used when a users reverses a written-off bill (reversal involves canceling the write off adjustments).
- Set up a Write Off Bill algorithm and plug it in on your *Collection Class Overdue Rules*. This algorithm will reference the adjustment type described in the previous point.

### Alert To Highlight Written Off Bills

If you want an alert to appear if the account has bills with written-off debt, you must configure an appropriate Control Central Alert algorithm ( *C1-WO-BILL*). This algorithm is plugged in on the *Installation* record.

### Open-Item Bill Amount Plug-In

You must set up the algorithm that computes the original, unpaid, and write-off amounts of your open-item bills. This algorithm is called by other algorithms when these amounts are needed. This algorithm is plugged-in on *Installation* in the Determine Open Item Bill Amounts spot.

## Setting Up Overdue Processing

The topics in this section describe how to set up the control tables to implement your overdue processing.

**Contents**



## Setting Up Overdue Event Types

An overdue event type encapsulates the business rules that govern a given type of overdue event. Open **Admin** > **Overdue Event Type** > **Add** to set up overdue event types.

> **NOTE:**
> **Recommendation.** Before using this transaction, we strongly recommend that you review *The Big Picture Of Overdue Events*.

**Description of Page**

Enter a unique **Overdue Event Type** code and **Description** for the overdue event type.

Use **Long Description** to provide a more detailed explanation of the purpose of the overdue event type.

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** (note, all system event's are optional and you can define an unlimited number of algorithms for each event).

| System Event | Optional / Required | Description |
|---|---|---|
| Cancel Logic | Required | This algorithm is executed to cancel an overdue event. Refer to *How Are Events Canceled* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Event Activation | Required | This algorithm is executed to activate an overdue event on its trigger date. Refer to *Overdue Events Can Do Many Things* and *How and When Events Are Activated* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Event Information | Optional - only used if you want to override an overdue event's info string | This algorithm is executed to construct an overdue event's override info string. Refer to *Overdue Event Information Is Overridable* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Monitor Waiting Events | Optional - only used if events of this type can enter the Waiting state | This algorithm is invoked by the Overdue / Cut Event Manager for events in the Waiting state. Refer to *Some Events Wait For Something Before Completing* for the details.<br>Click *here* to see the algorithm types available for this system event. |

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_OD_EVT_TYPE*.

## Setting Up Overdue Process Templates

An overdue process template encapsulates the business rules that govern a given type of overdue process. Open **Admin** > **Overdue Process Template** > **Add** to set up overdue process templates.

> **NOTE:**
> **Recommendation.** Before using this transaction, we strongly recommend that you review *The Big Picture Of Overdue Processes*.

**Description of Page**

Enter a unique **Overdue Process Template** and **Description** for the overdue process template.

**Collecting On Object** defines the type of object managed by this overdue process. This field actually references a *foreign key characteristic type* that references the managed object. For example, if this overdue process template manages overdue bills, you'd reference a foreign key characteristic that references the bill object.

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event** (note, all system event's are optional and you can define an unlimited number of algorithms for each event).

| System Event | Optional / Required | Description |
|---|---|---|
| Calculate Unpaid & Original Amount | Required | This algorithm is executed to calculate the unpaid and original amounts of the objects associated with the overdue process. These amounts are shown on the overdue process page and in the base-package *overdue info string*.<br>Click *here* to see the algorithm types available for this system event. |
| Cancel Criteria | Required | This algorithm is executed to determine if an overdue process can be cancelled. Refer to *How Are Overdue Processes Cancelled* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Cancel Logic | Required | This algorithm is executed to cancel an overdue process. Refer to *How Are Overdue Processes Cancelled* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Hold Event Activation Criteria | Optional - only used if overdue processes of this type can be suspended while some condition is true | This algorithm is executed to determine if the activation of overdue and cut events should be suspended. Refer to *Holding Events* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Overdue Process Information | Optional - only used if you want to override an overdue process's info string | This algorithm is executed to construct an overdue process's override info string. Refer to *Overdue Process Information Is Overridable* for the details.<br>Click *here* to see the algorithm types available for this system event. |

The **Event Types** control the number and type of overdue events linked to an overdue process when it is first created. The information in the scroll defines these events and the date on which they will be triggered. The following fields are required for each event type:

- **Event Sequence.** Sequence controls the order in which the overdue event types appear in the scroll.
- **Overdue Event Type.** Specify the type of overdue event to be created.
- **Days After.** If **Dependent on Other Events** is on, events will be triggered this many days after the completion of the dependent events (specified in the grid). Set this value to 0 (zero) if you want the event triggered immediately after the completion of the dependent events. If **Dependent on Other Events** is off, events will be triggered this many days after the creation of the overdue process. Refer to *How and When Events Are Activated* for the details.
- If **Dependent on Other Events** is on, define the events that must be completed or cancelled before the event will be triggered.
  - **Sequence** is system-assigned and cannot be specified or changed.
  - **Dependent on Sequence** is the sequence of the dependent event.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_OD_PROC_TMP*.

## Setting Up Cut Event Types

A cut event type encapsulates the business rules that govern a given type of cut event. Open **Admin** > **Cut Event Type** > **Add** to set up cut event types.

> **NOTE:**
> **Recommendation.** Before using this transaction, we strongly recommend that you review *Cut Events Are Like Overdue Events*.

**Description of Page**

Enter a unique **Cut Event Type** code and **Description** for the cut event type.

Use **Long Description** to provide a more detailed explanation of the purpose of the cut event type.

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Cancel Logic | Required | This algorithm is executed to cancel a cut event. Refer to *How Are Events Canceled* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Event Activation | Required | This algorithm is executed to activate a cut event on its trigger date. *How and When Events Are Activated* for the details. |

| | | |
|---|---|---|
| | | Click *here* to see the algorithm types available for this system event. |
| Event Information | Optional - only used if you want to override a cut event's info string | This algorithm is executed to construct a cut event's override info string. Refer to *Cut Event Information Is Overridable* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Monitor Waiting Events | Optional - only used if events of this type can enter the Waiting state | This algorithm is invoked by the Cut / Cut Event Manager for events in the Waiting state. Refer to *Some Events Wait For Something Before Completing* for the details.<br>Click *here* to see the algorithm types available for this system event. |

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_CUT_EVT_TYPE*.

## Setting Up Cut Process Templates

A cut process template encapsulates the business rules that govern a given type of cut process. Open **Admin** > **Cut Process Template** > **Add** to set up cut process templates.

> **NOTE:**
> **Recommendation.** Before using this transaction, we strongly recommend that you review *The Big Picture Of Cut Processes*.

### Description of Page

Enter a unique **Cut Process Template** and **Description** for the cut process template.

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Cancel Logic | Required | This algorithm is executed to cancel a cut process. Refer to *How Are Cut Processes Cancelled* for the details.<br>Click *here* to see the algorithm types available for this system event. |
| Cut Process Information | Optional - only used if you want to override a cut process's info string | This algorithm is executed to construct a cut process's override info string. Refer to *Cut Process Information Is Overridable* for the details. |

| | |
|---|---|
| | Click *here* to see the algorithm types available for this system event. |

The **Event Types** control the number and type of events linked to a cut process when it is first created. The information in the scroll defines these events and the date on which they will be triggered. The following fields are required for each event type:

- **Event Sequence.** Sequence controls the order in which the cut event types appear in the scroll.
- **Cut Event Type.** Specify the type of cut event to be created.
- **Days After.** If **Dependent on Other Events** is on, events will be triggered this many days after the completion of the dependent events (specified in the grid). Set this value to 0 (zero) if you want the event triggered immediately after the completion of the dependent events. If **Dependent on Other Events** is off, events will be triggered this many days after the creation of the cut process. Refer to *How and When Events Are Activated* for the details.
- If **Dependent on Other Events** is on, define the events that must be completed or cancelled before the event will be triggered.
  - **Sequence** is system-assigned and cannot be specified or changed.
  - **Dependent on Sequence** is the sequence of the dependent event.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CUT_PROC_TMP*.

## Setting Up Collection Class Overdue Rules

Collection class overdue rules contain algorithms that impact accounts associated with a given collection class, division and currency code are managed. Open **Admin** > **Collection Class Overdue Rules** > **Add** to set up collection class overdue rules.

> **NOTE:**
> **Recommendation.** Before using this transaction, we strongly recommend that you review *Different Overdue Rules For Different Customers*.

**Description of Page**

Enter the **Collection Class**, **CIS Division** and **Currency Code** to which the rules apply.

The **Algorithms** grid contains algorithms that control important functions. You must define the following for each algorithm:

- Specify the algorithm's **System Event** (see the following table for a description of all possible events).
- Specify the **Algorithm** to be executed when the System Event executes. Set the **Sequence** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.
  The following table describes each **System Event**.

| System Event | Optional / Required | Description |
|---|---|---|
| Bill-Based Payment Arrangement | Optional - only specified if your implementation uses bill-oriented payment arrangements | This algorithm is executed to handle the creation, breaking and canceling of a *Bill-Oriented Payment Arrangements*.<br>Click *here* to see the algorithm types available for this system event. |

| | | |
|---|---|---|
| Overdue Monitor Rule | Required | This algorithm is invoked by the Overdue Monitor to analyze an account's debt. Refer to *How Does The Overdue Monitor Work* for the details.<br>If you have multiple rules (and therefore multiple algorithms), please take care when assigning the sequence number, as the Overdue Monitor will invoke these rules in sequence order.<br>Click *here* to see the algorithm types available for this system event. |
| Write Off Bill | Option - only specified if your implementation writes-off bills | This algorithm is executed to handle the write-off and write-off reversal of a bill. Refer to *Writing Off Bills*.<br>Click *here* to see the algorithm types available for this system event. |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_OD_RULE_ALG*.

## Setting Up Overdue Event Cancellation Reasons

An overdue event cancel reason must be supplied before an overdue event can be canceled. Open **Admin** > **Overdue Event Cancel Reason** to define overdue event cancellation reasons.

**Description of Page**

Enter an easily recognizable **Overdue Event Cancel Reason** and **Description** for each cancellation reason.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_OEVT_CAN_RSN*.

## Setting Up Cut Event Cancellation Reasons

A cut event cancel reason must be supplied before a cut event can be canceled. Open **Admin** > **Cut Event Cancel Reason** to define cut event cancellation reasons.

**Description of Page**

Enter an easily recognizable **Cut Event Cancel Reason** and **Description** for each cancellation reason.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CEVT_CAN_RSN*.

# Defining Interval Billing Options

**NOTE:**

The transactions described in this section are only available if the interval billing module is turned on. This Customer Care and Billing functionality has essentially been deprecated and should be performed within a Meter Data Management system. This functional area remains within Customer Care and Billing exclusively for upgrading customers who currently use Interval Billing within an earlier version of this system.

**NOTE:**
The interval rating and billing functionality described in this chapter was designed and developed prior to the big data requirements of the smart grid. Implementations should use a meter data management application, such as Oracle Utilities Meter Data Management, for smart grid requirements.

The system provides capability to bill complex customers who measure usage in small intervals, such as one hour, thirty minutes, fifteen minutes, etc. The "Interval Billing" subsystem covers a variety of functionality including:

- Capturing billable interval data quantities linked to a service agreement
- Capturing "raw" interval data quantities linked to service points, which may be later aggregated to create billable quantities for the service agreement
- Application of contract-based modifications to produce interval data quantities
- Apply interval prices to interval quantities. (Sometimes this is known as "direct billing")
- Support time of use mapping, including override maps created for certain special periods, such as interruptions
- Support time of use pricing and time of use contract values
- Support special contract options under which certain calculations supporting a contract's rate may be overridden or altered occasionally for specific periods of time

**NOTE:**
The ability to capture and maintain interval prices and TOU prices is officially part of the Rates subsystem. Although we will refer to them here, the main documentation is in the Rates administration guide.

**WARNING:**
Setting up the interval billing control tables is as challenging as your organization's interval billing rules. If you have simple rules then your setup process will be straightforward. If your interval billing rules are complicated (e.g., specific prices for each customer, complicated TOU Mapping rules etc.), then your setup process will be more challenging.

**NOTE:**
**Separate modules.** Interval billing functionality is associated with separate modules, Complex Billing and Meter Data Management . If these modules are not applicable to your business you may turn them off. Refer to *Turn Off A Function Module* for more information.

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# Interval Billing Table Setup Sequence

The following table defines the table setup sequence required if your company has purchased the interval billing component.

| Function | Path |
|---|---|
| General Environment | |
| Seasonal Time Shift | Admin, Seasonal Time Shift |
| Time Zone | Admin, Time Zone |
| Installation - Framework | Admin, Installation Options - Framework<br>Indicate whether Seasonal Time Shift is required. |
| Installation | Admin, Installation Options<br>Set Base Time and Start Day Option. |
| Interval Billing Environment | |
| Bill Factor | Menu, Rates, Bill Factor<br>Note: earlier, you may have created bill factors for your general Rates environment. At this point, you may need to add more bill factors to satisfy your interval billing needs. |
| Interval Profile Relationship Type | Admin, Interval Profile Relationship Type<br>[Note - you won't be able to define the collection of valid Interval Profile Types until after you define the Interval Profile Types.] |
| Interval Profile Type | Admin, Interval Profile Type<br>[Note - you may need to define new algorithm types and algorithms if your interval profile type requires creation or validation algorithms.] |
| Algorithm | Admin, Algorithm.<br>You will need to set up the creation and validation algorithms needed for an Interval Profile Type. |
| Shared Profiles | Menu, Interval Billing, Interval Profile<br>Note: this is needed at this time if you want to create Start Options, which reference shared profiles. |
| Interval Registers | |
| Interval Register Type | Admin, Interval Register Type |
| Meter Configuration Type | Admin, Meter Configuration Type<br>Note: earlier, you may have created meter configuration types for your general meter environment. At this point, you may need to add more meter configuration types for registers, which are used for interval or index channels. |
| Meter Type | Admin, Meter Type<br>Note: earlier, you may have created meter types for your general meter environment. At this point, you may need to add more meter types for meters, which are used for interval or index channels. |
| Time of Use Billing | |

| | |
|---|---|
| Time of Use | Admin, Time of Use<br>Note: earlier, you may have created time of use codes for your meter environment. At this point, you may need to add more time of use codes to satisfy your time of use mapping. |
| TOU Group | Admin, TOU Group |
| Bill Factor | Menu, Rates, Bill Factor<br>At this point you may need to set up bill factors that are specifically for time of use pricing. |
| TOU Map Relationship Type | Admin, TOU Map Relationship Type<br>[Note - you won't be able to define the collection of valid TOU Map Types until after you define the TOU Map Types.] |
| TOU Map Type | Admin, TOU Map Type |
| Algorithm | Admin, Algorithm. You will need to set up any creation algorithms needed for your TOU map types. |
| TOU Map Templates | Admin, TOU Map Template<br>Note : this is not required, but will help to set up data for your TOU Maps. |
| Shared TOU Maps | Menu, Interval Billing, TOU Map<br>Note: this is needed at this time if you want to create Start Options, which reference shared TOU maps. |
| Contract Options | |
| Contract Option Type | Admin, Contract Option Type |
| Algorithm | Admin, Algorithm. You will need to set up any validation algorithms needed for your contract option types. |
| Contract Option Event Type | Admin, Contract Option Event Type |
| SA Interval Billing Rate Environment | |
| Rate | At this point, you are ready to set up your interval billing and time of use rates and calculation rules. Refer to the Rate Environment section in the *Control Table Setup Sequence*. |
| SA Interval Billing Controls | |
| SA Type | Admin, SA Type<br>Note: earlier you may have created your SA Types. At this point you may need to modify interval related SA Types to add valid interval information. Refer to the SA Type section in the *Control Table Setup Sequence*. |
| Start Option | Admin, SA Type Start Option<br>Note: earlier you may have created your SA Type Start Options. At this point you may need to modify interval related SA Type Start Options to add valid interval information. Refer to the SA Type section in the *Control Table Setup Sequence*. |

**NOTE:**

You may have customers with interval billing, time of use billing and contract options all required for their rate. For simplification of the table, these control tables were listed in separate sections.

# The Big Picture of Interval Billing

This section provides an overview of important Interval Billing concepts with which you should be familiar before you set up your Interval Billing control tables.

**Contents**



# Interval Pricing

This section provides an overview of concepts related to setting up interval pricing options for your rates. Applying interval prices to interval quantities is sometimes referred to as 'direct billing'.

**Contents**



## Interval Pricing Rate Application

Interval Pricing is the term used to describe applying interval prices to interval quantities to arrive at a bill calculation line item.


What data is needed in order to apply a rate component for an interval pricing scenario and how is this data defined?

- You need prices that vary at a given interval. Interval prices are stored for a **Bill Factor**/characteristic. Refer to *Bill Factor Interval Values* for more information.

- You need consumption values for each corresponding interval. The consumption values are stored for an Interval Profile linked to a service agreement. Refer to *Billable Interval Quantities for a Service Agreement* for more information.
  In order to find the correct interval profile for the service agreement, the rate component will reference a **Profile Relationship Type**. Refer to *Physical Attributes of Interval Data vs. Its Role* and *Interval Data Serves a Role for a Service Agreement* for more information.
- You need an algorithm in order to know how to apply the prices correctly. The rate component will reference a **Calculation Algorithm**, which will be executed to apply the prices to the quantities.

Refer to *Designing Your Interval Rate Components* for help in designing rate components of this type. Refer to *Setting Up Interval Pricing Rate Components* for more information about setting up this type of rate component.

## Physical Attributes of Interval Data vs. Its Role

You will see, as you learn more about the design of interval billing, that there are two control tables that are important for defining billable interval data:

- Profile Type - this defines the physical attributes of the interval data
- Profile Relationship Type - this defines the role that the interval data is playing for a particular contract. You can also think of this as defining the business purpose of the data.

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### Interval Data Physical Attributes

When defining a collection of billable data, there are basic attributes, which need to be defined:

- Unit of Measure
- Minutes per Interval
- Service Quantity Identifier
- Is this data owned by a service agreement or is it common data?

These are physical attributes of the data and have nothing to do with the business purpose of the data. This information is defined on the Profile Type.

The profile type may also include algorithms related to its data:

- Validation algorithms may be used to check and correct various conditions related to the interval data. Refer to *Validation of Profile Data* for more information.
- A creation algorithm may be used to derive data for a profile. Refer to *Creation of Profile Data through Data Derivation* for more information.

Refer to *Designing Interval Profile Types* for more information.

You will see later that classic TOU Maps also have a classic TOU Map Type. Refer to *Physical Attributes of a classic TOU Map* for more information.

## Business Role of Interval Data

The Profile Relationship Type is used by the system to indicate the "role" that a collection of billable interval data is playing. The following are some examples of roles that interval data may play:

- Measured Demand
- Contract Demand
- Aggregated Heating Demand
- Hedge Cover
- Excess Demand
- Reactive Energy

The profile relationship type is used by the rate component to indicate the data being billed. For example, the rate is billing "excess demand". When applying the rate, the system will determine which data is playing the role of "excess demand" for the service agreement. Refer to *Billable Interval Quantities for a Service Agreement* and *Interval Data Serves a Role for a Service Agreement* for more information.

You will see later that classic TOU Maps also have a "role". Refer to *Business Role of a TOU Map* for more information.

### The Business Role Defines Interval Data Physical Attributes

To enable proper setup, you will need to define the valid *profile types* for each profile relationship type.

# Raw Data Collection and Aggregation

This section provides an overview of concepts related to setting up your control tables to support the capturing of raw interval data.

**FASTPATH:**
Refer to *The Big Picture of Raw Data Collection and Aggregation* for more information.

**NOTE:**
If your company uses an external system for collecting, adjusting and aggregating raw interval data, then you may skip this section.

## Physical Attributes of Raw Interval Data

Raw interval data is available for use by algorithms in the system to create billable data for the service agreement. This data will not have any 'business' role, as with the billable interval data, described above.

As a result only 'physical' attributes of the raw interval data need to be defined, such as:

- Unit of Measure
- Minutes per Interval
- Service Quantity Identifier

This information is defined on the Interval Register Type.

The *interval register type* may also include algorithms related to its data:

- Validation algorithms may be used to check and correct various conditions related to the interval data. Refer to *Validation of Register Data* for more information.

# Time of Use Billing

This section provides an overview of concepts related to setting up your control tables to support time of use billing.

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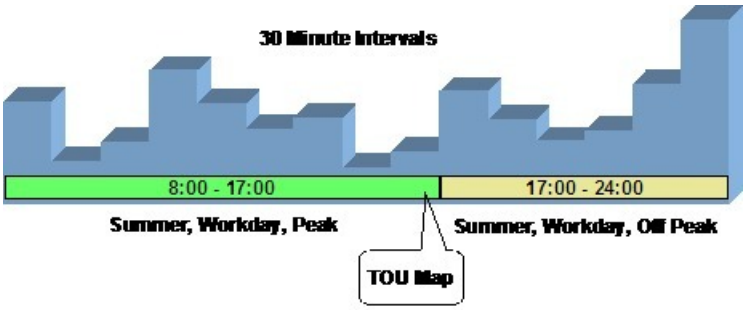
## Defining Time of Use Periods

Many customers choose not to price their interval data using interval prices. Time of Use Mapping enables a customer to map out time of use periods for their usage. This option for interval data might be preferred because:

- Typically it involves fixed prices for the use periods
- It is more manageable than direct billing
- It is easier for a customer to forecast and budget




A classic TOU Map holds the collection of time period definitions. The TOU Map has a TOU Map Type, which defines the minutes per interval. This is similar to the interval profile and profile type.

The time period definitions for a classic TOU Map indicate the TOU code for a given date and time.

| Map #123 (TOU Group 2) | |
|---|---|
| Effective 1 Jan 2000 | |
| Interval Date/Time | |
| 30/Apr/00 16:30 | On Peak/Winter |
| 30/Apr/00 16:45 | On Peak/Winter |
| 30/Apr/00 17:00 | Off Peak/Winter |
| 30/Apr/00 17:15 | Off Peak/Winter |
| --- | |
| 01/May/00 7:45 | Off Peak/Summer |
| 02/May/00 8:00 | On Peak/Summer |
| 02/May/00 8:15 | On Peak/Summer |
| --- | |

All the possible time of use codes for a given map are grouped together in a TOU group. Refer to *Grouping of TOU Codes* for more information.

# Grouping of TOU Codes

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## Overview

The time of use map's purpose is to define time of use codes for given time periods. For example:

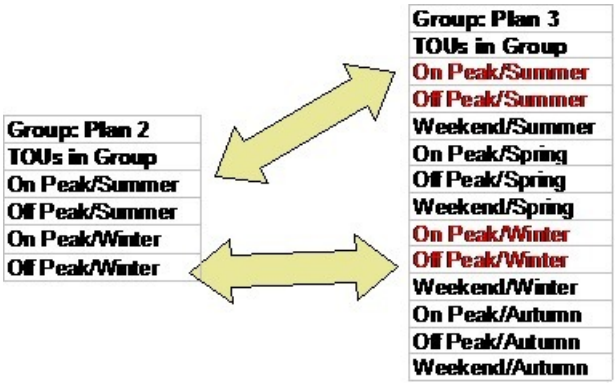
1/Jan/2001 05:00:000 is Off Peak, Winter

1/July/2001 13:00:000 is Weekend, Summer

5/July/2001 12:30:000 is On Peak, Summer

The time of use codes of "Off Peak, Winter" and "Weekend, Summer" are user-defined and use the same *TOU code* available for defining TOU for simple metering.

The set of time of use codes that make up a certain classic TOU map, are grouped together using the TOU group. The TOU group is a logical grouping of time of use codes. A TOU can exist on more than one TOU group.




The *TOU group* is used to define the collection of time of use codes available for a classic TOU map. In addition, you will see TOU group used in other areas of interval billing where a collection of time of use codes is required.

## TOU Sequence

If desired, you may use sequence number to indicate the relative position or relative priority of each TOU code within a TOU group. This sequence number is not used by any system functionality, but is available for you to use in a plug-in algorithm.

For example, assume that your customer's contract states that if the usage for the time period "ON" is below a certain contract limit, they will be charged the "ON" price. However, if the usage exceeds this contract limit, they will be charged a higher price for this usage. Let's assume the same is true for "OFF". You may choose to implement this as follows:

- Besides TOU codes of "ON" and "OFF", create additional TOU codes called "ONEXCESS" and "OFFEXCESS"
- Define the TOU codes within the TOU group with sequences values as follows:

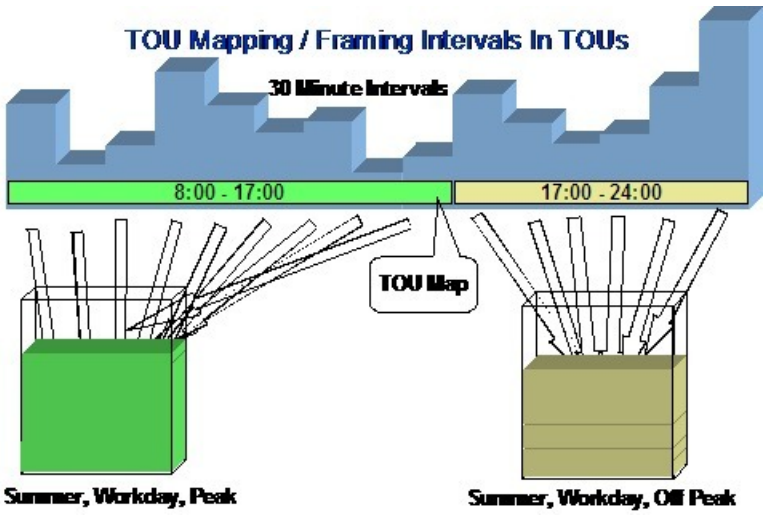
| Time of Use | TOU Sequence |
|---|---|
| ON | 1 |
| ONEXCESS | 2 |
| OFF | 3 |
| OFFEXCESS | 4 |

- Your classic TOU map will only define time periods for ON and OFF, but you will have TOU prices for all four time of use values.
- Design your TOU pricing algorithm so that if the usage for a given TOU is within the contract limit, the price for this TOU is used. However, if the usage exceeds the contract limit, then it will find the TOU with the next highest sequence and use the price for that TOU.

## Time of Use Mapping and Pricing

The following section describes the logic used by the system to map interval quantities to time of use codes using a TOU map, and subsequently apply prices to these mapped quantities.

At some point during billing, the system will take interval quantities linked to the service agreement and map them to time of use quantities based on a TOU Map.




For simple billing, this type of data manipulation is typically handled using an SQ rule. Keep in mind that SQ Rules are processed before applying the rate components and therefore they do not have knowledge of system breaks that may cause price proration.

Proration occurs when a given price covers a period smaller than the billing period AND the system does not have readings for the period covered by the price. When this occurs, the system will prorate the usage to apply the correct price. Refer to *Effective Dates & Price Proration* for more information about proration.

If you read carefully the price proration information, you'll see that if the service quantities are peak quantities, the quantities are not prorated but the charges are prorated. For other cases, the system prorates the service quantities.

When your interval quantities are peak quantities, the same should apply. The mapping should occur prior to price breaks, for example, using an SQ rule. Then, the TOU pricing rate components would apply prices to the mapped SQ quantities.

For non-peak interval quantities, readings exist for any price break situation. As a result, no service quantity proration is necessary. The mapping simply needs to occur after all price breaks are determined - at the rate component level.

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## TOU Pricing Rate Component

A special rate component exists to perform time of use mapping and time of use pricing. In fact, this rate component uses a calculation algorithm, so the algorithm can be written to perform whatever logic you need it to perform. The system is shipped with an algorithm, which performs mapping only and another algorithm, which may perform mapping and pricing, or just pricing.

- The mapping algorithms populate the read details collection by default because this collection can contain the quantities for each UOM/TOU/SQI along with a date range (This is important for *price breaks*.) In addition, you may configure the algorithm to also produce SQ quantities, which would represent the total quantities for each UOM/TOU/SQI.
- The pricing algorithm may be configured to apply prices to the SQ collection (for measures peak scenarios) or the read details collection (for non-measures peak scenarios).

Refer to *Designing Your Time of Use Rate Components* for help in designing rate components of this type. Refer to *Setting Up TOU Pricing Rate Components* for more information about setting up this type of rate component.

The TOU pricing rate component may reference either a *TOU bill factor* , which contains prices that differ for each time of use code or a regular bill factor, which will contain a single price to apply to all mapped quantities.

## Classic TOU Map Used For Mapping & Pricing

The classic TOU map used by the rate component for mapping is defined either directly on the rate component or it is linked to the service agreement.

- If ALL service agreements linked to the rate component's rate should use the same classic TOU map, then link the classic TOU Map to the rate component
- If some service agreements use different TOU maps than others, the TOU map must be linked to the service agreement. In this case, you must indicate a TOU Map Relationship Type on the rate component. The TOU map relationship type defines the *business role of TOU map*.

Refer to *Sharing TOU Map Data* for more information.

## TOU Price Breaks

This section describes functionality related to price changes for time of use bill factor values. This logic is only applicable when the interval quantities do not measure peak quantities.

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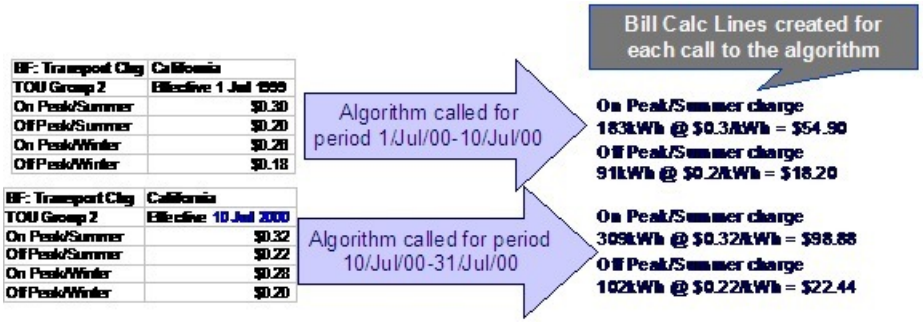
Algorithms are Called for Each TOU Price Break

Rate application logic understands how to determine price breaks for the bill factor referenced on your rate component and calls the calculation algorithm for each price break. The TOU pricing algorithm will be passed the appropriate date/time range to handle mapping and pricing and will produce separated bill calculation lines for each time period.




**NOTE:**
**Single TOU Group**. If your rate component references a TOU bill factor, the price breaks for the bill factor are determined using a single TOU group. If multiple classic TOU maps are applicable for the billing period and each refers to a different TOU group (via its *TOU map type*), the system uses the SA type's rate selection date to select the appropriate TOU group to use to determine the collection of prices to apply.

Algorithms Are Responsible for Storing Calculation Details

When the TOU mapping algorithms calculate the mapped quantities for a given date/time range, the results are stored in the *calculation/audit read details* collection on the bill segment. This collection enables the system to record the mapped quantities along with period represented by each quantity.

Your algorithms may opt to additionally capture the total quantity for each time of use in the SQ Details collection as an audit.


**NOTE:**
Bill Factor prices have effective dates only. There is no effective time. When a price break occurs, the algorithm will determine the time for the price breaks in the same manner that billing time is determined. Refer to *Start and End Times for Billing* for more information.

The system provides one sample algorithm *RCTMS* that performs TOU mapping and another algorithm *RCTMPS* that performs TOU mapping and pricing or pricing alone. These algorithms support TOU price break logic as follows:

- The mapping functions for both algorithms populate the calculation/audit read details collection and allow you to set a parameter to indicate whether SQ entries should also be created.
- Based on a parameter, the pricing portion of RCTMPS applies the appropriate TOU prices to the mapped quantities stored in the calculation/audit read details collection.

If RCTMPS has been configured to perform mapping and pricing, it will perform the two functions as separate steps: first it maps the quantities and populates the read details, then it applies TOU prices to the read details. It does this for the following reasons:

- You may have a rate that requires manipulation of mapped quantities prior to applying prices. For example, perhaps you must add service quantities from a non-interval meter to your mapped quantities prior to applying prices.
- You may need to *override the mapped quantities* when recalculating a bill. The base algorithms will not re-map the quantities if the details were overridden. The pricing portion applies the prices to the overridden quantities.

## Overriding Mapped Quantities

The mapping algorithms provided with the base product record the mapped quantities in the *calculation/audit read details* collection on the bill segment. When regenerating a bill segment, it is possible that circumstance requires you to override the details in this collection rather than allowing the system to map the interval quantities again.

Refer to *How To Override Service Quantities On A Specific Bill Segment* for more information.

The pricing functionality in the algorithms provided by the base product detect when mapped quantities have been overridden and apply the TOU prices to the overridden quantities.

## Physical Attributes of TOU Map vs. Its Role

You will see, as you learn more about the design of TOU mapping, that there are two control tables that are important for defining TOU maps:

- TOU Map Type - this defines the physical attributes of the TOU Map
- TOU Map Relationship Type - this is needed for TOU maps that are linked to a service agreement. It defines the role that the TOU Map is playing for that service agreement. You can also think of this as defining the business purpose of the data.

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## Physical Attributes of a Classic TOU Map

When defining a classic TOU map, there are basic attributes, which need to be defined:

- The collection of possible time of use codes to which the data will be mapped. These are grouped together into a *TOU group*.
- Minutes per Interval
- Is this data owned by a service agreement or is it common data?

These are physical attributes of the data and have nothing to do with the business purpose of the data. This information is defined on the classic TOU Map Type.

The *classic TOU map type* may also include an algorithm used to *automatically create data for the classic TOU map*.

This is the same model used for interval profile data. Refer to *Physical Attributes of Interval Data* for more information.

## Business Role of a Classic TOU Map

The TOU Map Relationship Type is used for TOU maps that are linked to the service agreement. It indicates the "role" that a classic TOU Map is playing for a particular service agreement. The following are some examples of roles that a classic TOU Map may play:

- Map for Measured Demand
- Map for Contract Demand
- Map for Excess Demand
- Map for Reactive Energy

If your rate component requires a classic TOU map but the TOU map is not common to all service agreements for the rate, then the rate component must indicate a TOU Map Relationship Type. The rate component algorithm uses this information to find the appropriate classic TOU map linked to the service agreement. Refer to *Classic TOU Maps Serve a Role for a Service Agreement* for more information.

This is the same model used for interval profile data. Refer to *Business Role of Interval Data* for more information.

## The Business Role Defines Valid Physical Attributes for a Classic TOU Map

To enable proper setup, you will need to define the valid *classic TOU map types* for each TOU map relationship type.

**FASTPATH:**
For more information about defining classic TOU maps and recording the time period data, refer to *Time of Use Mapping Background Topics*.

# Designing Interval Billing Options

Your interval billing options control how interval data may be maintained and billed for your customers with this capability.

**FASTPATH:**
For more information about interval billing, see *The Big Picture Of Interval Billing*.

**WARNING:**
There are many ways to design your interval billing options. The flexibility of the system may add to the challenge of determining the best way to set up your control tables. In this section, we provide information to help you understand the ramifications of the various options. Before you set up your production data, we encourage you to gain an intuitive understanding of these options by using the system to prototype the alternatives.

The design of your interval billing options is an iterative process. Over time, you will develop intuitive skills that will allow you to skip some iterations. We recommend using the various steps in this section as a guide. When you are finished with this guide, you will be able to set up your interval billing options.

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## Designing Your Interval Billing Rate Options

This section assumes that you are familiar with the Rates subsystem and especially with the section *Understanding Calculation Groups and Rules*. Your interval billing rate components will likely contain a combination of standard rate components and interval billing rate components. The focus in this section will be on designing rate components for interval billing and time of use mapping.

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### Designing Your Interval Rate Components

Although your rates will likely contain a combination of interval pricing and time of use pricing, we have separated these topics with respect to walking you through the control table setup.

To set up the rate components that support interval billing, we recommend using the following table as your guide.

| RC Type | Bill Factor | Interval Profile Relationship Type | Algorithm | TOU Map Relationship Type |
|---|---|---|---|---|
| | | | | |

Obtain copies of existing bills that use the rate in question. If the rate is new, then write up EXACTLY how the information should appear on the customers' printed bills.

- Next, try to identify the components of the bill that are related to interval billing.
  - Are any of the lines produced as a result of direct billing? In other words, were interval prices applied to interval quantities?
  - Are any of the lines produced using interval quantities applied to a fixed price?

Start filling out the table with descriptions of what is needed to produce each line.

- Any line that is produced as a result of taking interval quantities and applying prices will be defined with the "Interval Pricing" rate component type.
  - This rate component type will require an Interval Profile Relationship Type (which is used to define the source data to price).
  - A bill factor will need to be defined. This bill factor may contain interval quantities or simple values.
  - An algorithm, which knows how to apply the prices to the quantities, is needed. The system provides the following rate component algorithms as examples.
- Rate Components related to time of use mapping and pricing are discussed below. Refer to *Designing Your Time Of Use Rate Components*.

| RC Type | Bill Factor | Interval Profile Relationship Type | Algorithm | TOU Map Relationship Type |
|---|---|---|---|---|
| Interval Pricing | Strike Price | Hedge Cover | Apply prices to quantities assuming a continuous curve | N/a |
| Interval Pricing | Spot Market Prices | Amount in Excess of Hedge Cover | Apply prices only to positive quantities assuming a continuous curve | N/a |

## Designing Your Billing Factors

To apply prices to interval quantities, bill factors are recommended. In fact, to be able to handle interval prices, you will need to use bill factors.

**FASTPATH:**
To design and set up your bill factors, refer to *Setting Up Bill Factors* for more information.

## Designing Your Interval Billing Controls

**Contents**

*Designing Interval Profile Relationship Types*

*Designing Interval Profile Types*

## Designing Interval Profile Relationship Types

Recall that the interval profile relationship type can be thought of as the role that interval data will play. You can also think of it as the business description of the interval data.

The starting point for designing your interval profile relationship types is the rate. First, identify the relationship types that your rate needs in order to produce a bill

Using the above rate as an example, two profile relationship types have been identified

| Profile Relationship Type | Description |
|---|---|
| HEDGECVR | Hedge cover |
| OVRHEDGE | Amount over hedge cover. |

Now, you must think about what other relationship types are required to produce the above relationship types needed by rates. In our above example, we will need to define a profile relationship type whose data is compared to the hedge cover data to produce the OVRHEDGE data. Let's assume that this new profile relationship type is related to measured demand.

| Profile Relationship Type | Description |
|---|---|
| HEDGECVR | Hedge cover |
| OVRHEDGE | Amount over hedge cover. |
| MEASDMD | Measured Demand |

In this manner, you will be able to successfully define your profile relationship types.

## Designing Interval Profile Types

Now that you have your profile relationship types defined, you need to begin defining profile types. The interval profile type defines the physical attributes of the interval data.

The essential attributes of any profile type are the UOM/SQI, the minutes per interval and the associated algorithms. The easiest way to start defining your interval profile types is to start with the profile relationship type and determine what type of data each customer may have for the same profile relationship type.

Let's start with our profile relationship types and make some assumptions regarding the physical attributes of the data that a customer may have for each of these roles:

- Let's assume that a customer's demand may be measured in either 30-minute intervals or 60-minute intervals. In either case, the UOM is kW and SQI is not applicable. Let's also assume that the measured data may be interfaced from an external source or may be aggregated from interval register data.
- Let's assume that the hedge cover is common , but that these values may also be in 30-minute intervals or 60-minute intervals.
- Finally, let's assume that our spot market prices are at 60-minute intervals and that the algorithm, which rates uses to apply the interval prices, expects the "amount in excess of the hedge cover" to be in 60-minute intervals. This means that we need two different algorithms for our OVRHEDGE data. One algorithm is used for a customer with 60-minute intervals and simply subtracts the two curves and produces the resulting data. The second algorithm is used for a

customer with 30-minute intervals. It performs two steps. It subtracts the hedge from the measured demand and adds together each resulting 30-minute pair to produce a 60-minute OVRHEDGE curve.

We will assume that all of our profile data will follow the same seasonal time shift as our base time zone. Refer to *Time Zone and Time Changes* and *Designing Your Time Options* for more information.

| Prof. Rel. Type | Profile Type | Common/SA Owned | UOM/ SQI | Min/ Interval | Seasonal Time Shift | Algorithm |
|---|---|---|---|---|---|---|
| MEASDMD | DMDKW60 | SA Owned | KW | 60 | USShift | N/a |
| | DMDKW30 | SA Owned | KW | 30 | USShift | N/a |
| | DMDKW60AGG | SA Owned | KW | 60 | USShift | Aggregate interval register data |
| | DMDKW30AGG | SA Owned | KW | 30 | USShift | Aggregate interval register data |
| HEDGECVR | HEDGE60 | Common | KW/ HG | 60 | USShift | N/a |
| | HEDGE30 | Common | KW/ HG | 30 | USShift | N/a |
| OVRHEDGE | OVRHG60 | SA Owned | KW/ OVR | 60 | USShift | Compare MEASDMD to HEDGECVR to produce 60-minute over hedge curve |
| | OVRHG30 | SA Owned | KW/ OVR | 30 | USShift | Compare MEASDMD to HEDGECVR and add 30-min interval pairs to produce 60-min 'over-hedge' curve |

**NOTE:**
The above table accomplishes two steps: defining profile types and defining the valid profile types for a profile relationship type. When setting up this data, you will need to define your profile types first and then link them to the appropriate profile relationship type.

As with most of your control table design, this is an iterative process. As you design your profile types, you may see the need for new profile relationship types. You may find that a profile type will be valid for more than one profile relationship type.

**FASTPATH:**
During your definition of the profile types, you may determine that new UOMs need to be defined. Refer to *Setting Up Unit Of Measure Codes* for more information about defining units of measure.

During your definition of the profile types, you may determine that new pre-processing calculation groups that need to be defined. Refer to *Understanding Calculation Groups and Rules* for more information about defining SQI values.

**NOTE:**

Now that you have designed the control table values required to support your rate, we recommend that you set up *start options* for your SA types to assist a CSR in setting up a customer for this rate.

All of the above steps will need to be repeated for each interval billing rate that your company offers. For each rate, you need to define your rate components, your billing factors, your profile relationship types and then the appropriate profile types.

# Designing Your Raw Data Options

**NOTE:**
If your company uses an external system for collecting, adjusting and aggregating raw interval data, then you may skip this section.

The term "Channel" is often used for devices that may store interval data. A physical channel may hold interval data or index readings.

- Interval channels will contain collections of interval data
- Index channels are a collection of time of use registers and readings for these registers are no different than standard register readings

In either case, a "channel" is represented in the system by a register and a meter will represent a logical grouping of channels (index or interval). Refer to *The Structure Of A Meter* for more information.

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## Designing Your Interval Register Types

Each register, which will record raw interval data will require an interval register type.

The essential attributes of an interval register type are the UOM/SQI, the minutes per interval and any validation algorithms.

- For our examples, let's assume that raw interval data may be measured in kilowatts or megawatts and may be measured in either 30-minute intervals or 60-minute intervals.
- For our examples, let's assume that the data may be standard recorded data or it may be calculated excess data. We will use an SQI to further label the excess demand.
- For each register type in our example, we will use a validation algorithm, which will verify that the intervals are correct according to the interval size on the interval register type.

We will assume that all of our raw interval data will follow the same seasonal time shift as our base time zone. Refer to *Time Zone and Time Changes* and *Designing Your Time Options* for more information.

| Interval Register Type | UOM/ SQI | Min/ Interval | Seasonal Time Shift | Validation Algorithm |
|---|---|---|---|---|
| KW60 | KW | 60 | USShift | Validate interval size |
| KW60EXC | KW/EXCESS | 60 | USShift | Validate interval size |

| | | | | |
|---|---|---|---|---|
| KW30 | KW | 30 | USShift | Validate interval size |
| KW30EXC | KW/EXCESS | 30 | USShift | Validate interval size |
| MW60 | MW | 60 | USShift | Validate interval size |
| MW60EXC | MW/EXCESS | 60 | USShift | Validate interval size |
| MW30 | MW | 30 | USShift | Validate interval size |
| MW30EXC | MW/EXCESS | 30 | USShift | Validate interval size |

We expect that you will need more algorithms than we supply. Your algorithms will be based on any number of factors. Be aware that new algorithms may require programming. See *How To Add A New Algorithm* for more information.

## Designing Your Raw Data TOU Groups

In addition to designing TOU groups to be used by time of use maps, you may also set up *TOU groups* to define a valid collection of time of use values for a given meter configuration.

## Designing Your Meter Configuration Types

You must define a meter configuration type for each valid collection of interval and index registers. For meter configuration types with index registers, you may indicate a TOU group, which contains the valid collection of time of use codes for the registers. For each interval register, you must check the Interval switch and indicate the appropriate Interval Register Type. A meter configuration may contain

- A single interval register
- Multiple interval registers
- A collection of index registers
- A combination of interval registers and index registers

Refer to *Setting Up Meter Configuration Types* for more information.

## Designing Your Meter Types

You will need to set up appropriate *meter type codes* for the meters, which will be used to define or group index and interval channels. You must turn on the **Allow Interval Registers** switch for any meter type used by a meter, which will contain interval registers. Indicate the valid meter configuration types for this meter type.

**NOTE:**
If a meter type will only be used for meters linked to index channels, nothing special is required. Their behavior is similar to standard non-interval meters.

## Designing Your Time of Use Options

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*Designing Your Time of Use Codes*

*Designing Your TOU Groups*

*Designing Your Classic TOU Map Relationship Types*

*Designing Your Classic TOU Map Types*

*Designing Your Classic TOU Map Templates*

## Designing Your Time Of Use Rate Components

As you know from the rates chapter, the system can handle billing of quantities with different time of use periods using the SQ calculation rule type. Refer to *How To Set Up Service Quantity Calculation Rule* for more information. A more sophisticated rate component type is available, which can map interval profile data into time of use definitions and then apply prices based on time of use to produce multiple bill lines.

Obtain copies of existing bills that use the rate in question. If the rate is new, then write up EXACTLY how the information should appear on the customers' printed bills.

- Identify all the lines that represent charges for individual time of use periods.
- Determine how the quantities for the time of use periods are calculated. For example, what is the source data? Which time of use map is used to define the time periods? A TOU Pricing rate component type may be used to map each curve to its time of use quantities, apply time of use prices to mapped quantities or do both mapping and pricing. It all depends on how your algorithm is written.
  - In order to perform mapping, this rate component type needs to know where to get the interval data. You must indicate an Interval Profile Relationship Type (which is used to define the source data to map). Refer to *Billable Interval Quantities for a Service Agreement* for more information.
  - In order to perform mapping or pricing, this rate component type needs to know the classic TOU map. If the TOU map is common to ALL service agreements for the rate, you must indicate the appropriate TOU map. If the TOU map differs for different service agreements, you must indicate a TOU Map Relationship Type. The algorithms use this to find the appropriate *classic TOU map linked to the service agreement*.
  - In order to perform pricing, this rate component type requires either a regular *bill factor* or a *TOU bill factor* . The bill factor may contain the collection of prices directly, or may indicate that the prices are customer specific and can be found as contract quantities for the service agreement.
  - A calculation algorithm to map and / or price the quantities is needed. For mapping, this algorithm must apply the classic TOU map to the quantity curve and produce entries in the *calculation/audit read details* collection. For pricing, the algorithm will need to use the appropriate bill factor to apply prices to the quantities in the read details collection. If this bill factor is a TOU bill factor, a separate price exists for each time of use.

For our example, let's assume that curves exist for both active demand and reactive demand and assume each curve is mapped with a different classic TOU map. In addition, let's assume that excess demand used during a specific curtailment period will be priced at a different rate.

- For active demand, we have four time periods: on-peak winter, off-peak winter, on-peak summer and off-peak summer.
- For reactive demand, there are no charges in the winter so we have only two time periods: on-peak summer, off-peak summer. This classic TOU map is common to ALL service agreements for the rate.
- The curtailment charge will only appear if there is a curtailment event and the customer used more than their maximum demand defined for the period.

| RC Type | UOM/TOU | Bill Factor | Interval Profile Relationship Type | Algorithm | TOU Map Relationship Type | TOU Map ID |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| TOU Pricing | N/a | DMDTOU | Active Demand | Map quantities to time of use periods; apply prices | Active Demand Map | |
| TOU Pricing | N/a | RCTVTOU | Reactive Demand | Map quantities to time of use periods; apply prices | | 13849374 |
| TOU Pricing | N/a | CURTAIL | Curtailment charge | Map quantities to time of use periods, compare with maximum demand; apply prices to excess | Curtailment | |

Resulting bill calculation lines from the above TOU mappings (assuming this bill crosses the summer and winter seasons and a curtailment event occurred).

| |
|---|
| Charge for active kW On peak winter nn kW @ $0.0353/kW: $nn.nn |
| Charge for active kW Off peak winter nn kW @ $0.0298/kW: $nn.nn |
| Charge for active kW On peak summer nn kW @ $0.0483/kW: $nn.nn |
| Charge for active kW Off peak summer nn kW @ $0.0327/kW: $nn.nn |
| Charge for reactive kV On peak summer nn kV @ $0.0293/Kv: $nn.nn |
| Charge for reactive kV Off peak summer nn kV @ $0.0231/Kv: $nn.nn |
| Charge for curtailment excess nn kW @ $0.0593/kW: $nn.nn |

Once you have your rate components designed, you will be able to design the other control tables needed to set up your time of use billing customer.

**NOTE:**
Your time of use rate also requires interval profile relationship types. Refer to *Designing Interval Profile Relationship Types* and to *Designing Interval Profile Types*.

## Designing Your Time of Use Codes

The next most logical step in designing your time of use mapping controls is to define your time of use codes. To do this, look at the time of use periods to which your usage needs to be mapped. These values will likely correspond to the time of use quantities that your rate bills for. (Although it's possible that you are not billing for every time of use period.) Be sure to consider special time periods in your contracts such as holidays, curtailment days and interruption days.

Building on the above example, we have the following time of use codes defined:

| Time of Use | Description |
|---|---|
| ONWIN | On Peak Winter |
| OFFWIN | Off Peak Winter |
| ONSUM | On Peak Summer |
| OFFSUM | Off Peak Summer |

| CURTAIL | Curtailment period |
|---|---|

For more information about time of use, refer to *UOM versus TOU versus SQI*.

## Designing Your TOU Groups

To further aid in designing time of use mapping, the TOU Group enables you to group together all the time of use codes that are used in a single map. In our above example, we will have two TOU Groups because the active and reactive energy quantities are mapped to different sets of time periods. You must also decide if you want to use a sequence number to define the relative order of a TOU within a TOU group.

**FASTPATH:**
Refer to *Grouping of TOU Codes* for more information.

| TOU Group | Description | Time of Use | TOU Sequence |
|---|---|---|---|
| 4PARTS | Group for a 4-part map including On and Off Peak for Winter and Summer. | ONWIN | 0 |
| | | OFFWIN | 0 |
| | | ONSUM | 0 |
| | | OFFSUM | 0 |
| 2PARTS | Group for a 2-part map including On and Off Peak for Summer | ONSUM | 0 |
| | | OFFSUM | 0 |
| CURTAIL | Curtailment group, contains only one time of use | CURTAIL | 0 |

## Designing Your Classic TOU Map Relationship Types

The starting point for designing your TOU map relationship types is the rate. First, identify the relationship types that your rate needs in order to successfully map quantities.

Using the above rate as an example, only two TOU map relationship types are required because the Reactive Demand map is linked directly to the rate component. However, let's add a relationship type for reactive demand also in case it is needed in the future.

| TOU Map Relationship Type | Description |
|---|---|
| ACTVDMD | Active Demand |
| RACTVDMD | Reactive Demand |
| CURTAIL | Curtailment |

Now you must think of other types of maps that may need to be linked to the service agreement in order to successfully produce a bill. For example, are there any data derivation algorithms that require a classic TOU Map? If so, you need to define an appropriate classic TOU map relationship type to define the role for this map.

## Designing Your Classic TOU Map Types

Now that you have your TOU map relationship types and your TOU groups defined, you can begin defining classic TOU map types. Recall that the classic TOU map type defines the physical attributes of the classic TOU map.

The essential attributes of any profile type are the TOU Group and the minutes per interval and the associated TOU map data creation algorithms.

The easiest way to start defining your classic TOU map types is to start with the classic TOU map relationship type and determine what type of classic TOU map each customer may have for the same TOU map relationship type.

Let's start with our TOU map relationship types and make some assumptions regarding the physical attributes of the data that a customer may have for each of these roles:

- For Active demand, the quantities may be recorded in 15-minute or 30-minute intervals. To facilitate efficiency in processing the data, we recommend that the TOU map data is stored in the same minutes per interval as the interval data being mapped. We'll assume that this is a common TOU map type.
- For Reactive demand, the quantities are recorded in 60-minute intervals. This is linked directly to the rate and is therefore a common TOU map type.
- For curtailment, we will assume that the override map will be in 15-minute, 30-minute or 60-minute intervals, based on the interval size of the actual demand data. In addition, we require a TOU map creation algorithm. This algorithm will produce a data for the curtailment TOU map based on the existence of a contract option event. It will generate the time of use data based on a *classic TOU map template*. Refer to *Contract Option Background Topics* for more information. This will be an SA owned classic TOU map type.

**NOTE:**
We said above that we don't need a classic TOU map relationship type for Reactive Demand for our rate example. However, classic TOU map types must be defined. The table below includes the TOU map relationship type because we said we would add it just in case.

We will assume that all of our TOU data will not follow any seasonal time shifting. It will always be displayed in standard time. Refer to *Time Zone and Time Changes* and *Designing Your Time Options* for more information.

| TOU Map Rel. Type | TOU Map Type, Classic | Common/ SA Owned | TOU Group | Min/ Interval | Seasonal Time Shift | Creation Algorithm |
|---|---|---|---|---|---|---|
| ACTVDMD | 4PART15 | Common | 4PART | 15 | NoShift | N/a |
| | 4PART30 | Common | 4PART | 30 | NoShift | N/a |
| RACTVDMD | 2PART60 | Common | 2PART | 60 | NoShift | N/a |
| CURTAIL | CURT15 | SA Owned | CURTAIL | 15 | NoShift | Create based on events for 'curtail' contract option type. |
| | CURT30 | SA Owned | CURTAIL | 30 | NoShift | Create based on events for 'curtail' contract option type. |
| | CURT60 | SA Owned | CURTAIL | 60 | NoShift | Create based on events for 'curtail' |

| | |
|---|---|
| | contract option type. |

Now, you're ready to set up your interval billing options.

**NOTE:**
The above table accomplishes two steps: defining TOU map types and defining the valid classic TOU map types for a TOU map relationship type. When setting up this data, you will need to define your classic TOU map types first and then link them to the appropriate classic TOU map relationship type.

## Designing Your Classic TOU Map Templates

In order to help your users to create and maintain data for classic TOU maps, you may define classic TOU map templates, which can be used to generate data for a classic TOU map. The templates may be used to define standard data for a TOU map as well as data for special periods, such as interruptions and holidays. The classic TOU map templates will reference a classic TOU map type. The system will use the TOU group and the minutes per interval from the map type to verify the setup of the template.

For our example, let us first design templates for the 15 minutes active demand TOU map type. Let's assume:

- On Peak for both winter and summer is from Monday to Friday, from 9am to 5pm, inclusive
- Off Peak for both winter and summer is all day Saturday and Sunday and from Monday through Friday, Off Peak is from 12AM to 8:45AM, inclusive and from 5:15pm to 11:45pm inclusive.

We'll worry about the season definitions for winter and summer later.

In addition, let's design the curtailment map template. Assume:

- Curtailment covers 9am to 5pm inclusive on the given curtailment day.

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## Designing Daily Templates

We need to define four daily templates: one for summer weekdays, one for summer weekend days, one for winter weekdays and one for winter weekend days.

Before defining the template, take note of some points about defining template components:

- For our winter weekday, we can define the off peak period with one entry covering 5:15pm through 8:45am using the Start and End Sequence Numbers to indicate that the end of the time period is on the second day.
- The classic TOU map generator will create intervals for the first period AFTER the start time up to and including the end time. As a result, our Start Time must be the interval before the first interval covered by the time of use code.

| TOU Map Template, Classic | TOU Map Type, Classic | Template Type | Start Seq | Start Time | End Seq | End Time | Time of Use |
|---|---|---|---|---|---|---|---|
| 15MinWntrDay | 4PART15 | Daily | 1 | 8:45AM | 1 | 5PM | ONWIN |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 5PM | 2 | 8:45AM | OFFWIN |
| 15MinWntrWknd | 4PART15 | Daily | 1 | 12AM | 2 | 12AM | OFFWIN |
| 15MinSmrDay | 4PART15 | Daily | 1 | 8:45AM | 1 | 5PM | ONSUM |
| | | | 1 | 5PM | 2 | 8:45AM | OFFSUM |
| 15MinSmrWknd | 4PART15 | Daily | 1 | 12AM | 2 | 12AM | OFFSUM |
| 15MinCurtail | CURT15 | Daily | 1 | 8:45AM | 1 | 5PM | CURTAIL |

## Designing Weekly Templates

Now that we have our daily templates defined, we can define our weekly templates. For our example, we will need two weekly templates: one for a typical winter week and one for a typical summer week. For weekly templates, you must indicate the start day of the week.

We do not need a weekly template for the curtailment option.

| TOU Map Template, Classic | TOU Map Type, Classic | Template Type | Week Start | Start Seq | Start Day | Start Time | End Seq | End Day | End Time | Template |
|---|---|---|---|---|---|---|---|---|---|---|
| 15MinWntrWk | 4PART15 | Weekly | Mon | 1 | Mon | 12AM | 1 | Sat | 12AM | 15MinWntrDay |
| | | | | 1 | Sat | 12AM | 2 | Mon | 12AM | 15MinWntrWknd |
| 15MinSmrWk | 4PART15 | Weekly | Mon | 1 | Mon | 12AM | 1 | Sat | 12AM | 15MinSmrDay |
| | | | | 1 | Sat | 12AM | 2 | Mon | 12AM | 15MinSmrWknd |

Finally, we need to decide if we want to create a Calendar template for our example. The decision of whether or not to create a calendar template will be based on a few factors:

- How many different seasons exist in the TOU map, where each season has different weekly templates?
- How do your holidays behave?

First, let's consider holiday behavior.

## Designing Holiday Templates

When designing your classic TOU map templates, a special consideration should be made for holidays that occur throughout the year. Look at your classic TOU map contracts and ask the following questions:

- Are special prices applicable on holidays? Do these special prices require new time of use codes?
- If holidays do not get special prices, does the daily template look like the daily template for other days for this classic TOU map, for example like a weekend day?
- Do your holidays all have the same time period definitions as each other?

For our example, let's assume that our holidays use the Off Peak time of use for the season that it is in. In other words, winter holidays will use OFFWIN for every interval in that day and summer holidays will use OFFSUM for every interval in that day. As a result, we will not need to create a new template just for holidays. Instead, we can use the 15MinWntrWknd daily template for winter holidays and the 15MinSmrWknd daily template for summer holidays.

## Designing Calendar Templates

The calendar template is used to define daily and weekly templates for month and day ranges. The map components may represent dates within a single year or may cross into the following year.

Remember that a main reason for creating templates is for use on the *TOU Map Generation* page to create data for a classic TOU map. On that page, you will specify the dates you want to generate data for. In addition you must keep in mind that you can specify one holiday template for the time period you are generating.

In our example, we have two seasons and our holiday template is different in each season. Creating a calendar template to define the seasons will not help us, because on the TOU map generation page, we wouldn't be able to indicate a single holiday template for the whole year. For our example, rather than creating a calendar template, we could simply go to the classic TOU map generation page and indicate:

- 1st Nov <year> through 30th April <year>, use the 15MinWntrWk template. For holiday overrides, use the 15MinWntrWknd daily template
- 1st May <year> through 31st October <year>, use the 15MinSmrWk template. For holiday overrides, use the 15MinSmrWknd daily template

In fact, in our example, even if our holiday template would not vary by season, one would have to weigh the advantage of creating a calendar template to define 2 seasons vs. running the TOU map generation twice. If you have a very small number of customers using the same templates, then a calendar template may not be worth creating. However, if you have many customers using the same template, it may be worth it.

Here is a possible guideline to follow for deciding whether or not to create calendar templates:

- If the same holiday template may be used for all holidays, and your customer's contracted time period definitions contain more than one season, then creating a calendar to define the seasons is recommended.
- If the holiday template changes throughout the year based on the season, then you must weigh the advantages of your possibilities:
  - You may just create weekly templates for each season and define the dates and the holiday template when using the classic TOU map generation page. This option is recommended when the templates apply to a very small number of classic TOU maps. The time taken to generate the data based on the weekly templates would be less than the time you would have spent on defining the calendar.
  - You may define your calendar to explicitly indicate your seasons and your holidays. Then when generating the data for this template, you would not indicate an override holiday template. This option is recommended when the template applies to a larger number of customers. The time taken to define the calendar would be less than that spent on generating multiple seasons for each TOU map.

Let's go ahead and design a calendar template using our weekly templates to understand the setup. For this purpose, let's assume our holiday template would be the same all year round.

Assume the seasons are defined as follows: Winter is 1st Nov. through 30th April, Summer is 1st May through 31st October. This template shows that the summer schedule includes the interval 12 AM on 01, November. This means that summer's last interval is the one that covers from 11:46 PM on the 31st of October through 12 AM on the 1st of November. The first interval in winter is 12:15 AM on the 1st of November, which covers the period from 12:01 AM through 12:15 AM. The similar setup is true for the end of winter / beginning of summer.

| TOU Map Template, Classic | TOU Map Type, Classic | Template Type | Start Seq | Start Date | Start Time | End Seq | End Date | End Time | Template |
|---|---|---|---|---|---|---|---|---|---|
| 15MinClndr | 4PART15 | Calendar | 1 | 01May | 12AM | 1 | 01Nov | 12AM | 15MinSmrWk |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 01Nov | 12AM | 2 | 01May | 12AM | 15MinWntrWk |

# Designing Your Contract Options

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## Designing Your Contract Option Types

Contract options are used for service agreements, which may be subject to special overrides or alterations in their rate for certain temporary periods. Contract options are used to define the possible special situations and to record the actual override events. Your contract option type is a high level categorization of the possible special situation applicable to a customer or group of customers.

To design your contract option types, you will need to review each rate for your interval customers and determine whether or not there are special options. Some examples of special options are:

- Interruptions. Perhaps you warn your customers of interruption periods and any usage incurred during that period will be subject to special prices.
- Curtailment. Perhaps you define periods where you ask a customer to shed their load below a certain subscribed demand and any demand, which exceeds this subscribed demand during that period, will be subject to a special charge.

Next, must determine whether or not a given option behaves differently under different circumstances. For example, perhaps you have different types of interruptions. If these different types of interruptions are applicable to the same customer, then you will require a single contract option type and multiple contract option event types for that option type. If these different types of interruptions are not applicable to the same customer, then you would probably want to define separate contract option type values.

You need to also consider whether or not contract option events for this type of contract option may overlap in their effective periods. If you do allow overlap, then you must be sure that any algorithm, which may process the contract option events, must know how to process the overlaps.

Your next step is to determine whether or not characteristic values will be needed for each contract option of this type. The characteristic values are available for use by the algorithms, when processing the contract options. For example, perhaps subscribed demand is defined at the contract option level. On the contract option type, you must define the possible characteristic types for contract options of this type. You may also define a default value, if applicable.

Finally, you will need to determine whether or not you wish to create validation algorithms to validate your contract option event data. Algorithms may be created to be executed upon add or change of the data, where the status is Pending , Frozen or Canceled .

For our purposes, let us assume that we have only two contract option types: Interruption and Curtailment. Neither one allows overlap. The Curtailment option type will define subscribed demand as a required characteristic and will define a validation algorithm to ensure that the value of the demand falls within an appropriate range. This algorithm program will be executed for pending and frozen events.

**NOTE:**
Because there are different algorithm entities, more than one algorithm type and algorithm are required, but both algorithm types may use the same program.

We will assume that both contract option types will follow the same seasonal time shift as our base time zone. Refer to *Time Zone and Time Changes* and *Designing Your Time Options* for more information.

| Contract Option Type | Descr | Allow Overlap | Seasonal Time Shift | Char Type | Algorithm |
|---|---|---|---|---|---|
| INTERRUPT | Interruptions | No | USShift | N/a | N/a |
| CURTAIL | Curtailments | No | USShift | SubscrDmd, required, no default value | **Pending**: SbscrDmdPV (subscribed demand pending validation)<br>**Frozen** : SbscrDmdFV (subscribed demand frozen validation)<br>**Canceled**: n/a |

**NOTE:**
Once you have the contract option types required to support your rate and derivation algorithms, we recommend that you set up Start Options for your SA Types to assist a CSR in setting up a customer for this rate. Refer to *Designing Your Start Options*.

## Designing Your Contract Option Event Types

When you designed your contract option types, you were already considering the possible contract option event types. You will need to define a different contract option event type for each different type of event that may occur for the same contract option type.

Your next step is to determine whether or not characteristic values will be needed for each contract option event of this type. The characteristic values are available for use by the algorithms, when processing the contract option events. On the contract option event type, you must define the possible characteristic types for contract option events of this type. You may also define a default value, if applicable.

For our example, we will define two types of interruptions, which may be applicable for customers on the same rate. We will define only one type of curtailment event. None of the event types require characteristic values.

| Contract Option Event Type | Descr | Contract Option Type | Char Type |
|---|---|---|---|
| InterruptA | Interruptions, type A | Interrupt | N/a |
| InterruptB | Interruptions, type B | Interrupt | N/a |
| Curtail | Curtailments | Curtail | N/a |

## Designing Your SA Interval Billing Options

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## Designing Your SA Types

Your interval service agreements will require special data to be set up, such as special rates, interval profiles, TOU maps and contract options. In addition, it will need to define a cutoff time and start day option. The system requires you to indicate a special role of Interval for SA types defined for interval billing service agreements.

Refer to *Defining Service Agreement Types* to help you design the standard fields required for all SA Types. Additionally, for interval SA Types, you will need to define the valid Profile Relationship Types, the valid Map Relationship Types and the valid Contract Option Types for this SA Type.

Let's assume that we set up only one SA Type for all interval billing customers. As a result, all the relationship types defined in our sample are valid.

| CIS Division / SA Type | Special Role | Profile Relationship Type | Map Relationship Type | Contract Option Type |
|---|---|---|---|---|
| CA / E-INTBIL | Interval | HEDGECVR | ACTVDMD | INTERRUPT |
| | | OVRHEDGE | CURTAIL | CURTAIL |
| | | MEASDMD | | |
| | | ACTVDMD | | |
| | | RACTVDMD | | |

**NOTE:**
that this setup does not provide any link between the profile relationship types, the map relationship types and the contract option types. These are just a list of valid entries for the SA Type.

Although we created a TOU map relationship type for RACTVDMD above, it is not needed for the TOU mapping rate so it is not linked to the SA Type as a valid value.

Refer to *Setting Up SA Types* for more information.

## Designing Your Start Options

Once you have your rates defined and your SA Type defined, you should design Start Options to aid your customer service representatives in setting up these service agreements.

You will first need to design your *start options* with regard to standard SA information. Note that there may be other setup required before you can add your interval billing start options:

- To link common profiles to a start option you will need to create the appropriate *profile* first.
- To link common classic TOU maps to a start option you will need to create the appropriate *TOU map* first. This is only applicable to common maps that should be linked to the service agreement. In our example, it applies to the active demand map. The reactive demand map is linked directly to the rate component so no start option information is needed.
- To link shared contract options to a start option you will need to create the appropriate *contract option* first.

Note that when designing our rate components above, we did not give names to their rate schedules. Let's call the interval pricing rate schedule "INTPRC" and let's call the TOU Map rate schedule "INTTOU".

Recall that the classic TOU Map rate component required profile relationship types that we did not define above. We will assume that profile relationship types are defined with the same names as the map relationship types. We will also assume that the profile types define the same interval size as the map types.

You may also use Start Options to define Cutoff Time and Start Day Option, if they are different from the values defined on the installation record. Let's assume that our TOU mapping customers use a different Cutoff Time from the installation record.

The following table shows the start option definitions with the rates and the cutoff time information.

| CIS Division / SA Type | Start Option | Rate Schedule | Cutoff Time | Start Day Option |
|---|---|---|---|---|
| CA / E-INTBIL | Interval Pricing Hedge - 30MIN | INTPRC | | |
| | Interval Pricing Hedge - 60 Min | INTPRC | | |
| | TOU Map - option 1 | INTTOU | 2:00 AM | Current |
| | TOU Map - option 2 | INTTOU | 2:00 AM | Current |

The following table shows the profile related start options.

| CIS Division / SA Type | Start Option | Rate Schedule | Profile Relationship Type | Profile Type | Profile (Profile Type) |
|---|---|---|---|---|---|
| CA / E-INTBIL | Interval Pricing Hedge - 30MIN | INTPRC | HEDGECVR | | 12859302 (HEDGE30) |
| | | | OVRHEDGE | OVRHG30 | |
| | | | MEASDMD | DMDKW30 | |
| | Interval Pricing Hedge - 60 Min | INTPRC | HEDGECVR | | 4922018 (HEDGE60) |
| | | | OVRHEDGE | OVRHG60 | |
| | | | MEASDMD | DMDKW60 | |
| | TOU Map - option 1 | INTTOU | ACTVDMD | ACTV30 | |
| | | | RACTVDMD | RACTV30 | |
| | TOU Map - option 2 | INTTOU | ACTVDMD | ACTV15 | |
| | | | RACTDMD | RACTV60 | |

The following table shows the classic TOU map related start options.

| CIS Division / SA Type | Start Option | Rate Schedule | Map Relationship Type | Map Type | TOU Map (Map Type) |
|---|---|---|---|---|---|
| CA / E-INTBIL | TOU Map - option 1; no curtailment | INTTOU | ACTVDMD | | 12859302 (4PART30 ) |
| | TOU Map - option 2; no curtailment | INTTOU | ACTVDMD | | 52829947 (4PART15) |
| CA / E-INTBIL | TOU Map - option 3; curtailment | INTTOU | ACTVDMD | | 12859302 (4PART15 ) |
| | | | CURTAIL | CURT15 | |

The following table shows the contract option related start options.

| CIS Division / SA Type | Start Option | Rate Schedule | Contract Option Type | Contract Option |
|---|---|---|---|---|

Let's summarize what these tables define:

- The INTPRC rate requires 2 SA Owned profiles and one Common profile. The Common Profile needs to be created and linked to the start option. (For clarification, the Profile Type used for the profile is displayed in parentheses.) For the SA Owned profile, you need to indicate the profile type.
- There are two possible configurations for the rate INTPRC. As a result, there are two start options, each with the correct configuration defined.
- For the rate INTTOU, the SA will need profiles, TOU maps and, if they use the curtailment option, contract options.
  - The profiles will be SA owned , so only the profile relationship type and profile types are indicated.
  - For the TOU maps, the active demand maps is common so the actual map is indicated, whereas the curtailment map will be SA owned so only the map type is indicated. (The reactive demand map is linked directly to the rate component.)
  - The curtailment option will be shared by more than one service agreement, so the contract option itself is linked to the start option.

Refer to *Setting Up Start Options* to learn how to enter this information.

# Setting Up Interval Billing Options

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# Setting Up Interval Billing Control Tables

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## Setting Up Profile Relationship Types

Profile Relationship Types define the role that a set of interval data will serve for a customer. Open **Admin** > **Interval Profile Rel Type** > **Add** to define your profile relationship types.

**NOTE:**
This page will not be available if Complex Billing module is *turned off*.

### Description of Page

Enter a unique **Interval Profile Rel**ationship **Type** ID and **Description** for the profile relationship type.

Enter the **Interval Profile Type** collection. This is a list of valid *interval profile types* whose collections of data can serve the role defined by the profile relationship type.

> **NOTE:**
> To aid in setup, the interval profile type is not a required field on this user interface. This will help you to define your high level interval relationship types first and then define the more detailed profile types. The valid profile types will need to be linked to the appropriate relationship types prior to creating service agreement interval profiles.

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_INTV_PFRELTY*.

## Setting Up Interval Profile Types

Interval Profile Types define values common to interval profiles of the same type. Open **Admin** > **Interval Profile Type** > **Add** to define your interval profile types.

> **NOTE:**
> This page will not be available if Complex Billing module is *turned off*.

### Description of Page

Enter a unique **Interval Profile Type** ID and **Description** for the interval profile type.

Indicate whether interval profiles of this type are SA Owned or Common by entering the appropriate value in the interval profile **Sub Type**.

The **Creation Priority** will be used by the *Interval Profile Derivation Process* to determine the order in which the data for profiles linked to an SA should be derived. The values range from 10 , being the highest priority to 90 being the lowest priority.

> **NOTE:**
> The values for this field are customizable using the Lookup table. This field name is CRE_PRIO_FLG.

Enter the **Unit of Measure** (UOM) that data values stored for interval profiles of this type are captured in.

If a service quantity identifier is needed to further qualify data stored for interval profiles of this type, enter a valid **SQ Identifier**.

Enter the **Minutes per Interval** to define the number of minutes expected in between each row of data collected for interval profiles of this type.

If the *installation* record indicates that *seasonal time shift* is required, then you must enter the appropriate **Seasonal Time Shift** record applicable for the interval data. Please take special note of the issue described in the *Evenly Sized Intervals* section.

The grid contains **Algorithms** that may be used to create or validate interval data for profiles of this type. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).

- Specify the **Sequence** number and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

We expect that you will need more algorithms than we supply. Your algorithms will be based on any number of factors. Be aware that new algorithms may require programming. See *How To Add A New Algorithm* for more information.

The following table describes each **System Event**.

| System Event | Description |
|---|---|
| Interval Data Creation | These types of algorithms are used to *derive interval data* for a profile.<br>Click *here* to see the algorithm types available for this system event. |
| Interval Data Validation | These types of algorithms are used to *validate profile data*.<br>Click *here* to see the algorithm types available for this system event. |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_INTV_PF_TYP*.

## Setting Up Interval Pricing Rate Components

This section describes how to define your interval pricing rate components.

> **NOTE:**
> **Define Rate Schedule, Rate Version and other Rate Components.** Before creating your interval pricing rate component, you must set up a rate. During this process, you will also need to set up calculation groups and rules. Refer to *Rates* for more information.

When you are ready to set up your interval pricing rate component, open **Menu** > **Rates** > **Rate Version Classic** > **Search.** Choose the rate version that this component should belong to. Use the Rate Version context menu and select Go to Rate Component + to add a new rate component.

**Description of Page**

Refer to *Rate Component - Main Information* for information about the common fields on this page. When defining an Interval Pricing rate component additional fields become available to you. The following information will help you to set up your Interval Pricing rate components.

Indicate whether or not this is **FCPO**.

Select a **Value Type** of Unit Rate . This field will be gray when the rate component is referenced on another rate component. The **Value Source** will most likely be Billing Factor . Your bill factor will likely be one with a type of Interval .

> **FASTPATH:**
> Refer to *Defining Interval Values* for more information about setting up bill factors with interval prices.

Indicate whether or not this rate component is **Seasonal**. Refer to *Rate Component - Main Information* for more information about seasonal rate components.

The **Error if No Value** field is available for you to use in the calculation algorithm.

Indicate the **Calc Algorithm** that the system will use to calculate the bill line that this rate component produces.

- The system provides an Algorithm Type that is available for use here. It is called *RCIPRS*.

If this algorithm does not provide you with the logic you require, you will need to create a new algorithm (refer to *Setting Up Algorithms*). The above existing algorithm should be used as a sample if you have to write a new algorithm type.

**NOTE:**
The calculation algorithm's main purpose is to create bill calculation lines. However, the algorithm may populate other information for the bill, for example, it may add to the SQ or register read collection or it may overwrite the description on bill.

Indicate the **Audit Alg**orithm to be used when a CSR wants to drill down into the details of a bill line that was calculated using this Rate Component.

- The system provides an algorithm type that is available for use here. It is called *RCIPRS-ADT*.

If this algorithm does not provide you with the logic you require, you will need to create a new algorithm (refer to *Setting Up Algorithms*). The above existing algorithm should be used as a sample if you have to write a new algorithm type.

**NOTE:**
The audit algorithm should produce the same results as the Calc Algorithm. They are separated because they have different responsibilities. For example, the Calc Algorithm should produce bill lines, but the Audit Algorithm should not. They share common logic related to accessing and processing the appropriate interval data records. As a result, it is recommended that these two programs share a common code which accesses and processes the interval data. The above algorithms provided by the system behave this way and should be used as samples.

Refer to *Interval Billing Calculation Details* to understand where a CSR may view the calculation details for a bill calc line, using this algorithm.

Indicate the **Interval Profile Rel Type**. This indicates to the system the profile, linked to the SA, which contains the interval quantities to be processed. Refer to *Business Role of Interval Data* and *Setting Up Profile Relationship Types* for more information.

Turn on **GL Statistical Quantity** if GL journal lines generated for this rate component should also contain the service quantity amount as a statistical quantity. You would use this option if you keep track of both dollar amounts and consumption units in your general ledger.

Enter the verbiage to appear on the customer's bill in **Description On Bill** and turn on the **Print** switch. Refer to *Rate Version - Bill Print Info* for more information about these fields.

Move to the *Rate Component - GL Distribution* window to define how to book moneys associated with this rate component in the general ledger.

# Setting Up Channel Control Tables

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# Setting Up Interval Register Types

**FASTPATH:**

Refer to *The Big Picture of Raw Data Collection and Aggregation* for more information.

Interval register types define values common to interval registers of the same type. Open **Admin** > **Interval Register Type** > **Add** to define your interval register types.

**NOTE:**
This page will not be available if Meter Data Management module is *turned off*.

**Description of Page**

Enter a unique **Interval Register Type** and **Description** for the interval register type.

Enter the **Unit of Measure** (UOM) that data values stored for interval registers of this type are captured in.

If a service quantity identifier is needed to further qualify data stored for interval registers of this type, enter a valid **SQ Identifier**.

Enter the **Minutes per Interval** to define the number of minutes expected in between each row of data collected for interval registers of this type.

If the *installation* record indicates that *seasonal time shift* is required, then you must enter the appropriate **Seasonal Time Shift** record applicable for the interval data. Please take special note of the issue described in the *Evenly Sized Intervals* section.

The grid contains **Algorithms** that may be used to perform actions on interval data for registers of this type. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence** number and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

We expect that you will need more algorithms than we supply. Your algorithms will be based on any number of factors. Be aware that new algorithms may require programming. See *How To Add A New Algorithm* for more information.

The following table describes each **System Event**.

| System Event | Description |
|---|---|
| Interval Register Validation | These types of algorithms are used to *validate register data*.<br>Click *here* to see the algorithm types available for this system event. |

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_INTV_REG_TYP*.

## Setting Up Meter Configuration Types for Channels

You must set up *meter configuration types* for your interval channels and index channels.

## Setting Up Meter Types

You must set up *meter types* to use for grouping together your index and interval registers. You must turn on the **Allow Interval Registers** switch for any meter type used by a meter, which will contain interval registers. Indicate the valid meter configuration types for this meter type.

# Setting Up Time of Use Billing Control Tables

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## Setting Up Classic TOU Map Relationship Types

Classic TOU Map Relationship Types define the role that a classic TOU Map will serve for a customer. Open **Admin** > **TOU Map Relationship Type** > **Add** to define your classic TOU map relationship types.

> **NOTE:**
> This page will not be available if Complex Billing module is *turned off*.

**Description of Page**

Enter a unique **TOU Map Relationship Type** ID and **Description** for the TOU map relationship type.

Enter the **TOU Map Type** collection. This is a list of valid *TOU map types* whose collections of data can serve the role defined by the TOU map relationship type.

> **NOTE:**
> To aid in setup, the map type is not a required field on this user interface. This will help you to define your high level map relationship types first and then define the more detailed map types. The valid map types will need to be linked to the appropriate relationship types prior to creating service agreement TOU maps.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_TMAP_RELTY*.

## Setting Up TOU Pricing Rate Components

This section describes how to define your TOU Pricing rate components. Refer to *Time of Use Mapping and Pricing* for background information.

> **NOTE:**
> **Define Rate Schedule, Rate Version and other Rate Components.** Before creating your TOU pricing rate component, you must set up a Rate Schedule. Refer to *Setting Up A Rate Schedule* for more information. You will also need to set

up a rate version and possibly set up other types of rate components. Refer to *Defining Rate Versions* and *Defining Rate Components* for more information.

---

When you are ready to set up your TOU pricing rate component, open **Menu** > **Rates** > **Rate Version Classic** > **Search.** Choose the rate schedule and version that this component should belong to. Open its context menu, and select **Go to Rate Component Classic** > **Add** to add a new rate component.

**Description of Page**

Refer to *Rate Component - Main Information* for information about the common fields on this page. When defining a TOU Pricing rate component, additional fields become available to you. The following information will help you to set up your TOU Pricing rate components.

If the algorithm used by this rate component, only performs mapping and does not produce bill lines, indicate that this is **FCPO**.

The **Value Type** and **Value Source** are optional. If your algorithm performs pricing logic, then you will probably need to define a bill factor here. If your calculation algorithm only performs mapping, than you may not require any value here.

Indicate whether or not this rate component is **Seasonal**. Refer to *Rate Component - Main Information* for more information about seasonal rate components.

The **UOM** is available for use by your calculation algorithm. It could be used, for example, by a mapping algorithm to produce SQ quantities with a different unit of measure, assuming that the algorithm knows how to convert from one UOM to another. Note that the algorithms provided with the system do not use this field.

The **SQI** is available for use by your calculation algorithm. It could be used, for example, by a mapping algorithm to produce SQ quantities with a different SQI. Note that the *TOU mapping and pricing* algorithms provided with the system will use this field, if populated, to produce SQI quantities with this SQI value.

**Measures Peak Qty** and **GL Statistical Qty** behave the same way they do for SQ quantity rate components. Refer to *How To Set Up Service Quantity Rate Components* for more information.

The **Error if No Value** field is available for you to use in the calculation algorithm.

Indicate the **Calc Algorithm** that the system will use to map the interval quantities to time of use values.

- The system provides the following classic TOU mapping/pricing algorithms that are available for use here: *RCTMS* performs mapping of time of use only and *RCTMPS* performs both mapping and pricing, producing the necessary bill calculation lines.

If these algorithms do not provide you with the logic you require, you will need to create a new algorithm (refer to *Setting Up Algorithms*). The above existing algorithms should be used as a sample if you have to write a new algorithm type.

---

**NOTE:**
The calculation algorithm's main purpose is to create bill calculation lines. However, the algorithm may populate other information for the bill, for example, it may add to the SQ or register read collection or it may overwrite the description on bill.

---

Indicate the **Audit Algorithm** to be used when a CSR wants to drill down into the details of a bill line that was calculated using this Rate Component.

- The system provides the following audit algorithm that is available for use here: *RCTPRS-ADT*.

If this algorithm does not provide you with the logic you require, you will need to create a new algorithm (refer to *Setting Up Algorithms*). The above existing algorithm should be used as a sample if you have to write a new algorithm type.

---

**NOTE:**
The audit algorithm should produce the same results as the Calc Algorithm. They are separated because they have different responsibilities. For example, the Calc Algorithm should produce bill lines, but the Audit Algorithm should not. They share common logic related to accessing and processing the appropriate interval data records. As a result, it is

recommended that these two programs share a common code which accesses and processes the interval data. The above algorithms, provided by the system, behave this way and should be used as samples.

Refer to *Interval Billing Calculation Details* to understand where a CSR may view the calculation details for a bill calc line, using this algorithm.

Indicate the **Interval Profile Rel Type**. This indicates to the system the profile, linked to the SA, which contains the interval quantities to be mapped. Refer to *Business Role of Interval Data* and *Setting Up Profile Relationship Types* for more information.

If the classic TOU map differs for different service agreements, indicate the **TOU Map Relationship Type**. The system uses this information to find the correct classic TOU map linked to the SA. Refer to *Business Role of a TOU Map* and *Setting Up TOU Map Relationship Types* for more information.

If ALL service agreements linked to the rate use the same map, indicate the classic **TOU Map ID**.

Enter the verbiage to appear on the customer's bill in **Description On Bill** and turn on the **Print** switch. Refer to *Rate Version - Bill Print Info* for more information about these fields.

## Setting Up Time of Use Codes

An important step in preparing for Time of Use billing is to define Time of Use codes. Refer to *Setting Up Time-Of-Use Codes* for more information.

## Setting Up TOU Groups

Once you have your time of use codes defined, you will need to create your TOU groups to group the codes together. Refer to *Setting Up TOU Groups* for more information.

## Setting Up Classic TOU Map Types

The Classic TOU Map Type defines characteristics that are common to classic TOU Maps of the same type. Open **Admin** > **TOU Map Type Classic** > **Add** to define your TOU map types.

**NOTE:** The Classic TOU Map Type portal describes TOU Map Types that are used with the classic rate engine. For information about the differences between the classic and new style rate engines, see *Rates*. For details on setting up TOU Map Types for the new style rate engine, see *Creating New Style TOU Map Types*.

**NOTE:**
This page will not be available if Complex Billing module is *turned off*.

**Description of Page**

Enter a unique **TOU Map Type** ID and **Description** for the classic TOU Map Type.

Indicate whether TOU maps of this type are SA Owned or Common by entering the appropriate value in the **Sub Type**.

The **Creation Priority** will be used by the *TOU map data creation* process to determine the order in which the data for classic TOU maps linked to an SA should be derived. The values range from 10 , being the highest priority to 90 being the lowest priority.

**NOTE:**

The values for this field are customizable using the Lookup table. This field name is CRE_PRIO_FLG.

Enter the **TOU Group** that defines the collection of TOUs for this map type.

Enter the **Minutes Per Interval** to define the number of minutes expected in between each row of data collected for classic TOU maps of this type.

If the *installation* record indicates that *seasonal time shift* is required, then you must enter the appropriate **Seasonal Time Shift** record applicable for the interval data. Please take special note of the issue described in the *Evenly Sized Intervals* section.

The grid contains **Algorithms** that may be used to create classic TOU map data for TOU maps of this type. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence** number and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

We expect that you will need more algorithms than we supply. Your algorithms will be based on any number of factors. Be aware that new algorithms may require programming. See *How To Add A New Algorithm* for more information.

The following table describes each **System Event**.

| System Event | Description |
|---|---|
| TOU Map Creation | These types of algorithms are used to *create TOU map data* automatically.<br>Click *here* to see the algorithm types available for this system event. |

### Where Used

Follow this link to open the data dictionary where you can view the tables that reference *CI_TMAP_TYPE*.

## Setting Up Classic TOU Map Templates

The TOU Map Template classic page enables you to define daily, weekly and calendar templates for use by TOU data generation and automatic TOU data creation. Open **Admin** > **TOU Map Template Classic** > **Add** to define your TOU map templates.

**NOTE:**
The classic TOU Map Template portal describes TOU Map Templates that are used with the classic rate engine. For information about the differences between the classic and new style rate engines, see *Rates*. For details on setting up TOU Map Templates for the new style rate engine, see *Creating New Style TOU Map Templates*.

**NOTE:**
This page will not be available if Complex Billing module is *turned off*.

### Description of Page

Enter a unique **TOU Map Template** name and a **Description** for the classic TOU map template.

Enter a classic **TOU Map Type**. Daily templates use the TOU map type to determine the TOU group whose TOU codes are valid for this template. All templates use the classic TOU map type to determine the interval size to ensure that start and end

times are valid for the interval size. For example, if your interval size is 60 minutes, then the amount of minutes between your start and end times must be a multiple of 60. For example, you would not be able to enter a start time of 10:00 and an end time of 10:15.

Use the **TOU Map Template Type** to indicate whether this template is Daily , Weekly or Calendar .

The fields in the remaining portion of the page will depend on the classic TOU map template type.

A Daily template is used to define time of use periods applicable for hour/minute time ranges in an abstract day. Data in this template has no association with a specific day of the week or a specific calendar date. Each entry in the collection is used to define the time periods applicable for a given Time of Use code in this day. Enter the following information for your collection of time periods for the daily template.

Use the **Start Sequence Number** and the **End Sequence Number** to indicate whether the time period covered by this entry starts and ends on the same day or on different days. If the time period covered by the entry starts and ends on the same day, then the same number should be entered in both fields. If the time period ends on a different day (most likely one day later) than it starts, then the End sequence would be greater than the start sequence.

Enter the **Start Time** and **End Time** applicable for this **Time of Use** code. The valid time of use codes are limited to those belonging to the TOU group on the template's TOU map type.

---

**NOTE:**
The times on the TOU map components are in legal time. During the generation process the system will convert the time definitions into standard time, taking daylight savings into account. Time shifting is based upon the Seasonal Time Shift defined on the template's classic TOU Map Type. Refer to *Seasonal Time Shift* for more information.

When the TOU data is generated, intervals for this time of use code will be generated starting from the first time period AFTER the Start Time up to and including the End Time interval. Therefore, the end Time is inclusive and the start time is not inclusive.

---

A Weekly template is used to define the collection of daily templates that make up an abstract week. Data in this template has no association with specific calendar dates. You must indicate the **Week Start Day** to tell the system which day of the week is considered "day one".

Enter the following information for your collection of daily templates for the weekly template.

Use the **Start Sequence Number** and the **End Sequence Number** to indicate whether the time period covered by this entry starts and ends in the same week or in different weeks. If the days covered by the entry are in the same week, then the same number should be entered in both fields. If the time period ends in a different week (most likely one week later) than it starts, then the End sequence would be greater than the start sequence.

Enter the **Start Week Day** and **Start Time** and **End Week Day** and **End Time** applicable for this **Reference TOU Map Template**. The valid templates are limited to those that are daily and those whose TOU map type has the same TOU group and minutes per interval as this template's TOU map type.

---

**NOTE:**
The times on the TOU map components are in legal time. During the generation process the system will convert the time definitions into standard time, taking daylight savings into account. Time shifting is based upon the Seasonal Time Shift defined on the template's TOU Map Type. Refer to *Seasonal Time Shift* for more information.

When the TOU data is generated, intervals will be generated starting from the first time period AFTER the Start Time up to and including the End Time interval. Therefore, the end Time is inclusive and the start time is not inclusive.

---

A Calendar template is used to define the collection of weekly and daily templates that make up specific months and dates for a given calendar.

Enter the following information for your collection of daily and weekly templates for the calendar template.

Use the **Start Sequence Number** and the **End Sequence Number** to indicate whether the time period covered by this entry starts and ends in the same year or in different years. If the dates covered by the entry are in the same year, then the same

number should be entered in both fields. If the time period ends in a different year (most likely one year later) than it starts, then the End sequence would be greater than the start sequence.

Use the **Start Date** (month and day) and **Start Time** and the **End Date** (month and day) and **End Time** to indicate the time period applicable for this **Reference TOU Map Template**. The valid templates are limited to those that are daily and weekly and those whose TOU map type has the same TOU group and minutes per interval as this template's TOU map type.

**NOTE:**
The times on the TOU map components are in legal time. During the generation process the system will convert the time definitions into standard time, taking daylight savings into account. Time shifting is based upon the Seasonal Time Shift defined on the template's TOU Map Type. Refer to *Seasonal Time Shift* for more information.

When the TOU data is generated, intervals will be generated starting from the first time period AFTER the Start Time up to and including the End Time interval. Therefore, the end Time is inclusive and the start time is not inclusive.

**Where Used**

The *generate* button on the TOU map page allows you to specify a TOU map template and a holiday TOU map template to use for generating TOU data.

If you have a TOU map creation algorithm defined on a TOU map type, this algorithm will need to use a TOU map template to create TOU data. The mechanism for defining the TOU map template to use depends on how the algorithm is designed. The TOU map creation algorithm provided by the system *ITMCCOPT* expects the template to be defined as a characteristic of the service agreement.

# Setting Up Contract Option Control Tables

This section describes the pages related to maintaining contract options.

**Contents**



# Setting Up Contract Option Types

This section describes the pages related to maintaining a contract option type.

**Contents**



## Contract Option Type - Main

Contract Option Type defines control information required for contract options. Open **Admin** > **Contract Option Type** > **Add** to define your contract option types.

**NOTE:**
This page will not be available if Complex Billing module is *turned off*.

**Description of Page**

Enter a unique **Contract Option Type** ID and **Description**.

Indicate whether you **Allow Overlap** of the effective period for contract events linked to contract options of this type.

If the *installation* record indicates that *Seasonal Time Shift* is required, then you must enter the appropriate **Seasonal Time Shift** record applicable for the contract option event data.

Select a **Characteristic Type** that may be used on contract options of this type. The characteristic type's Description appears adjacent.

The following fields should be defined for each characteristic type:

**Sequence** This field controls the order in which the characteristics appear on the *contract option* page.

**Required** Turn this switch on if this type of characteristic must be defined on all contract options of this type.

**Default** Turn this switch on if this characteristic type should automatically appear in the characteristic scroll area of contract options of this type.

**Characteristic Value** If a characteristic value can default for contract options of this type, specify the default value in this field.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COP_TYPE*.

## Contract Option Type - Algorithms

To define validation algorithms for contract option events linked to contract options of this type. Open **Admin** > **Contract Option Type** > **Search** and navigate to the **Algorithms** page to define validation algorithms for this contract option type.

**Description of Page**

The grid contains **Algorithms** that may be used to validate contract option event information. You must define the following for each algorithm:

- Specify the **System Event** with which the algorithm is associated (see the table that follows for a description of all possible events).
- Specify the **Sequence** number and **Algorithm** for each system event. You can set the **Sequence Number** to 10 unless you have a **System Event** that has multiple **Algorithms**. In this case, you need to tell the system the **Sequence** in which they should execute.

The following table describes each **System Event**.

| System Event | Description |
|---|---|
| Contract Option Event Cancel | This algorithm is executed when a contract option event for a contract option of this type is canceled .<br>Click *here* to see the algorithm types available for this system event. |
| Contract Option Event Freeze | This algorithm is executed when a contract option event for a contract option of this type is frozen .<br>Click *here* to see the algorithm types available for this system event. |
| Contract Option Event Pending | This algorithm is executed when a contract option event for a contract option of this type is added or changed and the status is pending .<br>Click *here* to see the algorithm types available for this system event. |

## Setting Up Contract Option Event Types

Contract Option Event Type defines control information required for contract option events. Open **Admin** > **Contract Option Event Type** > **Add** to define your contract option event types.

> **NOTE:**
> This page will not be available if Complex Billing module is *turned off*.

**Description of Page**

Enter a unique **Contract Option Event Type** code and **Description**.

Indicate the **Contract Option Type** for this event type.

Use the **Characteristics** collection to define characteristics that can be defined for contract option events of this type. Use **Sequence** to control the order in which characteristics are defaulted. Turn on the **Required** switch if the **Characteristic Type** must be defined on contract option events of this type. Enter a **Characteristic Value** to use as the default for a given **Characteristic Type** when the **Default** switch is turned on.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_COP_EVT_TYPE*.

# Defining Prepaid Metering Options

The topics in this section describe how to set up the system to enable prepaid metering functionality.

> **NOTE:**
> **Prepaid metering is optional.** The system configuration requirements described in this section are only relevant if your organization offers prepaid metering service.

**Contents**



## The Big Picture of Prepaid Metering

Prepaid metering allows customers to pay for energy before it is actually used.

**Contents**

## How Does Prepaid Metering Work?

A traditional electronic prepaid metering system typically operates at three levels:

- Meters that are installed at the customer's home. These meters dispense energy up to the amount that the customer prepaid.
- Vending stations located at the utility's offices or designated payment agencies. These stations/agencies sell prepaid credits to customers.
- Master stations that group vending stations together for administration, reporting and control purposes. Master stations communicate information - e.g. customer information, tariff changes, etc - to the vending stations. The vending stations, in turn, report detailed customer sales and other transaction information to the master station.

A prepaid customer goes to a vendor and purchases credits for his/her meter to dispense energy. The vendor has knowledge of the customer and the rate that the customer is paying. The vendor issues the credits in any of the following forms: a prepaid card, a token (to be inserted into the meter) or a series of numbers (to be keyed into the meter).

## Debit Meter vs. Credit Meter

Prepaid meters are commonly referred to as debit meters. Billed meter types are also called credit meters. A meter's state of being 'credit' or 'debit' translates to a specific meter configuration. Having this property set at the meter configuration level enables meters to be switched between 'credit' and 'debit' if needed.

Prepaid credits may be purchased for either new premises or existing premises. In the latter case, the existing premise could initially have a typical 'credit' meter. In this case, fieldwork may be involved in getting the meter switched from 'credit' to 'debit' (prepaid).

## Prepaid Metering Transactions Result in Adjustments

There could be numerous types of prepaid transactions. But the most common types are prepaid sales and cancellations.

A sale or cancellation transaction includes a total amount that usually includes tax. In order to post to the general ledger, the prepaid transaction must result in a financial transaction. Moreover, separate GL entries must be created for the breakdown of revenue and tax. In some cases, it may also be necessary to calculate the usage from the revenue amount.

*Calculated Adjustments* are used to book revenue from these types of transactions. A base Generate Adjustment algorithm is available to let rate application generate the appropriate GL calculation lines and calculate the corresponding usage, if needed.

Prepaid adjustments do not affect a customer's balance.

## Interfacing Prepaid Transactions

An adjustment upload batch process exists for uploading prepaid transactions that result in adjustments. Refer to *Interfacing Adjustments From External Sources* for more information.

Prepaid metering options need only be set up if your organization offers prepaid metering service to your customers. Refer to *Defining Prepaid Metering Options* for more information.

## Prepaid Transactions Can Go Into Suspense

A prepaid transaction goes into suspense if a prepaid SA could not be determined for any of the following reasons:

- The badge number on the transaction is not a valid meter in the system
- The badge number on the transaction is a valid meter in the system, but is:
  - Not linked to a prepaid meter configuration type
  - Not linked to a non-closed, non-canceled prepaid SA

This can be a common occurrence because of the likelihood that transactions get uploaded prior to meter installation/ exchange or service agreement information being updated in the system.

When this situation happens, you probably still want to recognize the revenue by posting an adjustment to a suspense SA that you designate. Refer to the base sample Get Prepaid SA Using Badge Number (C1-SABYBADGE) algorithm for an example of how the suspense SA is specified.

A batch process exists for automatically resolving suspense adjustments. Refer to *How Are Suspense Adjustments Resolved* for more information.

## Setting Up The System To Enable Prepaid Metering

The following sections describe the steps in setting up control information for prepaid metering.

**Contents**



## Meter Types

Prepaid meters are set up just like any other meter - i.e. the meter must reference a meter type and the meter's configuration must reference a meter configuration type.

To set up prepaid meter types you must do the following:

- Define the meter configuration types that will be used for recording prepaid usage. Mark each of these configuration types as Prepaid . Define one register with the appropriate UOM (e.g. kWh ). See *Setting Up Meter Configuration Types* for more information.

- Define the meter types that will be used for prepaid metering. For each meter type, associate one of the Prepaid meter configuration types that you defined. You can also mark each meter type as Prepaid Capable . See *Setting Up Meter Types* for more information.

**NOTE:**
Base logic does not require the meter type to be marked as Prepaid Capable . The Prepaid indicator on the meter configuration type is used to identify prepaid meters.

# Characteristic Types

The following characteristic types are needed if you are going to upload prepaid transactions as adjustments and need the system to determine the prepaid SA given a prepaid meter's badge number.

Refer to *Setting Up Characteristic Types* for more information.

**Contents**



## Prepaid Entity Characteristic Type

Create a characteristic type that identifies whether an SA Type is used for prepaid metering. For example:

- Characteristic Type = <code>
- Description = Prepaid Entity
- Char Entities = SA Type
- Subclass = predefined list
- Values = Y , N

## Badge Number Characteristic Type

Create a characteristic type for specifying a badge number. For example:

- <code>
- Description = Badge Number
- Char Entities = Adjustment, Adjustment Type
- Subclass = Adhoc

# Algorithms

The following algorithms need to be set up in order to store prepaid transactions in the system.

Refer to *Setting Up Algorithms* for more information.

**NOTE:**

The following sections describe basic set up needed for uploading 'sale' and 'cancellation' types of prepaid transactions. Your implementation team may have to define additional specific algorithms types for any other prepaid transaction type that you need to upload into or store in the system.

**Contents**



## Calculation Rule - Calculation Algorithm

Create an algorithm of type Determine Percent Given Total (C1-PCTGVNTOT) specifying your parameter values for UOM / TOU / SQI.

Create an algorithm of type Back Into Revenue (C1-BACKINREV) specifying your parameter values for UOM / TOU / SQI.

## Adjustment Type - Generate Adjustment

Create an algorithm of type Adjustment Generation - Apply Rate (ADJG-RT) , specifying your *prepaid rate* and parameter values for UOM / TOU / SQI.

## Adjustment Type - Determine SA

Create an algorithm of type Get Prepaid SA Using Badge Number (C1-SABYBADGE) , specifying your badge number characteristic type, prepaid characteristic type and suspense SA ID (i.e. SA to which the adjustment needs to post when a valid prepaid SA is not found).

## Adjustment Type - Resolve Suspense

Create an algorithm of type Cancel Suspense Adjustment (C1-CANSUSADJ) specifying the following:

- *Badge number characteristic type*
- *Prepaid entity characteristic type*
- *Prepaid adjustment type*
- Adjustment cancel reason

If you want this algorithm to create to do entries for adjustments that have been in suspense for too long, specify additional parameter values for number of days and to do type and to do role (optional).

## Adjustment Type - Adjustment Information

Specify the SUSPENSE_DESCR parameter on your adjustment information algorithm if you want the information to include an indication of suspense.

## Installation - Adjustment Information

Specify the SUSPENSE_DESCR parameter on your adjustment information algorithm if you want the information to include an indication of suspense.

# Rate

In order to generate separate calculation lines for the revenue and tax breakdown of the prepaid amount, you need to set up a prepaid rate with components that calculate revenue amount and tax amount given just a total amount.

Create a rate schedule with the following components:

- Tax Calculation Rule
  - Calculation Rule Type = Calculation Algorithm
  - Value Type = Percentage
  - Value Source = Bill Factor
  - Bill Factor = your tax bill factor
  - Calculation Algorithm = the one created for algorithm type C1-PCTGVNTOT. Refer to *Calculation Rule - Calculation Algorithm* for information.
  - Distribution Code = *your distribution code for tax liability*
- Revenue Calculation Rule
  - Calculation Rule Type = Calculation Algorithm
  - Derive SQ = checked
  - Value Type = Unit Charge
  - Value Source = Bill Factor
  - Bill Factor = your rate/kWh bill factor
  - UOM/TOD/SQI to use for the resulting calculated usage, for example kWh
  - RC Cross Reference = indicate the sequence for the tax calculation rule (above)
  - Calculation Algorithm = the one created for algorithm type C1-BACKINREV. Refer to *Calculation Rule - Calculation Algorithm* for information.
  - Distribution Code = your distribution code for revenue

# Adjustment Types

You must define an adjustment type for each type of transaction that you want to store in the system. Refer to *Setting Up Adjustment Types* for more information.

For prepaid sales and cancellation transactions, you need to define *calculated adjustment types*. In addition, plug-in the following algorithms:

- Adjustment FT Creation - GL Only algorithm - so that transaction amounts do not affect the customer's balance. Specify calc lines as the source for adjustment distribution codes.
- *Generate Adjustment*
- *Determine SA*
- *Resolve Suspense*, if applicable.
- *Adjustment Information*, if applicable

## Adjustment Type Profiles

Create appropriate *adjustment type profiles* for your prepaid service agreements.

## Service Agreement Types

You must create a prepaid *SA Type* for each unique CIS Division. Each SA Type must be set up as non-billable and requiring a characteristic premise. The SA Types must also indicate that they are used for prepaid by specifying a *prepaid entity characteristic* value.

## Bill Cycle

Create at least one bill cycle that will be used for prepaid accounts. This bill cycle should not have a schedule defined.

## Vendor Information

A vendor could be a vending station, payment agency or master station.

You must create a *person* for each of your vendors. Information about the vendor may include names, an address, phone numbers, etc.

Any other miscellaneous information about the vendor can be stored as characteristics on the person.

Hierarchical relationships between vendors can be established through characteristics. For instance, a vending station's person record may contain a foreign key characteristic that points to the master station that the vending station reports to.

# Conservation Programs

Oracle Utilities Customer Care and Billing allows you to define conservation (or energy efficiency) programs and provide rebates to customers.

**Contents**

# The Big Picture of Conservation Programs

The purpose of using conservation programs is to provide rebates to customers based on eligibility and verification of newly purchased appliances and hardware that are rated to conserve the demand for energy. To redeem their rebates, customers have to submit a rebate application to the utility with receipts, and the utility has to administer and report on the programs.

Admin and transaction objects are provided in the product to support the definition of conservation programs (admin data) and the subsequent rebate claims (transaction data). Portals and BPA scripts are used to maintain the conservation programs and rebate claims. Adjustments are used to recognize the expense and to process refunds.

The following sections discuss the maintenance objects that support this functionality.

**Contents**



# Conservation Program Maintenance Object

A conservation program is an admin maintenance object (MO) used to support the definition of a conservation program. It holds rules that control how the claims for a conservation program are managed. If your organization wishes to use this MO, you can either use the business object (BO) supplied in the base product or configure your own BO.

This MO provides the following functionality:

- A business object option Display Statistics Service Script is provided for business objects of this type. The script plugged into this option retrieves information displayed on the **Conservation Program Statistics Zone**.
- A business object option Display Statistics UI Map is provided for business objects of this type. This is the map used on the **Conservation Program Statistics Zone** to display statistics.
- A separate maintenance object is provided to capture rebate definitions for a conservation program
- Logs are not provided.
- The standard characteristics collection is provided.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_CONSV_PROG*.

**FASTPATH:**
For more information, about this MO and to review the business objects defined for this MO, navigate to **Admin** > **Maintenance Object** > **Search** and view the MO C1-CPROG .

## Conservation Program Rebate Definition Maintenance Object

A conservation program has rebate definitions that define the rebate amounts and energy savings for different types of products. The superset of such lines is the "rebate matrix". Each row in the matrix defines the rebate and presumed energy savings for a product purchased by the consumer. If your organization wishes to use this maintenance object (MO), you can either use the business object (BO) supplied in the base product or configure your own BO.

This MO provides the following functionality:

- The Rebate Definition table can be used to capture information for rebate claim lines such as, appliance type, refund amount, energy savings, and applicable manufacturers and models.
- Logs are not provided for the Rebate Definition.
- A characteristics collection is not provided.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_REBATE_DEFN*.

> **FASTPATH:**
> For more information, about this MO and to review the business objects defined for this MO, navigate to **Admin** > **Maintenance Object** > **Search** and view the MO C1-RDEF .

## Rebate Claim Maintenance Object

When a customer files a claim for a rebate, a rebate claim will be created. The rebate claim maintenance object (MO) is used to support the definition of a claim. If your organization wishes to use this MO, you can either use the business object (BO) supplied in the base product or configure your own BO.

This MO provides the following functionality:

- Depending on the utility's requirements, you can specify single or multiple items on the Rebate Claim. A separate maintenance object is provided to capture rebate claim lines for a rebate claim.
- The standard characteristics collection is provided.
- A log is provided. This can be used to track approval information for the claim, to capture adjustments created as the claim is processed, etc.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_REBATE_CLAIM*.

> **FASTPATH:**
> For more information, about this MO and to review the business objects defined for this MO, navigate to **Admin** > **Maintenance Object** > **Search** and view the MO C1-RCLAIM .

## Rebate Claim Line Maintenance Object

A rebate claim has a rebate claim line for each product eligible for a refund. You use the rebate claim line maintenance object (MO) to create a rebate line. If your organization wishes to use this MO, you can either use the business object (BO) supplied in the base product or configure your own BO.

This MO provides the following functionality:

- SA (service): The SA table is the real service SA. There is a separate SA under which the rebate adjustments are stored.
- Logs are not provided for Rebate Claim Line
- The standard characteristics collection is provided.

**Where Used**

Follow this link to open the data dictionary where you can view the tables that reference *CI_REBATE_LINE*.

> **FASTPATH:**
> For more information, about this MO and to review the business objects defined for this MO, navigate to **Admin** > **Maintenance Object** > **Search** and view the MO C1-REBLN .

# GL Accounting Example

The following table shows the financial transactions that are issued when processing energy conservation rebates. This example shows the financial transactions when a customer files a claim for a dishwasher and insulation.

Notice how the expense adjustments are atomized:

- Separate adjustments are created to expense each item individually.
- A single adjustment is created for the A/P check request.

| Event | GL Accounting |
|---|---|
| Rebate adjustment is created - dishwasher | Rebate Expense 35<br>A/P <35> |
| Rebate adjustment is created - insulation | Rebate Expense 45.45<br>A/P <45.45> |
| A/P check request issued | A/P 80.45<br>Cash <80.45> |

# Setting Up Conservation Programs

Conservation Programs allow administrators to create and maintain conservation programs for which customer can submit rebate claims. To set up a conservation program, open **Admin** > **Conservation Program** > **Add.**

> **FASTPATH:**
> For additional information on working with rebate claims, see *Rebate Claims*.

The topics in this section describe the base-package zones that appear on the Conservation Program portal.

**Contents**

*Rebate Claim Statistics Zone*

## Conservation Program List Zone

The Conservation Program *List zone* lists every conservation program. The following functions are available:

- Click a *broadcast* button to open other zones that contain more information about the adjacent conservation program.
- Click the Add link in the zone's title bar to add a new conservation program.

This zone displays the following for each conservation program defined in the system:

- Conservation Program Information (Description, Status, Start Date, End Date)
- The number of Complete Claims
- The total Complete Claims Amount
- The number of Incomplete Claims
- The Statistics Date/Time is the date that the statistics were last calculated

Use the following procedure to create a new conservation program:

- Select **Admin** > **Conservation Program** > **Add** or click **Add** on the title bar of the Conservation Program *List zone*.
- Enter basic information about the conservation program in the **Main** section, including:
  - Conservation Program code
  - Description
  - Start Date/End Date
  - Statistic Update Frequency (in hours)
- Enter **Financial Information** about the conservation program, including:
  - CIS Division
  - SA Type
  - A/P Adjustment Type
  - A/P Taxable Adjustment Type
- Enter **Approval Information** about the conservation program, including:
  - Approval To Do Type
  - Duplicate Claim To Do Role
  - Approval Levels and Threshold Amounts
- Click **Save.** To return to the Conservation Program portal without saving the new program, click **Cancel.**

To view a specific conservation program, click the broadcast icon for the conservation program you wish to view. The remaining zones in the Conservation Program portal open displaying details about the selected conservation program.

## Conservation Program Zone

You use the Conservation Program zone to view and maintain individual conservation program. The Conservation Program zone displays the following information about the selected conservation program:

- Basic information about the conservation program, including

  - Conservation Program
  - Description
  - Start Date/End Date
  - Statistic Update Frequency (in hours)
  - Status
- Financial Information about the conservation program, including
  - CIS Division
  - SA Type
  - A/P Adjustment Type
  - A/P Taxable Adjustment Type
- Approval Information about the conservation program, including
  - Approval To Do Type
  - Duplicate Claim To Do Role
  - Approval Levels and Threshold Amounts

Please see the zone's help text for information about this zone's fields.

**Contents**



## Conservation Program Status

The Status of a conservation program indicates the current state of the program within the system. Valid statuses include:

- **Pending** indicates the program is pending. This is the initial state of a conservation program when first created.
- **Active** indicates the conservation program is currently active.
- **Inactive** indicates the conservation program is currently inactive.

## Conservation Program Actions

You can perform a number of actions on a conservation program, including:

- **Edit:** Used to edit a conservation program
- **Delete:** Used to delete a conservation program
- **Activate:** Used to activate a pending or inactive conservation program
- **Refresh Statistics:** Used to refresh the statistics of an active conservation program

- **Deactivate:** Used to deactivate a pending or active conservation program
- **Pend:** Used to change the status of an active or inactive conservation program to Pending

The actions available are based on the current status of the conservation program. The table below summarizes the actions available at each status.

| Status | Valid Action |
|---|---|
| Pending | Edit, Delete, Activate, Deactivate |
| Active | Edit, Refresh Statistics, Deactivate, Pend |
| Inactive | Activate, Pend |

## Editing Conservation Programs

Use the following procedure to edit an active or pending conservation program:

- Click **Edit.**
- Edit the details of the conservation program as needed.
- Click **Save.**

## Deleting Conservation Programs

Use the following procedure to delete a conservation program:

- Click **Pend** to change the status of the conservation program to Pending (if needed).
- Click **Delete.**
- Click **OK** on the Confirm Delete dialog. To close the dialog without deleting the conservation program, click **Cancel.**

## Activating Conservation Programs

To activate an inactive or pending conservation program, click **Activate.**

## Deactivating Conservation Programs

To deactivate an active or pending conservation program, click **Deactivate.**

## Setting the Status of Conservation Programs to Pending

To set the status of an active or inactive conservation program to Pending, click **Pend.**

## Rebate Definition Zone

You use the Rebate Definition zone to add, view, and edit rebate definitions associated with a conservation program. A rebate definition defines the types of rebates allowed for a specific conservation program. The Rebate Definition zone displays the following details for each claim line:

- Rebate Definition
- Status (Active or Inactive)
- Rebate Amount per Unit
- Icons to Edit, Delete, and Activate/Deactivate rebate definitions

**Contents**



## Adding Rebate Definitions

Use the following procedure to add a rebate definition:

- Click **Add** in the title bar of the Rebate Definition zone.
- Enter a Description of the rebate definition.
- Select the **Product** for the rebate definition from the dropdown list.
- Select the **Service Type** for the rebate definition from the dropdown list.
- Enter the **Rebate Per Unit Amount** for the rebate definition.
- Enter the **Rebate Unit of Measure** for the rebate definition.
- Select the **Expense Adjustment Type** for the rebate definition from the dropdown list.
- Enter the **Presumed Energy Savings** for the rebate definition.
- Select the **Presumed Energy Savings** Unit of Measure for the rebate definition from the dropdown list.
- Enter the **Manufacturer** and **Model** for each item eligible to be submitted as a rebate claim line.
- To upload manufacturer/model information from a comma-separated-values file, click **CSV File to Upload.**
  - Click **Browse** on the File Upload dialog, and browse to the file to be uploaded.
  - Click **Upload.**
- Click **Save.** To return to the Rebate Definition zone without adding the rebate definition, click **Cancel.**

## Editing Rebate Definitions

Use the following procedure to edit a rebate definition:

- Click the edit icon for the rebate definition you wish to delete.
- Edit the details of the claim line as appropriate.
- Click **Save**. To return to the Rebate Definition zone without changing the rebate definition, click **Cancel.**

**NOTE:**
You can edit a rebate definition only when it is Active.

## Deleting Rebate Definitions

Use the following procedure to delete a rebate definition:

- Click the delete icon for the rebate definition you wish to delete.
- Click **OK** on the Confirm Delete dialog. To close the dialog without deleting the rebate definition, click **Cancel.**

## Activating Rebate Definitions

To activate an inactive rebate definition, click the **Activate** button for the rebate definition you wish to activate.

**NOTE:**
You can only activate rebate definition that is currently Inactive.

## Deactivating Rebate Definitions

To deactivate an active rebate definition, click the **Deactivate** button for the rebate definition you wish to deactivate.

**NOTE:**
You can only deactivate rebate definition that is currently Active.

# Rebate Claim Statistics Zone

You use the Rebate Claim Statistic zone to view statistics for submitted rebate claims based on the current conservation program. This zone displays the following:

- Conservation Program
- Statistics Date/Time
- Statistics Charts

## Statistics Graphs

This zone displays statistics for submitted rebate claims using the following charts:

- **Statistics by Status:** A pie chart that displays the number and percentage of claims for each status.
- **Statistics by Month:** A line chart that displays the number of claims completed each month.
- **Statistics by Product:** A pie chart that displays the total value, percentage, and number of claim lines completed for each product.

- **Statistics by Claim Age:** A line and bar chart that displays the number of new claims per month (line graph) and the number of claims per age grouping (bar graph).

To refresh statistics, click **Refresh Statistics** on the title bar of the Rebate Claim Statistics zone.

# Defining Batch Schedule Options

The topics in this section describe how to set up the system to periodically execute batch job streams.

**NOTE:**
**The batch scheduler is optional.** Setting up the batch scheduler is only necessary if your organization uses the product's batch scheduler. If your organization uses a third party tool to manage the periodic execution of batch jobs, this section is not applicable.

**Separate module.** Batch scheduler functionality is associated with separate Workflow Scheduling module. If this module is not applicable to your business you may turn it off. Refer to *Turn Off A Function Module* for more information.

**Contents**



## The Big Picture of Scheduling Batch Jobs

The following points provide an overview of how batch jobs are scheduled to run periodically.

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## Technical Implementation Of The Batch Scheduler

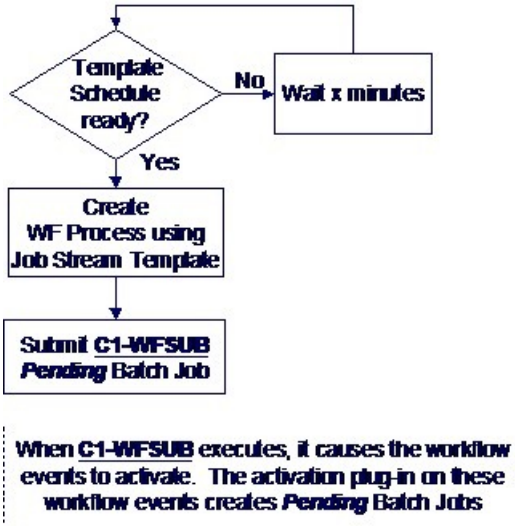
The topics in this section provide information about how your job streams are executed. This section is intended for your technical personnel who are responsible for configuring the program that periodically submits batch jobs.

**Contents**

*Polling Frequency*

## A PERL Program Determines If There's Work To Do

A PERL program runs in the background looking for job stream (workflow process) templates whose *schedule* is ready to be processed. The following flowchart provides a schematic of its logic:




The following points summarize important concepts illustrated in the flowchart:

- When the job stream template *schedule* indicates it's time to start a job stream, a workflow process is created by copying the event types from the job stream (workflow process) template.
- In addition, a Pending batch job that activates the workflow process's events is created (i.e., the C1-WFSUB batch job is submitted).
- When C1-WFSUB executes, it activates the workflow process's events. The activation plug-in of these workflow events creates the job stream's Pending batch jobs. In addition, the activation algorithm transitions the workflow events into the Waiting state (they are waiting for the batch job to complete).

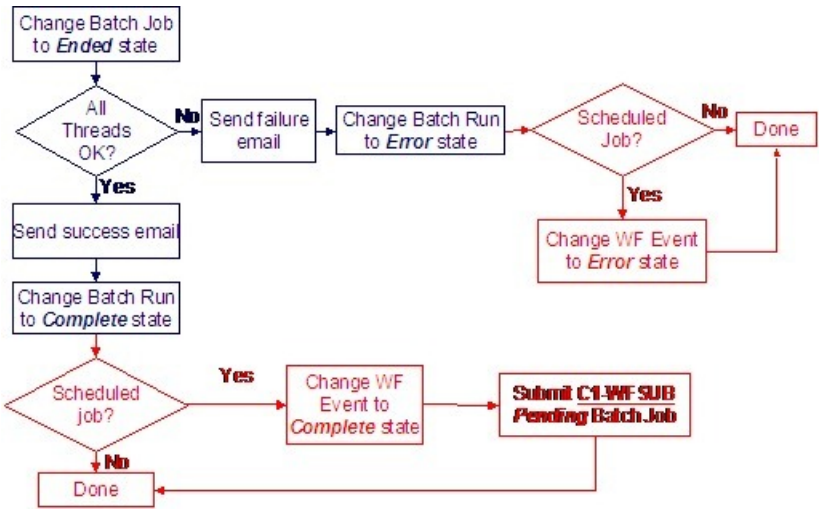
**NOTE:**
The identity of C1-WFSUB is not hard-coded. Rather, it's defined on the batch scheduler's *Feature Configuration*.

The same PERL program described above looks for Pending batch jobs and then executes them for the standard batch job submission functionality. Refer to *Technical Implementation of the Online Batch Submission* for more information.

**NOTE:**
**Number of Threads**. For batch jobs related to a job stream, the number of parallel threads to execute is defined on a parameter on the workflow event's activation algorithm.

## Completing A Batch Program That's Part Of A Job Stream

When a batch program completes, a common routine is called. Refer to *A Common Routine Is Invoked When Batch Programs Complete* for information about common batch submission logic related to the process. The following flowchart provides a schematic of this routine's logic where the additional logic applicable to the batch scheduler is highlighted in red.




The following points summarize important concepts regarding the batch scheduler logic illustrated in the flowchart:

- If at least one thread fails and this batch job is one related to a scheduled job stream, the status of the corresponding workflow event is changed to Error .
- If all threads are successful, and this batch job is one related to a scheduled job stream,
  - The status of the corresponding workflow event is changed to Complete .
  - In addition, a Pending batch job is submitted to activate workflow events that are dependent on the completion of a batch job. When this job executes, the "downstream" batch jobs will be submitted (and then the logic shown above starts again).

**NOTE:**
**Batch Run Number**. The routine also creates a characteristic for the workflow event to capture the batch run number associated with this batch run. The characteristic type to use is defined on the *feature configuration*.

## Polling Frequency

Usage of the batch scheduler requires that your system administrator create a job in the operating system to periodically execute the PERL program described above. It is important to schedule the execution of this PERL program very frequently (e.g., every five minutes) in order to avoid lengthy time gaps between the completion of a batch job and the triggering of the dependent jobs.

Refer to *online batch submission polling frequency* for more information about configuring this setting.

# Job Stream, a Definition

The term "job stream" refers to a suite of batch jobs that run periodically. Most organizations have multiple job streams. For example,

- You'll have a job stream that contains batch jobs that run nightly
- You'll have a different job stream that contains the hourly batch jobs
- You'll have a different job stream that contains the batch jobs that extract data for your data warehouse
- Etc.

**FASTPATH:**
Refer to *Batch Process Dependencies* for a description of sample job streams.

## A Workflow Process Is Created Each Time A Job Stream Executes

The system creates a *workflow process* each time a job stream executes. The workflow process has a separate workflow event for each batch job in the job stream. The batch jobs are submitted when the workflow process's events are activated (i.e., each workflow process event submits a specific batch job).

## A Workflow Process Template Defines The Batch Jobs In A Job Stream

The system creates a job stream's workflow process using a *workflow process template*. This means that a separate workflow process template exists for each job stream. For example, there is a workflow process template for the nightly job stream and another for the weekly job stream, etc.

There are typically dependencies between a job stream's batch jobs. For example, the billing batch job might be dependent on the successful execution of the payment upload batch job. Dependencies between batch jobs are defined by setting up workflow event dependencies on the workflow process. For example, if the billing batch job should only run after the payment upload batch job completes, you'd set up the workflow event that submits the billing job to be dependent on the completion of the event that submits the payment upload job. Note, you can define multiple dependencies between batch jobs (i.e., you can indicate that both the meter read upload and payment upload must complete before billing starts).

Once you define your job streams using workflow process templates, you indicate your job streams in the batch scheduler *feature configuration*. The *job stream summary* page and the *job stream creation schedule* use this information to display the appropriate job stream templates.

## How To Start A Job Stream

You can manually start a job stream using the *Job Stream Summary* page.

Optionally, you can *set up a schedule* defining when the system should start a job stream (i.e., create a workflow process). For example, you can set up a schedule for the "nightly" workflow process template to indicate that a workflow process should be created every night at 5:30 pm, Monday through Friday.

- You can monitor the status of your job streams on the *Job Stream Summary* page.
- You can monitor the status of a specific execution of a job stream on the *Job Stream Details* page. This page shows the status of the events on a workflow process and a summary of the execution status of each event's batch job.

**FASTPATH:**
Refer to *Technical Implementation Of The Batch Scheduler* for more information.

## Activating A Workflow Event Causes A Batch Run To Be Submitted

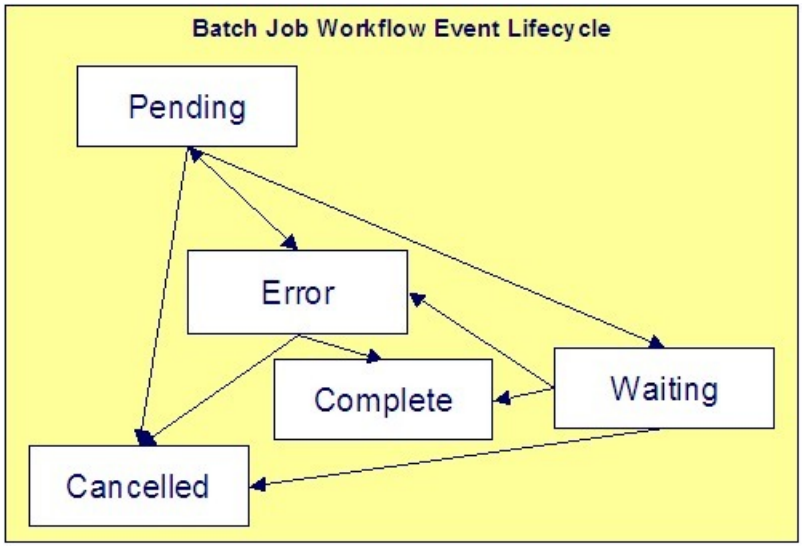
When a workflow event is activated, its activation algorithm creates a Pending batch run request. To be specific - the workflow event's Activation algorithm defines the batch process and the *number of parallel threads* that should be executed

when the batch job is submitted. Please see the activation algorithm's parameters for a description of exactly how the Pending batch run request is created.

**NOTE:**
**What activates workflow events?** A batch process exists that is responsible for activating the workflow events associated with your job streams' workflow processes. This batch process is known as *C1-WFSUB*. In addition, when this process is submitted, it only activates the workflow events associated with a specific workflow process template (the workflow process template is identified by a parameter supplied to C1-WFSUB ). You may wonder why the standard WFET batch process (i.e., the standard workflow event activator) doesn't process the batch scheduler workflow events. The reason is that C1-WFSUB is executed many times during the processing of your job streams and we didn't want to clutter up the run statistics for WFET with the myriad executions of C1-WFSUB .

## Workflow Event Status Reflects The Status Of The Batch Run

The system creates a *workflow process* each time a job stream executes. The workflow process has a separate workflow event for each batch job in the job stream. The batch jobs are submitted when the workflow process's events are activated (i.e., each workflow process event submits a specific batch job). The following diagram shows the potential state of these workflow events:




***Workflow Event Lifecycle***

The following points explain the relationship between a workflow event's status and the state of the corresponding batch job that it submits:

- Workflow events are initially created in the Pending state. The event's batch job has not been submitted when it's in this state.
- When the workflow event is activated, its activation algorithm attempts to submit a request to execute a batch job:
  - If there is something wrong with the activation algorithm's parameters, the event will enter the Error state. If this happens, you can:
- Resubmit the batch job by changing the event's state back to Pending .
- Cancel the batch job by changing the event's status to Canceled .
- Skip this batch job by changing the event's status to Complete . Do this if the subsequent dependent batch jobs should proceed despite these errors.

- If the batch run is submitted successfully, the workflow event enters the Waiting state (it is waiting for the batch job to complete).
- When the batch job completes, the workflow event transitions into either the Complete or Error state:
  - If the batch run aborts due to too many errors, it transitions into the Error state. If this happens, you can:
- Restart a batch job that aborted by changing the event's status back to Pending .
- Cancel the batch job by changing the event's status to Canceled .
- Skip this batch job by changing the event's status to Complete . Do this if the subsequent dependent batch jobs should proceed despite these errors.
  - If the batch run doesn't abort, due to too many errors, it transitions to the Complete state.
  - You can Cancel a Pending event if you don't want the batch job to be submitted.
  - A Pending event will be Canceled automatically by the system if the workflow process is canceled by a user.
  - A Waiting event will be Canceled automatically by the system if the workflow process is canceled by a user.

**NOTE:**
You can monitor the status of a workflow process's events and their related batch jobs on the *Job Stream Details* page.

# Setting Up The Batch Scheduler

The following topics summarize how to set up the system to enable the scheduling of job streams.

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# Create A Workflow Event Type - Activation Algorithm For Every Batch Job

As described under *The Big Picture of Scheduling Batch Jobs*, the system creates a workflow process when a job stream is initiated. The workflow process's events cause Pending batch jobs to be created when the workflow events are activated. .

A base-package Workflow Event Type - Activation algorithm exists that creates a Pending batch job (the indtity of the batch job is defined as a parameter on the algorithm). This means that you need to set up a Workflow Event Type - Activation Algorithm for every batch job.

Besides defining the batch job's *batch control* code, the base-package algorithm, *C1-WFAC-CRBJ* also allows you to define the following values on each algorithm:

- **The number of parallel threads that should be submitted.** If this parameter is left blank, the batch job is submitted using a single thread. If a value greater than one is defined, the system automatically initiates this number of parallel threads. For example, if you want to kick the BILLING batch process using 20 parallel threads, specify a value of 20 in the respective algorithm's parameters. Refer to *Optimal Thread Count for Parallel Background Processes* for more information of executing a batch process in parallel threads.
- **The override email address used to inform that a batch job has finished.** If this parameter is specified, email is sent to this address when a batch job completes informing the recipient of its successful completion (or failure). Note, this address overrides the email address defined on the *Feature Configuration* for the batch scheduler (meaning that you need only populate this parameter if you want the email to be sent to someone other than the global email recipient defined on the Feature Configuration).
- **The value of all batch job-specific parameters.** Some batch jobs have job-specific parameters. For example, the Account Debt Monitor (ADM) batch process has a parameter that controls if calendar or workdays should be used when calculating dates. Values for the job-specific parameters may be defined on the batch code. In addition, override values may be defined on the algorithm's parameters. For example, you can define if calendar days or workdays are used when you set up the algorithm that submits the Account Debt Monitor batch process.

## Create A Workflow Event Type For Every Batch Job

As described under *The Big Picture of Scheduling Batch Jobs*, the system creates a workflow process when a job stream is initiated. The workflow process's events reference workflow event types. A separate workflow event type must be set up for every batch job (and you must reference the appropriate activation algorithm on each workflow event type).

## Create A Workflow Process Template For Every Job Stream

As described under *The Big Picture of Scheduling Batch Jobs*, the system creates a workflow process when a job stream is initiated. The system uses a workflow process template to create a workflow process. This means you must create a workflow process template for every batch job.

## Set Up A Work Calendar

As described under *How To Start A Job Stream*, you must set up a Job Stream Creation Schedule to define when each job stream should be started. You do this using the *Job Stream Creation Schedule* transaction. This transaction allows you to create the submission dates and times using a "recurrence schedule" (i.e., you don't have to type in 52 entries for a weekly job stream, you can rather have the system create the 52 entries for you). This feature uses a given *work calendar* to know what days are workdays and holidays. You must set up a work calendar (or reuse an existing work calendar) if you intend to use this feature.

## Set Up A Job Stream Creation Schedule For Each Job Stream

As described under *How To Start A Job Stream*, you must set up a *Job Stream Creation Schedule* to define when each job stream should be initiated. For example, you can set up a schedule to have your "nightly" job stream run at 5pm, Monday through Friday.

## Set Up Characteristic Types

When the system activates a workflow event that submits a Pending batch job, it updates the workflow event with information about the batch job. It does this by populating characteristics on the workflow event. In order for the system to do this, you must set up the following characteristic types:

- Batch Job ID. This must be FK characteristic to the Batch Job object.
- Batch Control Code. This must be a FK characteristic to the Batch Control object.
- Batch Run Number. This must be an ad hoc characteristic.

In addition to the above workflow event characteristics, you must also set up a workflow process characteristic:

- Business Date. This must be an ad hoc characteristic. It holds the business date that's passed to the job stream's batch jobs (all batch jobs in a job stream use the same business date).

## Set Up A User ID For Batch Jobs

When batch jobs execute, they must reference a given user's information for the following:

- Batch jobs can cause "auditable" events to occur. These events have a user ID associated with them.
- Some batch jobs access language-specific data, the language used is defined on a given user.
- When batch jobs complete, an email message is sent to a user's email address.

When a batch job is submitted, it references a specific user ID; this user ID is used for the above points. We recommend setting up a "dummy" user for this purpose (e.g., user ID = BATCH ).

## Set Up A Feature Configuration

After completing the above set up tasks, you must set up a *Feature Configuration* to provide the batch scheduler with the information it needs to operate.

The following points describe the various **Option Types** that must be defined for the feature configuration:

- Active Job Stream (WF Template Code). Set up a separate option for every job stream. The option's value is the Workflow Process Template associated with the job stream. Note, only these job streams appear on the *Job Stream Summary* page and are available in the *Job Stream Creation Schedule* page.
- Batch Code FK Char Type. Set up a single option to define the foreign key characteristic type used to reference the batch code on the workflow events. Refer to *Set Up Characteristic Types* for more information.
- Batch Code of WF Event Activation Process. Set up a single option to define the batch code of the batch job that is responsible for *activating the workflow events* that cause Pending batch jobs to be created.
- Batch Job ID FK Char Type. Set up a single option to define the foreign key characteristic type used to reference the batch job on the workflow events. Refer to *Set Up Characteristic Types* for more information.
- Batch Run Number Ad hoc Char Type. Set up a single option to define the ad hoc characteristic type used to reference the batch run's run number on the workflow events. Refer to *Set Up Characteristic Types* for more information.
- Business Date Ad hoc Char Type. Set up a single option to define the ad hoc characteristic type used to reference the batch run's business date on the workflow process (a single business date is used for all batch jobs initiated by a job stream). Refer to *Set Up Characteristic Types* for more information.

- Email Address on Batch Jobs. Set up a single option to define the email address used to notify a user when a batch job completes (note, the Email's subject line indicates if the batch job failed or succeeded). Note, you can override the email address on a specific batch job using a parameter on the Workflow Event Activation algorithm used to create the Pending batch job. If you leave this field blank (and no override is defined for the batch job), no email will be sent.
- SMTP Server Name and SMTP Port Number . If you want email sent informing of the completion of a batch job, define the SMTP server and port number.
- User ID on Batch Jobs. Set up a single option to define the user ID controlling user-oriented functionality. Refer to *Set Up A User ID For Batch Jobs* for more information.
- Work Calendar. Set up a single option to define the work calendar used when Workflow Process Recurrence Schedules are created. Refer to *Set Up A Work Calendar* for more information.

# Maintaining Job Stream Creation Schedules

As described under *How To Start A Job Stream*, you can set up a job stream creation schedule to define when a job stream (workflow process) should be automatically created by the system. Open **Admin** > **Job Stream Creation Schedule** to set up a job stream creation schedule.

**Description of Page**

On this page, you define when the system should automatically create a workflow process for a job stream template. To do this:

- Enter the **Job Stream Template**.

> **NOTE:**
> Only job streams defined on the *Feature Configuration* for the Batch Scheduler appear on this page.

- Enter the **Dates and Times** on which the system should automatically create the workflow process.

When a schedule record is added, the system sets its status to Pending .

Click the **Hold** button to change a Pending schedule to Hold if you don't want the system to create a workflow process on the date and time. You'd hold a record rather than delete it if you intend to release the hold in the near future.

Click the **Release** button to change a Held schedule to Pending if you want to release the hold.

When the system creates a workflow process for a job stream schedule record, the schedule record's status is changed to Process Created . There is one exception to this statement - if multiple Pending schedule records exist for a given workflow process template, the system will create a single workflow process for the one with the latest date / time and mark all others as Skipped Due To Overlap .

Schedule records in the Process Created and Skipped Due To Overlap states are protected.

Rather than entering the individual Dates and Times, you can press the **Recurrence** button to have the system generate these for you. Pushing this button causes the **Recurrence Window - Daily Pattern** to open.

The **Range From** and **To** define the dates during which recurring entries will be created.

The **Pattern** defines the frequency of recurrence:

- The Daily pattern will create a schedule for every date in the range defined above (subject to exceptions defined below). You can define the following for this pattern:
  - Use **Repeat Every** to define if the schedule should be created every day (a value of 1 ), every other day (a value of 2 ), every third day (a value of 3 ), etc.
  - Enter the **Start Time** defined on the schedule records.
  - Turn on **Include Weekends** if schedule records should also be created on weekends.

- The Hourly pattern will create a schedule for every hour in the date range defined above (subject to exceptions defined below). You can define the following for this pattern:
  - Use **Repeat Every** to define if schedule records should be created every hour (a value of 1 ), every other hour (a value of 2 ), every third hour (a value of 3 ), etc.
  - Enter the **Between** start time and end time to restrict the hours during which schedule records are created.
  - Turn on **Include Weekends** if schedule records should also be created on weekends.
- The Weekly pattern will create a schedule for every week in the date range defined above (subject to exceptions defined below). You can define the following for this pattern:
  - Enter the **Start Time** defined on the schedule records.
  - Select the day(s) of the week that the schedule records should be created.

## If You Work In A Non-English Language

The demonstration database is installed in English only. If you work in a non-English language, you must execute the *F1–LANG* background process on the demonstration database before using it as a Compare Source supporting environment. If you work in a supported language, you should apply the language package to the demonstration database as well.

If you don't execute F1–LANG on the demonstration database, any objects copied from the demonstration database will not have language rows for the language in which you work and therefore you won't be able to see the information in the target environment.

# Configuring Zones

Many zones in Oracle Utilities Customer Care and Billing do not require configuration by your implementation team. For example, the base package is shipped with the Account Financial History zone that appears on the Control Central - Account Information portal. This zone does not require configuration because its zone type has no configurable options (i.e., its behavior is static).

Other zones require configuration before they can be used because their behavior is dynamic. The topics in this section provide tips and techniques on how to configure zones in Oracle Utilities Customer Care and Billing.

**FASTPATH:**
Refer to *The Big Picture of Portals and Zones* in the *Oracle Utilities Application Framework Administration Guide* for a description of portal and zone functionality.

## Configuring Timeline Zones

A timeline zone contains one or more "lines" where each line shows when significant events have occurred. For example, you can set up a timeline zone that has two lines: one that shows when payments have been received from a customer, and another that shows when bills have been sent to the customer.

**FASTPATH:**
For a complete description of the numerous features available on a timeline zone, refer to *Timeline Zone - Account Info*.

The following points describe how to set up a timeline zone:

- Set up an *algorithm* for each line in the zone. These algorithms will reference an algorithm type that is plugged into the Zone - Timeline Line plug-in spot. Click *here* to see the algorithm types available for this plug-in spot. Please note the following about the parameter values defined on these algorithms:
  - You can set up a timeline algorithm to show an object's "info string" when a user clicks on an event on a timeline. The object's info string appears in the zone's info area. When a user clicks on an "info string", they are transferred to a page (typically the one used to maintain the object). For example, if a user clicks on a "bill info" line, they will be transferred to the bill maintenance page.

You control the format of the info string and the destination transaction by defining the appropriate *foreign key reference* in each timeline algorithm's parameters. For example, if you were setting up the algorithm for a bill line, you'd reference the foreign key reference used to show bill foreign keys throughout the system.

- You can set up a timeline algorithm to show *BPA scripts* when a user clicks on an event on a timeline. For example, if you click on a bill event, BPA script descriptions can appear in the info area. When a user clicks on one of these descriptions, the script will execute and guide them through a respective business process (e.g., initiate a bill dispute, request a bill reprint, etc.). You define the scripts in each timeline algorithm's parameters.

When a script is initiated from a timeline, the system puts the prime key of the event into a field in the page data model. The name of the field is the column name(s) of the event's prime key. For example, when a script associated with a bill event is kicked off, the system populates a field called BILL_ID with the prime-key of the selected bill.

The script can use these page data model field to navigate to the pertinent pages. For example, if you were setting up a script to reprint a bill, the first line of the script would reference a navigation option to transfer the user to the Bill - Routing page where they can initiate the reprint. This navigation option will contain context fields that matched the names of the fields in the page data model (this is how field values are passed to pages).

- You can control every color and icon shown on a timeline by specifying the appropriate color codes on the zone's parameters.
- Set up a *zone* that references these algorithms. The zone will reference the F1-TIMELINE zone type.
- Link the zone to the appropriate portal(s) (e.g., *Control Central - Account Information* or *Control Central - Customer Information*).
- Update your users' *portal preferences* and *security rights* so they can see the zone in the desired location on the portal(s).

You can set up many timeline zones. For example,

- You might want different zones to appear on a portal depending on the type of user. For example, you might want one timeline for billing clerks, and a different one for customer service representatives.
- For aesthetic reasons, you might want multiple simple timeline zones to appear on a given portal rather than one complex timeline zone.
- You might want to set up context specific timeline zones. For example, you might want to have one timeline zone that is premise-oriented and another that is person-oriented.

# Configuration Migration Assistant (CMA) Addendum

This section is an addendum to the general *Configuration Migration Assistant* section in the *Oracle Utilities Application Framework Administration Guide*. This section assumes that you are familiar with the concepts of Configuration Migration Assistant (CMA).

> **NOTE:** CMA is designed to migrate configuration data only. Since base product data should be updated only through product patching mechanisms, CMA cannot currently be used to migrate master/transactional data that contains system-generated primary keys, such as customer account or billing information.

This addendum describes Configuration Migration Assistant (CMA) functionality that is specific to Oracle Utilities Customer Care and Billing.

The following sections provide information about what is provided in the C1-owned base package:

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# Base Package Migration Plans

The C1-owned base package provides a large number of migration plans to support migrating configuration and/or administration data from one environment to another.

Use the following procedure to access the base package migration plans:

1. Navigate to **Admin** > **Migration Plan** > **Search**.
2. Enter “C1” in the **Migration Plan** field.
3. **Click Refresh**.
4. Select a migration plan in the search results list. The details of the selected migration plan are displayed in the Migration Plan portal.

**NOTE:** The C1-owned base package plans can also be used as a basis for custom migration plans. To create a custom migration plan, select a plan to base the custom migration plan on, click the Duplicate button, and define the custom plan to meet the implementation’s requirements as described in *Defining a Migration Plan* in the *Oracle Utilities Application Framework Administration Guide*.

# Base Package Migration Request

The C1-owned base package provides two migration request to support migrating configuration and/or administration data from one environment to another.

Use the following procedure to access the base package migration requests:

1. Navigate to **Admin** > **Migration Request** > **Search**
2. Enter "C1" in the **Migration Request** field.
3. Click **Refresh.**
4. Click the **Copy and Sync Control Data** link in the search results list.

The details of the migration requests are outlined below. Please use the Migration Request portal to view additional details about this migration request.

**Base Admin Data Migration Request**

- **Migration Request:** C1-AdminBasic
- **Description:** Base Admin Data
- **Detailed Description:** Base Admin Data.
- **Migration Plans:** This migration request includes base package migration plans used by Oracle Utilities Customer Care and Billing.

**Copy and Sync Control Data Migration Request**

- **Migration Request:** C1-CopyControlTables
- **Description:** Copy and Sync Control Data
- **Detailed Description:** Copy and Sync Control Data.
- **Migration Plans:** This migration request includes base package migration plans used by Oracle Utilities Customer Care and Billing.

For additional information about these migration plans, see *Base Package Migration Plans*.

**NOTE:** The C1-owned base package request can also be used as a basis for custom migration requests. To create a custom migration request, select the base package request, click the Duplicate button, and define the request as to meet the implementation's requirements as described in *Defining a Migration Request* in the *Oracle Utilities Application Framework Administration Guide*.

# Wholesale and Piecemeal Migrations

There are two general types of migrations used with the Configuration Migration Assistant: wholesale migrations and piecemeal migrations.

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## Wholesale Migrations

Wholesale migrations are used when migrating all the configuration and/or administration data from one environment to another. For example, a wholesale migration might be used when migrating admin data from a development or test environment to a production environment. For more on this type of migration, see *Wholesale Migrations* in the *Oracle Utilities Application Framework Administration Guide*.

The following is a high-level overview of the steps involved when executing a wholesale migration.

1. Process the "F1-SchemaAdmin" (FW Foundation) migration request (This request contains migration plans for Field, Lookup, Char Type, Currency Code and FK Ref).
2. Process the "C1-AdminBasic" migration request. This includes copies of framework migration plans (including plans for Business Objects, Algorithms, and Feature Configurations) from the "F1-FrameworkAdmin" migration request, as well as independent base package C1-owned wholesale migration plans which can be run first.
3. Process any of the other delivered framework-based (F1-owned) migration requests as needed (except for the "F1-FrameworkAdmin" migration request which is already incorporated in #2)
4. Process the "C1-CopyControlTables" migration request. This includes base package C1-owned wholesale migration plans with dependency on "C1-AdminBasic" migration request.

## Piecemeal Migrations

Piecemeal (or "non-wholesale") migrations are used when migrating a small portion (or piece) of configuration and/or administration data from one environment to another. For example, a piecemeal migration might be used when migrating groups and rules from a development or test environment to a production environment. For more on this type of migration, see *Piecemeal Migrations* in the *Oracle Utilities Application Framework Administration Guide* .

The C1-owned base package does not contain piecemeal migration plans for Oracle Utilities Customer Care and Billing.

## Processing Notes for Specific Objects

The following limitations apply to certain Oracle Utilities Customer Care and Billing objects when using Configuration Migration Assistant:

- An Issuing Center object references a User. If this user does not exist in the target system, Configuration Migration Assistant cannot apply the requested changes.
- A Case Type object references an Application Service. If this service does not exist in the target system, Configuration Migration Assistant cannot apply the requested changes.
- Collection Agency and Service Provider objects reference a Person. If this person does not exist in the target system, Configuration Migration Assistant cannot apply the requested changes.
- Service Provider and Tender Source objects reference a Service Agreement. If this service agreement does not exist in the target system, Configuration Migration Assistant cannot apply the requested changes.
- If your migrateable object includes log tables, you may add your log entity to the characteristic type F1-MGO. You should also mark the log table as a “Non-Migrateable Table” in the Maintenance Object options.
- Transactions are applied in an unspecified order (and probably in order numerically by a randomly generated ID value). CMA only looks at "hard" constraints when determining what to put into the same transaction. Any "soft" constraints such as characteristics and algorithm parameters that might have FK references to other objects are not processed by CMA. Unless the migration plan ensures that related items go into the same transaction, they will end up in different ones, and must need to apply again and again until eventually all gets applied.

# CTI-IVR Integration

Oracle Utilities Customer Care and Billing provides tools to facilitate the integration with your Computer Telephony Integration/Interactive Voice Response (CTI/IVR) system. The interface provides the following functionality:

- The ability to launch Control Central for a particular account ID or phone number from an external application
- The ability to accept the next call, as dictated by the CTI software,
- The ability to perform an outbound phone call from within Oracle Utilities Customer Care and Billing

This document provides technical information needed by your implementers to fully integrate with your CTI/IVR system.

**Contents**



## Launching The System From an External Application

The following section describe possible options to launch the system from an external system.

**Contents**

## Launching The Application Using a URL

You launch the application using a URL. With this option you can set the system to launch a script upon startup. You can also indicate to the system to automatically load an appropriate page (if this information is not part of the script).

The application includes a simple sample html page that can launch CCB Control Central Search by Phone Number or by Central Search Account Id. The page is called CTISample.HTM and is located in /cm_templates.

**FASTPATH:**
Refer to *Launching A Script When Starting The System* for further information.

## Receiving the Next Caller in the Queue

If your CTI-IVR system allows users to request the next caller waiting in a queue, the system provides a mechanism to integrate with this functionality.

A BPA script called **Get Next Caller (C1-CCByAcct)** is available that can be used to request the next call waiting in an inbound queue managed by a CTI application.

When the **Get Next Caller** BPA is executed, it launches a browser script function called **launchCTI** located in a file called **ext_cti.jsp**. The **launchCTI** function calls a function called **ctiGetNextCaller** to retrieve the next caller's account ID and uses *Launching A Script When Starting The System* to load Control Central for an account.

## Customize Integration to Your Next Caller Function

The ext_cti.jsp file shipped with the base product provides sample functionality that should be replaced with the appropriate integration to your CTI application. In the sample provided, the **ctiGetNextCaller** randomly takes an account ID from a predefined list of accounts.

In order to integrate the next caller functionality with your CTI-IVR system, perform the following steps:

- Copy the JSP page ext_cti.jsp from the /cm_templates directory found under the web application root directory on your Oracle Utilities Customer Care and Billing server to the /cm directory.
- In the /cm directory, replace the contents of the **ctiGetNextCaller** function to retrieve the next caller ID from your CTI application.

## Initiating an External Call

This section describes the automated dialer functionality provided with the system as well as information about integrating with your own automated dialer.

**Contents**

## Overview of Automated Dialer

In order to initiate a call to a customer from within the system, a context menu item **Go To Automated Dialer** is available on the Person context menu. To call a customer displayed in the current context, choose this option from the person context menu and a window appears, showing a list of phone numbers defined for that person.

Select the desired phone number and click **Dial**.

---

**NOTE:**
**Context Entry Secured**. The *navigation key* for this window automatedDialer refers to an application service to facilitate application security. If your installation does not support an integration with external dialer software, configure the security settings to ensure that users do not have access to the application service for this context entry.

---

## Technical Implementation of Automated Dialer

The popup window is implemented as a JSP page, which calls the JSP page ext_cti_dialer.jsp to integrate with an automated dialer. The ext_cti_dialer.jsp page provided with the system integrates to any soft phone protocol handler that launches a dialer based on overriding the “tel:” protocol from a browser, for example, Cisco IP Communicator.

**Phone Dialer Configuration**

If your implementation chooses to use the functionality provided with the system and integrate with a soft-phone dialer, you must copy the JSP page ext_cti_dialer.jsp from the /cm_templates directory found under the web application root directory on your Oracle Utilities Customer Care and Billing server to the /cm directory:

## Customize Integration to Your Automated Dialer Software

In order to integrate with a different automated dialer software application, your implementers must modify the ext_cti_dialer.jsp to call the appropriate dialer.

- Copy the JSP page ext_cti_dialer.jsp from the /cm_templates directory found under the web application root directory on your Oracle Utilities Customer Care and Billing server to the /cm directory.
- Make the appropriate changes to the copy of ext_cti_dialer.jsp in the /cm directory to integrate with your automated dialer (e.g. change the protocol from “tel:” to “callto:”.

## Customize Automated Dialer User Interface

Your implementation may choose to display a different user interface for the **Go To Automated Dialer** function than the one provided with the system. For example, perhaps there is more information that you would like to display in addition to the person's name and phone numbers. In order to do this, perform the following steps:

- Create your customized component to provide the desired functionality.
- Create a navigation key for your new component and indicate the URL being overridden. The remainder of the section walks you through these steps.

Go to **Utilities, System, Navigation Key +**.

For **Navigation Key,** specify a name for the new navigation key prefixed with CM.

For **URL Location**, select **External (Override)** to override a base navigation key.

When you select **External (Override) ,** the **Overridden Navigation Key** becomes available. Select the **automatedDialer** navigation key because that is the key you are overriding.

The **URL Override** is the path on the web server to your custom component.

When overriding a navigation key, you must flush the system login cache on the web server. The navigation keys are stored in the system login cache, so the overrides do not become effective until the cache is flushed. To flush the cache, issue the following command in your browser's address bar: http://server:port/flushSystemLoginInfo.jsp , where server is the name or address of your web server and port is the port number of the application, for example, http://CD-Implementation:7500/flushSystemLoginInfo.jsp.

**FASTPATH:**
Refer to the *Defining Navigation Keys* for more information.

# The Conversion Tool

This document describes the Oracle Utilities Customer Care and Billing conversion tool.

**Contents**

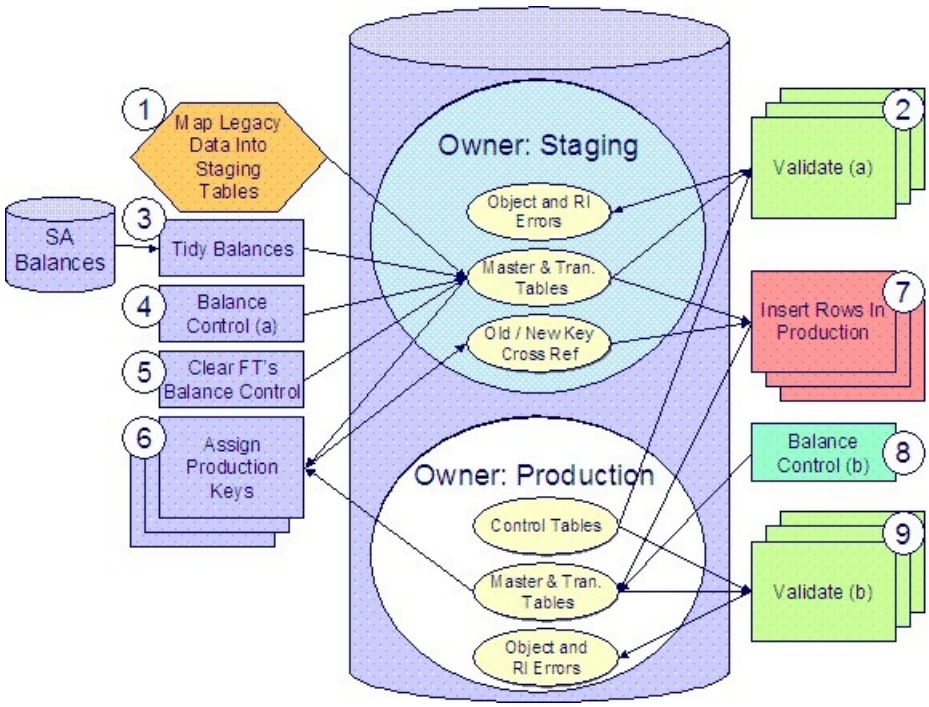


## Introduction

When you're ready to convert data from your legacy system into Oracle Utilities Customer Care and Billing, you will have analyzed your CIS processing requirements according to your business and organizational needs and set up the control tables accordingly.

**FASTPATH:**
Refer to the **Administration Guide** for a complete discussion of the various control tables and the order in which they must be set up.

After the control tables are set up, you are ready to load data into the system from your legacy system. This conversion effort involves several steps as illustrated in the following diagram:




The following points briefly outline each of the above tasks:

- **Map Legacy Data Into Staging.** During this step, your legacy master data (e.g., account, person, premise, meter) and transaction data (e.g., bills, payments, meter reads) is migrated into the system. Notice that you are not migrating this data directly into production. Rather, your rows are loaded into tables that are identical to the production tables; they just have a different owner. Refer to *Appendix B - Multiple Owners In A Single Database* for information about table ownership.

**WARNING:**
The above diagram illustrates how the system is configured to support the conversion effort in the standard installation, i.e., the staging tables are in the same database as the production tables (each with a different owner). However, it is possible for the staging tables to be in a separate database. This option requires additional effort on your part (because you would have to copy the control tables from production into your staging database). Please refer to *Appendix B - Multiple Owners In A Single Database* for information about this alternative.

Mapping legacy data into the system is probably the most challenging part of the conversion process because the system is a normalized database (and most legacy applications are not).

- **Validate (a).** During the validation (a) step, the system validates the data you loaded into the staging tables. Two types of validation programs exist:
  - **Object Validation Programs.** Each of the system's master data objects (e.g., person, account, premise, meter, etc.) is validated using the same logic that is used to validate data added by users in your production system.
  - **Referential Integrity Validation Programs.** After you have successfully validated the master data objects, the referential integrity validation programs are executed to validate transaction data and to highlight "orphaned" rows. These programs check the validity of the foreign keys on all rows on all tables.

**NOTE:**
**Control tables from production.** It's important to notice that the validation programs validate your staging data using the control tables that have been set up in production. Refer to *Appendix B - Multiple Owners In A Single Database* for a description of how this works.

- **Tidy Balances.** During this step, the system creates adjustments that cause each SA's current and payoff balances to equal the desired balances. The desired balances are supplied on a flat file prepared by you.
- **Balance Control (a).** During this step, you run the balance control program and then verify that the balances that it generates are consistent with the balances in your legacy system.
- **Clear FT's Balance Control.** In the previous step, the system creates a balance control and links it to the FT's. If the balance control's balances are consistent with the amount of receivables being transferred into the system, you should run the Clear FT's Balance Control program. This program simply resets the Balance Control column on the FT so that the FT's can be included in a balance control (see the last step below) after they have been transferred to production.
- **Assign Production Keys.** During this step, the system allocates random, clustered keys to the rows in the staging database.
- **Insert Rows Into Production.** During this step, the system populates your production tables with rows from the staging. When the rows are inserted, their prime keys are reassigned using the data populated in the previous step.
- **Balance Control (b).** During this step, you run the balance control program against production. You do this to verify the balances in production are consistent with the values of receivables converted from your legacy application.
- **Validate (b).** During this step, you rerun the object validation programs, but this time against production. We recommend rerunning these programs to confirm that the insertion programs have executed successfully. We recommend running these programs in random sample mode (e.g., validate every 1000th object) rather than conducting a full validation in order to save time. However, if you have time, you should run these programs in full validation mode (to validate every object).

# Conversion Tool Steps

The following sections provide more details about the steps in the conversion process.

**Contents**



# Map Legacy Data Into Staging Tables

This section provides some high level discussion about mapping legacy data to the system's staging tables. Refer to *The Staging Tables* for details about the staging tables in the system.

**NOTE:**
**Recommendation.** You can use any method you prefer to load Oracle Utilities Customer Care and Billing data from your legacy application. However, we recommend that you investigate your database's mass load utility (as opposed to using insert statements) as the mechanism to load the staging tables. In addition, we strongly recommend that you

disable the indexes on these tables before populating these tables and then enable the indexes after populating these tables.

---

**Populating Characteristic Tables.** There are many maintenance objects that include a characteristic table used to capture miscellaneous information about the object, e.g. Person, Account, Service Agreement, etc. Most of these tables include an indexed column used when searching by characteristic value called Search Characteristic Value. During conversion and depending on the type of characteristic, this column must be populated as follows:

- Predefined: Populate search characteristic value with the contents of the characteristic value column converted to upper case.
- Ad hoc: Populate search characteristic value with the first 50 bytes of the ad hoc characteristic value column converted to upper case.
- Foreign key: Populate search characteristic value by concatenating the values of each foreign key characteristic value column to a maximum of 50 bytes.

## A Note About Keys

The prime keys of the tables in the staging database are either system-assigned random numbers or they aren't. Those tables that don't have system-assigned random numbers have keys that are a concatenation of the parent's prime-key plus one or more additional fields.

Every table whose prime key is a system-assigned random number has a related table that manages its keys; we refer to these secondary tables as "key tables". The following points provide more information about the key tables:

- Key tables are used by programs that allocate new keys. For example, before a new account ID is allocated, the key assignment program checks the account key table to see if it exists.
- Key tables only have two columns:
  - The key of the object.
  - An environment ID. The environment ID identifies the database in which the object resides.
- Key tables are named the same as their primary table with a suffix of "_K". For example:
  - The key table for CI_ACCT is CI_ACCT_K
  - The key table for CI_PREM is CI_PREM_K
- The name of every table's key table is defined under the Generated Keys column in the Table Names sections in *The Staging Tables*.
- When you populate rows in tables with system-assigned keys, you must also populate a row in the related key table. For example, if you insert a row into CI_ACCT, you must also insert a row into CI_ACCT_K. The environment ID of these rows must be the same as the environment ID on this database's *installation record*.
  - When you populate rows in tables that reference this record as a foreign key, you must use the appropriate key to ensure the proper data relationships. For example, if you insert a row in CI_SA for the above account, the ACCT_ID column must contain the temporary account key.
- When you insert rows into your staging database, the keys do not have to be random, system-assigned numbers. They just have to be unique. A later process, *Allocate Production Keys*, will allocate random, system-assigned keys prior to production being populated.

## Validate Information In The Staging Tables

During the first validation step, the system validates the data you loaded into the staging tables. Two types of validation programs exist:

- **Object Validation Programs.** The object validation programs validate each of the system's master data objects (e.g., person, account, premise, meter, etc.) and a limited number of transaction data objects (e.g., field activity, field order, etc.). Please note that these programs call the same programs that are used to validate data added by users in your production system.
- **Referential Integrity Validation Programs.** After the master data objects have been validated, the referential integrity validation programs are executed to validate transaction data and to highlight "orphaned" rows. These programs simply check the validity of the foreign keys on all rows on all tables.

The contents of this section describe how to execute the validation programs.

**Contents**



## Object Validation Programs

Each of the objects described under *Master Data* must be validated using the respective object validation program indicated in its Table Names section.

In a limited number of cases object validation is available for *Transaction Data* objects, where customers may convert transaction data that is still pending. For example, if you are converting pending field activities, you want to ensure that the data is valid. For these cases you may also be converting historic records. For example, in addition to the pending field activities you are converting completed field activities to keep a historic view. You may not want to perform validation on completed records. As a result the background processes provided for transaction data allow you to limit the validation to records in a give status.

We strongly recommend validating each object in the following steps:

- Execute each object's validation program in random-sample mode to highlight pervasive errors. When you execute a validation in random-sample mode, you are actually telling it to validate every X records (where X is a parameter that you supply to the job). Refer to *Submitting Object Validation Programs* for more information about the parameters supplied to these background processes.
- You can view errors highlighted by validation programs using the *Validation Error Summary* transaction.
- Correct the errors using SQL. Note, you can use the base package's transactions (e.g., Person Maintenance, Premise Maintenance, etc.) to correct an error if the error isn't so egregious that it prevents the object from being displayed on the browser.
- After all pervasive errors have been corrected; re-execute each object's validation program in all-instances mode to highlight elusive, one-off errors. Refer to *Submitting Object Validation Programs* for more information about the parameters supplied to these background processes.

**WARNING:**
Whenever an object validation program is run, it is necessary to delete all previously recorded errors associated with its tables from the validation error table before it inserts new errors.

After the various object validation programs run cleanly, run the referential integrity validation programs as described in the next section.

## Submitting Object Validation Programs

The object validation programs that are described in the *staging tables* table names matrices are classic background processes as they can also be run against production data. You submit these processes in the same way you submit any background process in production. Refer to *Object Validation Processes* for information about these processes and their parameters.

## Referential Integrity Validation Programs

It's important to understand that only master data objects (e.g., persons, accounts, meters, premises, etc.) are validated by the object validation programs discussed above. This means that only master data objects will have their foreign keys checked for validity by the object validation programs. You must run the referential integrity programs to validate all other data.

The referential integrity validation programs highlight:

- Orphaned rows because orphan rows, by definition, don't reference an object.
- Invalid foreign keys on transaction data.

**NOTE:**
**Validating Transaction Data.** You may wonder why transaction data is not subject to the object validation routines. This is because: a) the production system only needs validation logic for master data because transaction data is not entered by users, and b) most conversions necessitate loading skeletal transaction data because the legacy system typically doesn't contain enough information to create accurate transactions in the system.

Each of the tables described under *Transaction Data* must be validated using the respective referential integrity validation program indicated in its Table Names section. We strongly recommend validating each table in the following steps:

- Execute each table's referential integrity validation program. Refer to *Submitting Referential Integrity Validation Programs* for more information about the parameters supplied to these background processes.
- You can view errors highlighted by this process using the *FK Validation Summary* transaction.
- Correct the errors using SQL (you cannot use the application to correct these types of errors).
- Rerun the referential integrity programs until no errors are produced.

**WARNING:**
Whenever you run a referential integrity validation program, it deletes all errors associated with its table from the referential integrity error table.

In order to highlight orphaned rows in the master data, run the referential integrity validation programs against all tables described under *Master Data* using the procedure described above.

When ALL referential integrity programs indicate the staging database is clean, you may now proceed to the next step - *tidy balances*.

## Submitting Referential Integrity Validation Programs

The referential integrity validation programs described under *Master Data* and *Transaction Data* (in the Table Names matrices) are submitted using a batch driver program, CIPVRNVB, and this program is executed in the staging database.

Please note that the referential integrity validation programs may also be run in the production environment on occasion, to determine the integrity of data in the production database.

Refer to *Referential Integrity Validation Processes* for information about these processes and their parameters.

You should supply the following parameters to this program:

- **Batch code.** The batch code associated with the appropriate table's referential integrity validation program. Refer to each table listed under *Master Data* and *Transaction Data* (in the Table Names matrices) for each referential integrity batch code / program.
- **Batch thread number.** Thread number is not used and should be left blank.
- **Batch thread count.** Thread count is not used and should be left blank.
- **Batch rerun number.** Rerun number is not used and should be left blank.
- **Batch business date.** Business date is the date supplied to the referential integrity validation programs and the date under which statistics will be logged.
- **Total number of commits.** Total number of commits is not used and should be left blank.
- **Maximum minutes between cursor re-initiation**. Maximum minutes between cursor re-initiation is not used and should be left blank.
- **User ID.** User ID is only used to log statistics for the execution of the batch job.
- **Password.** Password is not used.
- **Language Code.** Language code is used to access language-specific control table values. For example, error messages are presented in this language code.
- **Trace program at start** (Y/N), **trace program exit** (Y/N), **trace SQL** (Y/N) and **output trace** (Y/N). These switches are only used during QA and benchmarking. If trace program start is set to Y, a message is displayed whenever a program is started. If trace program at exist is set to Y, a message is displayed whenever a program is exited. If trace SQL is set to Y, a message is displayed whenever an SQL statement is executed.

## Recommendations To Speed Up Validation Programs

The following points describe ways to accelerate the execution of the validation programs:

- Ensure that statistics are recalculated after data has been inserted into the staging tables. For Oracle users, we strongly recommend using the Oracle-provided PL/SQL package to generate statistics rather than the analyze command.
- *Object validation programs* should be run multi threaded.
- Execute shorter running validation processes (e.g., less records) first so that the error data can be analyzed while other processes are busy running.
- *Referential integrity validation programs* run fairly quickly without much tuning. However, additional benefits are gained by running several programs at the same time.
- Remember that the *object validation programs* can be run in "validate every n th row". We recommend running these programs using a largish value for this parameter until the pervasive problems have been rectified.

# Tidy Balances

This background process creates adjustments that cause each SA's current and payoff balances to equal its balance in the legacy system (note: the batch control ID of CNV-BAL is used for this process).

**NOTE:**

**Submitting this process.** You submit this process in the staging database. Refer to *Tidy Balances* for a description of this process and its parameters.

You supply the desired balances to this background process in a flat file in the following format:

| Field | Size | Description |
|---|---|---|
| SA ID | X10 | The unique identifier of the service agreement |
| Payoff Balance Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Payoff Balance | N15.2 | The SA's payoff balance (how much the customer really owes). |
| Current Balance New Charge Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - New Charge | N15.2 | The amount of the SA's current balance that is considered a new charge, i.e., it hasn't started aging yet. |
| Current Balance Amount 1 Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - Amount 1 | N15.2 | The amount of the SA's current balance that is X days old (X is defined in the next field) |
| Age of Current Balance - Amount 1 | N3 | The number of days old the prior field is (if you keep your debt in "buckets" as opposed to knowing the exact number of days it has aged, you will have to choose an exact age). Set this value to zero if the value of amount 1 should be considered a "new charge" (i.e., it should only start aging when it is swept onto the next bill produced for the SA's account) |
| Current Balance Amount 2 Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - Amount 2 | N15.2 | The amount of the SA's current balance that is X days old (X is defined in the next field) |
| Age of Current Balance - Amount 2 | N3 | The number of days old the prior field is (if you keep your debt in "buckets" as opposed to knowing the exact number of days it has aged, you will have to choose an exact age) |
| Current Balance Amount 3 Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - Amount 3 | N15.2 | The amount of the SA's current balance that is X days old (X is defined in the next field) |
| Age of Current Balance - Amount 3 | N3 | The number of days old the prior field is (if you keep your debt in "buckets" as opposed to knowing the exact number of days it has aged, you will have to choose an exact age) |
| Current Balance Amount 4 Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - Amount 4 | N15.2 | The amount of the SA's current balance that is X days old (X is defined in the next field) |

| | | |
|---|---|---|
| Age of Current Balance - Amount 4 | N3 | The number of days old the prior field is (if you keep your debt in "buckets" as opposed to knowing the exact number of days it has aged, you will have to choose an exact age) |
| Current Balance Amount 5 Sign | X1 | Positive or Negative value indicates debit or credit balance respectively |
| Current Balance - Amount 5 | N15.2 | The amount of the SA's current balance that is X days old (X is defined in the next field) |
| Age of Current Balance - Amount 5 | N3 | The number of days old the prior field is (if you keep your debt in "buckets" as opposed to knowing the exact number of days it has aged, you will have to choose an exact age) |

**NOTE:**
**Submitting this process.** You submit this process in the staging database. Refer to *Tidy Balances* for a description of this process and its parameters.

## Balance Control (a)

During this step, you run the balance control programs and then verify that the balances that it generates are consistent with the balances in your legacy system.

**NOTE:**
**Submitting this process.** You submit this process in the staging database. Refer to *The Big Picture of Balance Control* for more information about the balance control processes. Refer to *Balance Control* for information about the page used to view the balances generated by this process.

## Clear FT Balance Control

In the previous step, the system created a balance control and links it to the FT's. If the balance control's balances are consistent with the amount of receivables being transferred into the system, you should run the Clear FT's Balance Control program. This program simply resets the Balance Control column on the FT so that the FT's can be included in a balance control (see the last step below) after they have been transferred to production. Note: the batch control ID of CNV-BCG is used to request this process.

**NOTE:**
**Submitting this process.** You submit this process in the staging database. Refer to *Reset Balances* for a description of this process and its parameters.

## Allocate Production Keys

The topics in this section describe the background processes used to assign production keys to the staging data.

**Contents**

*Submitting Key Assignment Programs*

*Recommendations To Speed Up Key Generation Programs*

## The Big Picture of Key Assignment

It's important to understand that the system does not overwrite the prime-keys on the rows in the staging database, as this is a very expensive IO transaction. Rather, a series of tables exist that hold each row's old key and the new key that will be assigned to it when the row is *transferred into the production database*. We refer to these tables as the "old key / new key" tables. The old key / new key tables are named the same as their primary table, but rather than being prefixed by "CI", they are prefixed by "CK". For example, the old key / new key table for CI_ACCT is called CK_ACCT.

The insertion programs that transfer the rows into the production database use the new key for the main record of the key along with any other record where this key is a foreign key. Note that the capability of assigning the new key to a foreign key applies to

- "True" foreign keys, i.e. where the key is a column in another table. For example, CI_SA has a column for ACCT_ID.
- FK reference characteristics. These are characteristics that define, through an FK reference, the table and the key that this characteristic represents.

The insertion programs are not able to assign "new keys" to foreign keys defined in an XML structure field (CLOB).

The key assignment programs listed under *Master Data* and *Transaction Data* (in the table names sections) are responsible for populating the old key / new key tables (i.e., you don't have to populate these tables). Because the population of the rows in these tables is IO intensive, we have supplied detailed instructions that will accelerate the execution time of these programs.

---

**NOTE:**

**Why are keys reassigned?** The conversion process allocates new prime keys to take advantage of the system's parallel processing and data-clustering techniques in the production system (these techniques are dependent on randomly assigned, clustered keys).

**Iterative conversions.** Rather than perform a "big bang" conversion (one where all customers are populated at once), some implementations have the opportunity to go live on subsets of their customer base. If this describes your implementation, please be aware that the system takes into account the existing prime keys in the production database before it allocates a new key value. This means when you convert the next subset of customers, you can be assured of getting clean keys.

**Program Dependencies**. The programs used to assign production keys are listed in the Table Names matrices. Most of these programs have no dependencies (i.e., they can be executed in any order you please). The exceptions to this statement are noted in *Program Dependencies*.

---

## Submitting Key Assignment Programs

The key assignment programs described under *Master Data* and *Transaction Data* (in the Table Names matrices) are submitted using a batch driver program, CIPVRNKB, and this program is executed in the staging database. You should supply the following parameters to this program:

- **Batch code.** The batch code associated with the appropriate table's key assignment program. Refer to each table listed under *Master Data* and *Transaction Data* (in the Table Names matrices) for each key assignment batch code / program.
- **Batch thread number.** Thread number is not used and should be left blank.
- **Batch thread count.** Thread count is not used and should be left blank.
- **Batch rerun number.** Rerun number is not used and should be left blank.

- **Batch business date.** Business date is the date supplied to the key assignment programs and the date under which statistics will be logged.
- **Total number of commits.** Total number of commits is not used and should be left blank.
- **Maximum minutes between cursor re-initiation**. Maximum minutes between cursor re-initiation is not used and should be left blank.
- **User ID.** User ID is only used to log statistics for the execution of the batch job.
- **Password.** Password is not used.
- **Language Code.** Language code is used to access language-specific control table values. For example, error messages are presented in this language code.
- **Trace program at start** (Y/N), **trace program exit** (Y/N), **trace SQL** (Y/N) and **output trace** (Y/N). These switches are only used during QA and benchmarking. If trace program start is set to Y, a message is displayed whenever a program is started. If trace program at exist is set to Y, a message is displayed whenever a program is exited. If trace SQL is set to Y, a message is displayed whenever an SQL statement is executed.
- **Mode.** The proper use of this parameter will greatly speed up the key assignment step as described under *Recommendations To Speed Up Key Generation*. This parameter has three values:
  - If you supply a mode with a value of I (initial key generation), the system allocates new keys to the rows in the staging tables (i.e., it populate the respective old key / new key table).
  - If you supply a mode with a value of D (resolve duplicate keys), the system reassigns keys that are duplicates.
  - If you supply a mode with a value of B (both generate keys and resolve duplicates), the system performs both of the above steps. This is the default value if this parameter is not supplied.
  - Please see *Recommendations To Speed Up Key Generation* for how to use this parameter to speed up the execution of these processes.

**NOTE:**
**Parallel Key Generation.** No key generation program should be run (either in mode I or B ) while another program is being run unless that program is in the same tier (see *Program Dependencies* for a description of the tiers).

• **Start Row Number.** This parameter is only used if you are performing conversions where data already exists in the tables in the production database (subsequent conversions). In an Oracle database the key assignment routines create the initial values of keys by manipulation of the Oracle row number, starting from 1. After any conversion run, a subsequent conversion run will start with that row number again at 1, and the possibility of duplicate keys being assigned will be higher. The purpose of this parameter is to increase the value of row number by the given value, and minimize the chance of duplicate key assignment.

## Recommendations To Speed Up Key Generation Programs

The following points describe ways to accelerate the execution of the key generation programs.

**NOTE:**
**Naming convention.** The convention "CK_<table_name>" is used to denote the old key / new key tables described under *The Big Picture of Key Assignment*.

- Make the size of your rollback segments large. The exact size is dependent on the number of rows involved in your conversion. Our research has shown that processing 7 million rows generates roughly 3GB of rollback information.
  - Setup the rollback segment(s) to about 10GB with auto extend to a maximum size of 20GB to determine the high water mark

  - A next extent value on the order of 100M should be used.
- Make sure to turn off all small rollback segments (otherwise Oracle will use them rather than the large rollback segments described above).
- After the key assignment programs execute, you can reclaim the space by:
  - Keep a low value for the "minimum extent" parameter for the rollback.
  - Shrink the rollback segments and the underlying data files at the end of the large batch jobs.
- Compute statistics on the CK_<table_name> tables after every 50% increase in table size. Key generation is performed in tiers or steps because of the inheritance dependency between some tables and their keys. Although key generation for the tier currently being processed is performed by means of set-based SQL, computation of statistics between tiers will allow the database to compute the optimum access path to the keys being inherited from the **previous** tier's generation run. For Oracle users, we strongly recommend using the Oracle-provided PL/SQL package to generate statistics rather than the analyze command.
- Optimal use of the **Mode** parameter under *Submitting Key Assignment Programs*.
  - Before any key assignments, alter both the "old key" CX_ID index and the "new key" CI_ID index on the CK_<table_name> tables to be unusable.
  - Run all *key assignment tiers*, submitting each job with MODE = "I".
  - Rebuild the CX_ID and CI_ID indexes on the CK_<table_name>. Rebuilding the indexes using both the PARALLEL and NOLOGGING parameters will speed the index creation process in an Oracle DB. Statistics should be computed for these indexes.
  - Run all key assignment tiers that were previously run in MODE = 'I', submitting each job with MODE = "D". This will reassign all duplicate keys.

# Insert Production Data

The topics in this section describe the background processes used to populate the production database with the information in the staging database.

**Contents**



## The Big Picture Of Insertion Programs

All insertion programs are independent and may run concurrently. Also note, all insertion programs can be run in many parallel threads as described in the next section (in order to speed execution).

## Submitting Insertion Programs

The insertion programs described under *Master Data* and *Transaction Data* (in the Table Names matrices) are submitted using a batch driver program, CIPVRNIB , and this program is executed in the staging database. You should supply the following parameters to this program:

- **Batch code.** The batch code associated with the appropriate table's insertion program. Refer to each table listed under *Master Data* and *Transaction Data* (in the Table Names matrices) for each insertion batch code / program.
- **Batch thread number.** Thread number contains the relative thread number of the process. For example, if you want to insert accounts into production in 20 parallel threads, each of the 20 execution instances receives its relative thread number (1 through 20). Refer to *Parallel Background Processes* for more information.
- **Batch thread count.** Thread count contains the total number of parallel threads that have been scheduled. For example, if the account insertion process has been set up to run in 20 parallel threads, each of the 20 execution instances receives a thread count of 20. Refer to *Parallel Background Processes* for more information.
- **Batch rerun number.** Rerun number is not used and should be left blank.
- **Batch business date.** Business date is the date supplied to the insertion programs and the date under which statistics will be logged.
- **Total number of commits.** This is the number of commits IN TOTAL that you want to perform. For example, if you have 1,000,000 accounts and you supply a value of 100 ; then a commit will be executed for approximately every 10,000 accounts.
- **Maximum minutes between cursor re-initiation**. This should only be populated if you want to override the default value of 15 .
- **User ID.** User ID is only used to log statistics for the execution of the batch job.
- **Password.** Password is not used.
- **Language Code.** Language code is used to access language-specific control table values. For example, error messages are presented in this language code.
- **Trace program at start** (Y/N), **trace program exit** (Y/N), **trace SQL** (Y/N) and **output trace** (Y/N). These switches are only used during QA and benchmarking. If trace program start is set to Y, a message is displayed whenever a program is started. If trace program at exist is set to Y, a message is displayed whenever a program is exited. If trace SQL is set to Y, a message is displayed whenever an SQL statement is executed.

## Recommendations To Speed Up Insertion Programs

The following points describe ways to accelerate the execution of the insertion programs:

- Before running the first insertion program:
  - Rebuild the index on the prime key on the old key / new key table (i.e., those tables prefixed with "CK").
  - Re-analyze the statistics on the old key / new key table (i.e., those tables prefixed with "CK"). For Oracle users, we strongly recommend using the Oracle-provided PL/SQL package to generate statistics rather than the analyze command.
  - Alter all indexes on the production tables being inserted into to be unusable.
- After the insertion programs have populated production data, rebuild the indexes and compute statistics for these tables. For Oracle users, we strongly recommend using the Oracle-provided PL/SQL package to generate statistics rather than the analyze command.

# Run Balance Control Against Production

During this step, you rerun the balance control program, but this time against production. You do this to verify the balances in production are consistent with the values of receivables converted from your legacy application.

**NOTE:**

**Submitting this process.** You submit this process in the production database. Refer to *The Big Picture of Balance Control* for more information about the balance control processes. Refer to *Balance Control* for information about the page used to view the balances generated by this process.

## Validate Production

During this step, you rerun the *object validation programs*, but this time in production. We recommend rerunning these programs to confirm that the insertion programs have executed successfully. We recommend running these programs in random sample mode (e.g., validate every 1000 th object) rather than conducting a full validation in order to save time. However, if you have time, you should run these programs in full validation mode (to validate every object). Please refer to the various "Table Names" sections above for the respective names of the programs to run.

# The Validation User Interface

The topics in this section describe the various pages that assist in the conversion effort.

**Contents**



## Validation Error Summary

Navigate to **Admin** > **Validation Error Summary** to view validation errors associated with the objects defined in *Master Data*.

**Description of Page**

You can use **Table Name** to restrict errors to a specific object. If this field is left blank, all errors on all objects will be displayed.

The grid contains a separate row for each type of error. The following information is displayed:

- **Table Name** is the name of the main table associated with the object.
- **Message Category** and **Message Number** define the type of error. These fields are the unique identifier of the message that describes the error (the verbiage of this message is displayed in the **Message Text** column).
- **Count** contains the number of records with this error. Press the Go To button to see the individual records with the error.

## Validation Error Detail

This page is used to view validation errors of a given type associated with one of the objects defined in *Master Data*. This transaction is not intended to be invoked from the **Admin** menu. Rather, drill into the validation details from *Validation Error Summary*.

**Description of Page**

Use **Table Name**, **Message Category**, and **Message Number** to define the object and the type of error you wish to display. The grid contains a separate row for each object with the given type of error. The following information is displayed:

- **Table Name** is the name of the main table associated with the object.
- **Record Identifier** is the unique identifier of the object with the error (e.g., the person ID, the account ID, the premise ID, etc.). Press the Go To button to transfer to the maintenance page associated with the object.
- **Message Category** and **Message Number** define the type of error. These fields are the unique identifier of the message that describes the error (the verbiage of this message is displayed in the **Message Text** column).

## FK Validation Summary

Navigate to **Admin** > **FK Validation Summary** to view foreign key validation errors associated with the objects defined in *Master Data*.

**Description of Page**

You can use **Table Name** to restrict errors to a specific object. If this field is left blank, all errors on all objects will be displayed.

The grid contains a separate row for each type of error. The following information is displayed:

- **Table Name** is the name of the main table associated with the object.
- **Count** contains the number of records on this table that have this error.
- **Foreign Key Field Names 1 to 6** contain the names of the foreign keys contained on this table that have been found to be in error.
- **Foreign Key Values 1 to 6** contain the values within the foreign key fields that are found to be in error.

## FK Validation Detail

This page is used to view foreign key validation errors of a given type associated with one of the objects defined in *Master Data*. This transaction is not intended to be invoked from the **Admin** menu. Rather, drill into the validation details from *FK Validation Summary*.

**Description of Page**

Use **Table Name** to specify the table you wish to view. The names and values of the foreign key fields on the table are displayed. The grid that follows contains the primary key values of this table's records that are in error. The following information is displayed:

- **Table Name** is the name of the main table.
- **FK Fields 1 to 6** are the names of the foreign keys contained in this table. Displayed alongside the key names are the values within these fields. These identify records on other tables to which this tables record is related. For example, the CI_PREM_GEO record identified by its displayed primary keys should be related to a Premise record with the Premise ID shown - it appears in this list only if there is something amiss with this relationship.

## The Staging Tables

This section describes the objects into which your legacy data is mapped. For each object, we provide the following:

- A data model.

- An indication of which tables have system-assigned keys.
- The physical table names.
- The name of the batch control to submit to validate the object.
- The name of the program (and related batch control) that validates each table for referential integrity.
- The name of the program (and related batch control) that performs key assignment for each table.
- The name of the program (and related batch control) that inserts the table's rows into production from staging.
- Suggestions to assist in the conversion process.

**WARNING:**
We recommend you read this document on a browser (or using Word under windows) so you can take advantage of the *Color Coding*.

**NOTE:**
**Column details do not appear in this document.** When you're ready to examine an object's tables, use the hyperlinks in the respective Table Names section to transfer to the *data dictionary* . The data dictionary will show you the required columns, the foreign keys (and their related tables), the source code of the program that validates the contents of the table, and a host of other information that will assist the conversion process.

**WARNING:**
In the data models that appear below, you will find a variety of entities that are classified as either a control table or a lookup table. Please refer to *Color Coding* for more information about how to recognize such an entity.

**Contents**



# A Note About Programs in the Table Names Matrices

For each object described in the master data and transaction data sections, there is a "table names" section that includes a matrix listing the name of each table that is part of the maintenance object. Included in the matrix is information about the programs provided to perform object validation, referential integrity validation, key assignment and insertion. The following are some points about these programs:

- One object validation program exists for the entire set of tables for the maintenance object. The **Object Validation Batch Control** column indicates the batch control used to submit the object validation. Refer to *Submitting Object Validation Programs* for more information. Drilling down on the hypertext allows you to see more information about the batch control, including the program associated with it.
- A referential integrity validation program exists for every table whose key includes a parent key of another object. As described in *Submitting Referential Integrity Validation Programs*, these programs are submitted using a driver supplied by the system where the batch code for the appropriate table is provided. (The driver then executes the program whose name matches the batch code). The **Referential Integrity Validation Batch Control** column indicates the table's batch control / program name.

- One key assignment program exists for the parent table for the maintenance object. As described in *Submitting Key Assignment Programs*, these programs are submitted using a driver supplied by the system where the batch code for the appropriate table is provided. (The driver then executes the program whose name matches the batch code). The **Key Assignment Batch Control** column indicates the table's batch control / program name.
- An insertion program exists for every table for the maintenance object. As described in *Submitting Insertion Programs*, these programs are submitted using a driver supplied by the system where the batch code for the appropriate table is provided. (The driver then executes the program whose name matches the batch code). The **Insertion Batch Control** column indicates the table's batch control / program name.

## Master Data

This section describes the various "master data" objects (e.g., person, account, meter, etc.) that must be created before you can convert transaction data.

**NOTE:**
**Key Assignment Dictates The Order Of Conversion.** The following contents are listed in the order in which the objects should be converted in order to maintain referential integrity.

**Contents**



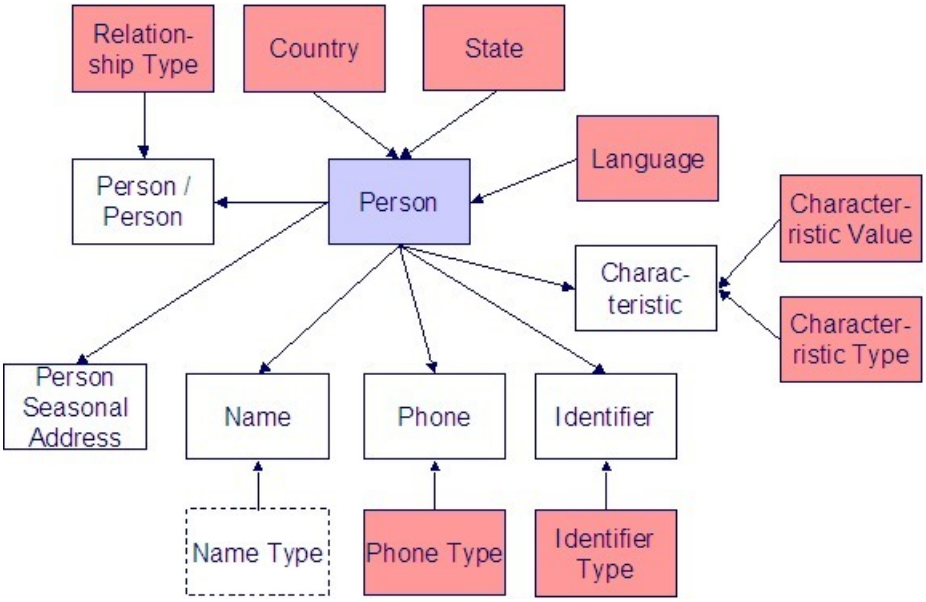
## Person

Each customer must have a person and an account object. This section describes the person object. Refer to *Account* for details about the account object.

**Contents**

## Person Data Model

The following data model illustrates the person object.




## Person Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Person | *CI_PER* | Yes *CI_PER_K* | *VAL-PER* | | CIPVPERK | CIPVPERI |
| Name | *CI_PER_NAME* | No. The key is PER_ID plus a sequence number. | | CIPVPNMV | | CIPVPNMI |
| Person / Person | *CI_PER_PER* | No. The key is PER_ID1, PER_ ID2, relationship type and start date. | | CIPVPPEV | | CIPVPPEI |
| Phone | *CI_PER_PHONE* | No. The key is PER_ID plus phone type. | | CIPVPPHV | | CIPVPPHI |
| Identifier | *CI_PER_ID* | No. The key is PER_ID plus identifier type. | | CIPVPIDV | | CIPVPIDI |
| Characteristic | *CI_PER_CHAR* | No. The key is PER_ID plus an | | CIPVPRCV | | CIPVPRCI |

| | | | | |
|---|---|---|---|---|
| | | edate and a char type. | | |
| Seasonal Address | *CI_PER_ADDR_SEAS* | No. The key is PER_ID plus a sequence number. | CIPVPSAV | CIPVPSAI |

## Person Suggestions

A person must have at least one row on the name table and at least one of the names must be marked as being the primary name.

A person must have at least one row on the identity table and at least one of the identities must be marked as being the primary ID.

The country and state are only necessary if the person has an override mailing address.

# Account

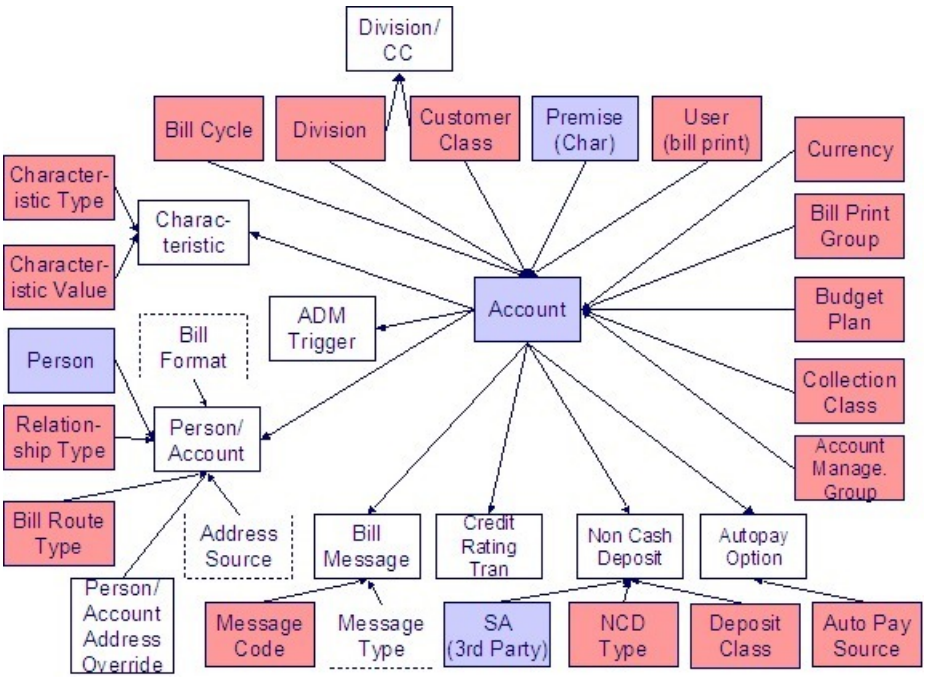
Each customer must have a person and an account object. This section describes the account object, refer to *Person* for details about the person object.

**Contents**



## Account Data Model

The following data model illustrates the account object.




## Account Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Account | *CI_ACCT* | Yes *CI_ACCT_K* | *VAL-ACCT* | | CIPVACCK | CIPVACCI |
| Bill Message | *CI_ACCT_MSG* | No. The key is account ID plus bill message code. | | CIPVMSGV | | CIPVMSGI |
| Autopay Option | *CI_ACCT_APAY* | Yes *CI_ACCT_ APAY_K* | | CIPVAAPV | CIPVAAPK *Has dependencies* | CIPVAAPI |
| Characteristic | *CI_ACCT_CHAR* | No. The key is ACCT_ID plus an edate and a char type. | | CIPVACHV | | CIPVACHI |
| Person/Account | *CI_ACCT_PER* | No. The key is account ID plus person ID. | | CIPVACPV | | CIPVACPI |
| Person/Account Address Override | *CI_PER_ADDR_ OVRD* | No. The key is Account ID plus Person ID | | CIPVPAOV | | CIPVPAOI |
| Non Cash Deposit | *CI_NCD* | No. The key is account ID plus seq number | | CIPVNCDV | | CIPVNCDI |

| | | | | | |
|---|---|---|---|---|---|
| Credit Rating Tran | *CI_CR_RAT_HIST* | Yes *CI_CR_RAT_HIST_K* | CIPVCRTV | CIPVCRRK *Has dependencies* | CIPVCRTI |
| ADM Trigger | *CI_ADM_RVW_SCH* | No. The key is account ID plus date | CIPVARSV | | CIPVARSI |

## Account Suggestions

An account must have at least one row on the account / person table and at least one account / person must be marked as being the main customer. Please see column notes for the account / person table for inter-field validation in respect of the various switches (e.g., if main customer switch is on, then the person must also be financially responsible).

We recommend storing an ADM trigger ( *CI_ADM_RVW_SCH*) for every account where the trigger date is the conversion date. This will cause the account to be reviewed by the *account debt monitor* when it next runs. We have supplied a dedicated batch process for this purpose that simply inserts a row in this table with the review date set equal to the current date. This will ensure that all converted accounts are reviewed after they are inserted into production. This program is named CIPVADMB and goes by the batch control ID of CNV-ADM .

If your legacy system has the equivalent of a credit rating or a cash only score, you should create credit rating transactions. The values you create need to be consistent with the base and threshold credit rating and cash only points on the installation record. Refer to the business process guide - customer information - how are credit rating transactions created for more information.

# Item

Each badged piece of equipment must have an item. Examples of items include badged street lamps, current transforms, backflow devices, voltage regulators, etc.

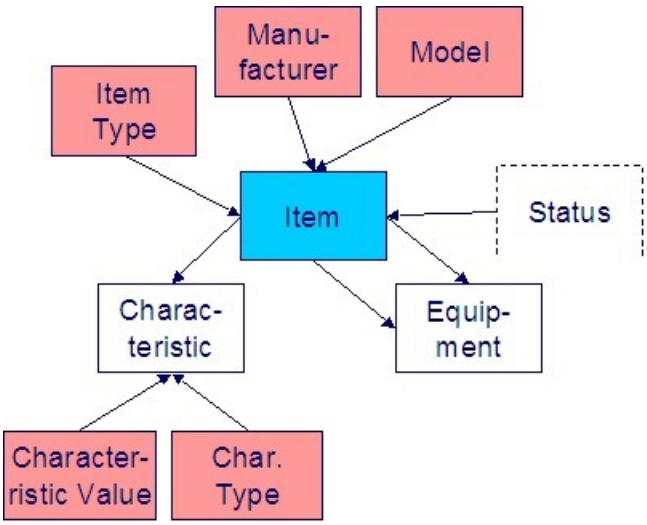
If the item is currently installed at a service point, you must link the item to the service point by inserting a row on the *SP Item History and On Off Event* tables.

**Contents**



## Item Data Model

The following data model illustrates the item object.




## Item Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Item | *CI_ITEM* | Yes *CI_ITEM_K* | *VAL-ITEM* | | CIPVITMK | CIPVITMI |
| Characteristic | *CI_ITEM_CHAR* | No. The key is ACCT_ID plus an edate and a char type. | | CIPVITCV | | CIPVITCI |
| Equipment | *CI_ITEM_EQ* | No. The key is item ID plus equipment (item) ID. | | CIPVIEQV | | CIPVIEQI |

## Item Suggestions

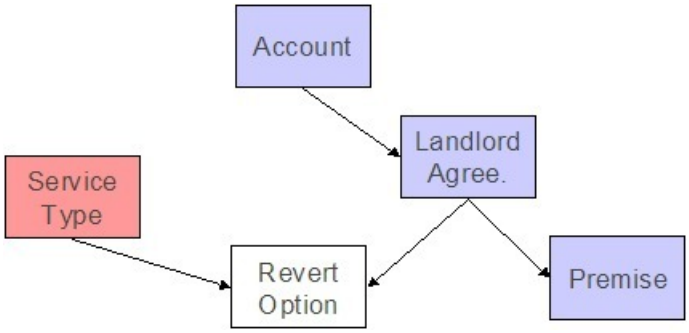
N/A.

# Landlord

**Contents**

## Landlord Data Model

The following data model illustrates the landlord object.




## Landlord Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Landlord | *CI_LANDLORD* | Yes *CI_LANDLORD_K* | *VAL-LL* | | CIPVLNDK | CIPVLNDI |
| Revert Option | *CI_LL_DETAIL* | No. The key is LL_ID plus service type | | CIPVLLDV | | CIPVLLDI |

## Landlord Suggestions

N/A.

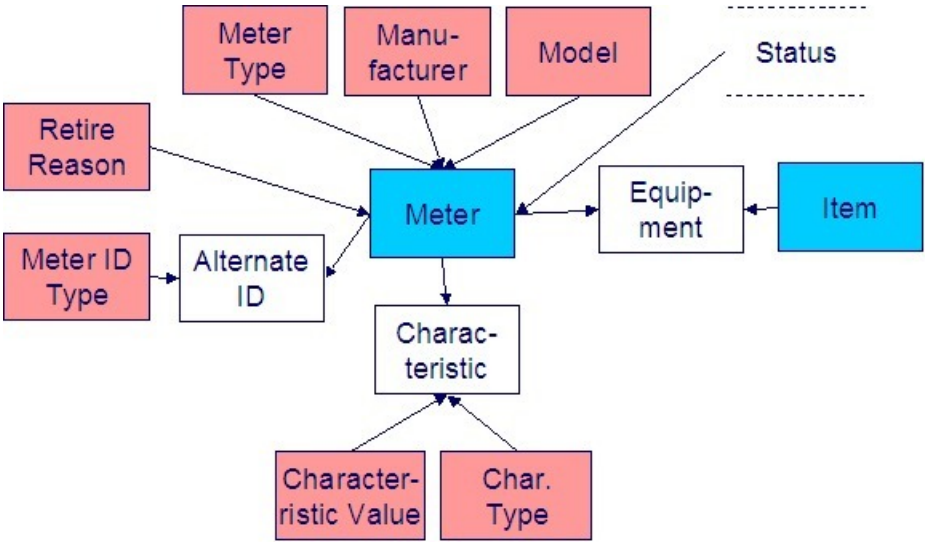
# Meter

Every meter must have a meter object and every meter object must have a meter configuration. This section describes the meter object. Refer to *Meter Configuration* for information about the meter configuration object.

**Contents**

## Meter Data Model

The following data model illustrates the meter object.




## Meter Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Meter | *CI_MTR* | Yes *CI_MTR_K* | *VAL-MTR* | | CIPVMTRK<br>*Has dependencies* | CIPVMTRI |
| Characteristic | *CI_MTR_CHAR* | No. The key is MTR_ID plus an edate and a char type. | | CIPVMTCV | | CIPVMTCI |
| Equipment | *CI_MTR_EQ* | No. The key is meter ID plus equipment (meter) ID. | | CIPVMEQV | | CIPVMEQI |
| Alternate ID | *CI_MTR_ID* | No. The key is MTR_ID plus meter id type. | | CIPVMIDV | | CIPVMIDI |

## Meter Suggestions

N/A.

## Meter Configuration

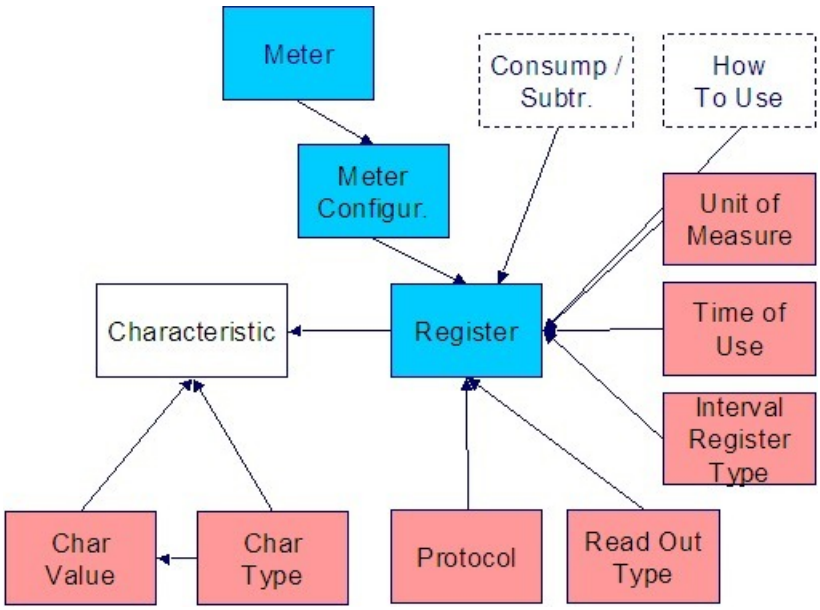
Every meter must have a meter object and every meter object must have a meter configuration. This section describes the meter configuration object. Refer to *Meter* for information about the meter object.

**Contents**



## Meter Configuration Data Model

The following data model illustrates the meter configuration object.




## Meter Configuration Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Meter Configuration | *CI_MTR_ CONFIG* | Yes *CI_MTR_ CONFIG_K* | *VAL-CFG* | | CIPVMTGK *Has dependencies* | CIPVMTGI |
| Register | *CI_REG* | Yes *CI_REG_K* | | CIPVREGV | CIPVREGK | CIPVREGI |

| | | | | Has dependencies | |
|---|---|---|---|---|---|
| Characteristic | *CI_REG_CHAR* | No. The key is REG_ID plus an edate and a char type. | CIPVRGCV | | CIPVRGCI |

## Meter Configuration Suggestions

N/A.

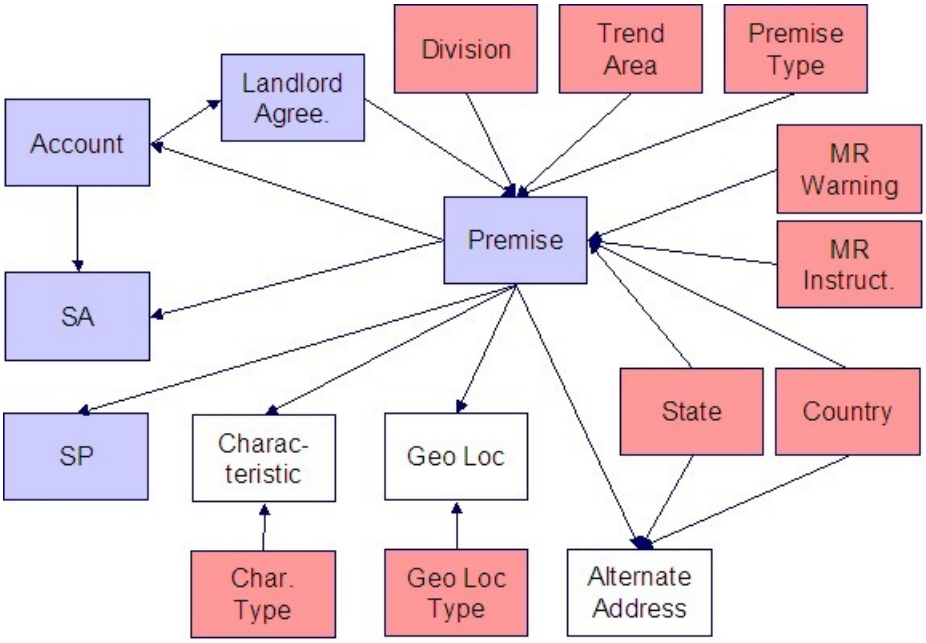
# Premise

**Contents**



## Premise Data Model

The following data model illustrates the premise object.




## Premise Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Premise | *CI_PREM* | Yes *CI_PREM_K* | *VAL-PREM* | | CIPVPRMK<br>*Has dependencies* | CIPVPRMI |
| Characteristic | *CI_PREM_CHAR* | No. The key is PREM_ID plus an edate and a char type. | | CIPVPCHV | | CIPVPCHI |
| Geo Loc | *CI_PREM_GEO* | No. The key is PREM_ID plus geo loc type. | | CIPVPGOV | | CIPVPGOI |
| Alternate Address | *CI_PRM_ALT_ADDR* | Yes *CI_PRM_ALT_ADDR_K* | | CIPVAPAV | CIPVAPAK<br>*Has dependencies* | CIPVAPAI |

## Premise Suggestions

N/A.

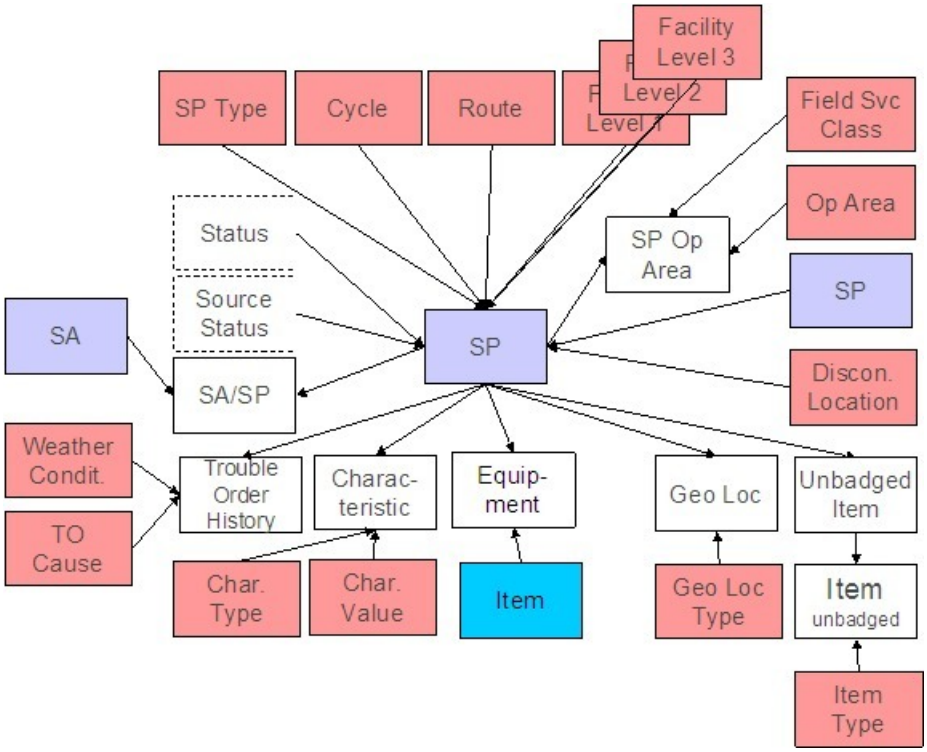
# Service Point

**Contents**



## Service Point Data Model

The following data model illustrates the service point object.




## Service Point Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Service Point | *CI_SP* | Yes *CI_SP_K* | *VAL-SP* | | CIPVSPPK<br>*Has dependencies* | CIPVSPPI |
| Characteristic | *CI_SP_CHAR* | No. The key is SP_ID plus an edate and a char type. | | CIPVSPCV | | CIPVSPCI |
| Equipment | *CI_SP_EQ* | No. The key is service point ID plus equipment (service point) ID. | | CIPVSEQV | | CIPVSEQI |
| Geo Loc | *CI_SP_GEO* | No. The key is service point ID plus geo type. | | CIPVSPGV | | CIPVSPGI |
| Unbadged Item | *CI_SP_MULT_ITEM* | No. The key is SP_ID plus edate. | | CIPVSPMV | | CIPVSPMI |

| | | | | | | |
|---|---|---|---|---|---|---|
| Item | *CI_MULT_ITEM* | No. The key is SP_ID, edate and item type. | | CIPVSMIV | | CIPVSMII |
| SP Op Area | *CI_SP_OP_AREA* | No. The key is SP_ID plus field service classification code | | CIPVSPOV | | CIPVSPOI |
| SA/SP | *CI_SA_SP* (note, this table really belongs to the SA object, it is included here for completeness) | Yes *CI_SA_SP_K* | CIPVSVAB | CIPVSAPV | CIPVSSPK<br>*Has dependencies* | CIPVSAPI |

## Service Point Suggestions

N/A.

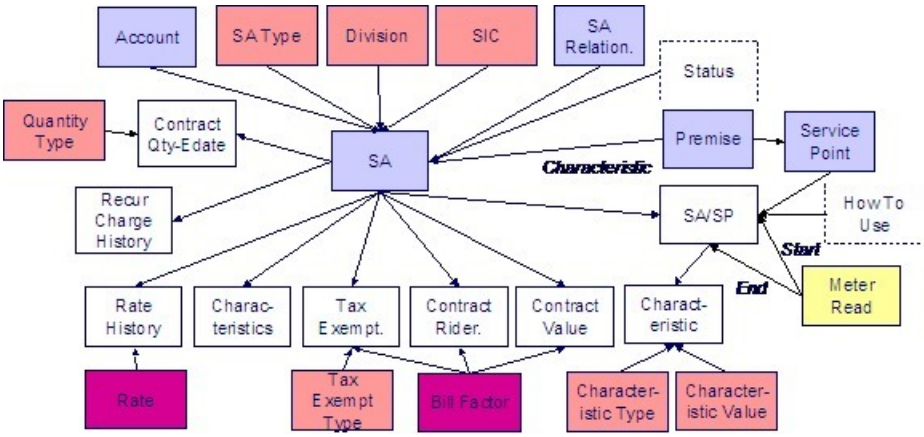
# Service Agreement

**Contents**



## Service Agreement Data Model

The following data model illustrates the service agreement object.



## Service Agreement Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Service Agreement | *CI_SA* | Yes *CI_SA_K* | *VAL-SA* | | CIPVSVAK *Has dependencies* | CIPVSVAI |
| Characteristic | *CI_SA_CHAR* | No. The key is SA_ID plus an edate and a char type. | | CIPVSACV | | CIPVSACI |
| Contract Quantity Edate | *CI_SA_CONT_QTY* | No. The key is service agreement ID plus quantity type plus edate. | | CIPVSAQV | | CIPVSAQI |
| Message | *CI_SA_MSG* | No. The key is service agreement ID plus Bill message code. | | CIPVSMGV | | CIPVSMGI |
| Recurring Charge | *CI_SA_RCHG_HIST* | No. The key is service agreement ID plus edate. | | CIPVSARV | | CIPVSARI |
| SA Relationship | *CI_SA_REL* | Yes *CI_SA_REL_K* | *VAL-SARL* | CIPVSRLV | CIPVSRLK *Has dependencies* | CIPVSRLI |
| Rate History | *CI_SA_RS_HIST* | No. The key is service agreement ID plus edate. | | CIPVSAHV | | CIPVSAHI |
| SA/SP | *CI_SA_SP* | Yes *CI_SA_SP_K* | | CIPVSAPV | CIPVSSPK *Has dependencies* | CIPVSAPI |
| SA/SP Characteristic | *CI_SA_SP_CHAR* | No. The key is SA/SP Id plus char type plus effective date. | | CIPVSSCV | | CIPVSSCI |
| Tax Exempt | *CI_SA_CONTERM* - this table is also used for the next 2 entities, the | No. This key is service agreement ID plus CONTERM_TYPE_FLG plus | | CIPVSAOV | | CIPVSAOI |

| | | | | |
|---|---|---|---|---|
| | key contains CONTERM_ TYPE_FLG that controls the entity | BF_CD plus START_DT | | |
| Contract Rider | *CI_SA_ CONTERM* - this table is also used for the previous and next entities, the key contains CONTERM_ TYPE_FLG that controls the entity | No. This key is service agreement ID plus CONTERM_ TYPE_FLG plus BF_CD plus START_DT | CIPVSAOV | CIPVSAOI |
| Contract Value | *CI_SA_ CONTERM* - this table is also used for the previous 2 entities, the key contains CONTERM_ TYPE_FLG that controls the entity | No. This key is service agreement ID plus CONTERM_ TYPE_FLG plus BF_CD plus START_DT | CIPVSAOV | CIPVSAOI |

## Service Agreement Suggestions

N/A.

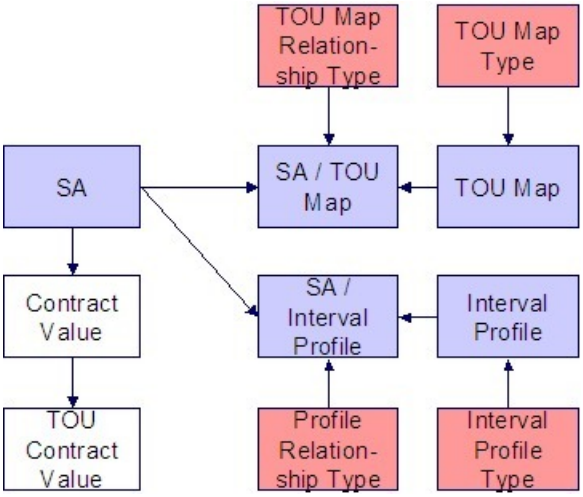
# SA Interval Billing

**Contents**



## SA Interval Billing Data Model

The following data model illustrates the Interval Billing objects related to the service agreement.




## SA Interval Billing Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| TOU Map | *CI_TOU_MAP* | Yes *CI_TOU_MAP_K* | *VAL-TMAP* | | CIPVTMAK<br>*Has dependencies* | CIPVTMAI |
| TOU Map Lang | *CI_TOU_MAP_L* | No. The key is TOU_MAP_ID plus language code. | | CIPVTMLV | | CIPVTMLI |
| Interval Profile | *CI_INTV_PF* | Yes *CI_INTV_PF_K* | *VAL-INPF* | | CIPVINPK<br>*Has dependencies* | CIPVINPI |
| Interval Profile Lang | *CI_INTV_PF_L* | No. The key is INTV_PF_ID plus language code | | CIPVINLV | | CIPVINLI |
| SA / Interval Profile | *CI_SA_INTV_PF* | No. The key is service agreement ID plus INTV_PF_REL_TYP_CD plus START_DTTM plus INTV_PF_ID | | CIPVSIFV | | CIPVSIPI |
| SA / TOU Map | *CI_SA_TOU_MAP* | No. The key is service agreement ID plus TMAP_REL_TYPE_CD | | CIPVSTMV | | CIPVSTMI |

| | | | | |
|---|---|---|---|---|
| | | plus START_ DTTM plus TOU_ MAP_ID | | |
| TOU Contract Value | *CI_TOU_CONT_ VAL* | No. The key is service agreement ID plus CONTERM_ TYPE_FLG plus START_DT plus BF_CD plus TOU_GRP_CD plus TOU_CD | CIPVTCVV | CIPVTCVI |

## SA Interval Billing Suggestions

N/A.

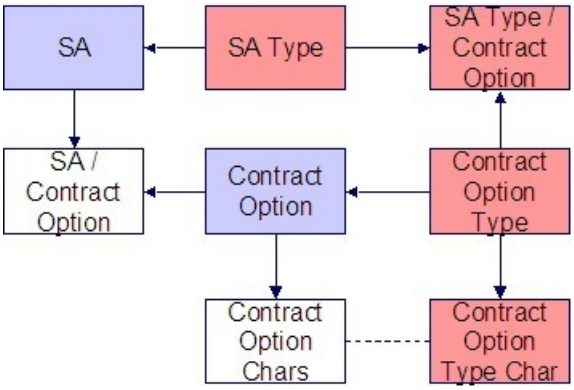
# Contract Options

**Contents**



## Contract Options Data Model

The following data model illustrates the contract options objects.




## Contract Options Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Contract Option | *CI_COP* | Yes *CI_COP_K* | *VAL-COP* | | CIPVCOPK<br>*Has dependencies* | CIPVCOPI |
| Contract Option Language | *CI_COP_L* | No. The key is CONT_OPT_ID plus language code | | CIPVCOLV | | CIPVCOLI |
| Contract Option Characteristics | *CI_COP_CHAR* | No. The key is CONT_OPT_ ID plus CHAR_ TYPE_CD plus EFFDT | | CIPVCCFV | | CIPVCCAI |
| SA / Contract Option | *CI_SA_COP* | Yes *CI_SA_ COP_K* | | CIPVSCPV | CIPVSCPK<br>*Has dependencies* | CIPVSCPI |

## Contract Options Suggestions

N/A.

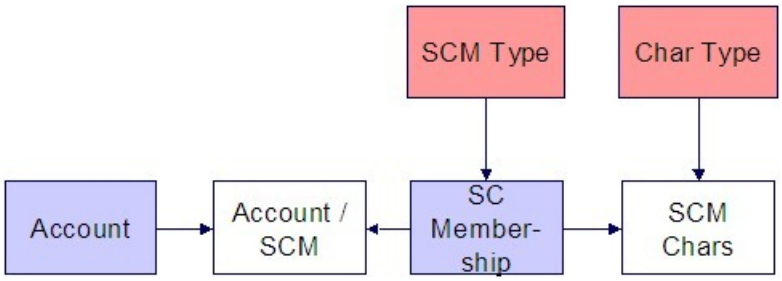
# Service Credit Membership

**Contents**



## Service Credit Membership Data Model

The following data model illustrates the Service Credit Membership objects.



## Service Credit Membership Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Service Credit Membership | *CI_SCM* | Yes *CI_SCM_K* | *VAL-SCM* | CIPVSCBV | CIPVSCMK | CIPVSCMI |
| Service Credit Membership / Account | *CI_SCM_ACCT* | No. The key is SCM_ID plus ACCT_ID. | | CIPVSCAV | | CIPVSCAI |
| Service Credit Membership Characteristics | *CI_SCM_CHAR* | No. The key is SCM_ID plus CHAR_TYPE_ CD plus EFFDT. | | CIPVSCCV | | CIPVSCCI |

## Service Credit Membership Suggestions

N/A.

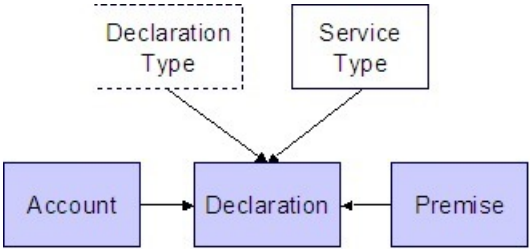
# Declaration

**Contents**



## Declaration Data Model

The following data model illustrates the Declaration object.




## Declaration Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Declaration | *CI_DCL* | Yes *CI_DCL_K* | *VAL-DCL* | | CIPVDCRK | CIPVDCRI |

## Declaration Suggestions

N/A.

# Transaction Data

This section describes the tables in which your transaction data (e.g., bills, payments, meter reads, customer contacts, etc.) resides.

**Contents**

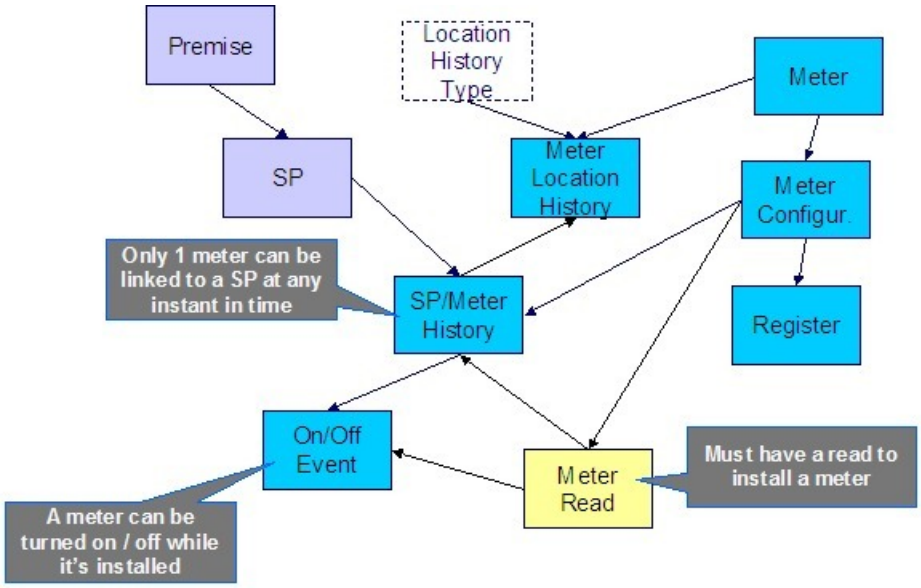
# SP / Meter History and On/Off Event

**Contents**



## SP / Meter Data Model

The following data model illustrates the service point / meter installation object.




## SP / Meter Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| SP/Meter History | *CI_SP_MTR_HIST* | Yes *CI_SP_MTR_HIST_K* | CIPVSMHV | CIPVSMHK<br>*Has dependencies* | CIPVSMHI |
| On/Off Event | *CI_SP_MTR_EVT* | No. The key is meter history ID plus sequence number. | CIPVSMEV | | CIPVSMEI |

| | | | | | |
|---|---|---|---|---|---|
| Meter Location History | *CI_MTR_LOC_HIS* | Yes. *CI_MTR_LOC_HIS_K* | CIPVMLHV | CIPVMLHK | CIPVMLHI |

## SP / Meter Suggestions

In order to link a meter to a service point, you must

- Link the meter's meter configuration to the service point by inserting a record on the CI_SP_MTR_HIST table.
- In addition, you must also create a CI_SP_MTR_EVT record. Note the following about this record:
  - The value of the SP_MTR_EVT_FLG should be I (for installation).
  - The value of the MTR_ON_OFF_FLG should be 1 (on).
  - It must reference a read whose read date is the installation date. The reading can be a dummy value unless this customer has not been billed since the install date (i.e., the installation has taken place recently). In this situation, this read must be the true start read for the customer. Note, this read should also be linked to the SA/SP record associated with the SA that's linked to the SP as its start read.

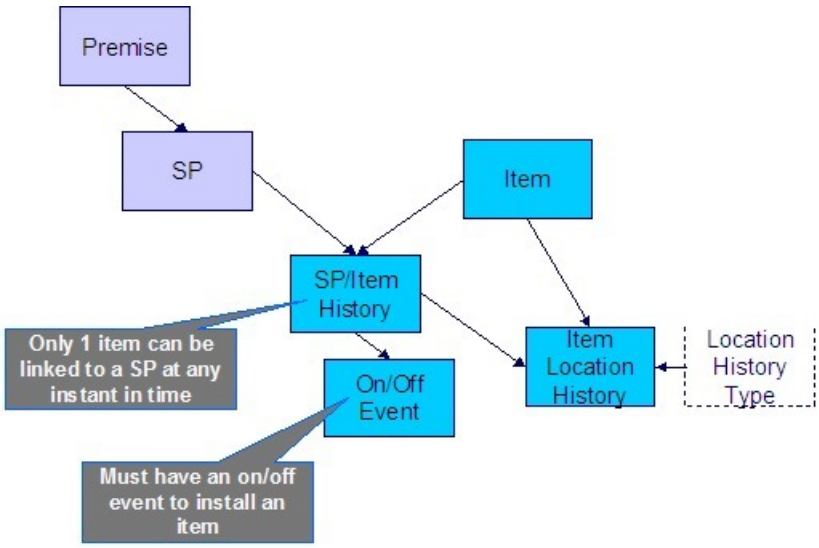
# SP / Item History and On/Off Event

**Contents**



## SP / Item Data Model

The following data model illustrates the service point / item installation object.



## SP / Item Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| SP/Item History | *CI_SP_ITEM_HIST* | Yes *CI_SP_ITEM_HIST_K* | CIPVSIHV | CIPVSIHK<br>*Has dependencies* | CIPVSIHI |
| On/Off Event | *CI_SP_ITEM_EVT* | No. The key is meter history ID plus sequence no. | CIPVSIEV | | CIPVSIEI |
| Item Location History | *CI_ITEM_LOC_HIS* | Yes. *CI_ITEM_LOC_HIS_K* | CIPVILHV | CIPVILHK | CIPVILHI |

## SP / Item Suggestions

In order to link an item to a service point, you must

- Link the item to the service point by inserting a record on the CI_SP_ITEM_HIST table.
- In addition, you must also create a CI_SP_ITEM_EVT record. Note the following about this record:
  - The value of the SP_ITEM_EVT_FLG should be I (for installation).
  - The value of the ITEM_ON_OFF_FLG should be 1 (on).

# Bill

**Contents**



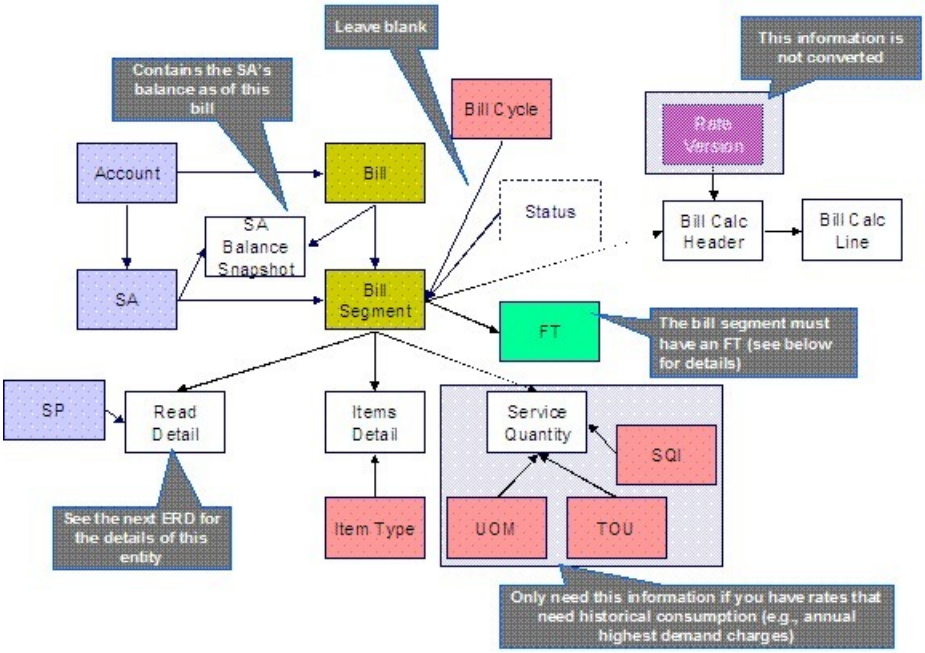
## Bill Data Model

**Contents**



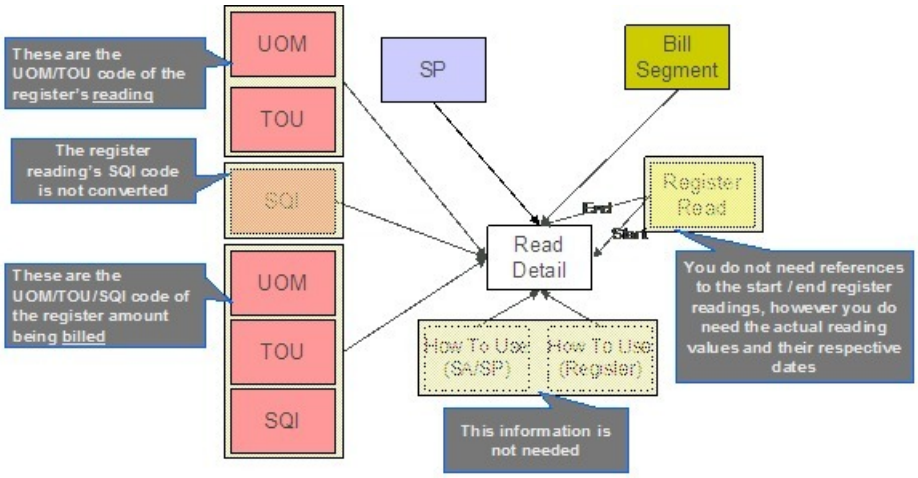
B ill - Main

The following data model illustrates the bill object.



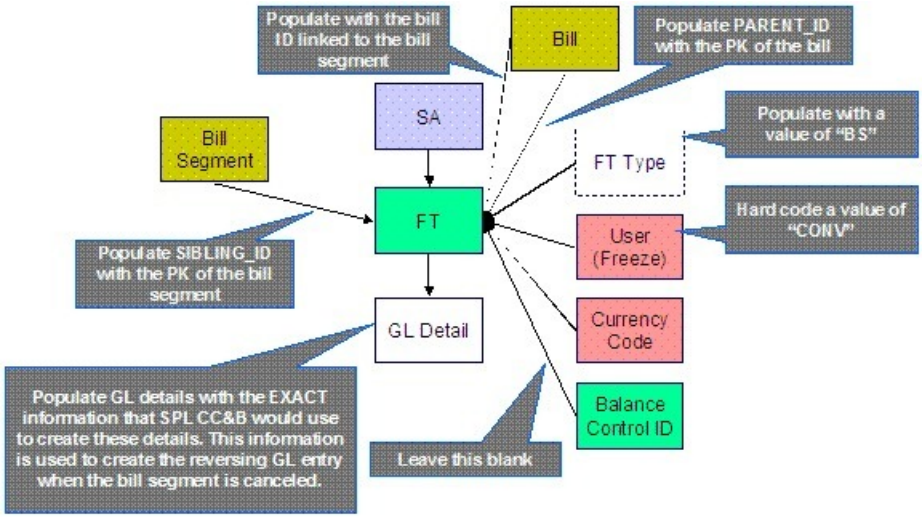

B ill - Read Details

The following data model illustrates the FK references on the read detail entity (a bill segment has one or more read details if the bill segment is associated with metered service).



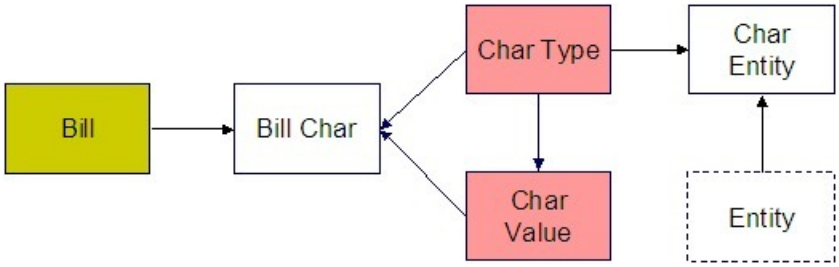

B ill - FT

The following data model illustrates the FT that must be associated with a bill segment.



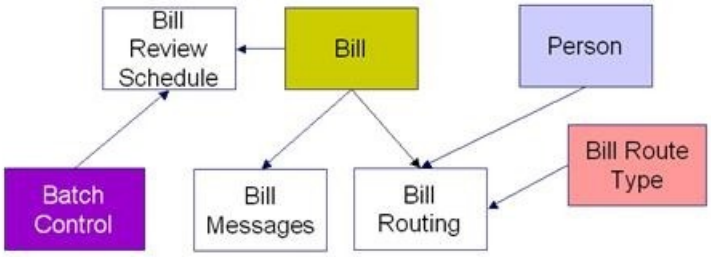

B ill Characteristics

The following data model illustrates Bill Characteristics.




B ill Messages, Bill Routing and Bill Review Schedule

The following data model illustrates Bill Messages, Bill Routing and Bill Review Schedule.




## Bill Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Bill | *CI_BILL* | Yes *CI_BILL_K* | CIPVBLLV | CIPVBILK<br>*Has dependencies* | CIPVBLLI |
| SA Balance Snapshot | *CI_BILL_SA* | No. The key is bill ID plus SA ID. | CIPVBSAV | | CIPVBSAI |

| | | | | | |
|---|---|---|---|---|---|
| Bill Segment | *CI_BSEG* | Yes *CI_BSEG_K* | CIPVSEGV | CIPVBSGK<br>*Has dependencies* | CIPVSEGI |
| Calc Header | *CI_BSEG_CALC* | No. The key is bill segment ID and a sequence number | CIPVBSCV | | CIPVBSCI |
| Calc Lines | *CI_BSEG_CALC_LN* | No. The key is bill segment ID, the header sequence number, and a sequence number | CIPVBSLV | | CIPVBSLI |
| Read Detail | *CI_BSEG_READ* | No. The key is bill segment ID, SP ID and a sequence number | CIPVSRRV | | CIPVSRRI |
| Item Detail | *CI_BSEG_ITEM* | No. The key is bill segment id and a sequence number | CIPVBSIV | | CIPVBSII |
| Service Quantity | *CI_BSEG_SQ* | No. The key is bill segment ID, uom code, tou code and SQI code | CIPVSQTV | | CIPVSQTI |
| FT (financial transaction) | *CI_FT* | Yes *CI_FT_K* | CIPVFTFV | CIPVFTXK<br>*Has dependencies* | CIPVFTFI |
| FT GL (FT general ledger) | *CI_FT_GL* | No. The key is FT ID and a GL sequence number | CIPVFTGV | | CIPVFTGI |
| Characteristics | *CI_BILL_CHAR* | No. The key is bill ID, char type code and a sequence number | CIPVBCHV | | CIPVBCHI |
| Bill Messages | *CI_BILL_MSGS* | No. The key is bill ID and bill message code. | CIPVBLMV | | CIPVBLMI |
| Bill Routing | *CI_BILL_ROUTING* | No. The key is bill ID and a sequence number | CIPVBLRV | | CIPVBLRI |
| Bill Review Schedule | *CI_BILL_RVW_SCH* | No. The key is bill ID, bill review date and batch code. | CIPVBRVV | | CIPVBRVI |

## Bill Suggestions

Most companies have found it impossible to load bill segment item, bill calculation header and lines with sufficient information and therefore these tables are not populated. See the comments in the above ERD's for more information.

Please populate the columns on the FT that's associated with the bill segment as follows:

- CUR_AMT should be set equal to the bill segment amount

- PAY_AMT should be set equal to the bill segment amount
- CRE_DTTM should be set equal to the bill segment end date / time
- FREEZE_SW should be "Y"
- FREEZE_DTTM should be set equal to the bill segment end date / time
- ARS_DT should be set equal to the bill segment end date
- CORRECTION_SW should be "N"
- REDUNDANT_SW should be "N"
- NEW_DEBIT_SW should be "N"
- NOT_IN_ARS_SW should be set to "N"
- SHOW_ON_BILL_SW should be set to "N"
- ACCOUNTING_DT should be set to the current date
- SCHED_DISTRIB_DT should be left blank
- CURRENCY_CD should be the currency on the installation record
- BAL_CTL_GRP_ID should be left blank
- XFERRED_OUT_SW should be set to "Y"
- PARENT_ID should be set to the bill ID
- SIBLING_ID should be set to the bill segment ID
- Do NOT create any GL details for the FT. If GL details are converted, ensure they are populated with the EXACT information SPL CC&B would use to create them. This information is used to create the reversing GL entry when the bill segment is canceled.

## Payment

**Contents**



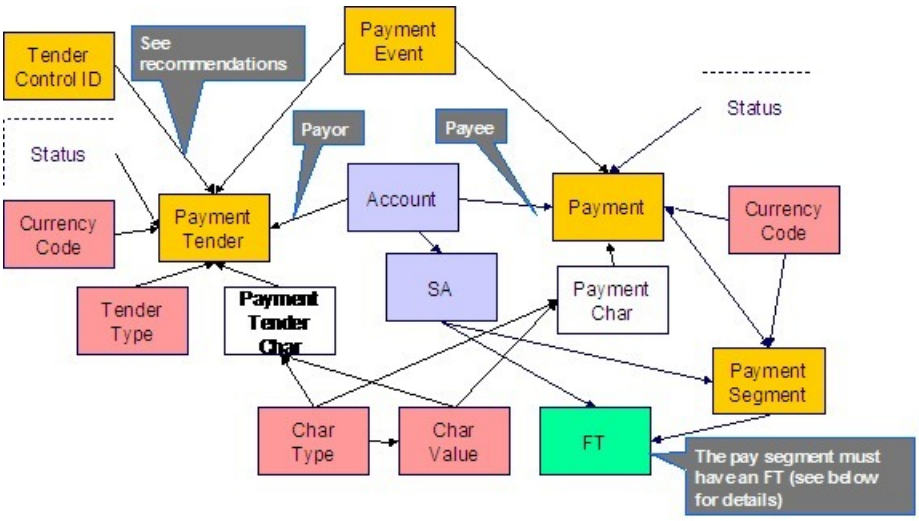
## Payment Data Model

**Contents**



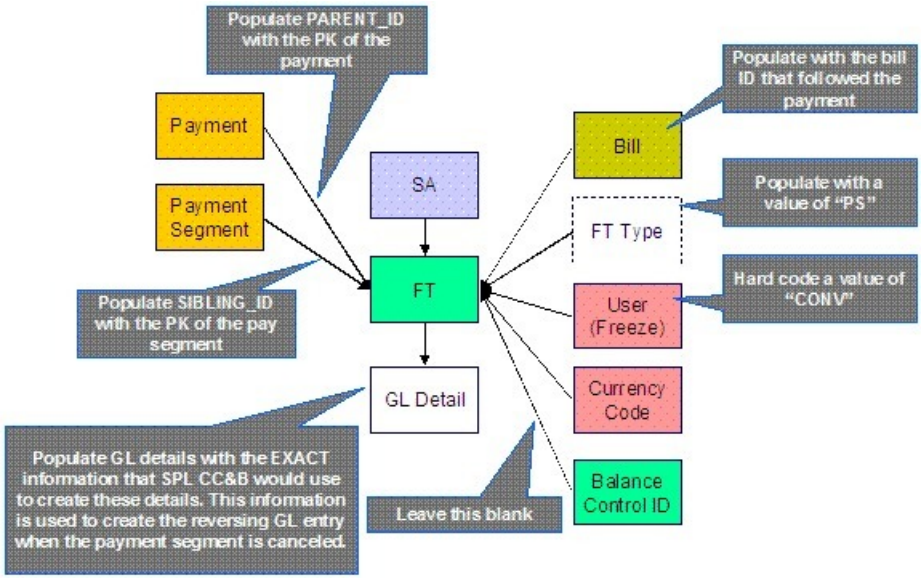
Payment - Main

The following data model illustrates the payment object.




Payment - FT

The following data model illustrates the FT that must be associated with a payment segment.




## Payment Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Payment | *CI_PAY* | Yes *CI_PAY_K* | CIPVPAYV | CIPVPAYK<br>*Has dependencies* | CIPVPAYI |
| Payment Event | *CI_PAY_EVENT* | Yes *CI_PAY_EVENT_K* | | CIPVPYEK<br>*Has dependencies* | CIPVPYEI |

| | | | | | |
|---|---|---|---|---|---|
| Payment Event Characteristic | *CI_PAY_EVT_CHAR* | No. The key is PAY_EVENT_ID and a char type. | CIPVBLCV | | CIPVBLCI |
| Payment Tender | *CI_PAY_TNDR* | Yes *CI_PAY_TNDR_K* | CIPVTNDV | CIPVTNDK<br>*Has dependencies* | CIPVTNDI |
| Payment Segment | *CI_PAY_SEG* | Yes *CI_PAY_SEG_K* | CIPVPSGV | CIPVPSGK<br>*Has dependencies* | CIPVPSGI |
| FT (financial transaction) | *CI_FT* | Yes *CI_FT_K* | CIPVFTFV | CIPVFTXK<br>*Has dependencies* | CIPVFTFI |
| FT GL (FT general ledger) | *CI_FT_GL* | No. The key is FT id and a GL sequence number | CIPVFTGV | | CIPVFTGI |
| Payment Tender Characteristic | *CI_PAY_TNDR_CHAR* | No. The key is PAY_TENDER_ID, plus a sequence number and a char type | CIPVTNCV | | CIPVTNCI |
| Payment Characteristic | *CI_PAY_CHAR* | No. The key is PAY_ID, plus a sequence number and a char type | CIPVPYCV | | CIPVPYCI |

## Payment Suggestions

We recommend that you use the system to create a single deposit control and link to it a single tender control using the PRODUCTION tables. The tender control should reference a tender source of "conversion". Use the prime key of the tender control as the foreign key on the tenders that you insert into the STAGING tables. This means you will have an invalid foreign key relationship on CI_PAY_TNDR (it will reference a tender control that doesn't exist).

After converting the payments:

- Re-access the tender control in production and enter the appropriate amounts (per tender type) to balance the tender control.
- Re-access the deposit control in production and enter the appropriate amounts to balance the deposit control.

Please populate the columns on the FT that's associated with the payment segment as follows:

- CUR_AMT should be set equal to the payment segment amount
- PAY_AMT should be set equal to the payment segment amount
- CRE_DTTM should be set equal to the payment segment date / time
- FREEZE_SW should be "Y"
- FREEZE_DTTM should be set equal to the payment segment date / time
- ARS_DT should be set equal to the payment segment date
- CORRECTION_SW should be "N"
- REDUNDANT_SW should be "N"
- NEW_DEBIT_SW should be "N"
- NOT_IN_ARS_SW should be set to "N"

- SHOW_ON_BILL_SW should be set to "N" on all payments other than payments that have been received since the last bill. For recent payments that you want to show on the next bill, this switch must be "Y"
- ACCOUNTING_DT should be set to the current date
- SCHED_DISTRIB_DT should be left blank
- CURRENCY_CD should be the currency on the installation record
- BAL_CTL_GRP_ID should be left blank
- XFERRED_OUT_SW should be set to "Y"
- PARENT_ID should be set to the payment ID
- SIBLING_ID should be set to the payment segment ID
- Do NOT create any GL details for the FT. If GL details are converted, ensure they are populated with the EXACT information SPL CC&B would use to create them. This information is used to create the reversing GL entry when the payment segment is canceled.

## Adjustment

**Contents**



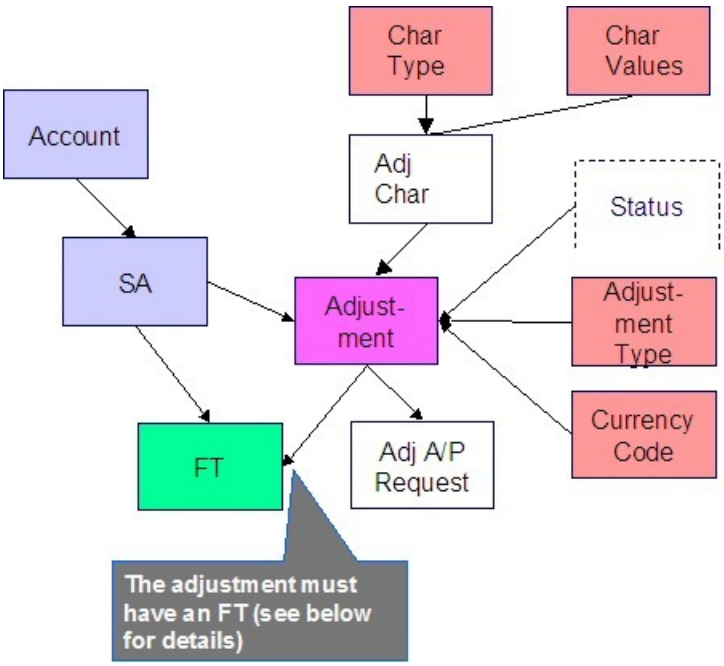
## Adjustment Data Model

**Contents**



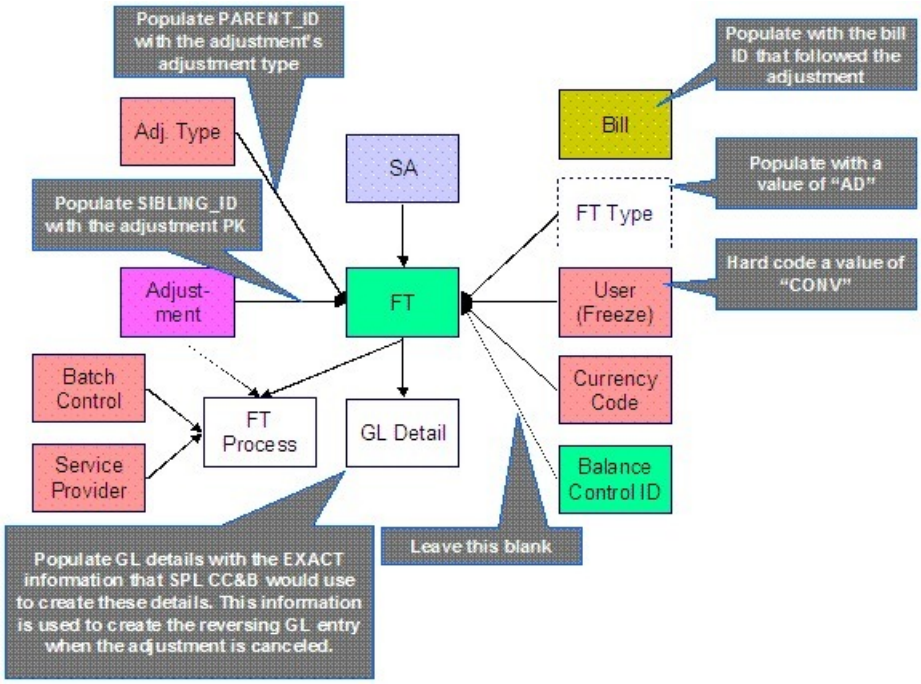
Adjustment - Main

The following data model illustrates the adjustment object.




A djustment - FT

The following data model illustrates the FT that must be associated with an adjustment segment.




## Adjustment Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Adjustment | *CI_ADJ* | Yes *CI_ADJ_K* | CIPVADJV | CIPVADJK | CIPVADJI |

| | | | | | |
|---|---|---|---|---|---|
| | | | | *Has dependencies* | |
| Adjustment Characteristic | *CI_ADJ_CHAR* | No. The key is ADJ_ ID and a char type. | CIPVADCV | | CIPVADCI |
| Adjustment A/P Request | *CI_ADJ_APREQ* | Yes *CI_ADJ_ APREQ_K* | CIPVAPRV | CIPVAPRK<br>*Has dependencies* | CIPVAPRI |
| FT (financial transaction) | *CI_FT* | Yes *CI_FT_K* | CIPVFTFV | CIPVFTXK<br>*Has dependencies* | CIPVFTFI |
| FT GL (FT general ledger) | *CI_FT_GL* | No. The key is FT ID and a GL sequence number | CIPVFTGV | | CIPVFTGI |
| FT Process | *CI_FT_PROC* | No. The key is FT id and a sequence number | CIPVFTPV | | CIPVFTPI |

## Adjustment Suggestions

Please populate the columns on the FT that's associated with the adjustment as follows:

- CUR_AMT should be set equal to the adjustment amount
- PAY_AMT should be set equal to the adjustment amount
- CRE_DTTM should be set equal to the adjustment date / time
- FREEZE_SW should be "Y"
- FREEZE_DTTM should be set equal to the adjustment date / time
- ARS_DT should be set equal to the adjustment date
- CORRECTION_SW should be "N"
- REDUNDANT_SW should be "N"
- NEW_DEBIT_SW should be "N"
- NOT_IN_ARS_SW should be set to "N"
- SHOW_ON_BILL_SW should be set to "N" on all adjustments other than adjustments that have been generated since the last bill. For recent adjustments that you want to show on the next bill, this switch must be "Y"
- ACCOUNTING_DT should be set to the current date
- SCHED_DISTRIB_DT should be left blank
- CURRENCY_CD should be the currency on the installation record
- BAL_CTL_GRP_ID should be left blank
- XFERRED_OUT_SW should be set to "Y"
- PARENT_ID should be set to the adjustment's adjustment type
- SIBLING_ID should be set to the adjustment ID
- Do NOT create any GL details for the FT. If GL details are converted, ensure they are populated with the EXACT information SPL CC&B would use to create them. This information is used to create the reversing GL entry when the adjustment is canceled.

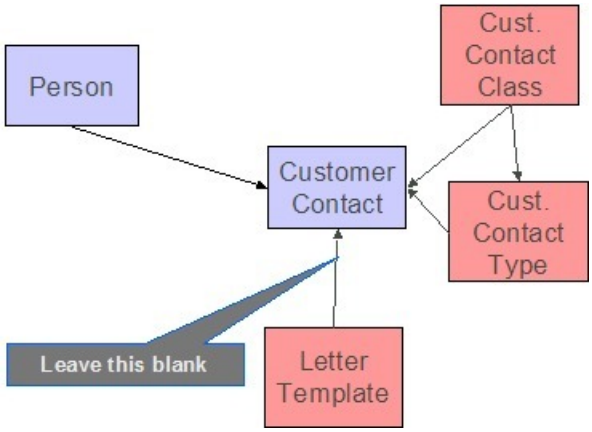
# Customer Contact

**Contents**



## Customer Contact Data Model

The following data model illustrates the Customer Contact object.




## Customer Contact Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Customer Contact | *CI_CC* | Yes *CI_CC_K* | CIPVCSCV | CIPVCCTK<br>*Has dependencies* | CIPVCSCI |

## Customer Contact Suggestions

N/A

# Meter Read

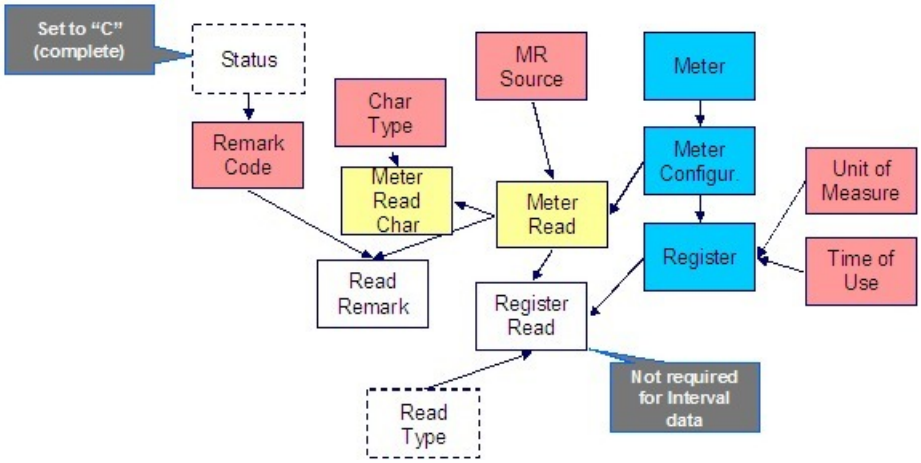
**Contents**

*Meter Read Table Names*

*Meter Read Suggestions*

## Meter Read Data Model

The following data model illustrates the meter read object.




## Meter Read Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Meter Read | *CI_MR* | Yes *CI_MR_K* | CIPVMRDV | CIPVMRDK<br>*Has dependencies* | CIPVMRDI |
| Register Read | *CI_REG_READ* | Yes *CI_REG_READ_K* | CIPVRGRV | CIPVRRDK<br>*Has dependencies* | CIPVRGRI |
| Read Remark | *CI_MR_REM* | No. Key is meter read plus read ID. | CIPVMRMV | | CIPVMRMI |
| Meter Read Characteristics | *CI_MR_CHAR* | No. The key is MR_ID plus a sequence number and a char type. | CIPVMRCV | | CIPVMRCI |

## Meter Read Suggestions

N/A

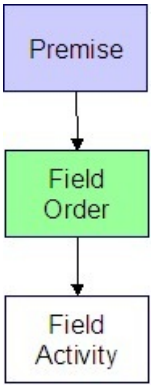
# Field Order

**Contents**



## Field Order Data Model

The following data model illustrates the Field Order object.




## Field Order Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Field Order | *CI_FO* | Yes *CI_FO_K* | *VAL-FO* | CIPVFORV | CIPVFORK<br>*Has dependencies* | CIPVFORI |

## Field Order Suggestions

N/A

# Field Activity

**Contents**

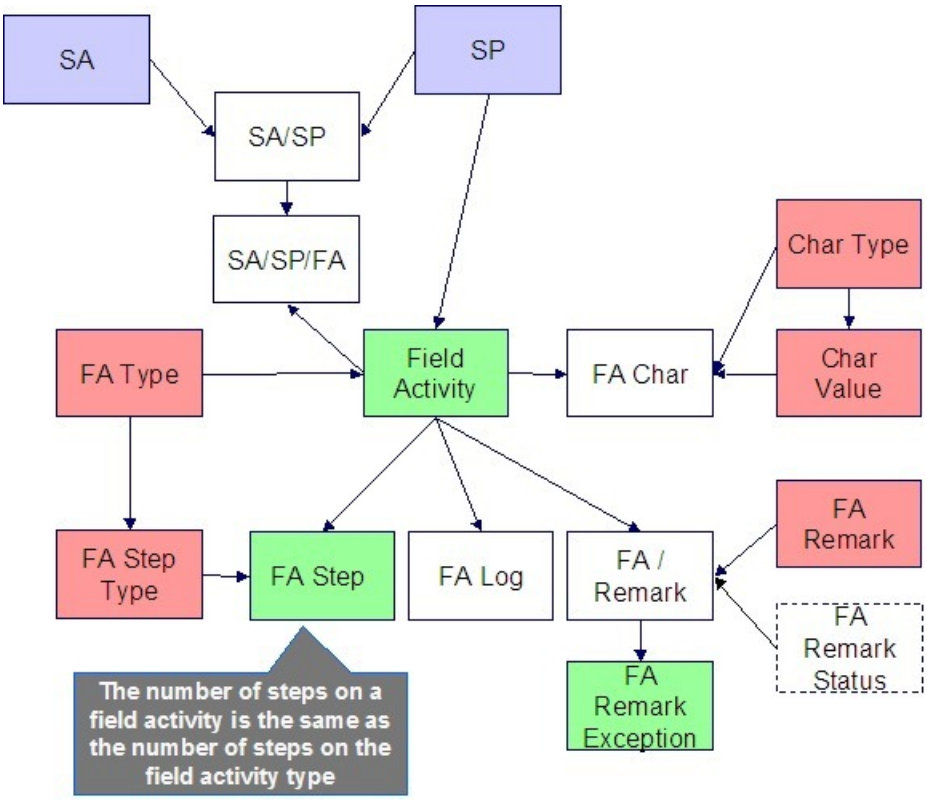
*Field Activity Data Model*

*Field Activity Table Names*

*Field Activity Suggestions*

## Field Activity Data Model

The following data model illustrates the field activity object.




## Field Activity Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Field Order | *CI_FO* | Yes *CI_FO_K* | *VAL-FO* | CIPVFORV | CIPVFORK<br>*Has dependencies* | CIPVFORI |
| Field Activity | *CI_FA* | Yes *CI_FA_K* | *VAL-FA* | | CIPVFACK<br>*Has dependencies* | CIPVFACI |
| Step | *CI_FA_STEP* | No. The key is FA_ID plus | | CIPVFSTV | | CIPVFSTI |

| | | | | |
|---|---|---|---|---|
| | | sequence number. | | |
| Characteristic | *CI_FA_CHAR* | No. The key is FA_ID plus CHAR_TYPE_CD plus sequence number. | CIPVFAHV | CIPVFAHI |
| Remarks | *CI_FA_REM* | No. The key is FA_ID plus FA_REM_CD. | CIPVFARV | CIPVFARI |
| Log | *CI_FA_LOG* | No. The key is FA_ID plus sequence number. | CIPVFALV | CIPVFALI |
| SA/SP/FA | *CI_SA_SP_FA* | No. The key is SA/SP id and FA id. | CIPVSSFV | CIPVSSFI |

## Field Activity Suggestions

N/A

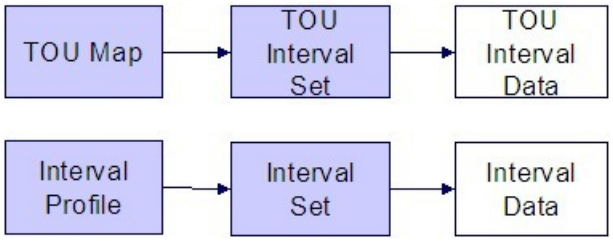
# Interval Data

**Contents**



## Interval Data Data Model

The following data model illustrates the SA Interval Billing object.



## Interval Data Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| TOU Interval Set | *CI_TOU_DATA_SET* | Yes *CI_TOU_DATA_SET_K* | *VAL-TDS* | | CIPVTDSK<br>*Has dependencies* | CIPVTDSI |
| TOU Interval Data | *CI_TOU_DATA* | No. The key is TOU_DATA_SET_ID plus TOU_DATA_DTTM | | CIPVTOFV | | CIPVTODI |
| Interval Set | *CI_INTV_DATA_SET* | Yes *CI_INTV_DATA_SET_K* | *VAL-IDS* | | CIPVIDSK<br>*Has dependencies* | CIPVIDSI |
| Interval Data | *CI_INTV_DATA* | No. The key is INTV_DATA_SET_ID plus INTV_DATA_DTTM | | CIPVITFV | | CIPVITDI |

## Interval Data Suggestions

N/A

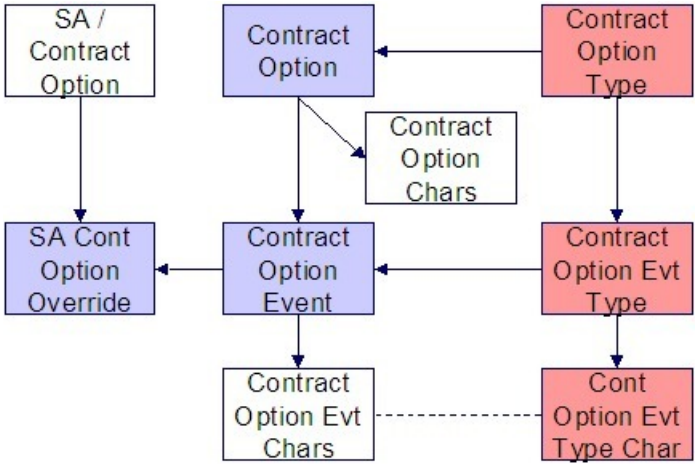
# Contract Option Events

**Contents**



## Contract Option Events Data Model

The following data model illustrates the Contract Options objects.




## Contract Option Events Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Contract Option Event | *CI_COP_EVT* | Yes *CI_COP_EVT_K* | *VAL-CEVT* | | CIPVCEVK *Has dependencies* | CIPVCEVI |
| Contract Option Event Characteristics | *CI_COP_EVT_CHAR* | No. The key is CONT_OPT_EVT_ID plus CHAR_TYPE_CD | | CIPVCVCV | | CIPVCVCI |
| SA Contract Option Override | *CI_SA_COP_OVRD* | No. The key is SA_CONT_OPT_ID plus CONT_OPT_EVT_ID plus OVRD_DTTM | | CIPVSCOV | | CIPVSCOI |

## Contract Option Events Suggestions

N/A

# Register Interval Data

**Contents**

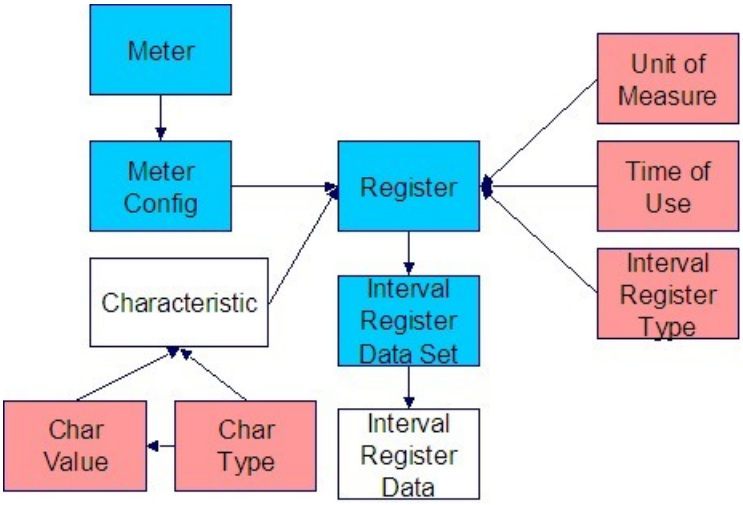
*Register Interval Data Model*

*Register Interval Data Table Names*

*Register Interval Data Suggestions*

## Register Interval Data Model

The following data model illustrates the register interval data object.




## Register Interval Data Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Interval Register Data Set | *CI_REG_DATA_SET* | Yes *CI_REG_DATA_SET_K* | *VAL-IRDS* | | CIPVIRSK<br>*Has dependencies* | CIPVIRSI |
| Interval Register Data | *CI_REG_DATA* | No. The key is REG_DATA_SET_ID plus REG_DATA_DTTM | | CIPVREFV | | CIPVREDI |

## Register Interval Data Suggestions

N/A

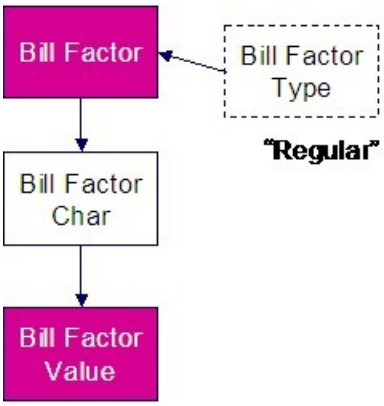
# Bill Factor Value

**Contents**



## Bill Factor Value Data Model

The following data model illustrates the bill factor objects.




## Bill Factor Value Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Bill Factor Value | *CI_BF_VAL* | No. The key is BF_CD plus CHAR_TYPE_CD plus CHAR_VAL plus TOU_GRP_CD plus EFFDT | CIPVBFVV | | CIPVBFVI<br>(Not threadable) |

## Bill Factor Value Suggestions

N/A

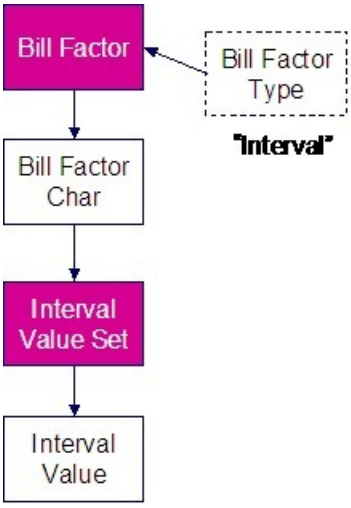
# Bill Factor Interval Prices

**Contents**

*Bill Factor Interval Prices Suggestions*

## Bill Factor Interval Prices Data Model

The following data model illustrates the bill factor interval prices objects.




## Bill Factor Interval Prices Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Interval Value Set | *CI_INTV_VAL_SET* | Yes *CI_INTV_VAL_SET_K* | *VAL-IVS* | | CIPVIVSK | CIPVIVSI |
| Interval Value | *CI_INTV_VAL* | No. The key is INTV_VAL_SET_ID plus INTV_VAL_DTTM | | CIPVITFV | | CIPVITVI |

## Bill Factor Interval Prices Suggestions

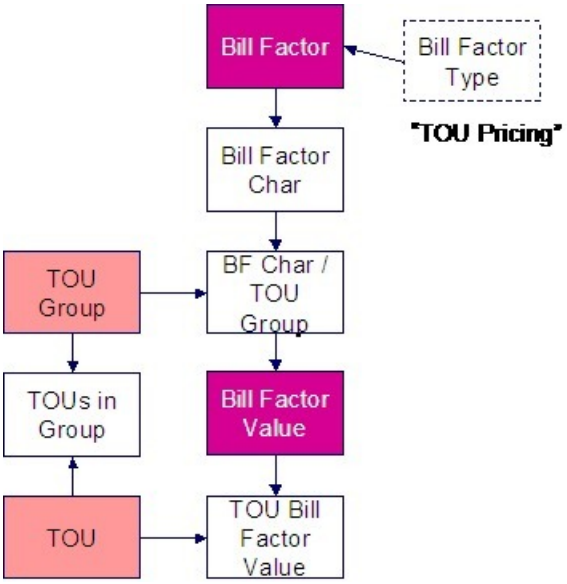
N/A

# Bill Factor TOU Pricing

**Contents**

## Bill Factor TOU Pricing Data Model

The following data model illustrates the bill factor TOU Pricing objects.




## Bill Factor TOU Pricing Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| TOU Bill Factor Value | *CI_TOU_BF_VAL* | No. The key is BF_CD plus CHAR_TYPE_CD plus CHAR_VAL plus EFFDT plus TOU_GRP_CD plus TOU_CD | CIPVTBVV | | CIPVTBVI<br>(Not threadable) |

## Bill Factor TOU Pricing Suggestions

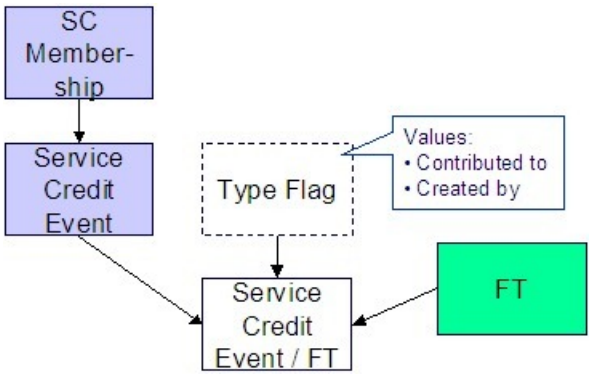
N/A

# Service Credit Event

**Contents**

## Service Credit Event Data Model

The following data model illustrates the Service Credit Event objects.




## Service Credit Event Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Service Credit Event | *CI_SC_EVT* | Yes *CI_SC_EVT_K* | CIPVSCVV | CIPVSCVK<br>*Has dependencies* | CIPVSCVI |
| Service Credit Event / FT | *CI_SC_EVT_FT* | Yes *CI_SC_EVT_FT_K* | CIPVSCFV | CIPVSCFK<br>*Has dependencies* | CIPVSCFI |

## Service Credit Event Suggestions

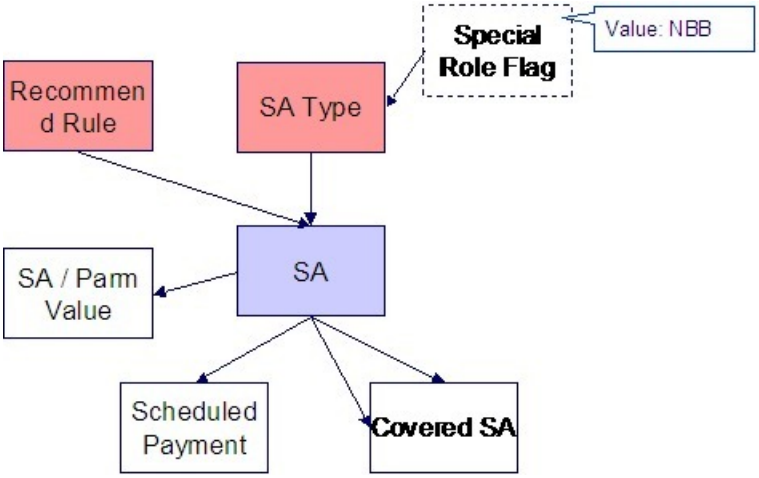
Loading the Service Credit Event FT data is optional. This data need only be converted if it exists in the legacy system and it is deemed necessary to include it.

# Non-Billed Budgets

**Contents**

## Non-Billed Budgets Data Model

The following data model illustrates the Non-Billed Budgets objects.




## Non-Billed Budgets Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| NBB / Service Agreement | *CI_NB_SA* | No. The key is SA_ ID plus CVRD_SA_ ID | CIPVNBSV | | CIPVNBSI |
| NBB Scheduled Payments | *CI_NB_SCHED_ PAY* | Yes *CI_NB_ SCHED_PAY_K* | CIPVNSPV | CIPVNSPK *Has dependencies* | CIPVNSPI |
| NBB / SA Parameters | *CI_SA_NB_PARM* | No. The key is SA_ ID plus Sequence Number. | CIPVNPMV | | CIPVNPMI |

## Non-Billed Budgets Suggestions

N/A

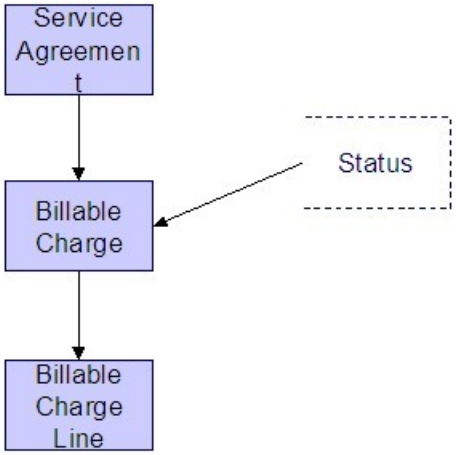
# Billable Charge

**Contents**

*Billable Charge Suggestions*

## Billable Charge Data Model

The following data model illustrates the Billable Charge objects.




## Billable Charge Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Billable Charge | *CI_BILL_CHG* | Yes. *CI_BILL_CHG_K* | *VAL-BCHG* | CIPVBCGV | CIPVBCGK | CIPVBCGI |
| Billable Charge Line | *CI_B_CHG_LINE* | No. The key is billable charge id and a sequence number | | CIPVBCLV | | CIPVBCLI |

## Billable Charge Suggestions

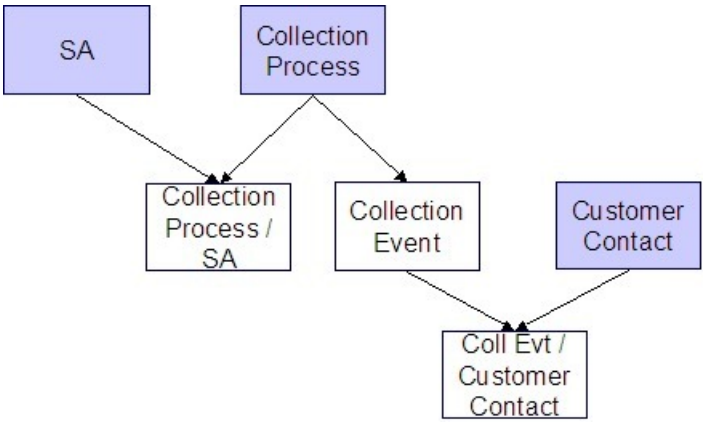
N/A

# Collection Process

**Contents**

## Collection Process Data Model

The following data model illustrates the Collection Process objects.




## Collection Process Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Collection Process | *CI_COLL_PROC* | Yes. *CI_COLL_PROC_K* | *VAL-COLL* | CIPVCLPV | CIPVCLPK | CIPVCLPI |
| Collection Event | *CI_COLL_EVT* | No. The key is collection process id and a sequence number. | | CIPVCVNV | | CIPVCVNI |
| Collection Process / Service Agreement | *CI_COLL_PROC_SA* | No. The key is collection process id and service agreement id. | | CIPVCLSV | | CIPVCLSI |
| Collection Event Customer Contact | *CI_COLL_EVT_CC* | No. The key is collection process id, a sequence number and the customer contact id. | | CIPVCECV | | CIPVCECI |

## Collection Process Suggestions

N/A

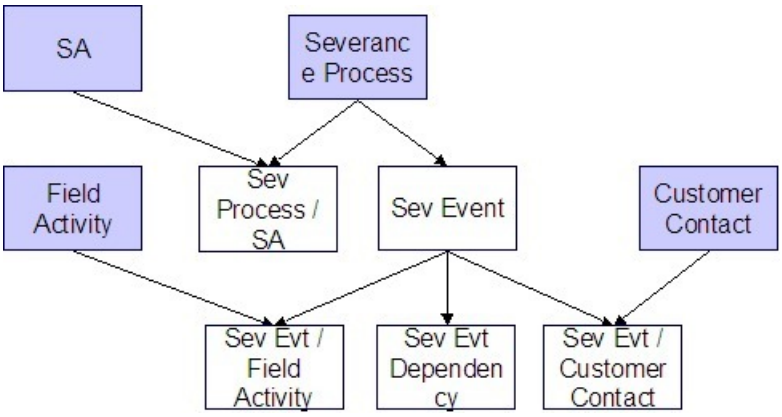
# Severance Process

**Contents**



## Severance Process Data Model

The following data model illustrates the Severance Process objects.




## Severance Process Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Severance Process | *CI_SEV_PROC* | Yes. *CI_SEV_PROC_K* | *VAL-SEVP* | CIPVSEPV | CIPVSEPK | CIPVSEPI |
| Severance Event | *CI_SEV_EVT* | No. The key is severance process id and a sequence number. | | CIPVSEVV | | CIPVSEVI |

| | | | | |
|---|---|---|---|---|
| Severance Event Customer Contact | *CI_SEV_EVT_CC* | No. The key is severance process id, a sequence number and the customer contact id. | CIPVSECV | CIPVSECI |
| Severance Event / Field Activity | *CI_SEV_EVT_FA* | No. The key is severance process id, a sequence number and field activity id. | CIPVSEFV | CIPVSEFI |
| Severance Event Dependency | *CI_SEV_EVT_DEP* | No. The key is severance process id, event sequence number and a sequence number. | CIPVSEDV | CIPVSEDI |

## Severance Process Suggestions

N/A

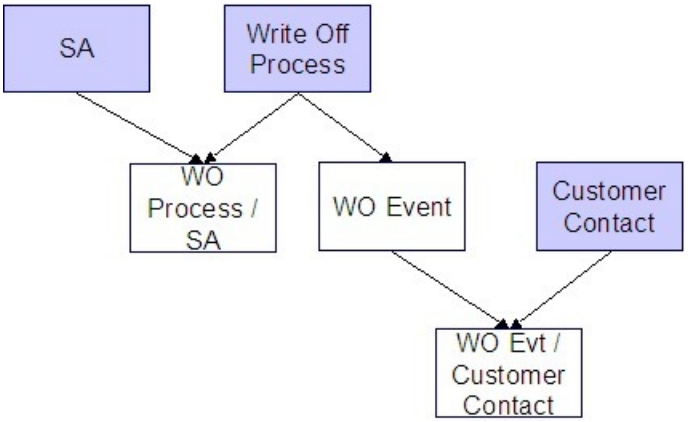
# Write Off Process

**Contents**



## Write Off Process Data Model

The following data model illustrates the Write Off Process objects.




## Write Off Process Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Write Off Process | *CI_WO_PROC* | Yes. *CI_WO_PROC_K* | *VAL-WOP* | CIPVWOPV | CIPVWOPK | CIPVWOPI |
| Write Off Process / Service Agreement | *CI_WO_PROC_SA* | No. The key is write-off process id and service agreement id. | | CIPVWOSV | | CIPVWOSI |
| Write Off Event | *CI_WO_EVT* | No. The key is write-off process id and a sequence number. | | CIPVWOVV | | CIPVWOVI |
| Write Off Event / Customer Contact | *CI_WO_EVT_CC* | No. The key is write-off process id, a sequence number and the customer contact id. | | CIPVWOCV | | CIPVWOCI |

## Write Off Process Suggestions

N/A

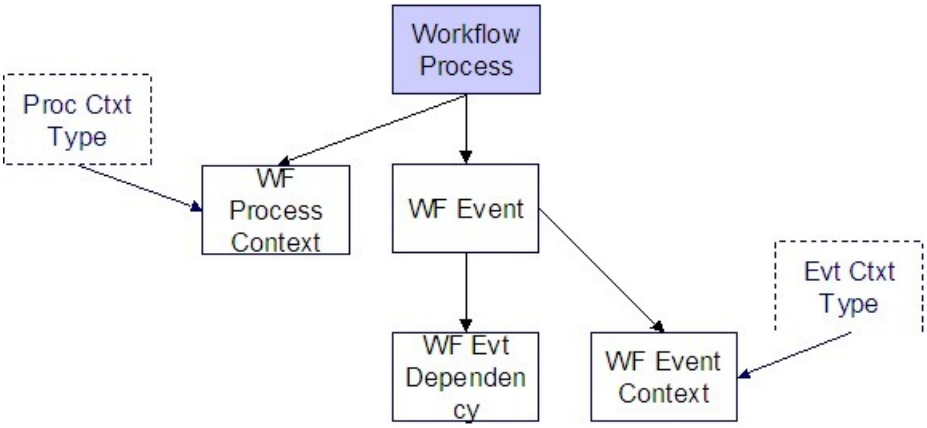
## Workflow Process

### Contents

*Workflow Process Data Model*
*Workflow Process Table Names*
*Workflow Process Suggestions*

## Workflow Process Data Model

The following data model illustrates the Workflow Process objects.




## Workflow Process Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|
| Workflow Process | *CI_WF_PROC* | Yes. *CI_WF_PROC_K* | *VAL-WFP* | CIPVWPRV | CIPVWPRK | CIPVWPRI |
| Workflow Process Context | *CI_WF_PROC_CTXT* | No. The key is workflow process id, workflow process context type and value. | | CIPVWPCV | | CIPVWPCI |
| Workflow Event | *CI_WF_EVT* | No. The key is workflow process id and a sequence number. | | CIPVWEVV | | CIPVWEVI |
| Workflow Event Context | *CI_WF_EVT_CTXT* | No. The key is workflow process id, event sequence number, event context type and value. | | CIPVWECV | | CIPVWECI |

| | | | | | |
|---|---|---|---|---|---|
| Workflow Event Dependency | *CI_WF_EVT_DEP* | No. The key is workflow process id, event sequence number and a sequence number. | | CIPVWEDV | CIPVWEDI |

## Workflow Process Suggestions

N/A

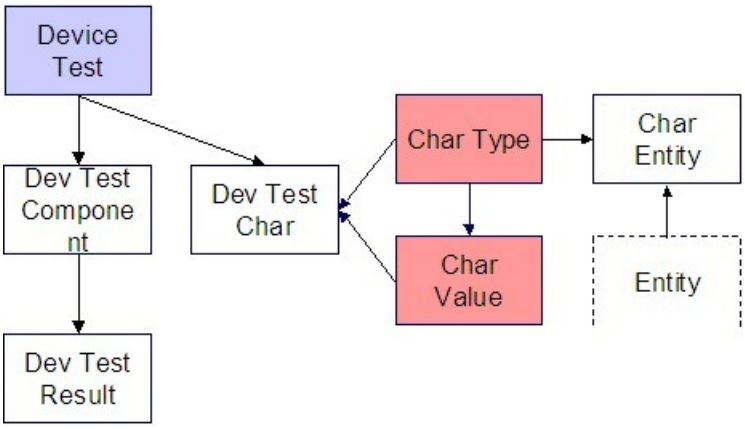
# Device Test

**Contents**



## Device Test Data Model

The following data model illustrates the Device Test object.




## Device Test Table Names

| Data Model Name | Table Name | Generated Keys | Object Validation Batch Control | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| Device Test | *CI_DV_TEST* | Yes. *CI_DV_TEST_K* | *VAL-DTST* | CIPVDTTV | CIPVDTTK | CIPVDTTI |
| Device Test Characteristics | *CI_DV_TEST_CHAR* | No. The key is device test id and characteristic type code | | CIPVDTCV | | CIPVDTCI |
| Device Test Component | *CI_DV_TEST_COMP* | No. The key is device test id and a sequence number. | | CIPVDTMV | | CIPVDTMI |
| Device Test Result | *CI_DV_TEST_RES* | No. The key is device test id, sequence number, test component type code and a sequence number | | CIPVDTRV | | CIPVDTRI |

## Device Test Suggestions

N/A

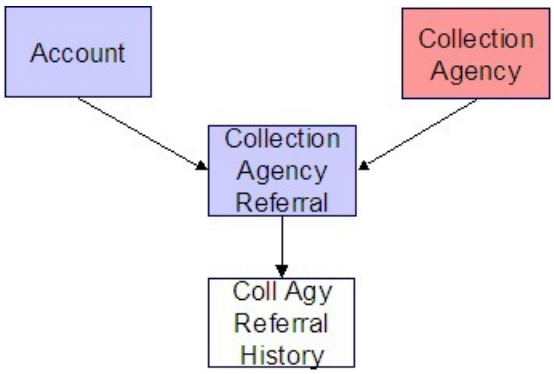
# Collection Agency Referral

**Contents**



## Collection Agency Referral Data Model

The following data model illustrates the Collection Agency Referral object.



## Collection Agency Referral Table Names

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Collection Agency Referral | *CI_COLL_AGY_REF* | Yes. *CI_COLL_AGY_REF_K* | CIPVCARV | CIPVCARK | CIPVCARI |
| Collection Agency Referral History | *CI_COLL_AGY_HIS* | No. The key is collection agency referral id and characteristic type code | CIPVARHV | | CIPVARHI |

## Collection Agency Referral Suggestions

N/A

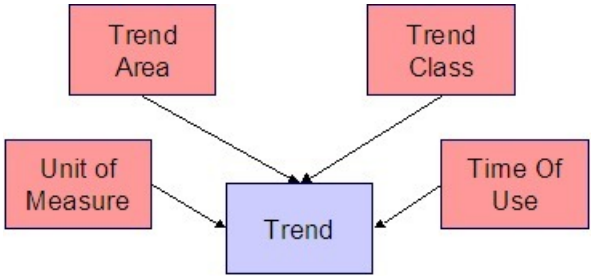
# Trend

**Contents**



## Trend Data Model

The following data model illustrates the Trend object.




## Trend Table Name

| Data Model Name | Table Name | Generated Keys | Referential Integrity Validation Batch Control | Key Assignment Batch Control | Insertion Batch Control |
|---|---|---|---|---|---|
| Trend | *CI_TREND* | No. The key is batch run number, trend area code, trend class code, unit of measure code, time of use code and read date. | CIPVTRNV | | CIPVTRNI |

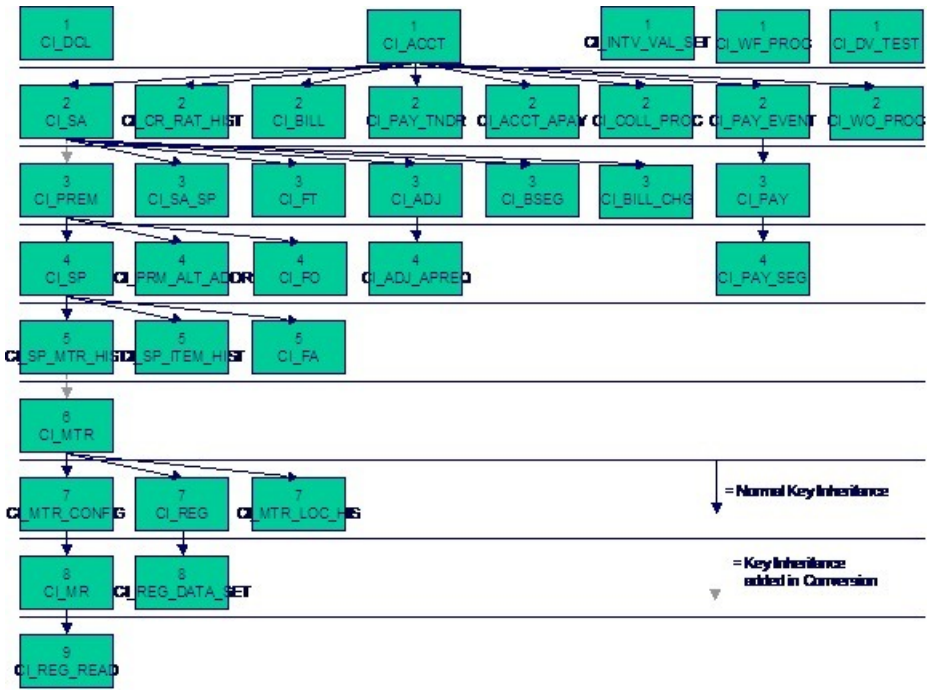
## Trend Suggestions

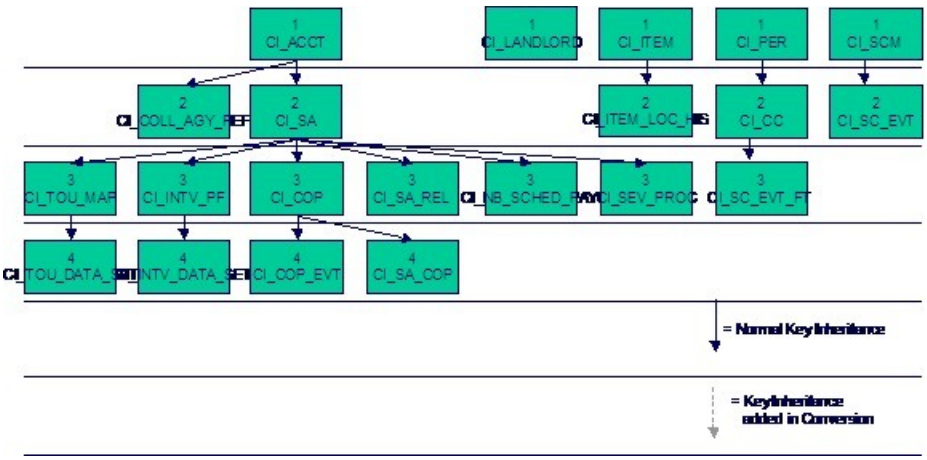
N/A

# Program Dependencies

The programs used to assign production keys are listed under *Master Data* and *Transaction Data* (in the Table Names matrices). Most of these programs have no dependencies (i.e., they can be executed in any order you please). The only exceptions to this statement are illustrated in the following diagram.

The tiers in this diagram contain a box for each table whose key assignment program is dependent on the successful execution of other key assignment programs. The numbers that appear in the boxes describe the order in which these programs must be executed.



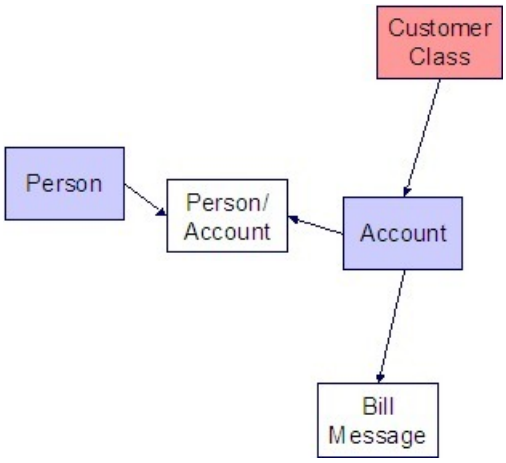



Please refer to the various "Table Names" sections above for the respective names of the programs to allocate each table's keys.

**WARNING:**
Prior to running the key generation program for a particular object, it is required that any previously generated keys be cleared from the key allocation tables and the key allocation temporary storage table. It is recommended that the key allocation tables be analyzed between runs to maximize performance.

# Appendix A - Entity Relationship Diagramming Standards

Because all data is stored in relational table, you need to be able to read diagrams that illustrate relationships between the various tables. The following entity diagram uses every diagramming notation used in the documentation:

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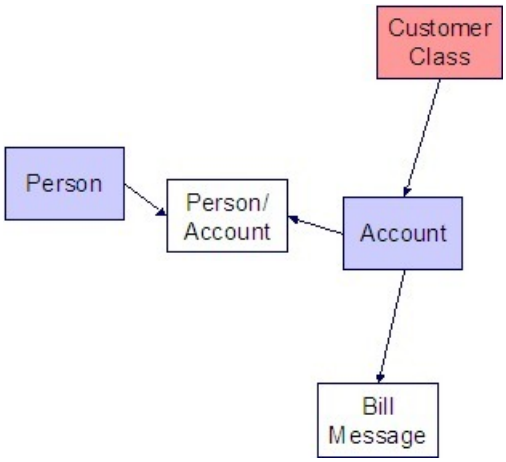
## Relationships

The solid line connecting the two entities that is terminated by an arrow represents a relationship between two entities. You read the relationship from the entity without the arrow to the entity with the arrow. For example in the following diagram, the line between Customer Class and Account illustrates that a Customer Class may have many Accounts, but an Account may be part of a single customer class.




## Entity

Every box on the above diagram represents an entity (i.e., a table). An entity may be a physical entity, such as a Person, or a logical construct, such as an Account.

## Color Coding

If you can view this document in color, you will notice that each entity is colored. The color indicates the "subsystem" which governs the entity. Know the governing subsystem is important because:

- The system's menu structure is subsystem-oriented (i.e., if you know the subsystem, you will know how to use the menus to navigate to the page used to view and update the entity).
- The system's documentation is subsystem-oriented (i.e., if you know the subsystem, you will know which chapter contains information about the entity).

Some entities are not color-coded (i.e., they are white). These entities do not have a dedicated page, as they are part of a parent entity. For example, the Person / Account entity above is related to the Account object and does not have its own page. You must display the parent entity in order to view such an entity. For example, if you want to look at Person / Account information, you must go to the Account page.

The following table describes the colors utilized in the documentation:

| Color | Subsystem |
|---|---|
| | Customer Information |
| | Admin (Control) Table. These tables are referenced as foreign keys on master and transaction tables. We do not document the names of |

| | |
|---|---|
| | these tables in this document as the table names are easily accessible using the Table transaction. |
| | N/A - the entity is maintained in respect of a higher level entity. |
| | N/A - the values in these types of entities are defined in a special table referred to as the lookup table. In order to determine the valid values for a column that references a lookup table, use the name of the column as the search value on the Look Up user interface. |
| | Meter Management |
| | Meter Reading |
| | Rates |
| | Billing |
| | Financial Transaction |
| | Payment |
| | Field Order |
| | Adjustment |

# Appendix B - Multiple Owners In A Single Database

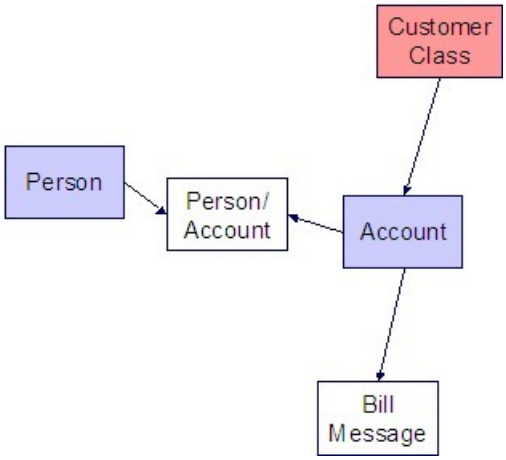
In the schematic referenced in the *Introduction*, you'll notice that there are two table owners in the system database. We refer to the first owner as "staging" and the second owner as "production".

The staging owner is linked to the tables into which you insert your pre-validated data. These tables have an owner ID of CISSTG .

> **NOTE:**
> **Multiple staging databases.** It is possible to have multiple staging databases. In this situation, each one would have a unique owner ID, e.g., CISSTG1 , CISSTG2 , etc.

The production owner is linked to the tables used by your production system. These tables have an owner ID of CISADM .

When the validation programs run against your staging data, they validate the staging data against the production control tables (and insert errors into the staging error table). This means that the SQL statements that access / update master and transaction data need to use the staging owner ( CISSTG ). Whereas the SQL statements that access control tables need to use the production owner ( CISADM ).




But notice that when these same programs run against production (Validate (b)), the SQL statements will never access the staging owner. Rather, they all point at the production owner.

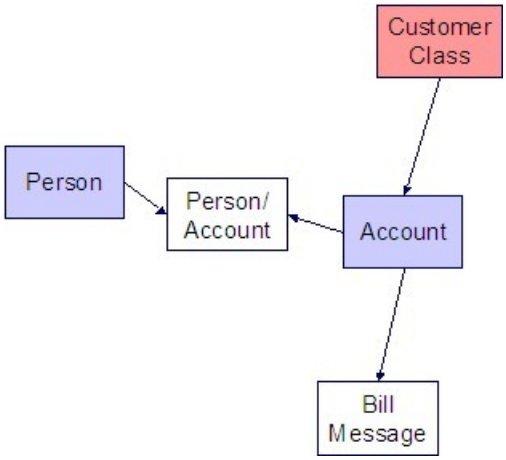
This is accomplished as follows:

- A separate application server must exist for each owner. Each application server points at a specific database user ID.
- The database user ID associated with the staging database uses CISSTG as the owner for the master and transaction tables, but it uses CISADM as the owner of the production control tables.
- The database user ID associated with the production database uses CISADM as the owner for the master, transaction, and control tables.

You may wonder why we went to this trouble. There are several reasons:

- We wanted to reuse the validation logic that exists in the programs that validate your production data. In order to achieve this, these programs must sometimes point at the staging owner, and other times they must point at the production owner (and this must be transparent to the programs otherwise two sets of SQL would be necessary).
- We wanted to let you use the application to look at and correct staging data. This can be accomplished by creating an application server that points at your staging database with the ownership characteristics described above.
- We wanted the validation programs to be able to validate your production data (in addition to your staging data). Why would you want to validate production data if only clean data can be added to production? Consider the following scenarios:
  - After an upgrade, you might want to validate your production data to ensure your pre-existing user-exit logic still works.
  - You may want to conduct an experiment of the ramifications of changing your validation logic. To do this, you could make a temporary change to user exit logic (in production) and then run the validation jobs on a random sample basis.
  - You forget to run a validation program before populating production and you want to see the damage. If you follow the instructions in this document, this should never happen. However, accidents happen. And if they do, at least there's a way to determine the ramifications.

While the redirection of owner ID's is a useful technique for the validation programs, it cannot be used by the key assignment and production insert programs? Why, because these programs have to access the same tables but with different owners. For example, the program that inserts rows into the person table must select rows from staging.Person and insert them into production.Person.




This is accomplished as follows:

- Views exist for each table that exists in both databases. These views have hard-coded the database owner CISADM (production). For example, there is a view called CX_PER that points at person table in production.
- The key assignment and insertion programs use these views whenever then need to access production data.

# Appendix C - Known Oddities

Be aware that the following tables reference master data (e.g., persons, accounts). This means that if you look at them using a user ID that defaults ownership to the staging level, you will not be able to see the related master data (because the person / account doesn't exist in the staging owner's tables).

- Collection Agency. References a person.
- Service Provider. References a person and a service agreement.
- 3 rd Party Payor. References an account.
- Tender Source. References a suspense account.