

**Oracle Utilities Meter Data Management
Integration to SAP for Meter Data
Unification and Synchronization**

Meter Data Management User's Guide Addendum

Release 11.1

E28260-01

March 2012

Copyright © 2000, 2012, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

If this software or related documentation is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS

Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications which may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

This software or hardware and documentation may provide access to or information on content, products and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third party content, products and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third party content, products or services.

Contents

Overview.....	4
Getting Started.....	5
AboutOracleUtilitiesMeterDataManagementIntegrationtoSAPforMeterDataUnificationandSynchronization	
About this Guide.....	6
Starting the Application.....	6
System Administration.....	7
General Data Administration.....	7
Defining Master Configurations.....	7
Defining Service Providers.....	8
Device Management Administration.....	8
Defining Device Types.....	8
Defining Measuring Component Types.....	8
Device Communication Administration.....	9
Defining Activity Types.....	9
Usage Administration.....	9
Defining TOU Map Templates.....	9
Defining Usage Rules.....	9
Defining Usage Subscription Types.....	10
User Documentation.....	11
Device Communication.....	11
Searching and Viewing Activities.....	11
Working with Meter Commands.....	12
Data Synchronization.....	12
Data Synchronization Requests.....	12
Data Synchronization Request Exceptions.....	13
Reference Topics.....	14
Glossary.....	14
Standard Actions for Admin-Level Data Maintenance.....	14
Standard Actions for Data Maintenance.....	15
Viewing and Adding Log Entries.....	16

Overview

This User Guide describes how to work with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization. This includes:

Getting Started on page 5

System Administration on page 7

User Documentation on page 11

Reference Topics on page 14

This guide contains the same content as the Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization section of the online help.

Getting Started

This section provides an overview of Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

About Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization acts as a link between Oracle Utilities Meter Data Management and SAP for Meter Data Unification and Synchronization (MDUS) to support meter operations and billing processes.

About Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization allows SAP Customer Relations & Billing (CRB) to interact with Oracle Utilities Meter Data Management using pre-defined MDUS interfaces.

In this integration, SAP for Meter Data Unification and Synchronization is the master system of record for device data. Meter data creation and updates are handled in SAP and sent to Oracle Utilities Meter Data Management. This is a one-way synchronization; device information updates in Oracle Utilities Meter Data Management are not synchronized back to SAP. Oracle Utilities Meter Data Management manages usage information and processes the usage measurements coming in from meter devices, and provides billing determinants to SAP MDUS upon request.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization supports the following business processes:

- Create Meter (Individual)
- Install Meter (Full, Technical, Billing)
- Remove Meter (Technical Removal, Technical Reversal)
- Meter Exchange (Both meters are already synced)
- Meter Exchange (New Meter Not Yet Synced)
- Smart Meter Equipment Relationship

- Time Series Calculations
- Profile Allocation
- AMI Commands to Connect/Disconnect Service and to Confirm Status Check

About this Guide

The Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization User's Guide is a supplement to the Oracle Utilities Meter Data Framework and Oracle Utilities Meter Data Management user guides, and provides user and administration information specific to this integration.

This guide contains provides details related to administration setup and user operations specific to Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization. Refer to the Oracle Utilities Meter Data Framework and Oracle Utilities Meter Data Management user guides for additional information about working with the Oracle Utilities Meter Data Framework and Oracle Utilities Meter Data Management.

Other Documentation

In addition to this user's guide, the following documents are intended for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization:

- Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization Installation Guide
- Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization Implementation Guide
- Oracle Utilities Meter Data Framework User's Guide
- Oracle Utilities Meter Data Management User's Guide
- Oracle Utilities Meter Data Management Configuration Guide
- Oracle Utilities Application Framework Business Process Guide
- Oracle Utilities Application Framework Administration Guide
- Oracle Utilities Application Framework Server Administration Guide
- Oracle Utilities Application Framework Batch Server Administration Guide

Starting the Application

Use this procedure to start Oracle Utilities Meter Data Management.

1. Click the desktop icon or program menu option to start the Oracle Utilities Meter Data Management server application.
2. Log in using your user ID and password.
3. If prompted, select a language.
4. Use the toolbar or menu bar (on the left edge of the screen) to select the function you want to perform.

System Administration

This section describes functions available from the Oracle Utilities Meter Data Framework Admin Menu. It provides conceptual information for performing various setup and administration tasks for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

General Data Administration

This section describes general data entities used with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

This section provides details for configuration of general data that is specific to this integration,

Defining Master Configurations

This topic outlines specific information related to defining master configurations for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization uses two master configurations:

- Master Data Synchronization Configuration
- MDUS Master Configuration

The **Master Data Synchronization Configuration** is used during synchronization request processing to validate and resolve foreign key references. When defining this master configuration, make sure the SAP system is defined as an **External System**, with appropriate **Identifier Types**.

The **MDUS Master Configuration** is used to define the **Service Provider** that represents the SAP system, and the **Outbound Message Type** used to send time series calculation usage responses to the SAP system.

Refer to the Oracle Utilities Application Framework Administration Guide for more information about master configurations.

Defining Service Providers

Service providers are external entities that serve various roles relative to the application.

Service providers can include head-end systems, billing systems to which the application sends bill determinant data, market participants in a deregulated environment, outage management systems that receive meter event data from the application, or other parties that require or provide information to the system. In the case of the Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization, you will create a service provider that represents the SAP system.

When defining the service provider that will represent the SAP system, the **Utility Device ID Type** parameter should be set to **External ID**.

In addition, the following processing methods should be defined for the SAP service provider:

- Remote Connect
- Remote Disconnect
- Response - Fail
- Response - Success
- Usage Transaction Completion

Note: Specify the **MDUS Usage Transaction** (DX-UsageTransaction) business object as the Business Object for the Default Processing Method.

- Usage Transaction Notification
- Usage Trans Error Notification

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about service providers.

Device Management Administration

This section provides specific information related to device management administration for use with the Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

This section provides details for configuration of device data that is specific to this integration,

Defining Device Types

Device types define information about a class of devices, including properties that apply to all devices of a type.

Device types used with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should reference the following business objects:

- Business Object: Smart Meter Type (D1-SmartMeterType)
- Device Business Object: MDUS Smart Meter (DX-SmartMeter)

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about device types.

Defining Measuring Component Types

Measuring component types define the most important properties of a measuring component.

Measuring component types used with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should reference the following business objects:

- Business Object: Interval Channel Type - Physical (D1-IntervalChannelTypePhysical)

- Measuring Component Business Object: MDUS Interval Channel (DX-IntervalChannel)

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about measuring component types.

Device Communication Administration

This section describes specific information related to device communication administration for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

This section provides details for configuration of device communication data that is specific to this integration,

Defining Activity Types

Activity types define properties common to a specific type of activity.

Activity types used with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should reference the following business objects:

Activity Business Object	Activity Type Business Object
MDUS Msrmt Task Dvc Assign Activity	MDUS Measurement Task Device Assignment Activity Type
MDUS Profile Allocation Activity	MDUS Profile Allocation Activity
MDUS Time Series Cal Bulk Confirm Activity	MDUS Time Series Cal Bulk Confirm Act Type
Remote Connect	Remote Connect Type
Remote Disconnect	Remote Disconnect Type
Device Status Check	Device Status Check Type
Enable Service	Enable Service Type

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about activity types.

Usage Administration

This section provides specific information related to usage administration for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

This section provides details for configuration of usage-related data that is specific to this integration,

Defining TOU Map Templates

TOU Map Templates are the schedules used for TOU map data generation.

TOU map templates used with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should reference the following business objects:

- Business Object: MDUS Time of Use Template (DX-TOUMapTemplate)

Refer to the Oracle Utilities Meter Data Management User's Guide for more information about TOU map templates.

Defining Usage Rules

Usage rules are standard and custom rules that perform calculations on measurement data to generate bill determinants and other values used by external systems, such as billing systems, customer information systems, etc.

Usage rules are created for a specific usage group. For example, if you were configuring two usage groups and both included a specific usage rule, you would need to create two instances of the usage rule, one for each group.

Usage rules created for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should **ALWAYS** reference a TOU map (based on a TOU Map Type that references a TOU Map Template created from the MDUS TOU Map Template business object).

Refer to the Oracle Utilities Meter Data Management User's Guide for more information about usage rules.

Defining Usage Subscription Types

Usage Subscription Types define a collection of properties defining a class of usage subscriptions.

Usage subscription types created for use with Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization should reference the service provider that represents the SAP system as its **Usage Recipient**. The "Usage Transaction Creation" processing method on this service provider should specify the "MDUS Usage Transaction" business object (DX-UsageTransaction) to create bill determinants to be sent to the SAP system.

Refer to the Oracle Utilities Meter Data Management User's Guide for more information about usage subscription types.

User Documentation

This section describes the application functions that support day-to-day operations. These functions are available from the Oracle Utilities Meter Data Management application Main Menu.

Device Communication

This section provides specific information related to device communication for use with the Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

Searching and Viewing Activities

An activity is a record of a communication or event related to a device, measuring component, or other entity in the system.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization supports the following types of activities:

Activity	Description
Meter Commands	Used to track meter commands sent from Oracle Utilities Meter Data Management. Supported meter commands include: <ul style="list-style-type: none">• Connection Status Change (Remote Connect and Remote Disconnect) commands• Meter Operational State Query (Device Status Check) commands
MDUS Profile Allocation	Used to track requests from the SAP system to assign a profile ID (labeled "Time Series ID") to a measuring component. Time Series IDs are used when retrieving measuring components for time series calculations.
MDUS Time Series Calculation Bulk Confirmation	Used to track time series calculation bulk requests from the SAP system . Each bulk request contains requests for one or more calculations, each specified by Profile ID. Bulk requests are parsed into individual usage transactions, each marked with a Bulk Message ID.
MDUS Measurement Task Device Assignment Messages	Used to track measurement device task assignment messages from the SAP system . These messages are used to update the installation constant of the associated installation event.

The **Activity Query** zone has been extended to support searching for activities for this integration.

- When searching for Connection Status Change commands, you can use the following options:
 - **Query Option:** Identifier Query
 - **Activity Identifier Type:** Connection Status Change Request ID

- When searching for MDUS Time Series Calculation Bulk requests, you can use the following options:
 - **Query Option:** Identifier Query
 - **Activity Identifier Type:** Bulk Message ID

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about searching and viewing activities.

Working with Meter Commands

Meter commands are activities that represent messages sent from Oracle Utilities Meter Data Management to devices to invoke a specific type of action.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization supports the following types of commands:

- **Meter Operational Status Query (Device Status Check)** : A command used to test whether the device is communicating with the network, determine the connection status of the device, and when possible, and check if there are any known malfunctions.
- **Connection Status Change:** Commands used to change the connection status of a device, including:
 - **Remote Connect:** A command issued when a device needs to be connected at a service point.
 - **Remote Disconnect:** A command issued when a device needs to be disconnected or shut off at a service point.

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about initiating and working with meter commands.

Data Synchronization

This section provides specific information related to data synchronization with the Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization.

Data Synchronization Requests

Data synchronization requests (or sync requests) are messages sent from an external system used to synchronize data between the external system and the target system (in this case, Oracle Utilities Meter Data Management).

With Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization, sync requests are sent from SAP for Meter Data Unification and Synchronization to Oracle Utilities Meter Data Management. In this integration, the SAP system serves as the "system of record" for meters (devices) and service points. When this data is updated, the corresponding data in Oracle Utilities Meter Data Management must be updated accordingly.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization uses data synchronization requests with the following operations in SAP for Meter Data Unification and Synchronization:

- Create Meter
- Install Meter
- Remove Meter
- Updates/Changes to Smart Meters

Data synchronization can be performed for any maintenance object defined in Oracle Utilities Meter Data Management (the target system), but the primary maintenance objects used for data synchronization in this integration are Service Point, Device, Device Configuration, Measuring Component, and Install Event.

Oracle Utilities Meter Data Management Integration to SAP for Meter Data Unification and Synchronization supports the following types of data synchronization requests:

Synchronization Request Type	Description
MDUS Device Config IE Composite Sync Request	Requests of this type process the Smart Meter Register Create/Change messages from the SAP system, which are translated into device configuration, measuring component and install event sync requests in Oracle Utilities Meter Data Management (there is no direct correlation to these entities in SAP).
MDUS Device Ongoing Sync Request	Requests of this type are used to maintain devices (meters) in Oracle Utilities Meter Data Management.
MDUS Install Event Ongoing Sync Request	Requests of this type are used to maintain installation events in Oracle Utilities Meter Data Management.
MDUS Service Point Ongoing Sync Request	Requests of this type are used to maintain service points in Oracle Utilities Meter Data Management.

Oracle Utilities Meter Data Management sends a response to the SAP system to each synchronization request received.

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about searching and viewing data synchronization requests.

Data Synchronization Request Exceptions

Data synchronization request exceptions (or sync request exceptions) are errors that occur as part of the data synchronization process.

Typical types of errors that occur during data synchronization include:

- Missing Data (one or more required data elements is missing from the sync request)
- Invalid Data (one or more data elements contain invalid data. This type of error includes situations where specific combinations of data are not valid, such as Manufacturer/Model, as well as situations where the values provided are not valid.)
- Duplicate Request (a sync request already exists for the maintenance object, external system, and external primary key).

Refer to the Oracle Utilities Meter Data Framework User's Guide for more information about searching and viewing data synchronization request exceptions.

Reference Topics

This section provides reference information to support tasks.

Glossary

This glossary provides definitions of commonly used terms.

Command Effective Date/Time	The date and time when a device command becomes effective.
Command Expiration Date/Time	The date and time when a device command expires.
Head-End System	A system that collects measurement data and meter events for eventual submission to the application. Many devices can communicate to the application through a single head-end system. A utility may have numerous head-end systems through which they communicate with devices.
Payload	An upload component which contains measurements and meter events in a format specific to the head-end. Payloads are part of the initial upload of measurement data.
Remote Connect	A command issued when a meter needs to be connected at a service point.

Standard Actions for Admin-Level Data Maintenance

A standard set of maintenance portals are used to define objects that are maintained from the Admin menu. These portals use a common interface and support a set of standard actions for creating and maintaining objects.

The following quick reference table provides the basic steps for performing any of the standard actions.


Action	Steps
Add	Click the Add link in the list or search zone title bar. Provide all necessary information and click Save .


Action	Steps
Edit	Select the object you want to edit from the list zone, then click the Edit icon. Enter your changes and click Save .
Delete	Select the object you want to delete from the list zone, then click the Delete icon. Confirm the deletion.
Duplicate	Select the object you want to duplicate from the list zone, then click the Duplicate icon. Key fields will be cleared in the new record. Complete all required fields and click Save .
Broadcast	Select the object you want to broadcast from the list zone, then click the Broadcast icon. The details and available actions for the selected object are displayed in the appropriate zones.
Activate or Deactivate	Select the object you want to activate or deactivate from the list zone, then click the Broadcast icon. Click Activate or Deactivate in the Actions zone.
<hr/> <p>Note: These actions only apply to objects that support an Active and Inactive status, such as activity types. When such an object is deactivated, no new objects of this type can be created</p> <hr/>	
Sort	Click a column header in the list zone to resort by the values in that column. Click again to reverse the order (from ascending to descending or descending to ascending).
Filter	If a list zone supports filtering, a Filter icon is displayed in the list zone title bar (on the far right). Click the Filter icon, then select the field by which you want to filter and click Refresh .
View or add log entries	Click the Log tab to view log entries. To add an entry, click the Add link in the list zone title bar and provide the requested information.

Standard Actions for Data Maintenance

This topic provides the basic steps for performing standard actions on data maintained from the Main Menu.

Note: The system displays buttons for all valid actions, based on the object's current status, your user privileges, and your system's configuration. The following table provides instructions for performing all standard actions.

Action	Steps
Edit	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to maintain. A query portal is displayed. 2. Enter search criteria to locate the object. The maintenance portal is displayed. 3. Click the Edit button in the Record Actions section. 4. Enter your changes. Click  to display field descriptions. 5. Click Save.
Delete	<p>From the Main Menu:</p> <ol style="list-style-type: none"> 1. Select the option for the object you want to delete. A query portal is displayed.

Action	Steps
	<ol style="list-style-type: none">2. Enter search criteria to locate the object. The maintenance portal is displayed.3. Click the Delete button in the Record Actions section. A confirmation dialog opens asking you to confirm the deletion of the record. Click OK to delete the object.
Duplicate	<p>From the Main Menu:</p> <ol style="list-style-type: none">1. Select the option for the object you want to duplicate. A query portal is displayed.2. Enter search criteria to locate the object. The maintenance portal is displayed.3. Click the Duplicate button in the Record Actions section. A new record is created and the Add/Edit screen is displayed. Key fields will be cleared in the new record.4. Complete all required fields. Click  to display field descriptions.5. Click Save.
View or add log entries	<p>From the Main Menu:</p> <ol style="list-style-type: none">1. Select the option for the object you want to manage log entries for. A query portal is displayed.2. Enter search criteria to locate the object. The maintenance portal is displayed.3. Click the Log tab.4. To add a log entry, click the Add link in the Log zone title bar.5. Type the log detail and click Save.

Viewing and Adding Log Entries

Use the Log tab to view or add log entries for the current object.

The log displays a list of user and system actions associated with an object, such as when it was created, last updated, or transitioned to different status. For each log entry, the system displays the date and time the action occurred, the user/system that initiated the action, the type of action, and related object, if any.

To create a new log entry, click the **Add Log Entry** link in the zone title, then enter log entry details and click **Save**. Your user ID is saved with the log entry.