ORACLE®

PeopleTools 8.53: Change Assistant and Update Manager

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PeopleTools 8.53: Change Assistant and Update Manager
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Contents

Preface

Understanding the PeopleSoft Online Help and PeopleBooks

The PeopleSoft Online Help is a website that enables you to view all help content for PeopleSoft Applications and PeopleTools. The help provides standard navigation and full-text searching, as well as context-sensitive online help for PeopleSoft users.

PeopleSoft Hosted Documentation

You access the PeopleSoft Online Help on Oracle's PeopleSoft Hosted Documentation website, which enables you to access the full help website and context-sensitive help directly from an Oracle hosted server. The hosted documentation is updated on a regular schedule, ensuring that you have access to the most current documentation. This reduces the need to view separate documentation posts for application maintenance on My Oracle Support, because that documentation is now incorporated into the hosted website content. The Hosted Documentation website is available in English only.

Locally Installed Help

If your organization has firewall restrictions that prevent you from using the Hosted Documentation website, you can install the PeopleSoft Online Help locally. If you install the help locally, you have more control over which documents users can access and you can include links to your organization's custom documentation on help pages.

In addition, if you locally install the PeopleSoft Online Help, you can use any search engine for full-text searching. Your installation documentation includes instructions about how to set up Oracle Secure Enterprise Search for full-text searching.

See *PeopleTools 8.53 Installation* for your database platform, "Installing PeopleSoft Online Help." If you do not use Secure Enterprise Search, see the documentation for your chosen search engine.

Note: Before users can access the search engine on a locally installed help website, you must enable the Search portlet and link. Click the Help link on any page in the PeopleSoft Online Help for instructions.

Downloadable PeopleBook PDF Files

You can access downloadable PDF versions of the help content in the traditional PeopleBook format. The content in the PeopleBook PDFs is the same as the content in the PeopleSoft Online Help, but it has a different structure and it does not include the interactive navigation features that are available in the online help.

Common Help Documentation

Common help documentation contains information that applies to multiple applications. The two main types of common help are:

• Application Fundamentals

- Using PeopleSoft Applications

Most product lines provide a set of application fundamentals help topics that discuss essential information about the setup and design of your system. This information applies to many or all applications in the PeopleSoft product line. Whether you are implementing a single application, some combination of applications within the product line, or the entire product line, you should be familiar with the contents of the appropriate application fundamentals help. They provide the starting points for fundamental implementation tasks.

In addition, the *PeopleTools: PeopleSoft Applications User's Guide* introduces you to the various elements of the PeopleSoft Pure Internet Architecture. It also explains how to use the navigational hierarchy, components, and pages to perform basic functions as you navigate through the system. While your application or implementation may differ, the topics in this user's guide provide general information about using PeopleSoft Applications.

Field and Control Definitions

PeopleSoft documentation includes definitions for most fields and controls that appear on application pages. These definitions describe how to use a field or control, where populated values come from, the effects of selecting certain values, and so on. If a field or control is not defined, then it either requires no additional explanation or is documented in a common elements section earlier in the documentation. For example, the Date field rarely requires additional explanation and may not be defined in the documentation for some pages.

Typographical Conventions

The following table describes the typographical conventions that are used in the online help.

Typographical Convention	*Description*
Key+Key	Indicates a key combination action. For example, a plus sign (+) between keys means that you must hold down the first key while you press the second key. For Alt+W, hold down the Alt key while you press the W key.
. . . (ellipses)	Indicate that the preceding item or series can be repeated any number of times in PeopleCode syntax.
{ } (curly braces)	Indicate a choice between two options in PeopleCode syntax. Options are separated by a pipe (|).
[ ] (square brackets)	Indicate optional items in PeopleCode syntax.
& (ampersand)	When placed before a parameter in PeopleCode syntax, an ampersand indicates that the parameter is an already instantiated object. Ampersands also precede all PeopleCode variables.
⇒	This continuation character has been inserted at the end of a line of code that has been wrapped at the page margin. The code should be viewed or entered as a single, continuous line of code without the continuation character.

ISO Country and Currency Codes

PeopleSoft Online Help topics use International Organization for Standardization (ISO) country and currency codes to identify country-specific information and monetary amounts.

ISO country codes may appear as country identifiers, and ISO currency codes may appear as currency identifiers in your PeopleSoft documentation. Reference to an ISO country code in your documentation does not imply that your application includes every ISO country code. The following example is a country-specific heading: "(FRA) Hiring an Employee."

The PeopleSoft Currency Code table (CURRENCY_CD_TBL) contains sample currency code data. The Currency Code table is based on ISO Standard 4217, "Codes for the representation of currencies," and also relies on ISO country codes in the Country table (COUNTRY_TBL). The navigation to the pages where you maintain currency code and country information depends on which PeopleSoft applications you are using. To access the pages for maintaining the Currency Code and Country tables, consult the online help for your applications for more information.

Region and Industry Identifiers

Information that applies only to a specific region or industry is preceded by a standard identifier in parentheses. This identifier typically appears at the beginning of a section heading, but it may also appear at the beginning of a note or other text.

Example of a region-specific heading: "(Latin America) Setting Up Depreciation"

Region Identifiers

Regions are identified by the region name. The following region identifiers may appear in the PeopleSoft Online Help:

*   Asia Pacific

*   Europe

*   Latin America

*   North America

Industry Identifiers

Industries are identified by the industry name or by an abbreviation for that industry. The following industry identifiers may appear in the PeopleSoft Online Help:

*   USF (U.S. Federal)

*   E&G (Education and Government)

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Documentation Accessibility

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Using and Managing the PeopleSoft Online Help

Click the Help link in the universal navigation header of any page in the PeopleSoft Online Help to see information on the following topics:

• What's new in the PeopleSoft Online Help.

• PeopleSoft Online Help acessibility.

• Accessing, navigating, and searching the PeopleSoft Online Help.

• Managing a locally installed PeopleSoft Online Help website.

Change Assistant and Update Manager Related Links

Oracle's PeopleSoft PeopleTools 8.53 Documentation Home Page [ID 1494462.1]

PeopleSoft Information Portal on Oracle.com

My Oracle Support

PeopleSoft Training from Oracle University

PeopleSoft Video Feature Overviews on YouTube

Patches&Updates

PeopleSoft 9.1 Continuous Delivery Status [ID 1401770.1]

PeopleSoft Update Manager Home Page [ID 1464619.1]

Contact Us

Send us your suggestions Please include release numbers for the PeopleTools and applications that you are using.

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Part I

Configuring and Working With Change Assistant

Chapter 1

Getting Started with PeopleSoft Change Assistant

PeopleSoft Change Assistant Overview

Oracle's PeopleSoft Change Assistant is a standalone, Windows based, Java program that orchestrates the process of updating or upgrading your PeopleSoft system. Environment Management Framework is used for non-PUM-enabled updates and for deploying files with Update Manager.

Change Assistant provides these main benefits:

- Automates many of the steps in an upgrade or update process.

- Provides a clear step-by-step definition of the process for applying maintenance or performing an upgrade. Whether the process is automated or manual, as long as you complete each step, you will successfully apply the application maintenance or perform the upgrade.

- Provides in-line documentation for each of the steps in the process.

- Is integrated with the PUM application and uses the change package definitions created in the PeopleSoft Image.

The Environment Management Framework performs these key tasks:

- Crawls local drives and directory paths to discover and validate the components associated with a given PeopleSoft environment.

- Deploys files to various components in the PeopleSoft environment.

Related Links
Environment Management Framework

Change Assistant Actions
Change Assistant supports the following actions:

Apply Updates	Any systems that are not Update Manager enabled will use the Apply Updates to apply updates downloaded from My Oracle Support.
Update Manager	Update Manager is used for application patching and updates for PeopleSoft applications 9.2 and above. This option allows you to select the updates from the PeopleSoft Image and create a custom change package that includes only the updates and any calculated requisites you want to apply to your application.
Application Upgrade	Application Upgrade is used to perform upgrade to a new application release, which typically includes a PeopleTools

upgrade as well. Full application upgrades are delivered with detailed templates and documentation tailored to your specific upgrade path.

Upgrade PeopleTools   Upgrade PeopleTools is used to do a PeopleTools only upgrade.

Compare/Copy Managed Objects or   Provides the ability to copy and compare Managed Objects,
Merge Select Object Types   ADS projects and Application Designer projects in Change
                                           Assistant. You also have the ability to view and merge
                                           PeopleCode, SQL and XSLT.

Create or Modify Templates   Change Assistant templates are composites of all the possible
                                           steps that apply to an update or upgrade. The templates are
                                           delivered as part of the change package or upgrade. Once you
                                           select a change package or upgrade, the template is loaded into
                                           the Change Assistant internal storage. You can edit the template
                                           or add additional chapters, tasks and steps, if needed.

Installation

Prior to using Change Assistant the following items must be in place:

Step	*Reference*
Install PeopleTools, database client software and any database client connect information.	*PeopleTools 8.53 Installation for your platform*
Install your PeopleSoft application	Your PeopleSoft application installation guide
For update modes only, install the elements required for the Environment Management Framework and Change Assistant	*PeopleTools 8.53 Installation: Installing PeopleSoft Change Assistant*

Quick Start

The following items provide a quick start reference for the main steps and concepts related to the implementation and use of Change Assistant. This list is designed to help get you up and running with Change Assistant as well as to help you to understand the main functions for which Change Assistant was designed.

PeopleSoft Update Manager (PUM) Enabled Updates
The steps appear in the logical order that you would perform them, and the links point to the location where the information for a specific task is provided.

Note: Initially PUM will only be enabled for 9.2 application patching and updates.

Image: PUM environment

This diagram illustrates the PUM environment which includes the PeopleSoft Image, the target environment and the windows client.

Step	Reference
1. Use My Oracle Support (MOS) to find the current PeopleSoft Image and download it.	See PeopleSoft Update Manager Home Page [ID 1464619.1] from the PeopleSoft Update Manager Home Page, you can also access "*Applying Updates with PUM-Enabled Applications*" in the Resources and Documentation section.
2. Install the PeopleSoft Image. Consult the manifest in the KM document associated with the PeopleSoft image to determine the PeopleTools release/patch level for the PI. **Note:** The PeopleSoft Image may be at a different release/patch level than your target environments.	See *Using the PeopleSoft VirtualBox Images*.
3. Configure and start the PSEMHUB within your PeopleSoft environment.	See Configuring the Environment Management Hub.

Step	Reference
4. Configure and start the PSEMAgent on every server within your PeopleSoft target environment. **Note:** EMF is only run on the target environments not on the PeopleSoft Image.	See Configuring an Environment Management Agent.
5. Start the PSEMViewer and verify the PeopleTools release/patch level of your target databases. Click on Environments link, then select the target database link. The PeopleTools release level is displayed for PTPATCHLEVEL. For example: PeopleTools 8.53.01.000.	See Running the Viewer
6. Map your Windows client to the PeopleSoft Image shared drives. Mapping can be done using the PeopleSoft Image ip address. **Note:** The ip address can be identified using the ifconfig Linux command on the VirtualBox.	See *Using PeopleSoft VirtualBox Images*, Starting the PeopleSoft VirtualBox Appliance.
7. Install the Oracle database client and configure database connectivity.	See *PeopleSoft Update Manager* , Using Update Manager Action, Setting Up the PeopleSoft Image, Configuring the Windows Client Running Change Assistant.
8. Install PeopleTools client for Oracle database.	See *PeopleSoft Update Manager* , Using Update Manager Action, Setting Up the PeopleSoft Image, Configuring the Windows Client Running Change Assistant.
9. If your target database is not Oracle, you must also install the target platform database client and configure database connectivity.	See *PeopleSoft Update Manager* , Using Update Manager Action, Setting Up the PeopleSoft Image, Configuring the Windows Client Running Change Assistant.
10. If your target database is not Oracle, you must also install PeopleTools client for your database platform.	See *PeopleSoft Update Manager* , Using Update Manager Action, Setting Up the PeopleSoft Image, Configuring the Windows Client Running Change Assistant.
11. Install Change Assistant, on Windows client.	See Installing Change Assistant
12. Start Change Assistant. Click Next on Welcome page, then select *Update Manager* action.	See *PeopleSoft Update Manager* , Using Update Manager Action, Selecting Update Manager Action.
13. In Change Assistant, select Update Manager > Define a New Change Package. When you transition from the Patching Source Database Information page to the Search and Select page, the target database information is uploaded to the PeopleSoft Image.	See *PeopleSoft Update Manager* , Using Update Manager Action, Defining a New Change Package
14. Use PeopleSoft Update Manager PIA application in the PeopleSoft Image environment to search for updates you need, review the update impact, and define your custom change package .	See *PeopleSoft Update Manager* , Understanding PeopleSoft Update Manager PIA Application, Defining Custom Change Packages

Step	Reference
15. Use Change Assistant to create the change package from your custom change package definition created with PeopleSoft Update Manager PIA application, analyze the change impact, and apply the updates.	See *PeopleSoft Update Manager* , Using Update Manager Action, Packaging Updates and Applying Change Package.

Note: The PeopleSoft Update Manager and Using the PeopleSoft VirtualBox Images books are posted on the PeopleSoft Update Manager Home Page [ID 1464619.1].

Applying Individual PeopleSoft Release Patchset (PRP) to PeopleSoft Image

The steps appear in the logical order that you would perform them, and the links point to the location where the information for a specific item exists within this PeopleBook.

Step	Reference
1. Search MOS for the PRP.	The PUM home page PeopleSoft Update Manager Home Page [ID 1464619.1] contains a link to "Applying Updates with PUM-Enabled Applications."
2. Download the PRP to a local directory.	See *PeopleSoft Update Manager* , Applying Downloaded PeopleSoft Release Patchset to PeopleSoft Image, Discovering and Downloading the PRP
3. Apply the PRP to the PeopleSoft Image using Update Manager action Apply Downloaded Individual Posting to PeopleSoft Image.	See *PeopleSoft Update Manager* , Applying Downloaded PeopleSoft Release Patchset to PeopleSoft Image, Applying the PRP to the PeopleSoft Image
4. Use the Update Manager process to search for and apply the new individual fix to your target databases.	See PeopleSoft Update Manager (PUM) Enabled Updates

Non-PUM Enabled Updates

The steps appear in the logical order that you would perform them, and the links point to the location where the information for a specific item exists within this PeopleBook.

Step	Reference
1. Configure and start the PSEMHUB within your PeopleSoft environment.	See Configuring the Environment Management Hub.
2. Configure and start the PSEMAgent on every server within your PeopleSoft environment.	See Configuring an Environment Management Agent.
3. Install and configure Change Assistant, specifying the proper directories for file download and storage, and ensuring it can connect to the PSEMHUB.	See Setting Up Change Assistant.
4. Use My Oracle Support (MOS) to identify the bundles and updates that need to be applied to your specific environment.	See Discovering Updates Using My Oracle Support.
5. Download the required bundles and updates.	See Downloading Updates From My Oracle Support.
6. Use Change Assistant to apply the bundles and updates.	See Applying Updates To A Target Environment.

Application Upgrade

The steps appear in the logical order that you would perform them, and the links point to the location where the information for a specific item exists within this PeopleBook.

Step	*Reference*
1. Download the Change Assistant template and documentation.	See Downloading The Upgrade Template and Documentation
2. Import the template into Change Assistant.	See Importing and Opening a Template
3. Configure your upgrade environment.	See Configuring and Working With The Upgrade Environment
4. Create an upgrade job.	See Creating Upgrade Jobs
5. Set the documentation directory.	See Setting the Documentation Directory
6. Start the upgrade process.	See Running the Upgrade Job

Other Sources of Information

This section provides information to consider before you begin to use PeopleSoft Change Assistant. In addition to implementation considerations presented in this section, take advantage of all PeopleSoft sources of information, including the installation guides, release notes, PeopleBooks, and training courses and your PeopleSoft application upgrade documentation.

Related Links

PeopleSoft Application Designer Developer's Guide

Application Designer Lifecycle Management Guide

PeopleSoft Change Impact Analyzer

Chapter 2

Understanding The Environment Management Framework and PeopleSoft Change Assistant

Environment Management Framework

Environment management framework-Environment Management Framework (EMF) is a collection of software elements that gathers and publishes PeopleSoft installation, configuration, and update information. It enables you to identify and view data about PeopleSoft environments. You can use EMF to obtain a snapshot of configuration and setup information about the file servers, the web servers, the application servers, the individual hosts, and the PeopleSoft Process Scheduler servers that comprise your PeopleSoft system. EMF also provides a vehicle to carry out commands remotely on different machines on the network, directed by Change Assistant, which uses EMF to apply updates to PeopleSoft installations and configurations.

EMF consists of the following core elements:

- The Environment Management hub (PSEMHUB)

- Environment Management Agent (PSEMAgent)

- The Environment Management viewer

Environment Management Hub
The Environment Management hub is a web application that is installed with the PeopleSoft Internet Architecture and portal. It is started along with the rest of the web applications when the user boots the web server. The hub is the broker for all communication between peers.

The Environment Management hub handles:

- Peer registration.

  The hub registers all of the information that is published by the agents. It also assigns a unique peer ID for every peer that engages in a dialogue with the hub.

- Maintenance of configuration information.

  The hub handles updates to configuration information, the correlation of information, and the grouping into environments based on the information that is published by the agents.

- Agent health monitoring.

  The hub keeps track of the state or "health" information of the managed components. It shows whether a peer is still running remotely or not.

- Message brokering.

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The hub services message service requests and responses from peers. The messages can be delivered to the respective peers even if the peers are not currently running. They are picked up the next time the peers "call in" to the hub. Typical messages include requests to deploy files to managed servers. It's recommended that the managed server agents be left up and running at all times to listen for messages from the hub. This is critical when applying software updates.

The Environment Management hub is installed as part of the standard PeopleSoft Internet Architecture installation. It supports both single-server and multi-server installations. The Environment Management hub is deployed in the J2EE containers as web application modules. They can be managed like any of the standard web application modules.

The following Environment Management hub directories are created on the J2EE container for the hub:

- With Oracle WebLogic:

  PIA_HOME\webserv*domain*\applications\peoplesoft\PSEMHUB

- With IBM WebSphere:

  PIA_HOME\webserv*server*\installedApps*domain*NodeCell/*domain*.ear\PSEMHUB.war

The required JAR files for the Environment Management hub are installed in the WEB-INF\lib subdirectory.

Agents

An Environment Management agent is a Java executable installed on the servers in a PeopleSoft environment, such as application servers, Process Scheduler servers, web servers, and so on. The Environment Management agent initiates communication with the hub and is assigned a unique peer ID. This ID persists and is reused for later connections by the agent.

The primary function of the agent is crawling the managed servers to identify manageable components. The metadata of the search results of the crawling are saved to the local hard disk. On startup, if the agent detects missing metadata, it recrawls the hard disk for manageable components. You can configure the drives and directory paths used for crawling.

The agent also publishes managed server information to the hub. After detecting a manageable component, the agent reads the non-sensitive information from configuration files of the component. Some relevant information that is related to environment and patch levels is also fetched from the database with which the application server or Process Scheduler communicates. The agent publishes this information to the hub upon initial connection and upon a recrawl or revalidate.

The agent also determines heartbeat and command execution. On every heartbeat, the agent pings the server to determine whether it has any pending messages. If there are pending messages for the agent, the messages are retrieved from the hub and carried out locally on the agent machine.

Note: You install the Environment Management agent by running the PeopleTools CD installation. The Environment Management agent is installed in the PSEMAgent directory in your *PS_HOME* with the server installation. If additional components are installed in the same *PS_HOME* location, the installer warns you that existing software may be overwritten.

Note: Multiple EM Agents can be run, but they must be run using a different agentport..

See PeopleTools installation documentation for your database platform.

Viewer

The Environment Management viewer is a command-line tool enabling you to view data stored on the Environment Management hub. This data is saved in an XML file that contains data that is specific to individual customer sites—such as, information about environments, software updates, hosts, file servers, application servers, PeopleSoft Process Scheduler servers, and web servers. Users can view this static data in HTML.

The Environment Management viewer may only be executed on PeopleSoft web servers, from its installed location in *PS_HOME*\PSEMViewer. You don't have to carry out any additional installation steps to install the viewer.

EMF Terminology

The following terms relate to Environment Management:

Manageable component	A component that can be individually managed from the Environment Management hub. A manageable component for PeopleSoft is typically a file server, an application server, a web server, individual hosts, or a PeopleSoft Process Scheduler server.
Peer	A manageable component that is involved in a transaction with one or more peers in the Environment Management by using the hub as the intermediary. A peer may also be responsible for delegation of management responsibility to a collection of manageable components. Examples of peers are agents, Change Assistant, and the Environment Management viewer.
Heartbeat	"I am alive messages" sent by every peer to the hub. The default interval is configurable. On every heartbeat, the peer pings the server to see if it has any pending messages. If it does, the messages are taken and carried out.
Environment	All of the manageable components in the enterprise that share the same globally unique identifier (GUID) in the database. There can be more than one instances of a type of managed component in an environment. For example, development environments can contain several application servers, Process Schedulers, and web servers.
GUID	Uniquely identifies a particular PeopleSoft system. PeopleSoft assigns a unique value, referred to as a GUID, to each PeopleSoft application installation. This value can't be customized. When an Environment Management agent notifies the hub that it has found a manageable component belonging to an environment, if the GUID of the environment is not recognized, the hub creates a new environment representation.
Crawling	The process of scanning the hard disk for known PeopleSoft patterns for manageable components. The hub has a set of configurable parameters by which the recrawl intervals can be altered. Based on this, the hub can issue a recrawl command to the agents to discover information about newly installed or changed configurations.

Note: During crawling, the Environment Management Framework uses the psserver property in the peopletools. properties file within each PS_HOME installation to determine the type of server(s) installed. For example, APP is application server, BATCH is Process Scheduler, DB is database server, WEB is web server, and FILE is file server.

Note: Recrawling includes revalidating.

Revalidate

The process of checking whether the last set of managed components that have been discovered is still valid. The agent iterates through the list of components that have been discovered from the last recrawl. It then checks whether the current set of configuration parameters for the managed components have changed the management scope for the component. If so, the information is updated. If the new set of configuration options has made the component not usable, it is removed from the list of managed components. This information is updated in the hub the next time the agent communicates with the hub.

Change Assistant

Change Assistant is a standalone application that enables you to assemble and organize the steps necessary to apply updates and fixes for PeopleSoft application maintenance updates as well as performing upgrades. Change Assistant automates many of the steps, but will prompt you and guide you through any manual steps with embedded documentation.

You use Change Assistant for these situations:

- Selecting and applying updates related to PeopleSoft application maintenance. Change packages are automatically created based on the customers selection of the updates to apply.

- Performing upgrades, which includes PeopleTools-only upgrades, PeopleSoft application-only upgrades, and combined PeopleTools and application upgrades.

Note: You *do not* use Change Assistant to apply PeopleTools patches.

Note: You use Change Assistant to apply updates that have a .ZIP extension. You *do not* use Change Assistant to apply updates that have an .EXE extension.

You can use PeopleSoft Update Manager for select applications releases to search for updates you may need for your environment and to review the potential impact of the selected changes. PeopleSoft Update Manager will automatically include requisite updates based on the items you select; it will show you what has already been applied to your target environment; and, it will let you review the changes included with each update before selecting it. You can then create a custom change package definition with your selected updates.

Important! The change package definition created only guarantees the requisites for the specific target selected. If the same change package is applied to a different target, you may encounter errors or warnings if the environment is not at the same level as the target specified when the package definition was created.

Understanding Change Assistant Versions

You can use a newer version of Change Assistant than the version of PeopleTools you are using. However, the environment management agents and hub must be at the same release level as Change Assistant.

For PUM , your PeopleTools version could be at 8.53.09, but you can run Change Assistant at the 8.53.14 level since the environment management hub and agents are on the same release.

For non_pum enabled environments, the environment management agents and hub must be at the same release/patch level as Change Assistant, in order to apply updates. For example, your PeopleTools version could be at 8.53.09, but you can run Change Assistant at the 8.53.14 level as long as the agents and hub are also at the 8.53.14 level.

Maintaining Change Assistant

Periodically, Oracle provides patches for PeopleTools that supply fixes to critical defects. With each PeopleTools patch version, Oracle provides the following updates in executable format:

Executable	*Description*
version.exe For example, 85014.exe	Contains all current fixes to the entire PeopleTools product, including those fixes to the software update technology, which includes Change Assistant and all environment management elements (agents, hub, and so on).
version-PSCA.exe For example, 85014-PSCA.exe	Contains *only* the current fixes for Change Assistant and all environment management elements (agents, hub, and so on). The software update technology runs independently from the rest of PeopleTools.

Note: If you install a complete PeopleTools patch, you do not need to apply the -PSCA patch individually. Apply the -PSCA patch individually only if you are interested in just the fixes for the software update tools and not the fixes for the entire PeopleTools product.

The -PSCA patch enables you to apply only the latest fixes to Change Assistant and the environment management framework without applying the latest full PeopleTools patch. By doing so, you can avoid the regression testing that typically occurs after applying a full PeopleTools patch.

PeopleSoft Update Manager

PeopleSoft Update Manager (PUM) is a lifecycle management process that is used with the PeopleSoft Update Manager PIA application, which runs on the PeopleSoft Image database.

PeopleSoft Images are Oracle VirtualBox virtual machines that you download locally. There is one PeopleSoft Image per product family (database instance) and they will be released periodically according to the image schedule posted on the PeopleSoft Update Manager Home Page. The PeopleSoft Image is the master source environment from which you will pull the updated objects, create a custom change package, and apply updates to your environment. The PeopleSoft Image for your application is

cumulative so you will download the most current PeopleSoft Image and get all of the updates that you need.

The PeopleSoft Update Manager PIA Application and the PeopleSoft Image work together; the PeopleSoft Image contains the updates and the PeopleSoft Update Manager PIA Application is the searching tool and custom change package definition generator. PeopleSoft Change Assistant orchestrates the entire process flow. Change Assistant is the tool used to analyze and compare changes, to apply the changed objects to your environment, to add in your customizations, and to generate custom change packages.

Software Update Process

The software *update* process refers to applying updates to your PeopleSoft application. The procedure for applying updates depends on whether the PeopleSoft application is PUM enabled.

PUM Enabled PeopleSoft Systems
All PeopleSoft updates for a product family are made available on a PeopleSoft Image. The PeopleSoft Image is a VirtuaBox image that contains the very latest PeopleSoft working database, applications, managed objects, codeline, and the data and metadata required to use the PeopleSoft Update Manager. The PeopleSoft Image is posted and downloaded from My Oracle Support (MOS). The schedule for images will be posted in advance on MOS for each PeopleSoft application database instance.

Software update tools include:

* Environment Management Framework

  Used to collect environment information.

  See Running the Environment Management Hub

* Change Assistant

  Used to upload target database information to the PI, create change packages from the custom change package definitions created using PeopleSoft Update Manager, and to the apply change packages to target databases.

  See Applying Updates To A Target Environment

* PeopleSoft Update Manager PIA Application

  Used to search for updates and create custom change package definitions.

  The PeopleSoft Update Manager PIA Application is posted on PeopleSoft Update Manager Home Page [ID 1464619.1]

* Change Packager

Creates the change package in Change Assistant based on the change package definition created in PUM.

Image: Software Update Process in Change Assistant

This diagram illustrates the Software Update process steps for the initial pass.
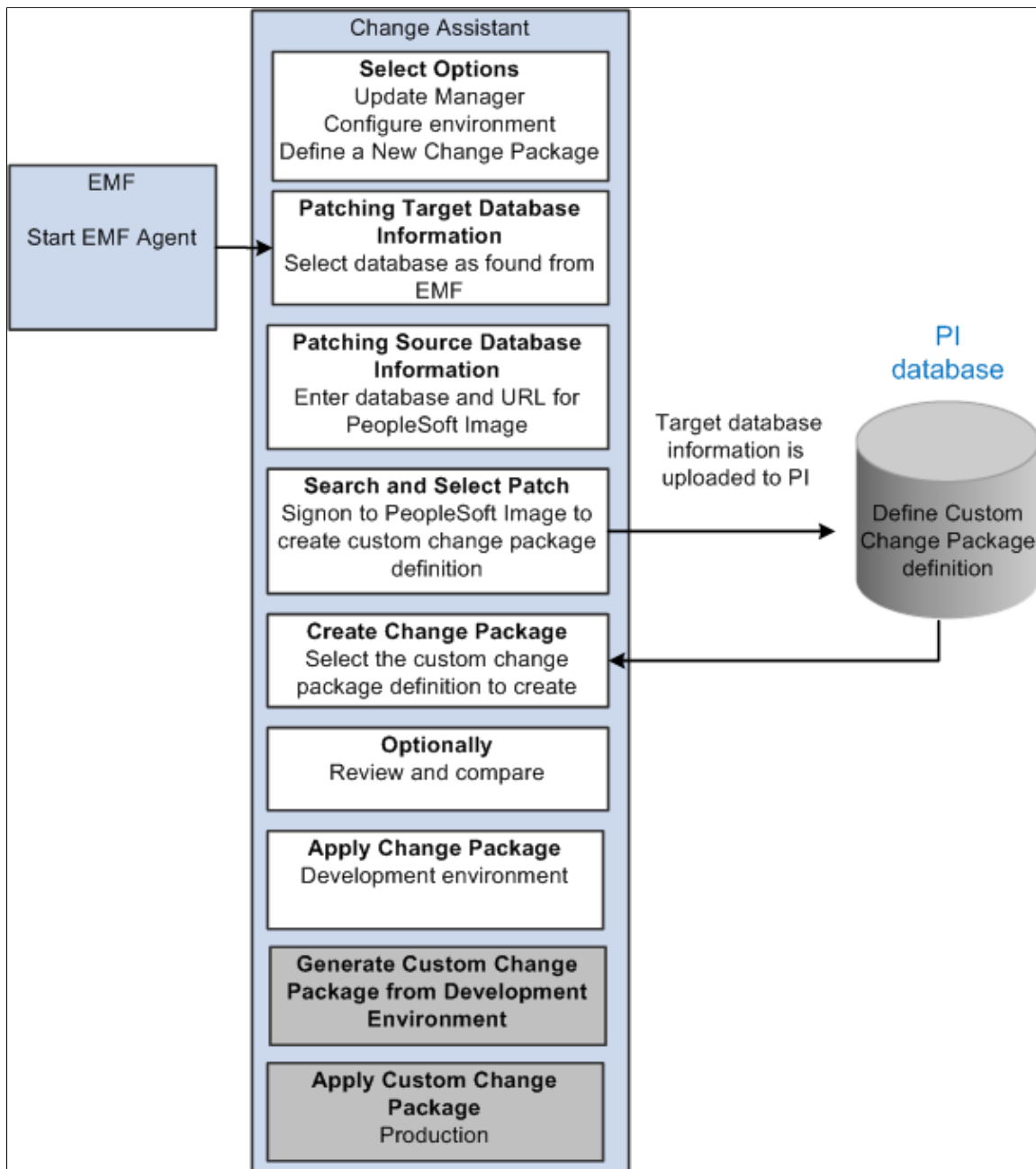
Steps Used in Software Update Process

This table lists the steps used to search for and apply updates to your development or target database.

Step	Description
1	Download latest PeopleSoft Image from MOS. Use Oracle VM VirtualBox Manager to startup the PeopleSoft Image environment.
2	Configure your windows client to access the PI database.
3	Install and configure EMF on the target environment.
4	Install Change Assistant on the windows client.
5	Start EMF Agent.
6	Start Change Assistant and configure for Update Manager. **Note:** Update Manager action.
7	In Change Assistant, Select Tools, Create Change Packages to connect to the PeopleSoft Image and create a change package definition. This will upload the target database information to the PeopleSoft Image. Sign on to the PeopleSoft Image and use PUM PIA application (PeopleTools > Lifecycle Tools > Update Manager > Define Change Package) to search for desired updates, review potential update impacts and changes, and generate your custom change package definition.
8	In Change Assistant, Select Tools, Apply Change Packages to create the change package and apply it to your target database. Use the *Initial Pass* option to identify your customizations and adjust the project accordingly. Reapply any customizations as necessary.
9	As part of the initial pass process, Change Assistant will create a new change package with all of your customizations that can be applied to your other environments, using the *Move to Production Pass* option.

Non-PUM Enabled PeopleSoft Systems

This software update process is only used for PeopleSoft systems that are not PeopleSoft Update Manager enabled. For PUM enabled systems refer to the previous section.

This software *update* process refers to applying change packages, bundles, and maintenance packs to your non-PUM enabled PeopleSoft application. For example, PeopleSoft application development teams periodically post change packages containing fixes to various application elements, such as pages and PeopleCode programs, that you can download and apply to your PeopleSoft system. You use Change Assistant to apply software updates.

Step	Description
1	Install and configure Change Assistant and the Environment Management components.
2	Use My Oracle Support (MOS) to search for updates.

Step	Description
3	Download the Change Packages from MOS.
4	After you have downloaded the change packages, you can then apply them in a batch or individually. If prerequisites or post-requisites are required, they will be included in the list as well.

Software Upgrade Process

The software *upgrade* process refers to moving from one release level to a newer release. This typically involves installing a new version of PeopleTools and a new version of an existing PeopleSoft application.

This process uses Change Assistant, and the Environment Management Framework when running remote upgrade processes. If you are upgrading from one release of a PeopleSoft application to another application release, also consult your specific application's install and upgrade documentation.

Source and Target Databases

In various places within this PeopleBook, as well as any PeopleSoft documentation related to upgrades or database compares, the terms *source* and *target* are used. Knowing the meanings of these terms helps you to understand the context of a description or step.

During a PeopleSoft update or upgrade, in most cases, you copy application definitions (such as pages and records) from a *source* database to a *target* database. The definitions of these terms are:

source database	The source database is the database *from which* the new changes are coming.
target database	The target database is the database *to which* you are moving the new changes.

Note: Depending on whether you are performing an upgrade or update, and the stage within the process you are, these terms are relative and can refer to different databases.

For example, in a typical upgrade, you install the new version to a demonstration database, referred to as Demo. Then, you create a copy of your production database, referred to as Copy of Production. You then copy the modified definitions from the Demo database into the Copy of Production. In this context, your Demo database is your *source* and the Copy of Production is the *target*. Likewise, after you complete the initial copy and perform the required compares and tests, you begin a Move to Production pass. In this pass you take the Copy of Production database and incorporate the modified definitions into the Production database. In this context, the Copy of Production is your *source* and the Production database is your *target*.

When applying an update using the "Apply with Database Compare/Copy" option, the source database is the Demo database where the update (change package) has already been applied.

Change Assistant Environments and Terminology
Depending on the action to perform, the environment must be configured. Each environment will include:

• Database name

- Database type

- Unicode

- User Ids and passwords

- SQL query executable

- Products

  Products are selected for the target database only. The source database will inherit these values from the target.

- Languages

  Languages are selected for the target database only. The source database will inherit these values from the target.

- Paths to the current environment home directories.

  - PS_HOME

  - PS_APP_HOME

  - PS_CUST_HOME

- For application upgrades , the target database will also include paths to the old environment home directories.

Paths to Home Directories

The order by which the PeopleTools runtime will pick up objects from the file system is as follows:

1. PS_CUST_HOME

2. PS_APP_HOME

3. PS_HOME

Change Assistant will loop through the paths in order of precedence until it finds the first instance of the file object at which time it will execute the step.

Databases Used for Each Action

Action	*Databases and Paths Used*
Apply Update	Target database with path for current environment.
Update Manager	Target database with path for current environment. Source database (PeopleSoft Image VirtualBox) with path for current environment.

Action	Databases and Paths Used
Application Upgrade	Target database with path for current environment and path for old release. Source database (PeopleSoft Image VirtualBox) with path for current environment. (Optional) Copy of current demo database with path for current environment. (Optional) Production database with path for current environment.
Upgrade PeopleTools	Target database with path for current environment.
Copy/Compare Managed Objects or Merge Selected Object Types	Multiple databases can be copied, compared and merged.

Chapter 3

Configuring and Running Environment Management Components

Configuring the Environment Management Hub

Before you can run the Environment Management hub, you must ensure that it's properly configured.

The hub issues automatic recrawl and revalidate commands to the agents, and it can be configured to accept automatic updates from Change Assistant. You configure the hub by setting appropriate parameters in its configuration file, which is located as follows:

- WebLogic:

  PIA_HOME\webserv*domain*\applications\peoplesoft\PSEMHUB\envmetadata\config\configuration.properties

- WebSphere:

  PIA_HOME\webserv*server*\installedApps*domain*NodeCell/*domain*.ear\PSEMHUB.war/envmetadata/config\configuration.properties

The following table describes the primary configuration.properties parameters for the hub:

Configuration Parameter	Description	Default Value
recrawlinterval	The interval, in hours, between two successive recrawl commands that have been issued to a peer. The server issues recrawl commands only to agents that are connected to the hub and have no pending messages in the queue. This configuration parameter is ignored by the agent.	*24* hours **Note:** A *0* value means that it will not recrawl. Recrawling includes a revalidating.
revalidateinterval	The maximum time, in hours, between two successive automatic revalidates that the hub issues.	*6* hours **Note:** A *0* value means that it will not revalidate.

Hub Security Considerations

Environment Management framework does not support HTTPS connections. The agent and hub communicate using standard HTTP only.

On WebSphere, or for a single server configuration on WebLogic, PSEMHUB is a web application running within PIA. If PIA is configured to be accessed using HTTPS, you need to configure a separate server instance for the hub to enable the HTTP connections between agents and hub.

Configuring Hub Logging

The Environment Management hub logs are located as follows:

- WebLogic: *PIA_HOME*\webserv*domain*\applications\peoplesoft\PSEMHUB\envmetadata\logs

- WebSphere: *PIA_HOME*\webserv\ps1\installedApps\<domain>NodeCell/<domain>.ear \PSEMHUB.war/envmetadata/logs

Edit the .....\PSEMHUB\envmetadata\config\Logconfig.properties to configure logging for the hub. The following two Logconfig.properties parameters, which determine the maximum size of each log file, and the amount of log files rolled over, can be changed:

- log4j.appender.R.MaxFileSize=1024KB

- log4j.appender.R.MaxBackupIndex=1"

Running the Environment Management Hub

This section discusses how to:

- Run the hub on a single server.

- Run the hub on multiple servers.

Before you run the Environment Management agent, you must first ensure that it's properly configured in the hub's configuration.properties file.

Running the Hub on a Single Server
On a single server, the PSEMHUB starts within PIA, so use the command you use for your web server to start PIA.

Running the Hub on Multiple Servers
Environment Management also supports multi-server installs. However, the Environment Management hub does not support clustering. The Environment Management hub persists metadata into the file system on the J2EE container. This is not replicated in a clustered environment. You experience erroneous behavior when you attempt to run the Environment Management hub in a clustered environment.

The Environment Management hub deals with large binary files that Change Assistant sends to the agents by using the hub as the intermediary dispatcher. This can create significant overhead to a production system that is running on a multi-server clustered environment. Therefore, PSEMHUB must always run on separate servers dedicated to the Environment Management hub requests.

Starting PSEMHUB on Multiple Servers on WebLogic

In a multiple server configuration, the PSEMHUB server listens on port *8081*, by default.

Use the following steps to start the WebLogic hub:

1. Configure the Environment Management hub to run on a server that is different from the PeopleSoft Internet Architecture servers.

2. Configure the reverse proxy to redirect any network traffic with a uniform resource identifier (URI) of PSEMHUB to the server running the Environment Management hub.

   On the machine from which the RPS application runs, access the HttpProxyServlet folder.

Select PSEMHUBHttpProxyServlet and click the Init Params tab. Replace WebLogicHost , WebLogicPort with the host and port from which your PSEMHUB server listens.

Note: Save your new configuration.

Use the following commands in sequence to start the Environment Management hub in a multi-server installation:

```
...\StartWebLogicAdmin.cmd (start the admin server)
...\StartManagedWebLogic.cmd RPS
...\StartManagedWebLogic.cmd PSEMHUB
```

Then use the following URL to access PSEMHUB: http://*RPS host*:*RPS port*/PSEMHUB/hub.

Note: For a single server install using a reverse proxy, this additional step needs to be performed in order for the Environment Management hub to be able to process the PSEMHUB requests. You need to edit: *PIA_HOME*\webserv*domain*\applications\HttpProxyServlet\WEB-INF\web.xml. In the PSEMHUBHttpProxyServlet section, change the default port from 8001 to 80.

The following is a sample configuration:

```
- <servlet>
  <servlet-name>PSEMHUBHttpProxyServlet</servlet-name>
  <servlet-class>weblogic.servlet.proxy.HttpProxyServlet</servlet-class>
- <init-param>
  <param-name>WebLogicHost</param-name>
  <param-value>localhost</param-value>
  </init-param>
- <init-param>
  <param-name>WebLogicPort</param-name>
  <param-value>80</param-value>
  </init-param>
 </servlet>
```

Start the WebSphere Hub on Multiple Servers

If you are using multiple servers, then you need to dedicate one of them to handle PSEMHUB requests. All PSEMHUB requests should be routed to the same server instance. The following steps show the configuration changes that are required for this purpose:

1. Edit your reverse proxy's plug-in configuration file (plugin-cfg.xml) then make sure that only one server is dedicated to PSEMHUB.

2. Remove this line from all other servers: <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid" Name="/PSEMHUB/*" />. The server you chose for PSEMHUB should only service PSEMHUB requests so that it can run independently and can be shut down without affecting the rest of the system.

3. Restart the reverse proxy using : *IBM_proxy_base_directory*\bin\apachectl restart.

4. Restart all the servers. For Windows, the directory is: *WebSphere_Appserver_directory*\bin \startServer.bat serverX. For UNIX, the directory is: *WebSphere_Appserver_directory*/bin/ startServer.sh serverX.

5. Use the following URL to access PSEMHUB http://*reverse_proxy_host*:*reverse_proxy_port*/ PSEMHUB/hub.

The reverse proxy's listen port is defined in *IBM_reverse_proxy_base_directory*\conf\httpd.conf.

Stopping the PSEMHUB on Multiple Servers on WebLogic

In a multiple server environment, target the server which is dedicated to PSEMHUB then execute *PIA_HOME*\webserv*domain*\stopWebLogic.cmd PSEMHUB on Windows and *PS_HOME*/webserv/*domain*/stopWebLogic.sh PSEMHUB on UNIX. This will only stop the server servicing PSEMHUB requests. The other servers will still be up processing PIA requests.

The following is a sample XML configuration file for the WebLogic multi-server installation:

```
1.1 Sample XML configuration file for WebLogic Multiserver installation
<UriGroup Name="default_host_server1_st-lnx06_Cluster_URIs">
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid" Name="/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSIGW/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSINTERLINKS/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSOL/*" />
</UriGroup>
- <UriGroup Name="default_host_server1_pt-lnx03_Cluster_URIs">
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid" Name="/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSIGW/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSINTERLINKS/*" />
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSOL/*" />
</UriGroup>
- <UriGroup Name="default_host_server1_pt-ibm15_Cluster_URIs">
  <Uri AffinityCookie="JSESSIONID" AffinityURLIdentifier="jsessionid"
Name="/PSEMHUB/*" />
</UriGroup>
```

Stopping PSEMHUB on Multiple Servers on WebSphere

In a multiple server environment, target the server which is dedicated to PSEMHUB then execute *WebSphere_Appserver_directory*\bin\stopServer.bat serverX on Windows and *WebSphere_Appserver_directory*/bin/stopServer.sh serverX on UNIX. This will only stop the server servicing PSEMHUB requests. The other servers will still be up processing PIA requests

Configuring an Environment Management Agent

Before you can run an environment management agent, you must ensure that it's properly configured. You configure the agent by making appropriate entries in its configuration.properties file, which is located under:

PS_HOME\PSEMAgent\envmetadata\config

The following table describes the configuration.properties parameters for the Environment Management agent:

Configuration Parameter	Description	Default Value
hubURL	The URL that contains the host name and the port number of the machine on which the Environment Management hub is running (inside a J2EE container).	http://*hostname*:*port*/PSEMHUB/hub.
agentport	A port that the agent uses for internal life cycle management.	5283.
pinginterval	The interval, in milliseconds, between two successive attempts that the peer makes to contact the hub. All peers that access this configuration file have the same ping interval.	10000 (in milliseconds for the heartbeat) **Note:** The minimum required pinginterval value is 1000.
windowsdrivestocrawl	On Microsoft Windows, the set of local drives or directory paths where PS_HOME, PS_CFG_HOME and PIA_HOME are located. Separate the drive letters or directory paths with spaces and a pipe symbol (|).	c: | d: **Note:** Do not leave a trailing '/' or '\' character at the end of the path.
unixdrivestocrawl	On UNIX, the set of local drives or directory paths where PS_HOME, PS_CFG_HOME, and PIA_HOME are located.	$HOME **Note:** Do not leave a trailing '/' or '\' character at the end of the path.
chunksize	Only applicable to large files, which may be chunked when sent. The chunksize represents the maximum size in bytes of each chunk.	1048576 (1 MB) (used for large file transfers).

Configuring Agent Logging

The Environment Management agent's logs are located under *PS_HOME*\PSEMAgent\envmetadata\logs.

Edit *PS_HOME*\PSEMAgent\envmetadata\config\Logconfig.properties to configure the logging for the agent.

The following parameters determine the maximum size of each log file and the amount of log files rolled over. You can change the values of these parameters.

•   log4j.appender.R.MaxFileSize=1024KB

•   log4j.appender.R.MaxBackupIndex=1"

Configuring Agents With a Secure PS_HOME

Change Assistant deploys the updates to the PS_HOME using the agents running on the managed servers. Therefore, the agent running on a server should have write access to the PS_HOME and its subdirectories.

Note: While specifying the crawl path in configuration.properties, make sure that the decoupled configuration home (PS_CFG_HOME) is also included.

Related Links

"Working with the Default PS_CFG_HOME" (PeopleTools 8.53: System and Server Administration)
"Securing PS_HOME on UNIX" (PeopleTools 8.53: System and Server Administration)
"Securing PS_HOME on Windows" (PeopleTools 8.53: System and Server Administration)

Running an Environment Management Agent

This section discusses how to:

* Run an agent.

* Start an agent automatically in Windows.

Running an Agent

Before you run an Environment Management agent, you must ensure that it's properly configured in the agent's configuration.properties file.

Starting the Agent

At a command prompt, navigate to *PS_HOME*\PSEMAgent.

Use one of these scripts to start the Environment Management agent:

* On Microsoft Windows, run *PS_HOME*\PSEMAgent\StartAgent.bat.

  Note: If you want the agent to start automatically when the machine starts, use the Microsoft Windows service that's delivered as part of PeopleTools. Or, you can add the script to the startup applications.

* On UNIX, run *PS_HOME*/PSEMAgent/StartAgent.sh.

  Note: If you want the Environment Management agent to start automatically on UNIX when the machine starts, add StartAgent.sh to the login/boot scripts.

The first time an agent starts, it crawls the machine to locate PeopleSoft elements on that machine. The results of searching the hard disk are saved in the envmetadata\data\search-results.xml file.

Note: When starting an agent manually from the command prompt or from a script, the command prompt will continue to stay open, and it is normal to see the output of the periodic heartbeat events ("sending pulse") in the command prompt as the agent communicates with the hub. By default these "pulses" are every 10 seconds, except when environment information is being uploaded to the hub. You can configure the agent to run in the background using the provided Windows service, and on UNIX by using the `nohup` command. These options are documented in other sections of this PeopleBook.

Note: Only one Environment Management agent can be started per machine. If an agent is already started, you may receive error messages indicating that the agent cannot be started because there is already one running on the machine.

See <u>Starting an Agent in the Background on UNIX</u>.

See <u>Starting an Agent With PSEMAgent Windows Service</u>.

Starting the Agent on a Secure PS_HOME

On Microsoft Windows:

1. Create a new shortcut from the desktop (right-click, New, Shortcut).

2. In the Type the location of the item enter:

   <PS_HOME>\PSEMAgent\StartAgent.bat -u :<domainname>\<username>

   For example:

   c:\ptinstalls\pt851\PSEMAgent\StartAgent.bat -u :bigcompany.com\tsawyer

   Where the user specified has write access to PS_HOME.

   Note: When you run <PS_HOME>\PSEMAgent\StartAgent.bat -u :<domainname>\<username>, the %TEMP% directory is used. Both the user that runs the command and the "runas" user need write/execute access to the %TEMP% directory.

   ---

3. Click Next, and enter a name for the shortcut.

4. Use this shortcut to start the agent.

On UNIX:

1. Log in as the user who has write access to the PS_HOME.

2. PS_HOME/PSEMAgent/StartAgent.sh.

See "Securing PS_HOME on UNIX" (PeopleTools 8.53: System and Server Administration).

Stopping the Agent

Use one of these scripts to stop the Environment Management agent:

• On Microsoft Windows, run *PS_HOME*\PSEMAgent\StopAgent.bat.

• On UNIX, run *PS_HOME*/PSEMAgent/StopAgent.sh.

Recrawl

If you install new software components, the running Environment Management agent doesn't automatically detect them. This is because, to improve performance, the agent doesn't crawl every time it starts up. Instead it crawls only if the search-results.xml file does not exist.

You can force a recrawl and make the new components manageable by reissuing the StartAgent command with the recrawl option:

1. Open a new command line window.

2. Change directories to *PS_HOME*\PSEMAgent.

3. Issue the following command:

   ```
   StartAgent recrawl
   ```

This forces a recrawl and creates a new search-results.xml file. If an agent is already running, it publishes the results to the hub.

If the running Environment Management agent is connected to the hub constantly, the recrawl interval occurs every 24 hours by default. If the agent has not been connected to the hub for a few days, the hub requests the agent to recrawl when the agent contacts the hub the next time.

Note: Recrawling includes revalidating.

Note: The recrawl process assumes the Environment Management agent is running. If it is not running, you may see error messages in the output. It is recommended that before running a recrawl, you make sure the agent is running.

Revalidate

If the Environment Management agent does not recognize any of the installed components, the search-results.xml file may not exist or may contain only an entry for Host. The problem may be that the agent needs to have permission to read directories as well as execute programs. Grant these permission for the agent. Also check whether the agent has permission to create a file on the local file system. Finally, check whether the disk is full. The agent might have no disk space to create a search-results.xml file.

If the hub is not running, you may receive the following error messages in the agent log or console:

- Broken connection - attempting to reconnect

- RemoteException while connecting to server - retrying attempt 1

- RemoteException while connecting to server - retrying attempt 2

- RemoteException while connecting to server - retrying attempt 3

    Once the Environment Management hub is back up, the agent will successfully connect. There's no need to stop and restart the agent.

Note: If you are performing a recrawl, you don't need to separately revalidate.

Command-Line Arguments for the Agent

You can run these command-line arguments with the startAgent.bat (or startAgent.sh) script.

Argument	Description	Sample Output
version	Returns the version of the agent.	Version:8.45 Build Number: 109

Argument	Description	Sample Output

shutdown	Shuts down a previous instance of the agent if it is running.	If the agent does not exist:
		
		`Shutting down Agent....`
		`Unable to detect a`
		`running agent...`
		`Instance does not exist`
		
		If the agent exists:
		
		`Shutting down Agent....`
		`Shut down normally`

url	Prints the URL of the hub with which the agent is configured to communicate.	http:// 216.131.222.227:80/PSEMHUB/ hub
validate	Validates the current set of managed components that have been discovered from the last crawling by the agent.	Not applicable (NA)
recrawl	Recrawls the hard disk to detect new configurations. Recrawls the detected database environments to update database information. The current search-results.xml file is backed up. **Note:** Recrawling includes revalidating.	NA
isrunning	Returns true if an agent is already running and false if an agent is not already running.	NA
remove	Removes the peer and all its registered components from the hub.	Removal Completed- PeerID 2 has been removed. Removal Failed- PeerID 2 could not be removed from the hub.

Starting an Agent in the Background on UNIX

Use the UNIX `nohup` command with the StartAgent.sh script to start an agent automatically and run in the background. This enables you to avoid having a command prompt open at all times showing the constant heartbeat of the agent. You can specify an output file to store heartbeat information.

For example,

```
nohup ./StartAgent.sh > agent_output.log &
```

Starting an Agent With PSEMAgent Windows Service

You can set an Environment Management agent to start automatically when your Environment Management machine boots and run in the background. This enables you to avoid having a command prompt open at all times showing the constant heartbeat of the agent.

For this option, use the *PSEMAgent* Windows service that's delivered as part of PeopleTools.

Installing the PSEMAgent Service

You install the PSEMAgent service from a command prompt. Copies of the install program are located in two places:

PS_HOME\bin\client\winx86

PS_HOME\bin\server\winx86

To install the PSEMAgent service:

1. At a command prompt, change to either location of the install program.

2. Enter the following command:

   PSEMAgentService /install *PS_HOME*\PSEMAgent

   Where *PS_HOME* is the PeopleTools installed location.

   The PSEMAgent service is now installed, but not started. It's configured by default to start automatically when the system boots, and to log on using the local system account. You can start it manually, or wait for the next reboot.

   Note: The PSEMAgent service is configured to start as an automatic service, by default. However, the Hub must be running prior to the PSEMAgent service attempting to start, or the PSEMAgent service will not start successfully. It is recommended to set the PSEMAgent service to manual start in the Windows Services interface. Then, to start the PSEMAgent service, start it manually from the Services interface.

Starting the PSEMAgent Service

You can start the PSEMAgent service from a command prompt, or from the Windows Services control panel. The name of the service follows this convention: *PeopleSoft Environment Management Agent-<release>*.

• To start the PSEMAgent service from a command prompt, use the NET START command. For example:

   NET START "PeopleSoft Environment Management Agent-8.50"

• To start the PSEMAgent service from the Windows Services control panel:

   1. Open the Windows Control Panel, then double-click Administrative Tools, then Services.

   2. In the Services control panel, right-click the *PeopleSoft Environment Management Agent* entry and select Start.

Stopping the PSEMAgent Service

You can stop the PSEMAgent service from a command prompt, or from the Windows Services control panel.

• To stop the PSEMAgent service from a command prompt, use the NET STOP command. For example:

   NET STOP "PeopleSoft Environment Management Agent-8.50"

- To stop the PSEMAgent service from the Windows Services control panel:

    1. Open the Windows control panel, then double-click Administrative Tools, then Services.

    2. In the Services control panel, right-click the PeopleSoft Environment Management Agent entry and select Stop.

Uninstalling the PSEMAgent Service

You uninstall the PSEMAgent service from a command prompt.

To uninstall the PSEMAgent service:

1. At a command prompt, change to either location of the uninstall program.

   Copies of the uninstall program are located in two places:

   PS_HOME\bin\client\winx86

   PS_HOME\bin\server\winx86

2. Enter the following command:

   PSEMAgentService /uninstall

   PSEMAgentService determines if the service is currently started, and automatically stops it before completing the uninstall operation. You'll see messages reporting on the status of the operation.

   ___

   Note: If the service is currently stopped, you'll see an error message indicating that it can't be stopped. Regardless of this, the uninstall operation completes normally.

   ___

Monitoring Agent Status

If the Hub does not receive status from a peer for three ping cycles ("I am alive" messages) then it changes the state of the peer from *Running* to *Not Running*. Information related to agent status can be accessed from a browser using the following URL:

http://*hub_host*:*hub_port*/PSEMHUB/hub

Running the Viewer

To view data from the Environment Management hub:

1. Run a Java program to connect to the hub and retrieve the information in XML format.

   Run the appropriate script for your environment in from *PS_HOME*\PSEMViewer. You will be prompted for the web server's listening port.

   - UNIX: ./GetEnvInfo.sh

   - Windows: GetEnvInfo.bat

> **Note:** For security reasons, the Java program connects only to the local host.

2. Open *PS_HOME*\PSEMViewer\envmetadata\data\viewer.html to view the information in the generated XML file.

Configuring and Starting an Environment Management Agent on z/OS

To run an agent on z/OS, you must have installed JRE delivered with PeopleTools on the z/OS machine.

To configure and start the agent on z/OS:

1. Edit the configuration.properties file (*PS_HOME*/PSEMAgent/envmetadata/config).

2. Edit hubURL and define the hub machine name and hub port.

3. Edit unixdrivestocrawl and set it to the set of directories that need to be crawled.

4. Edit StartAgent.sh.

   On the first line, replace PS_HOME with your *PS_HOME* location.

   Edit the last line to point to your JRE location.

5. Edit StopAgent.sh.

   On the first line, replace PS_HOME with your *PS_HOME* location.

   Edit the last line to point to your JRE location.

The default charset on z/OS is EBCDIC. If you wish to view the content of *PS_HOME*/PSEMAgent/envmetadata/data/search-results.xml, you need to run the following commands:

```
cd PS_HOME/PSEMAgent/envmetatda/data
. PS_HOME/psconfig.sh
PS_HOME/bin/psuniconv utf-8 search-results.xml ccsid1047 result.txt
```

This comment is also true for *PS_HOME*/PSEMAgent/envmetadata/data/matchers.xml.

You can find a viewable version of the results in result.txt. You can also FTP (binary) these files to a different machine running a different operating system and view them in any editor.

Integrating with Oracle Configuration Manager

This section contains an overview and discusses how to instrument PeopleTools for Oracle Configuration Manager data collection.

Understanding Oracle Configuration Manager for PeopleSoft

Oracle Configuration Manager (OCM) is used to collect configuration data from customer environments and upload that data to a Customer Configuration Repository (CCR) stored and managed by Oracle. OCM works in tandem with PeopleSoft EMF for collecting configuration data from a PeopleSoft environment. The OCM data collection agents collect configuration data using the feed provided by the PeopleSoft EMF agents.

The PSEMAgent has to be running on the instance so that configuration data can be collected. After crawling the environment, PSEMAgent writes the environment data in XML format (with a .psft extension) to the *PS_HOME*/ccr/state directory.

OCM is installed and configured on a PeopleTools environment as part of the application server, Process Scheduler server, and web server PeopleTools installation. You can also install and configure OCM by directly downloading the standalone install kit from My Oracle Support.

See *PeopleTools 8.53 Installation <for your platform>, "Using the PeopleSoft Installer"*

Instrumenting PeopleTools for Configuration Data Collection
This section provides an overview of the data collection and discusses:

- Setting up Integration Broker for OCM.

- Deploying Services for OCM.

- Setting up security for OCM.

- Publishing queries for OCM.

Understanding PeopleTools Instrumentation for OCM

The optional configuration information collected from a PeopleSoft system for Oracle Configuration Manager (OCM) are defined as queries and shipped with OCM collectors. The query definitions need to be instrumented after the installation and configuration of OCM on a PeopleSoft environment. The instrumentation step publishes the queries that are required to gather configuration information from a PeopleSoft system using Integration Broker. The queries can be instrumented by a Java program "psft_qrypub" and are part of the OCM collector. The publishing of queries is a one-time activity performed after the configuration of CCR collectors.

The Integration Broker services and interfaces used by the publishing engine are:

Service Name	Operation Name	Description
QAS_QRY_SERVICE	QAS_EXECUTEQRYSYNC_OPER	Discovers application type.
	QAS_LISTQUERY_OPER	Determines whether data already exists.
	QAS_QUERY_DELETE_OPER	Deletes query for republishing.
	QAS_SAVE_QUERY_OPER	Saves query definition.
PT_CCR_QUERY	CCR_TREE_ADD_REC	Adds participating records of a query to QUERY_TREE_CCR.

Setting Up Integration Broker for OCM

Setting up Integration Broker is discussed in the Integration Broker documentation.

When setting up Integration Broker for OCM, make sure that:

- your gateway is configured and pointing to the appropriate gateway URL, such as http://<webserver_machinename>:<httpport>/PSIGW/PeoplesoftListeningConnector.

- all other connectors are loaded.

- on the PeopleSoft Node Configuration page you specify the appropriate Gateway Default App. Server values and PeopleSoft Nodes values.

- you can ping the node successfully.

- on the Service Configuration page (PeopleTools, Integration Broker, Service Configuration) that the target location http://<webserver>:<httpport>/PSIGW/PeopleSoftServiceListeningConnector.

Deploying Services for OCM

To publish QAS services:

1. Select PeopleTools, Integration Broker, Web Services, Provide Web Service.

2. Search and select the QAS_QRY_SERVICE service, and click Next.

3. Select View All to see all operations in the grid.

4. Choose the following operations:

    - QAS_EXECUTEQRYSYNC_OPER

    - QAS_LISTQUERY_OPER

    - QAS_QUERY_DELETE_OPER

    - QAS_SAVE_QUERY_OPER

5. Click Next until the final step and click Finish.

6. Make note of the WSDL URL generated, and open the wsdl in a new browser and make sure it was generated successfully.

To publish CCR services:

1. Select PeopleTools, Integration Broker, Web Services, Provide Web Service.

2. Search for and select PT_CCR_QUERY, and click Next.

3. Choose the following operation. CCR_TREE_ADD_REC.v1.

4. Click Next until the final step and click Finish.

5. Make note of the WSDL URL generated, and pen the wsdl in a new browser and make sure it was generated successfully.

To verify permissions for service PT_CCR_QUERY and operation CCR_TREE_ADD_REC:

1. Select PeopleTools, Integration Broker, Integration Setup, Service Operations.

2. For search criteria enter: for:

    - Service: PT_CCR_QUERY

    - Service Operation: CCR_TREE_ADD_REC

- Operation Type: Synchronous

3. Click CCR_TREE_ADD_REC and select Service Operation Security.

4. Make sure that the permission list PTPT1000 has Full Access is set.

Setting Up Security for OCM

This section defines setting up of two user accounts.

User Account	Description
Publisher	Used by the client publisher Java program to publish queries using Integration Broker. To set up this user profile, add the CCR Publisher role to the user profile.
PSEMAgent	Used for configuring your application server and Process Scheduler. PEMAgent uses the same credentials to run the queries for publishing the configuration information to OCM. To set up this user profile, add the CCR Execution role to the user profile.

See "Working With User Profiles" (PeopleTools 8.53: Security Administration).

Publishing Queries

The publisher program can be invoked by running psft_qrypub.bat in <PS_HOME>/ccr/sysman/admin/util.

Chapter 4

Configuring Change Assistant

Setting Up Change Assistant

This section covers topics related to setting up Change Assistant, including how to:

- Install Change Assistant.

- Confirm the path variable.

- Scan the workstation.

- Define environment identification.

Installing Change Assistant

Change Assistant runs only on supported Microsoft Windows workstations. Change Assistant is not automatically installed when you install PeopleTools. You install Change Assistant by running a separate setup.exe program in:

PS_HOME\setup\PsCA

After installing Change Assistant, you open it by selecting Start, Programs, PeopleSoft Change Assistant 8.5x.xx, Change Assistant.

Note: A new version of Change Assistant is delivered with each PeopleTools patch. After applying a PeopleTools patch, you must run the setup program again.

Note: The user who runs Change Assistant needs to have Administrator privileges on the Windows workstation. If you encounter the message "Another instance of Change Assistant is already running" the first time you try to access Change Assistant, right-click the icon or menu item and select Run as Administrator.

Complete installation instructions for Change Assistant appear in your PeopleTools installation guide.

See *PeopleTools 8.53 Installation: Installing PeopleSoft Change Assistant*

For hardware and software requirements, consult *My Oracle Support, Certifications.*

Confirming the Path Variable

After installing Change Assistant, ensure that the PATH system variable has been set. The following locations need to appear as the *first* entries in the PATH string.

Example:

PS_HOME\bin\client\winx86

Where *PS_HOME* is the location where you installed PeopleTools.

To verify Path settings:

1. Select Start, Settings, Control Panel.

2. Double-click the System icon.

3. Select the Advanced tab on the System Properties dialog box.

4. Click Environment Variables.

5. Select the *Path* variable in the System Variables section, then click the Edit button.

    The Edit System Variables screen appears.

6. On the Edit System Variables dialog box, ensure that in the Variable Value field, the following
    directory locations appear as the *first* entries in the Path string:

    ```
    C:\PS_HOME\bin\client\winx86;
    ```

7. If you've made any modifications, click OK to save your settings.

Define Environment Identification

In the browser, navigate to the PeopleTools Options page (PeopleTools, Utilities, Administration,
PeopleTools Options) and make sure that the Environment Long Name and Environment Short Name are
specified correctly.

The Environment Management Framework and Change Assistant use these values, along with the GUID,
to identify an environment and associate environment information with a particular named environment.
Likewise, it enables you to search for updates for a specific environment.

Related Links

Cloned Databases Not Being Unique

Opening Change Assistant the First Time

The first time you open Change Assistant after installing it, you will be presented with the Welcome menu. You can select not to display this page again.

Image: Change Assistant Welcome menu

This example illustrates the fields and controls on the Change Assistant Welcome menu.
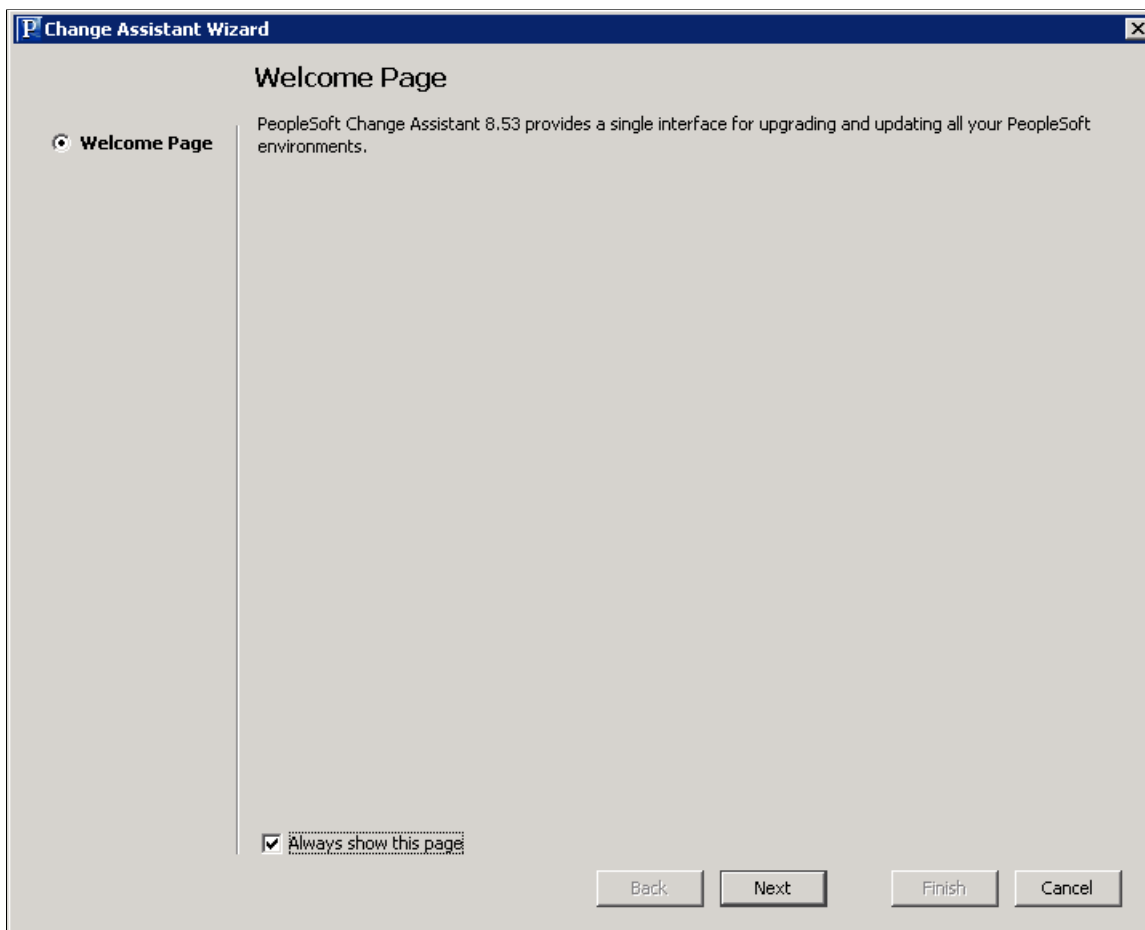
Click Next to view the Change Assistant Options.

Image: Change Assistant Wizard-Select Action dialog box

This example illustrates the fields and controls on the Change Assistant Wizard-Select Action dialog box. You can find definitions for the fields and controls later on this page.
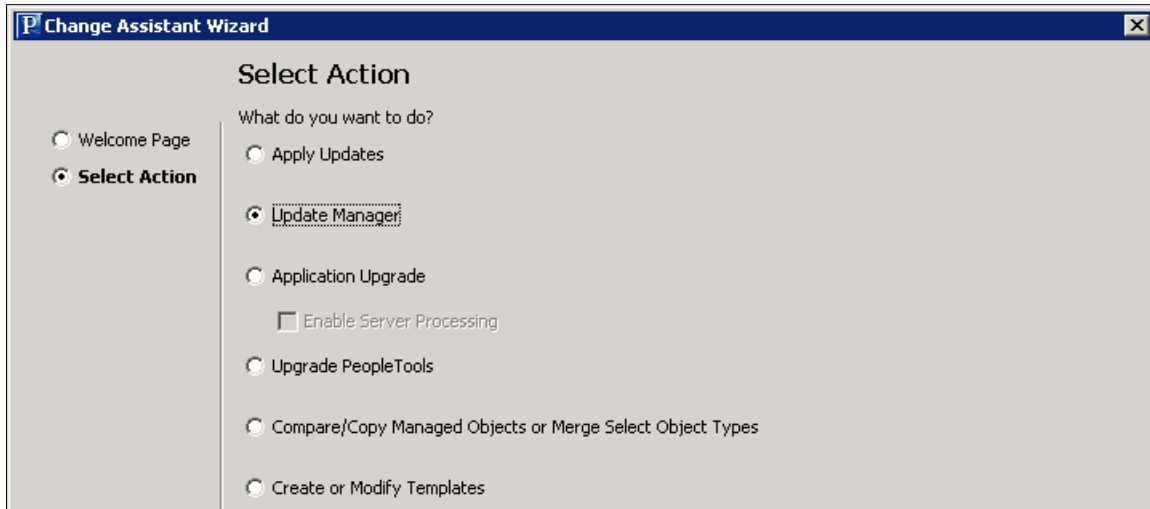
Depending on the action you select, the Change Assistant Wizard will guide you through the steps. Each of these actions has a topic that will provide details.

Apply Updates	Any systems that are not PUM enabled, will use the Apply Updates option to apply updates downloaded from My Oracle Support.
	Apply Updates can be used with any non-PUM change packages.
	See <u>Applying Updates To A Target Environment</u>
Update Manager	Update Manager is used to create and apply PUM Change Packages and PUM PeopleSoft Release Patches (PRP). The PeopleSoft Image is the virtual machine that contains the updates for a PeopleSoft application. Update Manager currently only supports applications patching. The PeopleSoft Update Manager PIA application is used in the PeopleSoft Image to search for updates, review potential change impact, and create a custom change package definition that is based on the updates you selected for your environment.
	Note: Update Manager is only available for 9.2 applications patching.
	See <u>Update Manager Action Overview</u>
Application Upgrade	Application Upgrade is used to perform upgrade to a new application release, which typically includes a PeopleTools upgrade as well. Full application upgrades are delivered with

detailed templates and documentation tailored to your specific upgrade path.

See The Upgrade Process Using Change Assistant

Upgrade PeopleTools	Upgrade PeopleTools is used to do a PeopleTools only upgrade.
Compare/Copy Managed Objects or Merge Select Object Types	Provides the ability to copy and compare Managed Objects projects and Data Migration Workbench projects in Change Assistant. You also have the ability to view and merge PeopleCode, SQL and XSLT.
Create or Modify Templates	Change Assistant templates are composites of all the possible steps that apply to an update or upgrade. The templates are delivered as part of the change package. Once you select a change package, the template is loaded into the Change Assistant internal storage. You can edit the template or add additional chapters, tasks and steps, if needed.

Chapter 5

Working With Change Assistant

Understanding The Change Assistant Interface

Change Assistant enables you to run, view, and modify Change Assistant templates. You open Change Assistant on a Windows workstation by selecting Start, Programs, PeopleSoft Change Assistant 8.5x.xx, Change Assistant.

Note: Before starting and running Change Assistant, application servers, Process Scheduler servers, and web servers should be running. If you are planning to use the action Apply Updates or Update Manager, then ensure all agents running on the servers are running and sending pulses.

Image: Template open in Change Assistant

This example illustrates the fields and controls on the Template open in Change Assistant. You can find definitions for the fields and controls later on this page.
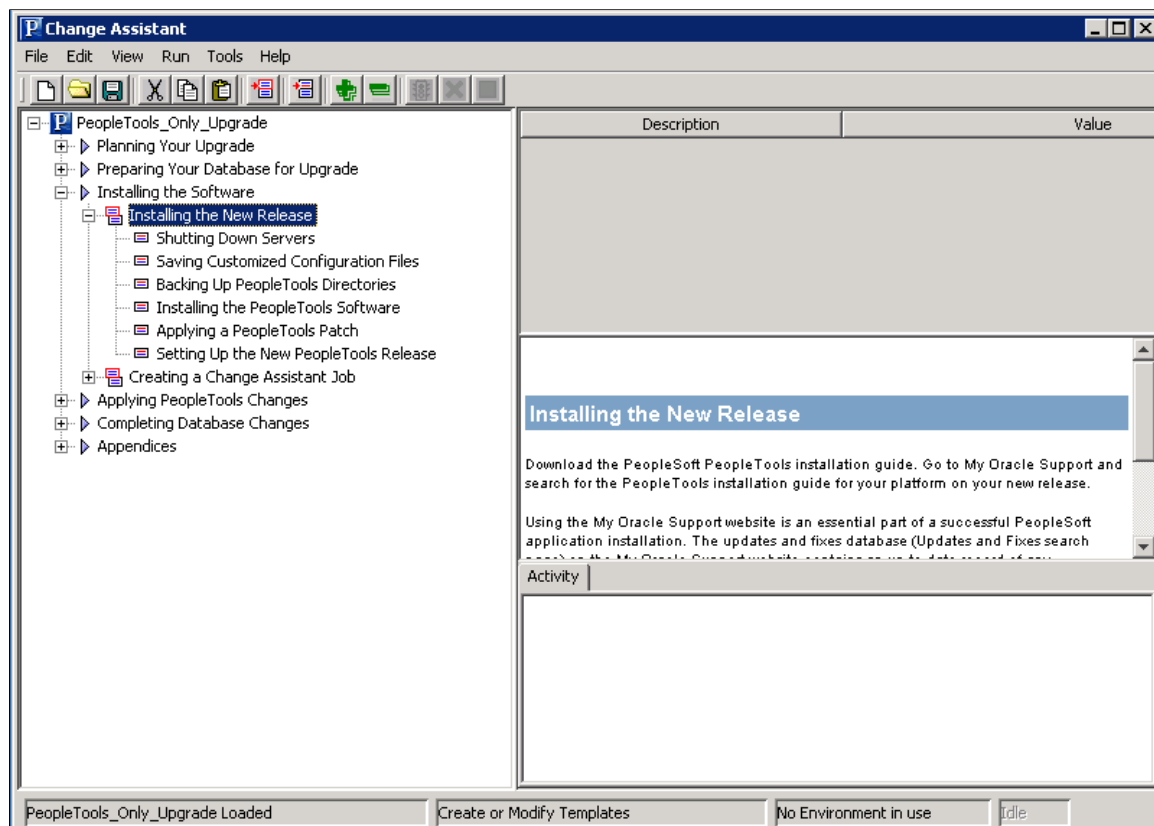
Change Assistant enables you to:

• View, modify, and create Change Assistant templates or jobs.

• Run PeopleSoft update and upgrade jobs.

When you have a Change Assistant template open, you use these areas in the project workspace:

Interface Area	Description
Template tree	The template tree section displays distinct nodes for the chapters, tasks, and steps within a template. • Chapters are section dividers that group and display the tasks. • Tasks are section levels that contain one or more steps. • Steps are the actual update actions that complete the processing of your update job. **Note:** Properties are assigned at the step level in the template, not the task or chapter level.
Properties box	Depending on what is selected in the template tree, the properties box displays the properties associated with that node. For the Create or Modify Templates action, the properties box displays the properties assigned to the step when it was defined. For a job, the properties box displays information related to the progress of a step, such as start time, end time, total duration, and so on.
Documentation box	Each template contains its own built-in documentation to provide guidance for a chapter, task, or step. The documentation exists in separate HTML files, but it appears in this box for each selected node on the template tree.

Interface Area	Description
Activity box	The Activity box displays the processing and status messages associated with a step, when a job is running in Change Assistant. This is similar to the Output window in the Application Designer workspace.

Image: Job open in Change Assistant

This example illustrates the Change Assistant interface for a job running in Change Assistant.
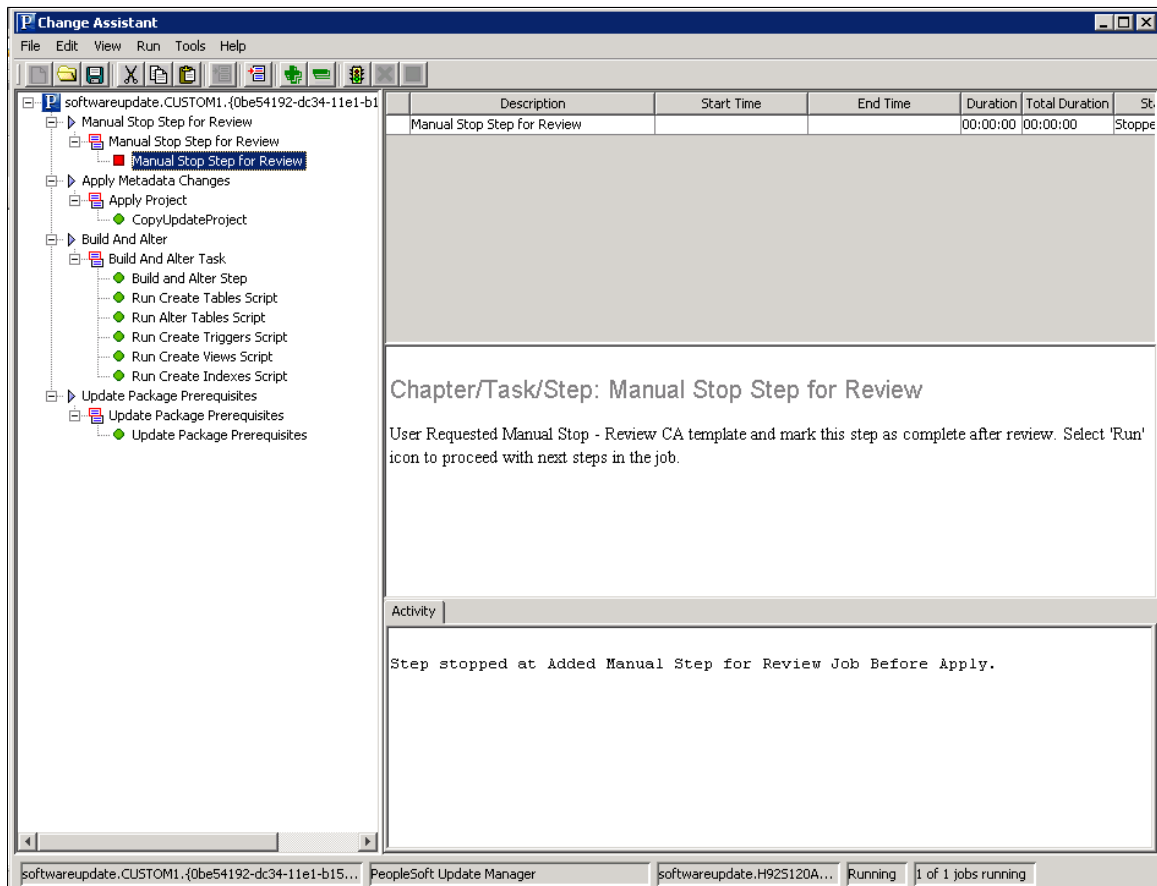
Working With Change Assistant Menu Options

This section describes the menu options available when using Change Assistant.

Note: Some menu options are enabled only during a specific Change Assistant action, which is determined in the Change Assistant Actions dialog box.

File Menu

The File menu contains some generic Windows options, plus these specific Change Assistant options:

Menu Option	Description
New Template	Creates a new Change Assistant template.
Open Template	Opens a template of job from the Change Assistant storage (internal database).
Save Template	Saves the template into the Change Assistant storage (internal database).
Save Template As	Saves the new template with the name you specify.
New Job	Creates a new Change Assistant job.
Open Job	Opens a job from the Change Assistant storage (internal database).
Save Job	Saves the job into the Change Assistant storage (internal database).
Save Job As	Saves the job with the name you specify.
Close	Closes the current template or job.
Import Template	Imports an existing template into Change Assistant. **Note:** Any modifications to the current template will not affect the original template that you imported. If you want others to obtain a copy of your modified template, you need to export it out of Change Assistant.
Delete Template	Removes the template from Change Assistant. When you delete a template, you also delete all the jobs associated with the template. **Note:** Press and hold the CTRL key to select multiple templates for deletion.
Export Template	Exports a copy of the template out of Change Assistant so others can use it.
Delete Job	Removes a job associated with the current template.
New Environment	Launches the Database Configuration wizard for creating a new environment. Change Assistant uses these settings to locate *PS_HOME* directories, connect to the Target database, and so on.
Open Environment	Opens a defined environment.

Menu Option	Description
Import Environment	Imports an existing environment.
Export Environment	Exports an existing environment.
Delete Environment	Deletes an existing environment.
Exit	Exits Change Assistant. **Note:** This option is disabled when a Change Assistant step is running. To exit Change Assistant while a process is running, you must first kill the process (select Run, Kill). When you relaunch Change Assistant you can resume at the point where you killed the process.

Edit Menu

The Edit menu contains some generic Windows options, plus these specific Change Assistant options:

Menu Option	Description
Insert Chapter	Inserts a new chapter. A chapter serves as a section head for multiple tasks.
Insert Task	Inserts a new task within a chapter. A task serves as a section head for one or more steps.
Insert Step	Inserts a new step within a task.
Step Properties	When a step is selected, launches the Step Properties dialog.
Rename	Renames an existing chapter, task, or step.
Run	Runs the selected step.
Stop	Stops the selected step.

Menu Option	Description
Restart	Restarts certain types of steps that you have stopped or have failed. Restart is supported for these step types: • Application Engine • SQL Application Engine programs can keep track of the state of a program run, and when restarted, they can pick up where a previous run stopped. When restarting SQL steps, Change Assistant generates a separate log file and numbers them incrementally, as in *logfile_2*, *logfile* 3, and so on.
Complete	Marks the selected step as complete. Often used when setting a manual step to complete, indicating that the manual work is done.
View Log	Opens the current job processing log.
View Script	Opens the script associated with the selected step.
Job Properties	Enables you to set properties for the upgrade job created.
Set Documentation Directory	Specifies the directory into which your upgrade documentation is saved. Change Assistant loads the documentation for viewing when you open a template or job.
Edit Documentation	Enables you to modify the documentation associated with the selected chapter, task, or step.
Finalize Documentation	Generates the HTML files

View Menu

The View menu contains these specific Change Assistant options:

Menu Option	Description
Step Details	Displays the step properties box in the Change Assistant workspace.
Documentation	Displays the documentation box in the Change Assistant workspace.
Activity	Displays the Activity box in the Change Assistant workspace.

Run Menu

The Run menu contains these specific Change Assistant options:

Menu Option	Description
Run	Begins the execution of a Change Assistant job.
Cancel	Stops the processing of a Change Assistant job *after* the currently running process completes.
Kill	Stops the processing of a Change Assistant job completely and immediately, *including* the step that's currently running.

Tools Menu

The Tools menu contains these specific Change Assistant options:

Menu Option	Description
Create Change Packages	Enabled when action type is Update Manager. Opens Change Assistant Wizard to select your environment information and leads you through the process to create a change package. See *PeopleSoft Update Manager*, Using Update Manager Action, Defining a New Change Package
Apply Change Packages	Enabled when action type is Update Manager. Opens Change Assistant Wizard to select your environment information and leads you through the process to apply a change package. See *PeopleSoft Update Manager*, Applying Custom Change Packages, Applying Change Package
Apply PeopleSoft Release Patchset	Enabled when action type is Update Manager. Opens Change Assistant Wizard to guide you through applying PeopleSoft release patchset to the PeopleSoft Image. See *PeopleSoft Update Manager*, Applying PeopleSoft Release Patchset to PeopleSoft Image, Applying Downloaded PeopleSoft Release Patchset to PeopleSoft Image
Validate	Validates the Change Assistant settings in your environment, that the required elements are up and running, and that Change Assistant can connect to them.

Menu Option	Description
Merge PeopleCode/SQL	Enabled when action type is Compare/Copy Managed Objects or Merge Select Object Types. Allows you to start a new merge session or open an existing session.
Default Merge Rules	Enabled when action type is Compare/Copy Managed Objects or Merge Select Object Types. Opens the Default merge Rules dialog box.
Project Administration	Enabled when action type is Compare/Copy Managed Objects or Merge Select Object Types. Opens Project Administration page.
Scan Configuration	Searches the Change Assistant workstation for tools and utilities required to perform updates and upgrades. For example, this process locates the local SQL tool, Data Mover, Application Designer, and so on.
Change Actions	Opens Change Assistant Wizard Select Action page. See Opening Change Assistant the First Time
Options	Opens the Change Assistant Options dialog box, enabling you to select Change Assistant configuration options. The options available depend on the Action selected.

Working with Change Assistant Templates and Jobs

Whether you are performing an update or an upgrade, you work with Change Assistant templates and jobs. The *templates* are composites of all possible steps that apply to an update or upgrade, whether they apply to your environment or not.

The source of the template is dependant on the action you are performing in Change Assistant. This table lists the template source for each Change Assistant action.

Change Assistant Action	Template
Apply Update	Change Assistant template comes in the change package downloaded from MOS. For change packages created in Application Designer, the template is generated when you select Generate New Template.
Update Manager	Change Assistant template is either generated from the custom change package when you select to apply the change package or delivered from PeopleSoft if you are applying a PRP (PeopleSoft Release Patchset.).

Change Assistant Action	*Template*
Upgrade	Change Assistant template for your upgrade path is downloaded from MOS.

After you specify the required settings in Change Assistant regarding your environment, you use Change Assistant to build a *job* tailored to your environment. When building the job, Change Assistant filters the steps so that the job contains only the steps applicable to your implementation. For example, the resulting Change Assistant job will have only steps that apply to your database type, your installed applications, your languages, and so on.

When you apply updates or run an upgrade, Change Assistant automatically loads the template into the Change Assistant internal storage system. You can add additional chapters, tasks, and steps to the template, if needed. To edit a template, you must be in the Create or Modify Templates mode, specified on the Change Assistant Options dialog box.

Examples of custom steps that might be added include, dropping indexes, adding indexes, backing up a database, and so on.

Note: In most cases, it is not necessary (or recommended) to modify a delivered template. Any changes that you make to the imported template won't affect the original template that you downloaded. However, if you choose to edit a template, keep a backup of the original.

Creating New Template Elements
You can add chapters, tasks and steps to an existing template.

To insert a template element:

1. Highlight the location where you want to add the element.

   If you want to add a chapter above the existing first chapter in the template, highlight the template root node (template name) at the top of the template tree.

2. From the Edit menu (or toolbar) select the appropriate option: Insert Chapter, Insert Task, Insert Step.

3. Enter a unique name for your new element.

   Note: Each chapter in the update template must have a unique name, each task within a chapter must have a unique name, and each step within a task must have a unique name.

4. Click OK.

   When creating new steps, Change Assistant displays the Step Properties dialog box for specifying step options.

Deleting Template Elements
To delete a chapter, task, or step:

1. Highlight the chapter, task, or step that you want to delete.

   Note: Press and hold the CTRL key to select multiple steps for deletion.

> *Warning!* If you delete a chapter, Change Assistant deletes all the tasks and steps within the chapter. If you delete a task, Change Assistant deletes all the steps within the task.

2. Select from the following:

   a. If you want to delete a chapter, select Edit, Delete Chapter.

   b. If you want to delete a task, select Edit, Delete Task.

   c. If you want to delete a step, select Edit, Delete Step.

3. Change Assistant deletes the chapter, task, or step and updates the template.

4. Save the template.

Exporting Templates

In order for others to use the template that you create or modify, you need to export it from Change Assistant. If you want to overwrite an existing template file, enter the name of the original template.

To export a template:

1. Open the template in Change Assistant by selecting File, Open Template.

2. Select File, Export Template.

   The Export Template dialog box appears.

3. Navigate to the folder in which you want to save the template.

4. Enter the name of the template.

> **Note:** If you want to overwrite the original template that you downloaded, enter the original name of the template.

5. Click Save.

Exporting Jobs to XML, HTML, or Microsoft Excel Format

Change Assistant allows you to export jobs to XML, HTML, or Microsoft Excel file formats.

To export a job:

1. Select File, Export Job.

2. Enter the desired exported filename and the select the desired file type format.

You can use this option to enable other implementation team members, who do not have access to the machine on which Change Assistant is running, to *view* the job. Exporting the job to Microsoft Excel enables you to view the timings in a spreadsheet format.

> **Note:** You can not export a Change Assistant job and either import it or open it on another machine with Change Assistant installed and then run or modify the job on that other machine.

Working with Steps

This section discusses how to:

- Set step properties.

- Set filter queries.

- View step status.

Setting Step Properties

PeopleSoft delivers update templates with default settings and steps to perform updates. If needed, you can modify the steps, or create new steps, based on the conditions that apply when you run the update process.

To modify the step properties, highlight the step for which you want to modify the step properties, then double-click on the step or select Edit, Step Properties. After making any changes to step properties, click OK, and save your template.

Note: Depending on what mode you are in, some of the fields may be disabled.

Note: Under normal circumstances, it is recommended that you do not modify or edit the step properties in your delivered template.

This section describes fields and options on the Step Properties dialog box. You can modify step properties for a step when adding or editing steps in the template.

Image: Step Properties dialog box

This example illustrates the fields and controls on the Step Properties dialog box. You can find definitions for the fields and controls later on this page.

Step Description

This field displays the current step.

Script/Procedure

Enter the name of the script, procedure, project, or program name to which you want to assign the properties of the step. For example, enter *SYSAUDIT*.

This field is required for all step types except manual stop.

Type

Select a step type. This selection defines the type of action to be performed by the step. For example, if you are running the SYSAUDIT SQR report, select *SQRReport*.

Detailed information related to each step type appears elsewhere in this PeopleBook.

See Step Types

Parameters	Enter additional parameters that you may need to run the step. For example, for SQL commands, you enter the actual SQL command in this field. In other cases, you use this edit box to override various environment settings or other parameters so that the step completes successfully.
	Detailed information related to the parameter options for each step type appears elsewhere in this PeopleBook.
	See Step Parameters
From Tools Release	Specify the PeopleTools releases to which a step applies. Use the associated operator dropdown list to indicate ranges of releases. The default values are *All* with the = operator.
	The operator dropdown list enables you to express greater than, less than, equal to, and 'in' relationships.
	The *in* operator enables you to specify more specific ranges, such as 'in' 8.48 and 8.49, as opposed to 'greater than' 8.48. When adding multiple release numbers, separate the values with a comma (,). For example:
	8.48,8.49
	Note: If you enter more than one From Tools Release value, the system assumes the 'in' operator.
	Change Assistant uses these values to filter the steps when creating the upgrade job so that only the steps necessary for a particular environment remain.
Run Location	Select one of these run location options:
	• *Local*: runs a step's process on the local machine: the Windows workstation where Change Assistant is running. For Application updates and PeopleTools-only upgrades, steps run locally. However, for full upgrades, steps can run locally or remotely.
	• *Remote Agent*: runs the step on a remote server. During a full upgrade, some steps are data intensive and, for performance reasons, can be run on a remote server. If you select *Remote Agent*, before running the step you need to configure the Remote Agent options on the Change Assistant Options dialog.
	The details of setting up this option are documented in the upgrade portion of this PeopleBook.
	See Configuring Remote Agent Processing.
Orientation	Specify which database the step needs to be run against. Options will vary based on the action selected, but may include:

- *Source*

- *Target*

- *Copy of Current Demo*

- *Production*

Step type and type of upgrade determine valid orientation settings.

See <u>Source and Target Databases</u>.

Products   Click the Products icon. Change Assistant displays the Select Products dialog box, which enables you to select the product line, the industry, and the products to which your step should be run against (for example, FIN/SCM, Commercial, Asset Management).

Note: You must select at least one product.

Apply Type   Specify the type of upgrade to which this step applies:

- *Initial Pass*: refers to the initial application of a change package or new release to your Copy of Production database.

- *Move to Production*: refers to the upgrade between your Copy of Production database and your test or production system.

- *Both*: refers to steps that need to be run in both apply types.

Note: When the job is created, the system filters the template steps to be executed by the apply type specified. For example, if *Move to Production* is specified as the apply type, only steps in the template specified as Move to Production or Both will be included in the job.

Allow for Errors   Indicates how the system should react to any errors that may arise during a step run. If set to *Yes*, if the step encounters errors the system does not perform any error handling and continues on to the next step.

Default is set to *No*.

Run Concurrently   Enables you to set multiple steps (programs, processes, and so on) to run simultaneously.

If you select this option for two or more consecutive steps, Change Assistant starts those processes concurrently, until the job reaches:

- a step with Run Concurrently set to *No*.

- a step type of *Manual Stop*.

- the Maximum Concurrent Processes value, as set on the Change Assistant Options dialog box.

By setting Run Concurrently to *Yes*, you are indicating to Change Assistant that this step can run concurrently with the following step. The total number of processes that can run concurrently is determined by the Maximum Concurrent Processes setting on the Change Assistant Options dialog box.

Some examples are shown here, these examples use 3 AE steps and CA concurrency set to 2:

- Example 1

  Steps:

  - AE1 Concurrent=Yes

  - AE2 Concurrent=Yes

  - AE3 Concurrent=No

  - Manual Stop

  In this example, AE1 and AE2 will run in parallel. When both finished, AE3 will then run.Job will stop when ManualStop is encountered.

- Example 2:

  Steps

  - AE1 Concurrent=Yes

  - AE2 Concurrent=Yes

  - AE3 Concurrent=Yes

  - Manual Stop

  In this example, AE1 and AE2 will run in parallel, when either AE1 or AE2 finish, AE3 will run. Job will stop when ManualStop is encountered.

- Example 3

  Steps:

  - AE1 Concurrent=Yes

  - AE2 Concurrent=Yes

  - Manual Stop

- AE3 Concurrent=No

In this example, AE1 and AE2 will run in parallel, the job will stop when ManualStop is encountered. AE3 will run after the user completes the ManualStop.

- Example 3

  Steps:

  - AE1 Concurrent=Yes

  - AE2 Concurrent=No

  - AE3 Concurrent=Yes

  - Manual Stop

  In this example, AE1 will run, when AE1 finishes, AE2 will run, when AE2 finishes AE3 will run. Job will stop when ManualStop is encountered.

Running steps concurrently is a strategy reserved for application upgrades to save time when running the following step types on a remote host through a remote EMF agent or Process Scheduler:

- Application Engine

- SQL

- Data Mover

Concurrent processing is not enabled in any circumstances for these step types:

- DBTSFIX

- Load Base Data

- Upgrade PeopleTools

- Manual Stop

Note: If a step is dependent on a previous step, it is not recommended to set it to run concurrently with that step.

Note: Steps set to run concurrently can span across multiple consecutive tasks or chapters, and can be of different step types.

Note: In an application upgrade, do not run the "Update PeopleTools System Tables" step concurrently, and, unless specifically instructed to do so, do not run any of the steps in the "Apply PeopleTools Changes" chapter concurrently.

See the upgrade documentation for your specific upgrade for recommendations on specific steps within that upgrade that can be run concurrently.

Setting Filter Queries

Filter queries provide the ability to add ad-hoc step filtering criteria to a template to further improve applicability of job to the customer and where possible remove unnecessary manual steps.

See Adding Filter Queries

Viewing Step Status

When working with templates and jobs, you see these status icons to the left of steps:

🟢 **Run**	Indicates that Change Assistant runs this step or process automatically without manual intervention.
🟥 **Stop**	Indicates that Change Assistant stops on this process. It also indicates that there may be manual steps to perform for this step. Review the documentation window for further instructions. After completing the work described in a manual step, you must set the status to *Complete.*
Restart	Indicates a restart process. If a step failed and you corrected the problem, you can set the step to restart from the point of failure.
Processing	Indicates that the process is running.
Failure	Indicates a failure has occurred that needs immediate attention. This appears if a Data Mover script, SQL script , or project copy step fails. Resolve the error before continuing with processing.
Warning	Indicates a warning for this step which does not need immediate attention. The job continues processing with no adverse affects. After the job completes, review the steps in a warning state and evaluate for further action.
✅ **Complete**	Indicates that the step is complete.

Adding Filter Queries

Filter queries provide the user with the ability to add ad-hoc step filtering criteria to a template in order to improve the applicability of a job to the customer and where possible remove unnecessary manual steps.

This section discusses how to:

• Create Filter Query Step type.

• Assign Filter Query to a step.

• Cut and Paste filter queries

• Create and execute jobs that include filter queries.

Creating Filter Query Step Type

A template can have 0–n Filter Query steps defined and they can be defined at any position in the template. The location of the filter query step will determine when the filter queries associated to that step will be executed.

Image: Filter Query Step dialog box

This example illustrates the fields and controls on the Filter Query Step dialog box. You can find definitions for the fields and controls later on this page.

Script/Procedure	The Script/Procedure is defaulted to Filter<n+1> where n is set to 0 for a new template and incremented by 1 each time a Filter Query step type is added and saved.
	The first Filter Query step created in a template will be named Filter1, the second will be named Filter2, and so on.
	These values must be unique, deletion of a filter query step, will not change the n value. When a filter query step is deleted, the value is never reused.
Define Filter Query	Use this button to access the Define Filter Queries dialog box.

The following step attributes can be set for Filter Query step type:

• From Tools release

- Orientation

- Products

- Platforms

- Languages

- Apply Type

Setting Step Properties

The following step attributes cannot be changed and will be greyed out.

- Parameters — not required for Query Filter step type

- Run Location (Default = Local)

- Allow for Errors (Default = No)

- Run Concurrently (Default = No)

Note: A filter query step cannot be filtered by it's own query. A filter query step can not be filtered by a filter query defined in another step.

Defining Filter Queries

The Define Filter Queries page is used to define the actual filter queries. The grid is displayed in read-only mode and always contains a minimum of one row in the view.

- To add a new filter query, right-click and select Add New Filter Query.

- To delete an existing filter query, right-click on the row and select Delete Selected Filter Query.

- To update an existing filter query either:

  - Right-click on the row and select Edit Selected Filter Query.

  - Double click on the row.

Defining Filter

Use the Filter Definition dialog box to define the filter.

Image: Filter Definition dialog box

This example illustrates the fields and controls on the Filter Definition dialog box. You can find definitions for the fields and controls later on this page.

Filter ID	The Filter ID must be unique within the Filter Query step. The Filter ID value in conjunction with the Script/Procedure name is used to ensure uniqueness within the template. For example: Filter1–AP Check.
Description	Enter a description for the filter query.
Query Definition	Enter the SQL statement for the query.
	Special filter queries are also available as described in the next section.
	Note: The SQL statement is not validated.
Filter if True Value	The Filter if True Value can be a numeric or a string. Valid operator are:

- Numeric

    =, <, >, >=, <=, <>

- String

    Contains, Does Not Contain

For a single filter query, when the *Filter if True Value* is True then the associated step will be filtered.

Special Filter Queries

In addition to the standard user defined queries, a special platform-based filter query is available where Change Assistant leverages it's own metadata about the environments to resolve the query.

The following would be inserted in lieu of an actual SQL statement. The variables cannot be used as a part of the actual SQL statement. Examples of unique identifier pairing would be:

• #PLATFORM_SRC=#PLATFORM_TGT

• #PLATFORM_SRC=#PLATFORM_ODMO

• #PLATFORM_SRC=#PLATFORM_PROD

The return value for these pairings will be *Y* for yes and *N* for no.

For more information on variables see <u>Filter Query Variables</u>

Assigning Filter Query to a Step
To use a filter query, the filter query must be assigned to a step. The following rules apply:

• The drop down list of filter queries will be restricted to filter queries that are defined in the template at a position ahead or above the step being updated.

• Steps can only be associated to Filter Queries that would execute prior to the step being executed.

• Steps cannot be associated to the same Filter Query twice.

Adding a Query Filter to a Step

To add a query filter to a step:

1. Double-click on the step to open the Step properties.

2. Select the Filter Queries tab.

Image: Filter Queries dialog box

This example illustrates the fields and controls on the Filter Queries dialog box. You can find definitions for the fields and controls later on this page.

Step will be filtered if: Select when filtering will be done.

                                                              • All Filter Queries listed Return True Values

AND condition

- One Filter Query listed returns True value

  OR condition

Filter Name	Select the Filter name from the drop down list.
	To add additional filter queries, right-click and select Insert Query.
Filter Identifier	Select the Filter Identifier from the drop down list.
	Note: The drop down list will contain all of the Filter IDs for the selected Filter Name. This field will be grayed out if a Filter name has not been specified.

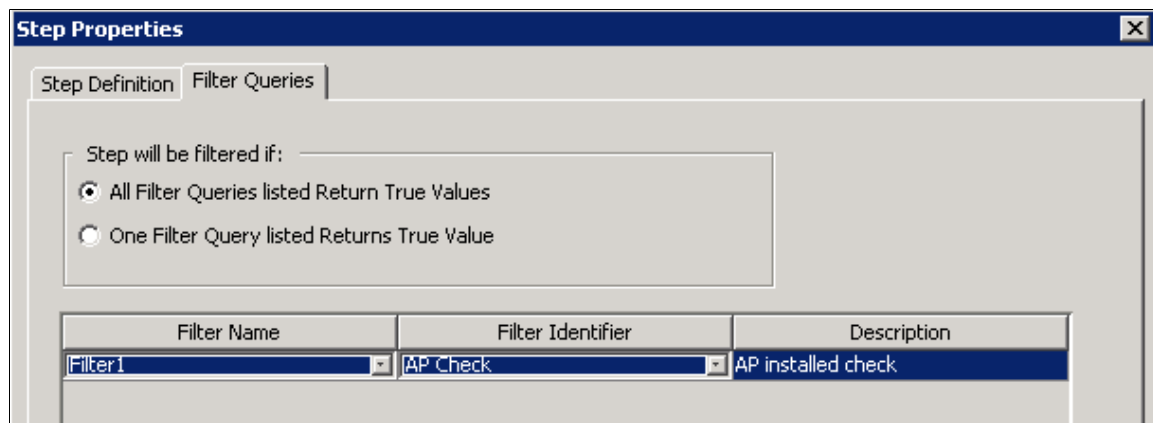To add additional Filter Queries, right-click on a row and select Insert Query.

Deleting a Query Filter from a Step

To delete a query filter:

1. Double-click on the step to open the Step properties.

2. Select the Filter Queries tab.

3. Right-click on the row with the filter and select Delete Query.

4. Click OK.

Cutting and Pasting Filter Queries

Once Filter Query Step types have been defined and used as filters for additional steps, you must take care in deleting or moving the steps in the template. Keep in mind the following points:

- Deleting a Filter Query Step

  If you delete a Filter Query step from the template, you will receive a warning that the deletion will result in all references to all filters defined in that step will be deleted. If you choose to continue, the process will remove all step references to the deleted Script/Procedure + Filter ID values.

- Cutting and pasting a Filter Query Step to another location in the template

  - Pasting to a position above or ahead of the original position has no impact.

  - Pasting to a position below the original position will result in a warning message indicating that moving step will result in removal of references to the current filter query step above it's new position.

    If you choose to continue, the process will remove all step references to the moved Script/Procedure + Filter ID values in steps that precede it in the revised template.

- Cutting and pasting a non-filter query step

  - Pasting to a position below the original position has no impact.

- Pasting to a position above the original position will result in a warning message indicating that moving the step will result in removal of references to filter queries below it's new position.

  If you choose to continue, the process will remove all step references to the impacted Script/ Procedure + Filter ID values within the relocated step.

Creating and Executing Jobs that Include Filter Queries

This section discusses how filter queries affect:

- Job Creation

- Job Execution

Job Creation

At the time of job creation, Filter Query steps can be filtered by any of the standard attributes (such as Platforms) as is the case for any other Step type. The filtering of a Filter Query step in this manner does not invalidate or cause steps that reference the filter query to filtered.

At job creation all Filter Queries defined within the template will be set to a default value of Null or No Value. No Step will be filtered by an Ad-Hoc Filter Query at job creation, because no Filter queries have been run at that time. The earliest these Filter Queries can be executed is in the first step of the template/ job.

A step can be filtered by a System Filter Query at job creation, assuming that the associated step does not also have any ad-hoc Filter Queries associated to it.

Job Execution

On Filter Query step execution, results are retrieved for all filter query ID' s defined within that specific Filter Query step. These results are written to the Change Assistant database.

- The execution accounts for the orientation of the Filter Query step.

- The return values for each Filter Query are noted in the CA log listing the Filter Identifier, Filter ID, the Hide if True Condition, the return value and whether the Hide if True Condition was met.

- In the event of a SQL error, an error message is written to the CA log and the step is marked as *Failed*.

- In the event that the SQL returns a value of the wrong type (numeric as string) ,an error message is written to the CA log and the step is marked as *Failed*.

Upon completion of this execution, the template is refreshed and as part of this action filtering of steps will occur. Filtering of steps by filter query can only occur where all associated Filter Identifier' s have been resolved and are not in the Null or no value state. This is true even when only a single FALSE is required to filter a step.

When a Job is opened or refreshed – the filter query filtering will execute to ensure that all required filtering has occurred.

Working with Embedded Documentation

Each delivered Change Assistant template comes with embedded documentation to help guide you through an update or upgrade job, especially for manual steps. Typically, full upgrades have significantly more documentation than updates.

The documentation for any chapter, task, or step resides in a separate HTM file with the same name as the template element. A master HTML file stores the compilation of the separate HTM files displayed in an order matching the template.

When working with Change Assistant documentation, you:

• Set the documentation directory.

• View documentation.

• Create and edit documentation.

• Finalize documentation.

Setting the Documentation Directory

You set the documentation directory before an upgrade and prior to customizing documentation. The documentation directory contains the documentation HTM files.

To set the documentation directory:

1. Select Edit, Set Documentation Directory.

2. Navigate to the directory where you want to store the documentation.

3. Click Open.

Viewing the Documentation

To view the embedded documentation associated with a particular template element:

1. Select the template node.

2. View the documentation in the documentation box.

To view the compiled documentation:

1. Navigate to the documentation directory.

2. Open the *template_name*.HTM file.

Creating and Editing Documentation

To create or edit documentation:

1. Select the desired element node.

2. Select Edit, Edit Documentation.

3. In the edit box on the Edit Documentation dialog box, insert your cursor, and add new content or modify existing content.

Click Attach to incorporate additional files, such as graphics or additional text files. Attaching files moves that file into the documentation directory and inserts a link to that file in the embedded documentation.

4. Click OK.

Finalizing Documentation

After modifying any documentation for individual template elements, select Edit, Finalize Documentation to compile the individual documentation changes into the master HTM file.

Maintaining Change Assistant Directories

After you download and apply change packages, it's not uncommon for there to be a number of files left in the local Change Assistant directories. This section describes when it's safe to remove the files and what to consider if you want to remove any of the files.

Directory	Maintenance Consideration
Download	Location where the system stores your downloaded bundles and change packages. After the updates have been applied to all environments, you may delete the updates from this directory. This can be advantageous when applying change packages by keeping the list of change packages on the Select Change Packages page of the Apply Change Packages wizard at a manageable length. However, keep in mind that if you delete the updates, and then you need to recreate another environment, you will need to download the update again.
Staging	A temporary holding place for files needed during the application of a change package. It is safe to delete files in this directory after a change package has been successfully applied to all target databases.
Output	Contains all the logs related to the processing of a change package. The files in this directory should be kept as long as it is feasible in case problems are detected later. The logs contain valuable information for troubleshooting.
PeopleSoft Update Manager Directory	This is a network share that maps to the PI_HOME share of the image. Do not delete these files.
PS_HOME\Maint	Contains script files and other files that are only required during the application of the change package. It is safe to delete files in this directory after a change package has been successfully applied.

Running Change Assistant Job from the Command Line

Change Assistant jobs can be run from the command line to automate applying updates to multiple environments.

Command Line for Running PUM Updates 9.2 and Higher

All PUM-enabled environments will use the environment information defined via the Update Manager Action Options UI. See *PeopleSoft Update Manager*, Using Update Manager Action, Selecting Update Manager Action, Configuring Change Assistant for Update Manager.

Command line format:

```
Changeassistant.exe -SRCENV <peopleSoft Image database> -TGTENV <target database> -⇒
 UPD <change package> -FS <file server> -DL <download directory> -TYPE <initial pas⇒
s or move to production> -OUT <log file directory> -EXONERR <launch GUI Y or N>
```

Example command line:

```
Changeassistant.exe -SRCENV HRIMAGE -TGTENV HR92A - UPD updPKG1
```

In this example the source database (PeopleSoft Image) is named HRIMAGE, the target database is named HR92A and the change package to apply is upgPKG1 (name of the custom change package created in Update Manager with the upg prefix when the change package is created). All of the other parameters will use the default.

Parameter	Description
-SRCENV	Name of source environment containing the PeopleSoft Image database. (Required)
-TGTENV	Name of target environment. (Required)
-UPD	The Change Package to apply. (Required) Specify either *all* , a single or multiple Change Packages to apply to the specified environment. For example: • -UPD all • -UPD upd111111 • -UPD upd111111,upd222222
-FS	File Server path to apply the Change Package to the specific environment. (Optional) Select either *all* or list a specific file server configuration path in order. For example: • -FS all • -FS c:\pt8.53 -FS c:\pt8.53,c:\pt8.53–903

Parameter	Description
-DL	Download directory for the environment. (Optional) If the directory is not specified it uses the default defined under General Options.
-TYPE	Apply Type. (Optional) • I = Initial Pass (default) • M = Move to production
-OUT	Path of log file (Optional) If the log directory is not specified it uses the default defined under General Options.
-EXONERR	Specify whether or not to launch GUI if an error or manual stop is encountered. (Optional) • Y = Do not Launch • N= Launch (default)

Command Line for applying downloaded PRP to PeopleSoft Image

Command line format:

```
Changeassistant.exe -MODE <update manager mode> -ACTION <APPLY prp> -TGTENV <name o⇒
f target environment > – UPD <change package>  -TYPE <initial pass or move to produ⇒
ction> -OUT <log file directory> -EXONERR <launch GUI Y or N>
```

Example command line:

```
Changeassistant.exe -MODE UM -ACTION PRPAPPLY  -TGTENV HRIMAGE – UPD updPKG1
```

In this example the target database (PeopleSoft Image) is named HRIMAGE and the change package to apply is upd11111 (name of the downloaded PRP change package). All of the other parameters will use the default.

Parameter	Description
-MODE	Change Assistant Action (Required) UM = Update Manager
-ACTION	Action name (Required) PRPAPPLY = Apply PRP
-TGTENV	Name of target environment containing the PeopleSoft Image database. (Required)

Parameter	Description
-UPD	The Change Package to apply. (Required) Specify either *all* , a single or multiple Change Packages to apply to the specified environment. For example: • -UPD all • -UPD upd111111 • -UPD upd111111,upd222222
-TYPE	Apply Type. (Optional) • I = Initial Pass (default) • M = Move to production
-OUT	Path of log file (Optional) If the log directory is not specified it uses the default defined under General Options.
-EXONERR	Specify whether or not to launch GUI if an error or manual stop is encountered. (Optional) • Y = Do not Launch • N= Launch (default)

Command Line for Uploading Change Assistant Environments that were Previously Exported

To upload a CA environment that was previously exported use this command line format:

```
changeassistant -MODE UM -ACTION ENVIMP -FILEPATH <location of xml file> -FILE <xml⇒
 file name>
```

Parameter	Description
-MODE	Change Assistant Action (Required) UM = Update Manager
-ACTION	Action name (Required) ENVIMP = Import Environment
-FILEPATH	Location of xml file to be uploaded. (Required) Example: -FILEPATH C:\pt8.53

Parameter	Description
-FILE	Name of xml file to be uploaded. (Required)] Example: -FILE PT903R1.xml

Command Line for Non PUM-Enabled Environments

For Non PUM-enabled environments (PeopleSoft Image is not installed), use the following command line format:

```
Changeassistant.exe -ENV <target database>  - UPD <change package> -FS <file server⇒
> -CA <access id> -CAP <access password> -CO <user id> -CP <user password> -DL <dow⇒
nload directory> -BLD <manual or auto> -OUT <log file directory> -EXONERR <launch G⇒
UI Y or N>
```

Note: EMF Agent must be running.

Parameter	Description
-ENV	Target database. (Required)
-UPD	The Change Package to apply. (Required) Specify either *all* , a single or multiple Change Packages to apply to the specified environment. For example: • -UPD all • -UPD upd111111 • -UPD upd111111,upd222222
-FS	File Server path to apply the Change Package to the specific environment. (Required) Select either *all* or list a specific file server configuration path in order. For example: • -FS all • -FS c:\pt8.53 -FS c:\pt8.53,c:\pt8.53–903
-CA	Access id for the environment. (Required)
-CAP	Access password for the environment. (Required)

Parameter	Description
-CO	User id for the environment. (Required)
-CP	User password for the environment. (Required)
-DL	Download directory for the environment. (Optional) If the directory is not specified it uses the default defined under General Options.
-BLD	Specify whether to create the Build scripts and execute them automatically or have the DBA run the scripts automatically. (Optional) • 0 = Manual • 1 = Automatically (default)
-OUT	Path of log file (Optional)
-EXONERR	Specify whether or not to launch GUI if an error or manual stop is encountered. (Optional) • Y = Do not Launch • N= Launch (default)

Part II

Using Change Assistant with PeopleSoft Update Manager

Chapter 6

Using Update Manager Action

Update Manager Action Overview

Update Manager Action includes the following:

- Validate Change Assistant EMF Settings

- Define a New Change Package

- Apply Change Packages

- Apply Downloaded PeopleSoft Release Patchset to PeopleSoft Image

See Software Update Process

PeopleSoft Update Manager Homepage

This PeopleSoft Update Manager Homepage serves as a central location for information regarding PeopleSoft Update Manager and PeopleSoft Images. The current documentation for Using Update Manager Action is contained in the PeopleSoft Update Manager book. The PeopleSoft Update Manager documentation is posted on the PUM Home Page on MOS [ID1464619.1] (login required). PeopleSoft Update Manager Home Page [ID 1464619.1]

Important! .We recommend that you look at the PeopleSoft Update Manager Home Page for updates to the documentation.

PeopleSoft Update Manager PIA Application
The PeopleSoft Update Manager PIA application which resides on the PeopleSoft Image is used to identify required and desired updates for the change package definition. It contains 2 components, Define Change Package and Review Change Package.

For details on using the PeopleSoft Update Manager PIA application refer to the *PeopleSoft Update Manager* documentation posted on the PeopleSoft Update Manager Home Page [ID 1464619.1].

Part III

Using Change Assistant with Non-PUM Enabled Systems

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Chapter 7

Using Apply Update Action

Discovering Updates Using My Oracle Support

If the current application level of PeopleSoft product is not PUM-enabled, it is necessary to use My Oracle Support to discover updates and then download them to your local system.

1. Log onto My Oracle Support (MOS).

2. Select Patch and Updates tab.

For detailed instructions on using MOS for patches and updates, refer to the continuous delivery document.

PeopleSoft 9.1 Continuous Delivery Status [ID 1401770.1]

My Oracle Support Patches and Updates for PeopleSoft Products [ID 1465172.1]

Downloading Updates From My Oracle Support

When you select an update to download, you will be downloading the change package. You will need to set up a download directory on your local machine to store all of your downloaded change packages. When you are ready to apply the change packages, you will reference this directory from Change Assistant.

Downloading a Single Patch
To download a patch from the Patch Details page:

1. In the Patch Search Results table, click the patch name link to view the patch details page.

2. Click Download.

3. Select the Include Prerequisites check box to list all the prerequisite change packages.

4. In the File Download window, click the patch file name link and select Save.

The context bar for each patch provides a download option. Note that you can select multiple patches from a list by using Ctrl or Shift.

Downloading Multiple Patches From My Oracle Support
To download more than one patch:

- From the patch search results, click anywhere in the row except a link to select that row. Use Ctrl or Shift to select multiple rows.

- Choose the Download button from the context bar.

- Click each file and save it.

Using WGET Options
WGET is a UNIX download utility. The WGET options enable you to create a WGET download script that you can save as a file or copy to the clipboard.

Note: The WGET download script is intended for advanced users. In most cases, there are no messages to indicate that an error has occurred. Before using the WGET script, you should be familiar with the WGET command and WGET log files. You should also be familiar with UNIX file management, know how to edit, delete, and copy UNIX files, create and edit shell scripts, change execute privileges in UNIX, and understand HTTP error codes. Alternatively, use a download manager to download multiple patches. If you do this, you must maintain an active My Oracle Support session while you download the patches.

For details on using the WGET options refer to

Patches and Updates

Reviewing the Updates Change Log

Using the Environment Management hub, Change Assistant evaluates the change log status of the available environments to identify if prerequisites have already been applied before allowing you to apply a new change package.

To review the change log for an environment, or to confirm whether particular update has been applied, you use the following PeopleTools utilities:

Utility	*Navigation*
Updates - View All	PeopleTools, Utilities, Administration, Updates - View All
Updates by Release Label	PeopleTools, Utilities, Administration, Updates by Release Label
Updates by Update ID	PeopleTools, Utilities, Administration, Updates by Update ID

Only those application releases in which *all* of their application updates were delivered in change packages are considered to have reliable change log data. Application updates that you applied that were not delivered as change packages are probably not included in your change log. Therefore it's possible that your change log does not match your actual maintenance history. In these cases, you should apply change packages individually—select only one change package in the Update Wizard. Then, you can verify whether the list of missing prerequisites reported by Change Assistant accurately reflects your maintenance history.

If your target environment is at an application release level that is not considered to have reliable change log data, Change Assistant may falsely report that a prerequisite is missing from this environment. If this is the case, *do not* add the supposed missing update to your current apply list, as this would reinstall the update (not recommended).

Therefore, if your target environment may have unreliable change log data, review the list of missing prerequisites found by Change Assistant and if any of these updates are known to have been previously applied to your target environment, manually enter these updates to your change log first so that Change Assistant can accurately determine that these prerequisites have been satisfied. If you need to add entries to your change log, you will have to restart the apply change packages process.

Validating Change Assistant Settings

Before applying non-PUM updates, you should validate your settings.

Change Assistant validates settings by:

* Locating valid SQL query tools required to run SQL scripts.

* Testing the Environment Management hub and ensuring that Change Assistant can communicate with it.

You can also print a summary of your environment, which can facilitates the diagnosis of problems by Oracle Global Customer Support.

To validate your environment:

1. Select Tools, Validate.

2. Click Start Validation.

3. When the validation process has completed, a completion message appears.

4. If any of the steps were unable to complete successfully, open the log file to determine the cause.

    Click View Log in the lower part of the screen to see more details regarding individual steps of the validation.

You can also select the Validate Change Assistant EMF Settings radio button from the Change Assistant Wizard when the action Apply Updates is selected.

Image: Validating Change Assistant Settings in Your Environment

This example illustrates the Validating Change Assistant Settings in Your Environment response.
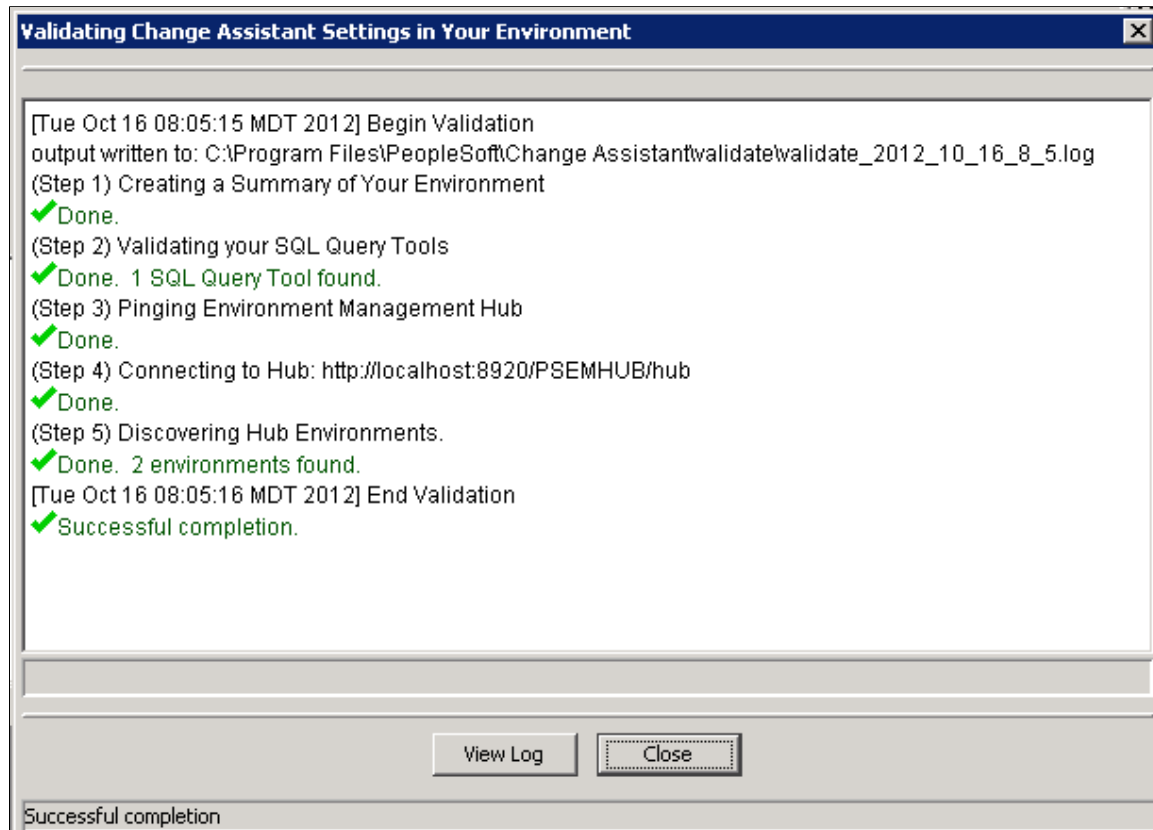
Note: If you use proxy servers, the system will ping those and prompt for proxy server user ID and password.

Working with Templates

When applying a change package, Change Assistant uses the update template embedded in the PeopleSoft-provided change package. You can use the update template to automate the majority of the job steps. The primary difference between a template and a job is that a template is a composite of the update process, whereas a job is a set of filtered steps for a given target environment within a template.

When you apply updates by using the Apply Update action with the Apply Change Packages option, Change Assistant automatically loads the template into the Change Assistant internal storage system. You can add additional chapters, tasks, and steps to the template.

Note: Any changes that you make to the imported template won't affect the original template that you downloaded with the change package. If you want to overwrite the original template with your changes, save the template and select File, Export to export it to the directory from which you downloaded it. You can also use the export function to make this modified template available to others.

In order for others to use the template that you create or modify, you need to export it from Change Assistant.

To export a template:

1. Select File, Open Template.

2. Select File, Export Template.

   The Export Template dialog box appears.

3. Navigate to the folder in which you want to save the template.

4. Enter the name of the template.

   Note: If you want to overwrite the original template that you downloaded, enter the original name of the template.

5. Click Save.

   Note: To ensure consistency with shared templates, the system includes all template and step properties in the exported XML file, regardless of whether the property value differs from the default value.

See Using Templates in Upgrades.

Applying Updates To A Target Environment

The apply process enables you to apply one or more change packages to the target environment. A typical change package apply process, would be as follows:

1. Apply the change package without compare to your demonstration environment.

   Since the demonstration environment does not contain any customizations, there is no need to compare. This brings the demonstration environment current on the specific maintenance, overwriting the new maintenance into the demonstration environment.

2. Apply the change package to the first customized environment by using the 'Apply with Database Compare/Copy' option.

   This uses your demonstration database as the source and this customized environment as the target. This process augments the normal Change Assistant template/job in order to compare the change project from the demonstration database to the target database.

3. Use the PeopleTools database compare and copy utilities to reconcile the new changes from PeopleSoft with your customizations, just as you do during an upgrade.

4. Once the reconciled or modified change package is created, it can then be applied without compare into all other customized environments, assuming these customized environments are the same.

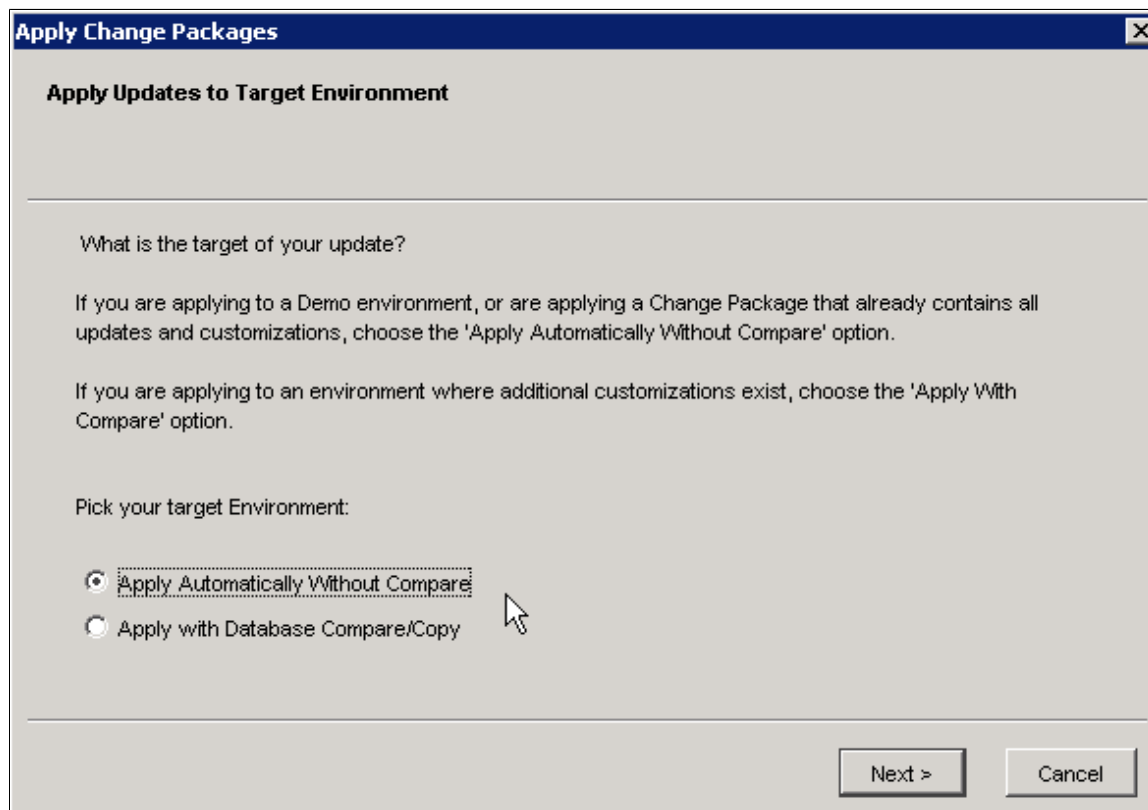To apply change packages to the target environment:

1. The Environment Management Hub must be up and running.

2. In Change Assistant, select Tools, Change Actions

3. Select Apply Updates.

4. Select Apply Change Packages and click Finish.

5. Apply Change Packages Wizard starts.

You use the Apply Change Packages wizard to select the appropriate settings for a change package.

Image: Apply Updates to Target Environment

This example illustrates the fields and controls on the Apply Updates to Target Environment. You can find definitions for the fields and controls later on this page.

| **Apply Automatically Without Compare** | Applies the change package to the target environment and copies the project without initiating any compare reports or analysis.

Select this option if you are:

• Applying a PeopleSoft-delivered change package to a PeopleSoft demo environment.

  Because you have not made any customizations to a demonstration environment, there is no need to compare objects.

• Applying a modified change package to your own environments, as in development, test, or production environments. |

The "modified change package" refers to a new change package created using the Apply with Database Compare/ Copy option. This modified change package is the result of the Change Management process where you have reconciled changes made in the PeopleSoft maintenance with your customizations. Once the modified change package has been created for the first customized environment, there is no need to compare additional environments. This assumes that the additional environments contain the same metadata. Once you have created this modified change package, it can be applied without compare to the remaining customized environments.

Apply With Database Compare/Copy   Select this if you are beginning the process of migrating a PeopleSoft-delivered change package to your customized environments. In this case, you are applying to a customized environment, and this will require the use of PeopleTools' change management tools, such as compare and copy.

Note: When applying multiple updates, a job set may not move on to the next update if there are steps in the current update with a status of *Warning* rather than *Success*. In this situation, review the logs for the steps with warnings and take any corrective measures, as needed. Then change the status of these steps from *Warning* to *Complete* to proceed to the next change package in the job set.

Apply Without Compare

This section describes the apply process after you have selected the Apply Automatically without Compare option.

To apply a change package without compare:

1. On the Apply Updates Using the Change Impact Analyzer screen indicate whether you want to include Change Impact Analyzer analysis.

    Typically, system administrators use Change Impact Analyzer to help devise a test plan based on the impact of changes.

2. On the Select a product line release screen indicate product line associated with the target environment.

3. On the Select Target Environment screen, select the database name associated with the target environment.

    All PeopleSoft web servers, application servers, Process Scheduler servers, and so on, are associated with one, and only one, environment, which is determined by the database.

4. On the Environment Preparation screen acknowledge that you have performed the recommended pre-update procedures.

5. On the Select File Servers screen, select the file servers that are used in conjunction with the target environment.

Note: The system uses this file server selection only as a destination to deploy files during the apply process. The file server specified is not used for execution purposes. The executables used to run steps during the apply process are those specified in the PS_HOME edit box on the Change Assistant Options page.

File server installations are not necessarily tied to any one environment, unlike application servers, web servers, Process Scheduler servers and database servers, which are associated with one, and only one, database environment. On the other hand, a single file server could be used for multiple databases, and likewise, there could be multiple file servers in your PeopleSoft implementation all supporting different application versions. So, it is necessary to prompt you to select the appropriate file server installation.

---

6. On the Enter user name and password screen, enter the user credentials required for Change Assistant to be authenticated.

7. On the Select apply directory screen, confirm the location of the change packages you intend to apply.

8. On the Select Change Packages screen, select change packages to install.

    You can use Select All to select all the available change packages listed on the screen.

9. Click Next after you've selected your change packages.

    At this time, Change Assistant examines all the selected change packages to determine if any of them have previously been applied.

    Note: If an *Unable to read change package* error appears because of an unsupported change package version number, then you must install the latest release of Change Assistant.

    ---

10. If the change package has already been installed, you will be prompted to select one of the following options:

    • Do not reapply the change package.

    • Review each change package individually, with option to apply.

      If you choose to review each change package individually, you will be prompted either not to reapply the change package or to reapply the change package (not recommended).

11. Select the options, then click Next.

    If none of the translated languages included in a change package applies to the languages installed in the target environment, you will be prompted to select one of the following options:

    • Remove these change packages from my installation list.

    • Review each of these change packages individually, with option to apply.

      If you elect to review each change package individually, you will be prompted either not to apply the change package or to apply the change package (not recommended).

12. After you've made your selection, Change Assistant searches for post-requisites. If there are post-requisites that are not listed in the apply list, you will be prompted to select one of the following options:

    • Apply these additional change packages.

      The additional change packages are added to the list of selected change packages.

      _____

      Note: This option is enabled only if the additional change packages are already present in your apply directory.

      _____

    • Remove the change packages that require post-requisites from my installation list.

13. Click Next.

    Change Assistant searches for any missing prerequisites required by the selected change packages, and you will be prompted to make the same selections as in the previous step.

    _____

    Note: If your target environment is at an application release level that is not considered to have reliable change log data, Change Assistant may falsely report that a prerequisite is missing from this environment. If this is the case, it is very important that you *not* elect to add the supposed missing update to your current apply list, because this would reinstall the update, which is not recommended. Therefore, if your target environment is considered to have unreliable change log data, it is very important that you review the list of missing prerequisites found by Change Assistant. If any of these updates are known to have been previously applied to your target environment, you must first manually enter these updates to your change log so that Change Assistant can accurately determine that these prerequisites have been satisfied. If you need to add entries to your change log, you will have to restart the Apply Change Packages process.

    _____

14. After you have selected your option, click Next.

    If one or more of the change packages you are applying includes the Build and Alter template steps, you will be prompted to select one of the following methods to apply the database changes.

    • Automatically: Enables build scripts to be run as an automated template step.

    • Manually: Enables the build script to be run as a manual template step.

15. If one of your selected changes packages will be executing a script that includes embedded question syntax that is supported by Change Assistant, you will be prompted to enter a runtime value for the script variables.

16. Click Next to display a screen where you confirm your selections–target environment and change packages to apply and number of manual steps, if any, for each change package.

17. On the Apply Now screen, consider the options presented before applying the change project.

    Validate Now   _____

                                                  Note: Before you initiate the apply update process, you can validate your environment connections to ensure all components are active.

                                                  _____

Review and Apply	Enables you to review the entire job to make sure it is correct before running it against an environment.
	Note: If there are steps you don't want run or have already completed manually, you could set them to Complete while reviewing the job. For example, if you have already deployed some files manually to a certain PS_HOME, you could set that step to Complete to save time and avoid overwriting any custom settings.
Begin Apply	Starts the update job.

Apply With Compare or Copy

The interface of the Apply Change Packages wizard is similar to what you see with the Apply Without Compare option, however, the following steps are included.

• Compare project from the demo database to the development or copy of production database.

  Change Assistant will compare this project between the source database and the currently selected environment (target database).

• Examine the compare report step (a manual step).

  You must examine the compare reports generated to determine the appropriate action (for example, whether or not to copy the object from the source database to the target database).

• Copy project from the source database.

  Change Assistant copies the objects from the source database to the target database, based on the actions chosen.

• Extract the files from the delivered change package.

  Change Assistant will extract the current change package to a temporary location (<<staging directory>>/~ExtractedCP).

• Re-apply customizations.

  This is a manual step.

• Compare and merge files.

  This is a manual step.

• Export the project from the target database.

  Change Assistant will export (from the target database) the project containing customize objects to a temporary location (<<staging directory>>/~ExportedProject).

• Change Assistant creates a new change package in the download directory. The original change package is renamed to xxxxx.zip_datetimestamp.

Automatically Deploying Files to Different Servers

Change Assistant can automatically deploy files in a change package to different servers within an environment. If the job that is running while applying the change package includes a Deploy Files chapter

and contains tasks and steps, that indicates to Change Assistant to deploy the files to the agents that are running in the environment.

While Change Assistant runs deploy file steps within the job, it will query the hub for the location to deploy the files. The query is based on the server, operating system, and database platform. If the query returned from the hub matches what was defined for the file reference in the change package, Change Assistant attempts to deploy the files to the agent running on the host machine.

Change packages provided by PeopleSoft applications, are configured to deploy multiple files of the same type within one step. This can improve performance, especially when a change package contains hundreds of updated files.

When files are deployed, the step's log file lists the host name and the type of server that match the file reference and the target path on the remote host.

If the Environment Management agent is not running at the time when Change Assistant is trying to deploy files, a warning message appears stating the inability to deploy the files. Other types of problems that may occur, such as lack of disk storage space, will result in step failure.

Resuming Running Jobs
If there is a current apply job set, the Resume Running Jobs dialog box appears automatically when you start Change Assistant, run a job, or apply change packages (start a new apply).

Select Cancel to:

- Remove all jobs associated with the current apply job set that have not been run.

- If a job definition is open in Change Assistant and it does not belong in the current apply job set, the job definition remains open.

- If a template definition is open in the Change Assistant, regardless of whether or not it's used in the current job set, it will remain open.

Select No to keep the current apply job set and its associated jobs as they are, so that you can resume this apply job set later.

Select Delete Job Set to delete the current apply job set.

Part IV

Working With Change Packages

Chapter 8

Working with Change Packages

Understanding Change Packages

Once you have your change project completed, you create a change packages in Application Designer. Change packages are used to enable:

- PeopleSoft developers to package software updates and any prerequisites associated with PeopleSoft application updates

- You to package your own system customizations into a change project, which is then used by the Change Packager and Change Assistant when migrating from one release or one environment to the next.

The process of using a change package is to:

1. Create a new project adding all new items for the application changes to the database for the update, identifying the project as a change project and setting the appropriate update IDs and prerequisites, if applicable.

2. Define the file reference definition(s), if necessary, for the individual files that need to be packaged with the project and the file type code.

   Note: Only projects that contain physical files (such as SQR or Excel files) need to include a file reference definition.

3. Generate the change package, which copies the project to a file, generates a Change Assistant template and documentation, creates the Data Mover scripts for non-managed objects, and packages the referenced files.

4. Manually update the Change Assistant template, if necessary, that is generated by the Change Packager.

5. Finalize the change package using the Finalize Change Package option, which performs validations on the package and produces the zip file.

   The zipped archive files contain the change project and all its associated files.

6. Test the newly created change package.

Creating a Change Project

In addition to identifying the project as a change project, if necessary, you will need to add a file reference definition to the project, which requires a file type code definition. A file reference is only necessary if there is a physical file that you want to execute or deploy or both when the change package is applied by Change Assistant.

This section discusses how to:

- Set project properties for a change package.

- Define the file type code.

- Create a file reference definition.

- Modify the upgrade definition type.

Setting Project Properties for a Change Package

Before beginning to work with the Change Packager, you must identify the project you want to use as a change project. You do this in the Project Properties dialog box.

To create a change project and set project properties:

1. Create a new project.

2. Open the Project Properties dialog box.

3. Enter a Project Description and any pertinent comments for your internal tracking system on the General tab.

   The system populates the information you enter here into the change log and the manifest.

4. Select Change Project on the General tab.

   This enables the Update IDs and the Pre-Requisites tabs. Here you identify the lead incidents from your incident tracking system, if applicable, that identify the updates to the database.

5. Select the Update IDs tab.

6. Enter the primary incident tracking ID associated with the update you want to implement in the Update ID field.

   This field may contain both numeric and alphanumeric characters. The system considers the first value in the list to be the primary ID for the project. When entering your own incidents:

   a. Enter the names of the fixes or the update IDs fixed in this project. The system logs them to the manifest and includes them when Change Packager copies the project.

   b. Click Add to add it to the list.

   _____

   Note: In order for Change Packager to create the change package successfully, you must enter a value in the Update ID field.

   _____

7. Select the Pre-Requisites tab.

   List any prerequisites that this project might have. Change Assistant checks those incidents that you enter here against those listed in the target environment's change log to verify whether the fix has been applied.

Defining the File Type Code

Each file reference definition that you create for the project must be associated with a file type code. The file type code stores generic information that is applicable to a group of files within the same target directory.

Access the file type code definition from Tools, Miscellaneous Definitions, File Type Codes.

To define the file type code for the file reference definition:

1. Click New to access the New File Type Code dialog box.

2. Enter a file type code and click OK.

    The file type code can be up to 30 characters in length. This action opens the File Type Code dialog box.

3. Enter the Path.

    This notifies Change Assistant where the file belonging to this type code should be deployed. The only supported environment variable for use is *%ps_home%*.

4. Enter a description for the file type code.

    This field is required in order to save the definition.

Creating a File Reference Definition

If you have individual files that need to be packaged with the project, you can create file reference definitions to identify them. Create one file reference definition for each file. You create a file reference definition in the same manner as all other PeopleTools definitions in Application Designer, by selecting File, New from the menu.

File Name and Path	Enter the path and file name for the file you want to reference. Use the browse button to search the proper path. This is the source location and file from which Change Packager selects the definition for packaging. This field supports the use of environment variables.
	If you want to create a file reference with a variable path, prepend %FILEREFPATH% to the filename.
Change Assistant Template Text	Enter the text you want to display in the Change Assistant template for this change package. This field has a 20 character limit.
Binary	Check if the file is a binary file. This information is necessary to properly transfer the file to the target platform.
Database Platform	Select the database platform for the target database.
Operating System	Select the operating system for the target database.
PeopleSoft Server	Select the applicable server for your system.
Unix Target Directory Security	Specify the file permissions the file should have once it is copied if operating on a UNIX system.

For each of the drop-down list boxes in this dialog box, you may select multiple entries by using the Shift/Ctrl keystroke combinations.

The file reference properties contain only the General tab where you can enter any comments about the file reference as well as select the Owner ID. This tab also tells you when the definition was last updated and by whom.

When you save the file reference definition, the definition name defaults to the file name you entered in the File Name and Path field. The Save As dialog box prompts you for the File Type Code, which is a requirement for every file reference definition.

Variable File Reference Path

You can use a variable path as a file reference. To do this, in addition to the steps for creating an absolute path:

• In the File Name and Path edit box, enter the name of the file and prepend the filename with %FILEREFPATH%.

  For example: %FILEREFPATH%\ExcelToCI.xls

• Add this file reference to a change project.

Image: Example of Variable Path File Reference

This example illustrates the fields and controls on the Example of Variable Path File Reference. You can find definitions for the fields and controls later on this page.

Using variables in the file reference definition eases the repackaging of a change package. When you create a change package with a variable file reference, the File Reference Path edit box in Create Change Package dialog expands the %FILEREFPATH% variable in the file reference definition. However, the file reference definition itself is not updated in the process.

This enables you to repackage change packages without having to modify the file reference definitions. The value in the File Reference Path field is stored in the registry and displays the last value.

When the change package is recreated, the update ID automatically expands the file reference paths according to the following construct:

file reference path + upd + *update ID* + \ +upd + *update ID* +_batch\filereferences\ + *file type code* + *filename*

For example:

c:\temp\upd999999\ upd999999_batch\filereferences\XLS\ExcelToCI.xls

c:\temp\upd999999\ upd999999_batch\filereferences\SQR\xrfwin.sqr

If the file does not exist in the directory, the system searches for the file reference path. If the file isn't found in this directory, then an error will be displayed and the Change Packager fails to create a change package.

See Creating a Change Package.

Modifying the Upgrade Definition Type
After creating the file reference definitions and inserting them into the change project, the next step is to modify the upgrade definition type to instruct whether Change Assistant should deploy or execute the file reference. Deploying the file copies it to the location specified in the File Type Code defined in the target environment. Executing the referenced file means it will be run on the Change Assistant machine.

Note: File references and application engine programs are the only definition types that can be executed.

To modify the upgrade definition type:

1. Open the change project.

2. Select the Upgrade tab in the project workspace.

3. Double-click the File References folder.

    This action opens the upgrade definition type listing all file reference definitions for that project.

4. Choose the appropriate upgrade attributes for each of the file references listed.

    Refer to this table to ensure the desired results:

Desired Result	*Execute Check Box*	*Upgrade Check Box*	*Action Option*
Deploy and Execute	Selected	Selected	Copy
Deploy only	Cleared	Selected	Copy
Execute only	Selected	Cleared	Copy
No Step*	Cleared	Cleared	Copy
No Action**	Either	Either	Delete

* No step indicates that the generated Change Assistant template will not have a step corresponding to that file reference definition.

** No action means that the file is neither deployed or executed in the target machine.

The default settings for the upgrade definition type are set for deploy only.

5. Save the project.

Creating Change Packages

This section discusses how to:

- Create a change package.

- Modify the Change Assistant template.

- Finalize the change package.

Creating a Change Package

Once you have created your change project you can build the change package using the Change Packager feature in Application Designer.

To create a change package, select Tools, Create Change Package, which invokes the Create Change Package dialog box.

Image: Create Change Package dialog box

This example illustrates the fields and controls on the Create Change Package dialog box. You can find definitions for the fields and controls later on this page.

Export Directory	The Change Packager feature copies the project into the directory you identify. Use the browse button to search for the desired directory. If you already created a change package for this project in the same directory, the system prompts you to delete the existing file.
File Reference Settings	These settings apply only if your change package contains file references, otherwise these settings are disabled.

- File Reference Path: Enter the path for the file reference.

- Update ID: Enter the associated update ID.

See Creating a File Reference Definition.

Generate New Template	Select this option if you intend to generate a new Change Assistant template with your change package that *does not* incorporate any manual changes made to an existing template.
Merge Existing Template	Select this option if you intend to incorporate any manual changes you have made to an existing Change Assistant template. Enter the file path or navigate to the location of the existing Change Assistant template you want to merge with the updated template.
Backport IB to pre-8.48 PeopleTools	Select if your changes affect Integration Broker (IB) definitions and need to be applied to versions of PeopleTools before PeopleTools 8.48. In PeopleTools 8.48, the metadata surrounding Integration Broker changed significantly
Overwrite if already backported	Only appears if Backport IB to pre-8.48 PeopleTools is selected. Select this option to overwrite any Integration Broker changes that have already been backported.

The progress dialog boxes indicate the definitions that the system is copying into the change package. The system then confirms that the change package was created successfully. The Results tab of the output window displays a list of the definitions in the project by definition type, as well as any errors encountered.

Open the staging directory to confirm the change package was created successfully. The destination directory now includes a new folder named after the project and appended with the word *Package*.

Change Packager Output

The Change Packager feature generates several folders and a manifest, placing them in the output directory you specified previously. The manifest from the change package is an XML document containing data that may need to be accessed quickly by Change Assistant. This manifest information includes:

- Update ID(s) from the project properties.

- Prerequisite ID(s) from the project properties.

- Update summary text from the project properties.

- The user who created the update.

  This is the user ID for the individual that last updated the project based on the *By User* field in the Project Properties dialog box.

- Post date.

  This date is generated from last updated *Date/Time* field from the Project Properties dialog box. Change Assistant uses this date to determine the order in which to apply a selection of change packages.

- The number of manual steps included in the Change Assistant template.

- A count of the definition types included in the project.

In addition to the manifest are six folders that include:

*   The Change Assistant template

    The template contents for the update are tailored to the specific contents of the change project, including all relevant file deployment steps for each file reference definition given the file type code and the file reference attributes.

*   Documentation

    The change package documentation is an HTML file. This document contains general information on the installation as well as instructions that are customized to your specific customizations. When you open the change package in Change Assistant, it displays the proper documentation for the current step in which you are currently working.

*   File references

    The File References folder contains folders for each file type code associated with each file reference definition in the project. Each file type code folder contains a copy of the actual file referenced by the project's file reference definitions associated with this file type code.

*   Project folder

    This folder contains an XML file of all project information.

*   Pre 8.44 project folder

    This folder is applicable only to customers operating on a pre-8.44 PeopleTools release and are therefore not using Change Assistant to deploy change packages.

Modifying the Change Assistant Template
In most cases, the Change Assistant template generated by the Change Packager is exactly what you need to begin working with Change Assistant. However, in rare instances it may be necessary to manually add or update the steps in the Change Assistant template. The template is located in the Change Assistant package directory as an XML file.

Finalizing a Change Package
Once you create the change package and are satisfied with the Change Assistant template, finalize the change package. The finalization process validates the files to confirm that all of the necessary pieces to produce the change package are present and generates a zip file for the entire change package. The zip file enables you to easily migrate your change sets to multiple environments.

To finalize a change project:

1. Open the change project to finalize.

2. Select Tools, Finalize Change Package from the menu.

3. Enter the location of the staging directory that you would like zipped up for the change package and click OK.

    Use the browse button to search for the proper directory.

    Change Packager places the zip file in the "<project name>Package" file, using the project name for the file name.

Working With Change Package Automation

This section provides an overview, and discusses:

- Working with ReleaseAdaptor.

- Working with ProjectFilter.

- Working with ProjectInspector.

Understanding Change Package Automation

PeopleTools provides a set of standalone utilities that automate the manipulation of change packages, ensuring that only the appropriate changes get included in change packages and applied to your system. For the most part, these utilities improve the process of creating change packages within Oracle for distribution to customer sites. However, they can also be useful at customer sites, where development teams create custom change packages to apply to their implementations.

These utilities address situations in previous releases, where during upgrades, manual steps were required and multiple change packages need to be applied, such as in the cases where Integration Broker metadata needed to be applied to pre-PeopleTools 8.48 releases. In most cases, these utilities run in the background when you create change packages or perform an upgrade while using Change Assistant. To run these utilities manually, they can be invoked from the command line, or added to automation shell scripts, for example.

When these utilities are used within an upgrade process, the documentation in your Change Assistant job and your upgrade documentation will provide the necessary details.

See Your PeopleSoft application upgrade documentation

Working with ReleaseAdaptor

ReleaseAdaptor is invoked by Change Assistant to remove:

- contents from the project that are not consumable by the target PeopleTools release.

- unneeded steps from the change package template.

ReleaseAdaptor appears as a Change Packager step, and automatically examines the project to determine if it is applicable to the current PeopleTools release. For example, it determines whether a project contains Integration Broker content, and, if the PeopleSoft application release is pre-PeopleSoft 9.0. If the project meets these criteria it generates and includes the additional pre-PeopleTools 8.48 Integration Broker elements without any manual intervention. The resulting change package will contain all elements required for consumption by all applicable releases of PeopleTools.

A set of command-line transformation programs enables this processing. Which programs need to be run for a specific release is determined by the TRANSFORM_PROGRAMS.XML file. TRANSFORM_PROGRAMS.XML has two sections:

- a list of <release> tags that map various pillar and release identifiers into <InitialToolsRelease> elements

- and a list of <transform> tags that specify which transforms to apply for each <InitialToolsRelease> element

The TRANSFORM_PROGRAMS.XML file is located in *PS_HOME*\BIN\CLIENT\WINX86.

The final, consolidated project will contain all required elements for all release targets.

Working With ProjectFilter

ProjectFilter enables you to remove the specified project contents from the specified project.

Use the following syntax:

```
ProjectFilter [[-PRJ <projectFile> [-TY|-TX <type name[;type name*]>]
[-N <instance name[;instance name*]>]] | [-TL]] [-LOG <log filepath>] [-?]
```

Parameter	Description
-PRJ	Specify the project file to be scanned. No default value assumed.
-TY | -TX	-TY specifies one or more object type names to be removed, delimited by a semicolon character (;). -TX specifies one or more type names to be retained, delimited by a semicolon character (;). -TY and -TX are mutually exclusive. If neither TY nor TX are specified, all types are removed.
-N	A list of names of instances to be removed or retained in the form type:name0.name1.name2.name3 where each name is delimited by a semicolon (;) character. If not specified, all instances are removed or retained consistent with any -TY or -TX specification.
-TL	Lists the valid type identifiers, names, and descriptions.
-LOG	Absolute path to log file.
-?	Shows usage details.

Example: ProjectFilter

Entering the following removes record and field type objects from the project C:\PRJ151141.xml, and writes a log file to C:\ProjectFilter151141.log.

```
ProjectFilter -PRJ C:\PRJ151141.xml -TY Record;Field
-LOG C:\ProjectFilter151141.log
```

Entering the following lists valid object types, and writes a log file to C:\ProjectFilterObjTypes.log

```
ProjectFilter -TL -LOG C:\ProjectFilterObjTypes.log
```

Working With ProjectInspector

ProjectInspector enables you to query the contents of projects. It does not require signon and it does not make a database connection. ProjectInspector is designed to be incorporated in automation shell scripts and for ad hoc queries. If can be run against projects created using previous releases of PeopleTools.

Use the following syntax: This has the command line:

```
ProjectInspector -PRJ <project file> [-TY <type name ['';'' type name]* >]
```

```
[-N <instance name [';' instance name]* >][-L N | C | T][-TL] [?]
```

Parameter	Description
-PRJ	Path name of the project file to be scanned. There is no default. If just a name is specified, the program checks in the current directory.
-TY	One or more object type names to be listed, delimited by a semicolon character (;). If not specified, all types are removed.
-N	A list of names of instances to be removed or retained in the form type:name0.name1.name2.name3 where each name is delimited by a semicolon (;) character. If not specified, all instances are removed or retained consistent with any -TY value.
-L	Specifies the listing format and can be either N, T or C. • N means list the types and names of all objects with one object per line. • T means list the types and counts of all objects with one type per line. • (Default) C means list just the number of objects as a single integer. The –N and –T arguments can be used in the same command provided the types do not overlap. Specifying the same types in an –N name argument as in a –T argument causes an error.
-TL	Lists the valid type names, numeric identifiers, and descriptions.
-?	Shows usage details.

Example: ProjectInspector

Entering the following lists the number of subscription PeopleCode and message channel definitions in the project, or a null string if there were none.

```
ProjectInspector -PRG PRJ8979874.XML -TY SubscriptionPPC ; MessageChannel -T T
```

Part V

Using Change Assistant for Software Upgrades

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Chapter 9

Getting Started with Software Upgrades

Understanding Change Assistant For Upgrades

You use Change Assistant to help automate and customize the PeopleSoft upgrade process. A PeopleSoft upgrade typically includes a PeopleTools and a PeopleSoft application upgrade. Full application upgrades are delivered with detailed templates and documentation tailored to your specific upgrade path. Be sure to review all documentation, release notes, and templates prior to beginning your upgrade.

The Upgrade Process Using Change Assistant

The following list describes the major steps within an upgrade when using Change Assistant.

- Download the Change Assistant template and documentation for the specific upgrade process that you will be performing.

- Import the template into Change Assistant.

- Use the Database Configuration wizard to define your database environment and identify the databases to be used during the upgrade.

- Create an upgrade job tailored to your specific environment, defining all the steps required to perform the upgrade.

- Set the documentation directory.

- Use Change Assistant to guide you step-by-step through the upgrade processes. Change Assistant shows you documentation for each step, automates many of the steps, and keeps track of the upgrade progress.

Using Templates in Upgrades

The interface for using upgrade templates is identical to that used for update templates. However, certain options, such as those used to configure upgrade environments, are only used when performing a full upgrade.

See Working with Change Assistant Templates and Jobs.

Chapter 10

Configuring Change Assistant for Upgrades

Downloading The Upgrade Template and Documentation

You can download the templates and upgrade documentation for your application from the upgrade home pages on My Oracle Support.

Download the upgrade template and the HTML upgrade documentation to the same machine on which Change Assistant is installed. After the upgrade template file and documentation have been downloaded, detached, and unzipped, you can import the template to Change Assistant.

Note: Change Assistant uses HTML documentation. If you want to print the documentation, there is a .pdf file available that has the same information.

Note: When viewing the HTML documentation in Change Assistant on some of the supported Microsoft Windows operating systems, the image icons may be inoperable. To view the documentation images, use the upgrade documentation in PDF format that is available on the Upgrade My Oracle Support pages.

Importing and Opening a Template

To import and open the upgrade template:

1. Start Change Assistant.

2. Select Create or Modify Templates and click Finish.

3. Select File, Import Template.

   The Import Template dialog box appears.

4. Select the directory where you stored the upgrade template that you downloaded from My Oracle Support.

5. Select the template for your product and path.

6. Select File, Open Template..

   The Open Template dialog box appears, which lists all of the templates stored in Change Assistant.

   Note: If this menu option is disabled, make sure you have Create or Modify Templates selected as the mode in the Change Assistant Options dialog box.

7. Select the template for your product and path.

   Change Assistant loads the template for your upgrade product.

Confirming The PATH Variable

When performing PeopleSoft application upgrades, you make a copy of your production database, and it is the Copy of Production database (not the New Release Demo database) against which you run many of the upgrade tasks. Unless instructed otherwise, any tasks run against the Copy of Production database during Chapter "Preparing Your Database for Upgrade" of your PeopleSoft application upgrade need to use the previous installation of PeopleTools, not the new installation of PeopleTools supporting the new PeopleSoft release.

During the tasks in Chapter "Preparing Your Database for Upgrade" of the application upgrade, make sure the PATH variable on the machine running Change Assistant references the PS_HOME of your previous PeopleTools installation instead of the PS_HOME of your new PeopleTools installation (*OLD_PS_HOME*\bin\client\winx86). When starting Chapter "Applying PeopleTools Changes" of your application upgrade, edit your PATH variable to point to the new PS_HOME (*NEW_PS_HOME*\bin\client \winx86).

Related Links
Confirming the Path Variable

Setting the Documentation Directory

To view the documentation associated with a template, you need to set the documentation directory first, so that Change Assistant can locate the files. Once set, you select a chapter, task, or step in the template or job tree, and Change Assistant displays the corresponding upgrade documentation in the documentation pane.

Note: Setting the documentation directory for a template requires that the template be saved.

To set the documentation directory:

1. Select Edit, Set Documentation Directory.

2. Enter or browse to the folder where you placed your upgrade documentation HTML files.

3. Click OK.

See Working with Embedded Documentation.

Configuring and Working With The Upgrade Environment

Before you begin performing an upgrade using Change Assistant, you must define your upgrade environment, which consists of all of the databases used to perform the upgrade and any Process Scheduler servers you intend to use. Change Assistant uses your configuration information to:

*   filter the template so steps in the job apply only to your environment.

*   set the upgrade path.

*   locate necessary upgrade tools, like SQL query tools, PeopleTools installations, Process Scheduler servers.

*   connect to the databases.

Selecting Application Upgrade Option

In order to perform an Application Upgrade, you must be in the Application Upgrade mode. To select the Application Upgrade Mode:

1. Select Tools, Change Actions.

2. Select Application Upgrade and click Next.

3. On the General Options page, specify the high-level settings for your current environment. and click Next.

4. On the Additional Options page, enter your optional email notifications settings.

5. Click Finish.

General Options

The values entered on the General Options page are used as the default values for all of the various databases in the upgrade process.

Image: General Options - Upgrade

This example illustrates the fields and controls on the General Options - Upgrade. You can find definitions for the fields and controls later on this page.

Maximum Concurrent Processes	Specifies the maximum number of processes that can be executed concurrently on the local machine. The default is 1.
PS Home	Enter the full path in which you installed PeopleTools client on the Windows Client machine.
	Note: Specify the PS_HOME location you used to install Change Assistant.
PS App Home	Enter the location for PS_APP_HOME.
	PeopleTools provides the option of installing your PeopleSoft application into a separate directory, outside of the PS_HOME location. The location where you install your PeopleSoft

application files is represented by the PS_APP_HOME environment variable.

For more information see "Working with PS_APP_HOME" (PeopleTools 8.53: System and Server Administration)

PS Cust Home   Enter the location for PS_CUST_HOME.

PS_CUST_HOME (PeopleSoft Customization Home) enables you to further clarify the ownership of files within your PeopleSoft system and separate them for more efficient lifecycle maintenance and system administration. While PS_APP_HOME enables you to separate PeopleSoft application files from PeopleTools files, PS_CUST_HOME enables you to identify your site's customized files and store them in a location separate from your PeopleTools and PeopleSoft application files.

For more information see "Working with PS_CUST_HOME" (PeopleTools 8.53: System and Server Administration)

Staging Directory   Enter the directory in which you would like to stage all the Change Assistant upgrade files. This is the location that Change Assistant will store files to be used during the upgrade job.

Output Directory   Enter the directory in which you want the log files generated by the upgrade job.

Additional Options

Image: Additional Options - Upgrade

This example illustrates the fields and controls on the Additional Options - Upgrade. You can find definitions for the fields and controls later on this page.

Send Email Notifications   Select this check box to receive email notifications if there are errors in the update process. Change Assistant also sends you a completion message when it encounters a Stop in the update process.

SMTP Server	Enter the SMTP mail server from which you receive the error or completion messages.
Port	Enter the port from which you want to access the email.
Send To	Enter the address to which you want the email sent.
Return Address	Enter the email address of the sender. Use this to identify who sent the notification.
Test	Validates that email is sent to the designated recipients and is working correctly.
	Note: Ensure that your SMTP server is installed and configured correctly.

Specifying Upgrade Environment Database Settings

An upgrade environment includes these database types:

- Source

- Target

- Copy of Current Demo

- Production

Which database types you specify in your environment depends on the type of upgrade you are performing and the types of steps that need to be run.

Database Type	Required/Optional	Used in PeopleTools Upgrade?	Used in Application Upgrade?
Source	Required (for Application Upgrades)	No	Yes
Target	Required	Yes	Yes
Copy of Current Demo	Optional	No	Yes
Production	Optional	No	Yes

Creating a New Upgrade Environment

To create a new upgrade environment:

1. Select File, New.

   The Database Configuration Wizard will guide you through the set up pages.

   Note: You must be in the action mode Application Upgrade.

2. The Database Wizard will guide you through the pages to configure your environment. Some pages are optional and only displayed when the corresponding check box is selected. Refer to the table below for a listing of all the pages in the Database Wizard.

3. Complete all of the Database Wizard pages by entering the values and clicking Next for the next page.

4. Click Save.

Page	Description
Target Database	Configure the target database. Values selected for products and languages will be carried forward to all databases configurations to ensure the integrity of the upgrade and provide the correct filtering for the upgrade job. See Using Database Configuration Wizard
Target Database — Optional PeopleSoft Test Framework Settings	This page is displayed when Enable PeopleSoft Test Framework is selected on the Target Database page. See Specifying PeopleSoft Test Framework Settings
Target Database — Optional App. Server and Process Scheduler Settings (for Process Scheduler requests).	This page is displayed when Enable Process Scheduler is selected on the Target Database page. See Specifying Upgrade Environment Process Scheduler Settings
Target Database — Optional Process Scheduler Settings (for Process Scheduler requests).	This page is displayed when Enable Process Scheduler is selected on the Target Database page. See Specifying Upgrade Environment Process Scheduler Settings
Source Database	Configure the source database. The source database will take the information entered for the target database. See Using Database Configuration Wizard
Source Database — Optional PeopleSoft Test Framework Settings	This page is displayed when Enable PeopleSoft Test Framework is selected on the Source Database page. See Specifying PeopleSoft Test Framework Settings
Source Database — Optional App. Server and Process Scheduler Settings (for Process Scheduler requests).	This page is displayed when Enable Process Scheduler is selected on the Source Database page. See Specifying Upgrade Environment Process Scheduler Settings
Source Database — Optional Process Scheduler Settings (for Process Scheduler requests)	This page is displayed when Enable Process Scheduler is selected on the Source Database page. See Specifying Upgrade Environment Process Scheduler Settings
Copy of Current Demo Database	This page is displayed when Configure Copy of Current Demo is selected on the Target Database page.
Production Database	This page is displayed when Configure Production Database is selected on the Target Database page.

Page	Description
Page	*Description*
Confirm Selections	Displays a summary of your selections.

Using Database Configuration Wizard

The Database Configuration Wizard provides a separate configuration page for each database type, containing these settings:

Database	Enter a name of up to 8 characters for the database.
Database Type	Select a database platform from the list. Based on signon requirements for the database platform that you select in this field, other fields will be disabled or become available for entry.
Database Server Name	Only applies to Informix, Microsoft SQL Server and Sybase. If applicable, enter a name of up to 256 characters for the database server name.
Owner ID	(Used for DB2 z/OS only). Enter the owner ID used for the tables.
Unicode	Select *Yes* if you use a Unicode database. Select *No* if you use an ANSI database.
User ID and Password	Enter the PeopleSoft user ID and password for the database that will be used to perform the upgrade. Examples of user IDs are VP1 and PS.
Access ID and Password	The access ID has full access to all objects in the database. Your access ID is *not* a PeopleSoft user ID, such as *VP1* or *PS*. Examples of access IDs are *sa* or *sysadm*. **Note:** For Microsoft SQL Server the access ID must also have System Administrator privileges. **Note:** The IDs and passwords are case-sensitive. **Note:** The access ID is often the database owner. It is not normally the same value as the connect ID, which has limited access to the database. See "Access IDs" (PeopleTools 8.53: Security Administration).
Test Connection	Click to confirm the database connection information you have entered.
SQL Query Executable	Select the correct executable for the database platform. Valid SQL query executables for each platform are: • DB2: db2cmd.exe

- Informix: dbaccess.exe

- Microsoft SQL Server: sqlcmd.exe

- Oracle: sqlplus.exe

- Sybase: isql.exe

Note: Change Assistant uses the command line version of the .
exe, not the GUI version. For example, sqlplus.exe is used for
an Oracle database, rather than sqlplusw.exe.

Important! *Oracle Database Customers:* For systems running
on the Oracle database, by default, Change Assistant copies the
generated SQL script files to the location specified as the TEMP
User variable on the Environment Variables dialog box. So, on
Oracle, the generated SQL script files will actually exist in two
locations: the specified Change Assistant output directory, and
the TEMP directory. This behavior is in place because some
versions of Oracle SQL Plus do not support pathnames longer
than 79 characters. It is recommended that you ensure that the
value specified for the TEMP User variable is set to a path short
enough so that the string comprising the path and generated
SQL file will not exceed 79 characters.

Products	Browse and select all installed products affected by this upgrade.
Languages	Browse and select all languages that apply to this upgrade.
Current Environment PS_Home	Enter the location of your current PS_HOME (the PS_HOME of the application to which you are upgrading).
	Note: Oracle recommends using a mapped drive.
Current Environment PS_App_Home	Enter the location of your current PS_APP_HOME (the PS_APP_HOME of the application to which you are upgrading).
	Note: Oracle recommends using a mapped drive.
Current Environment PS_Cust_Home	Enter the location of your current PS_CUST_HOME (the PS_CUST_HOME of the application to which you are upgrading).
	Note: Oracle recommends using a mapped drive.
Old Environment PS_Home	Enter the location of your previous PS_HOME.
	Note: Oracle recommends using a mapped drive.
Old Environment PS_App_Home	Enter the location of your previous PS_APP_HOME.

	Note: Oracle recommends using a mapped drive.
Old Environment PS_Cust_Home	Enter the location of your previous PS_CUST_HOME.
	Note: Oracle recommends using a mapped drive.
Configure Copy of Current Demo	Enables a third database, *Copy of Current Demo*, to be specified in the environment, in addition to *Source* and *Target*.
	In some cases, during application upgrades only, templates contain steps to be run against the *Copy of Current Demo* database. The database orientation of *Copy of Current Demo* is available only for select step types, such as compare and Data Mover steps.
	Note: This option is applicable for upgrades to PeopleSoft Financials and Supply Chain 8.9 and above and PeopleSoft applications 9.0 and above.
	Note: This check box applies only to application upgrades.
Configure Production Database	Configure Production Database is not valid for any existing upgrade. It is reserved for future use. This option should normally be unselected.
Enable PeopleSoft Test Framework	Select this option if the upgrade contains PTF steps.
Enable Process Scheduler	Select this option to define up to two Process Scheduler servers to run ProcessScheduler steps during the upgrade job run.
	This option applies only to Source and Target databases in an application upgrade environment.

Specifying Upgrade Environment Process Scheduler Settings

If you have selected the Enable Process Scheduler check box for an applicable database definition, you must enter the required information for the host machine and the Process Scheduler server definitions associated with that database that will be running the ProcessScheduler steps. You assign an existing Process Scheduler server to either the SERVER1 or SERVER2 slots. When defining a ProcessScheduler step type, you specify which server will run the step, SERVER1 or SERVER2.

Machine name or IP	Enter the host name or the IP address of the application server where the appropriate Process Scheduler server domain is running (PSPRCSRV.EXE and so on).
JSL Port	Enter the domain's JSL port (listener port).
Domain Connection Password	Enter the domain connection password for the application server.
Server Name	Enter the name of the Process Scheduler server definition, such as PSUNIX.

Method of retrieving Process Scheduler logs	You can download and view the Process Scheduler logs from within Change Assistant so that you don't need to monitor the processes separately using Process Scheduler monitoring and logging. Similar to other Change Assistant log files, the downloaded Process Scheduler log files are saved to the Change Assistant output directory.

• None: Disables the ability to view Process Scheduler log information from within Change Assistant.

• FTP: Select if Process Scheduler is running on a UNIX server.

• File Copy: Select if Process Scheduler is running on a Windows server.

Note: If you have configured multiple Process Scheduler servers within your upgrade environment, and they each run processes within the job, as needed, note that the log information will reside in two locations, with each location containing the log information associated with the processes run on that server.

Machine Name or IP	(Applies only to FTP option). Enter the machine name or IP address of the FTP server where the Process Scheduler logs are located.
Log/output Directory	(Applies to File Copy and FTP option). Enter the path to where the Process Scheduler logs are located on the server.

• For the FTP option, enter the absolute path on the FTP server.

• For the File Copy option, this is the (mapped) path on the Change Assistant workstation.

User IDandUser Password	(Applies only to FTP option). Enter the user ID and password required for connecting to the UNIX server (as if an FTP client were connecting).

Specifying PeopleSoft Test Framework Settings

If you selected the Enable PeopleSoft Test Framework option, you will need to supply PTF connection settings.

Server:Port	Enter the server name and port for the environment. Contact your Integration Broker administrator or system administrator for the correct values.

The format for the Server:Port field is:

```
<machine_name>:<https_port>
```

For example:

`rtdc79614.us.oracle.com:443`

If the https port is the default 443 the port is optional.

You can also enter a complete https URL in this format:

`https://<machine_name>:<https_port>/PSIGW/`
`HttpListeningConnector`

For example:

`https://rtdc79614vmc.dsi-inet.peoplesoft.com:443/`
`PSIGW/HttpListeningConnector`

Node ID	This field is required if more than one database is connected to the server. Enter the name of the PeopleSoft node with which the integration gateway is to communicate.
	Contact your Integration Broker administrator or system administrator for the correct values.
Execution Options	Specify the name of the Execution Options configuration to use.
Path to PTF Client	Specify the path to the PTF client executable.
	The default location is `C:\Program Files\PeopleSoft\PeopleSoft Test Framework.`
Proxy Information	Select this option to enter details for the proxy server. When you select this option, the proxy information fields are enabled.

Enter the following information for the proxy server:

- Server: Enter the server name

- Port: Enter the server port.

- User: Enter the user ID for the proxy server.

  If you use network authentication, use the DOMAIN\USER format.

- Password: Enter the password.

Configuring Production Database

When you select the check box Configure Production Database, the Production Database page will be displayed. This page contains the same information as the Source database.

Importing and Exporting Upgrade Environments

To save time when creating other jobs or if you are accessing Change Assistant from multiple machines, you can export the environment configuration to a file after you've saved it. Change Assistant generates an XML file to store the upgrade environment information.

Note: Environments are associated with the selected action. To export Upgrade environments, you must be in the Application Upgrade action.

To export an environment:

1. Select File, Export Environment.

2. On the Environments screen, select the environment to export.

3. On the Export Environments dialog box, navigate to the directory where you want to store the exported XML file.

    By default, the exported file assumes the name of the environment that you specified when you created it.

4. Click Export.

To import an environment:

1. Select File, Import Environment.

2. On the Import Environments dialog box, navigate to and select the XML file storing an exported upgrade environment.

3. Click Import.

Deleting Upgrade Environments

If you decide to delete an upgrade environment, consider that all the job instances associated with that environment that you created will also be deleted.

To delete an upgrade environment:

1. Select File, Delete Environment.

2. On the Delete Environment dialog box, select the name of the environment to delete, and click OK.

3. Confirm that you are aware that all the jobs associated with the environment will also be deleted.

Creating Upgrade Jobs

You can create new upgrade jobs or use existing jobs.

> **Note:** The Target database must be up and available when you create the Change Assistant upgrade job in order for steps to be filtered appropriately.

To create a new upgrade job:

1. If you are not in the Application Upgrade action, select Tools, Change Actions and select Application Upgrade and click Finish.

2. Select File, New Upgrade Job.

3. On the Use Template dialog box, select the template you want to use for the upgrade job, and click OK.

4. On the Environments dialog box, select the environment you want to use for the upgrade job, and click OK.

5. On the Type of Upgrade dialog box, select the type of upgrade to match the phase of your upgrade process.

   For example, if you are running a test upgrade against a Copy of Production database or a Demo database, select *Initial Upgrade*, but if this job is running against your Production database, select *Move to Production*. This filters steps based on the Type of Upgrade step property.

Note: You can create multiple upgrade jobs from each upgrade template.

Filtering During Job Creation

Change Assistant filters the job based on:

- Type of Upgrade

  Each step in the template has the associated upgrade type, Initial Upgrade, Move to production or Both.

- Languages

  Each step in the template has the associated languages for the step.

- Platform

  Each step in the template has the associated languages for the step.

- Products

  Each step in the template has the associated languages for the step.

- Parameter Filters

  If your target database and the source database are not on the same platform, there are certain steps that can not be run, for example Database Compare. In order to ensure the correct steps are run, delivered templates will contain parameter filters on the step. If the filter evaluates to true, the step is included in the job. If the parameter filter evaluates to false, it is not included in the job.

  See Filter Query Variables

Configuring Remote Agent Processing

To improve performance and processing time for data intensive steps associated with, for example, data conversion, Build, and Alter scripts during the move to production upgrade pass, Change Assistant can run these step types through an EMF Agent running on a remote host:

- Application Engine

- Data Mover (User and Bootstrap)

- SQL (Script and Command)

Note: Remote agent processing applies only to upgrades.

In many cases, test runs against the Copy of Production database should provide reliable metrics with which you can determine which processes are candidates for remote processing. If a step appears to require a lot of time to complete, rather than running the process on the Windows workstation where

Change Assistant is installed, you can elect to have the processes run on a high-powered server, where a PS_HOME (and thereby an EMF Agent) is also installed. For optimal results using this option, make sure that the EMF Agent resides on the same server machine as the database, or on a high-powered server on the same backbone network.

To configure remote agent processing:

1. On the Change Assistant Select Action page, select Application Upgrade and Enable Server Processing.

2. On the Change Assistant Options dialog box, set the Remote Agent options.

   The Remote Agent options are available only if you have selected both Perform Application Upgrade mode and Enable Server Processing.

Host Name	Name of the server machine where the agent to perform the remote processing is installed.
	Note: Use a fully-qualified machine name.
Host PS_HOME (Complete Executable Path)	The complete path to Data Mover (psdmtx) and Application Engine (psae) executables.
	For example:
	Windows: c:\PT85\bin\client\winx86\
	UNIX: /ds1/pt85/bin/
Host Output Directory	Enter the directory in which you want the log files generated by the update process to reside.
Host SQL Query Executable	The complete path and filename of the SQL query executable.
	For example:
	Windows: c:\oracle10\bin\sqlplus.exe
	UNIX: /ds1/oracle/bin/sqlplus
Host Maximum Concurrent Processes	The maximum number of process that can be executed concurrently on the remote host.

3. Set the PS_SERVER_CFG environment variable to point to the PSPRCS.CFG file of the user ID starting the agent, using a fully-qualified machine name.

4. For the steps that you want to run on the remote host through the remote EMF Agent, in the Step Properties dialog, set Run Location to *Remote Agent.*

Chapter 11

Running Upgrade Jobs with Change Assistant

Running the Upgrade Job

When you create a new upgrade job, you will see a job view similar to the following example:

Image: Upgrade View

This example illustrates the fields and controls on the Upgrade View. You can find definitions for the fields and controls later on this page.
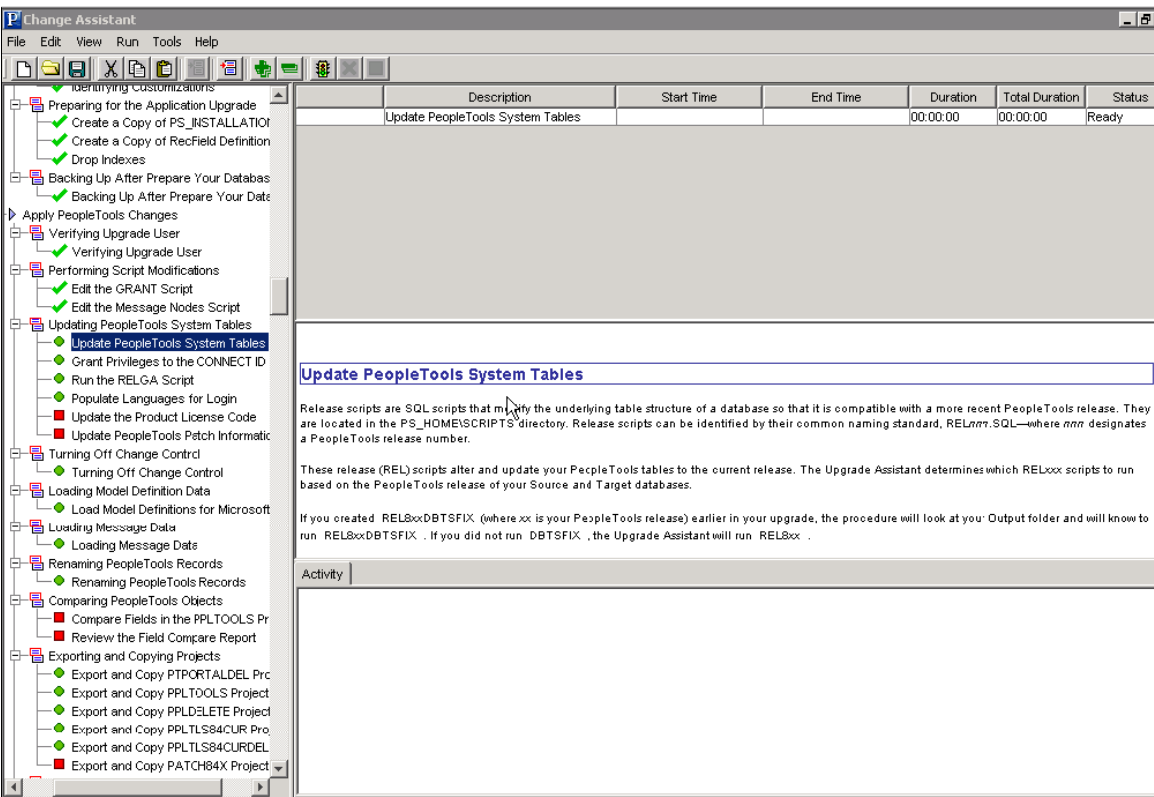
In the job area on the left-hand side of the screen, you'll see one of the following icons next to the steps.

■	Indicates each step that must be performed manually. The status of manual steps can be set only to Stop or Complete.
◆	Indicates that Change Assistant can automatically run this step. You can set the status to Stop, Run, Restart, or Complete.
	If you set the status to Stop, this indicates that you want to stop the upgrade job at that step or that a milestone has been reached. The status can be reset to Run when desired.

When you are ready to run your upgrade job, select Run from the Change Assistant toolbar. Monitor the status of the automated upgrade steps in the Step Details box. After a automated step is completed running in Change Assistant, you can view logs, scripts and update job properties for individual steps.

Note: Change Assistant uses Application Designer and Data Mover in the background to perform many of the tasks. When using Change Assistant, make sure that any current Application Designer and Data Mover sessions running on the same workstation as Change Assistant are closed before running Change Assistant.

Viewing Upgrade Logs

You can view all the logs generated by the automated processes. After the process runs, you can select a step to view.

To view a log:

1. Highlight or select the step.

2. Select Edit, View Log.

3. Click OK

Note: If a step encounters an error, Change Assistant will automatically display the View Log.

Note: On the left side of the file list, Change Assistant displays both error and success symbols. These indicate which step logs contain errors to help you troubleshoot.

Viewing Scripts

You can view SQL and Data Mover scripts that are used to automate processes. Before the step that contains the script runs, you can view or modify the original script. After the process runs, you can view or modify the updated script and then restart the step.

To view a script:

1. Highlight or select the step.

2. Select Edit, View Script.

3. On the View Script dialog box, select the script you wish to view and click OK.

Modifying Job Properties

You may want to maintain a record of how long your upgrade takes. In that case, you can view and change the dates and durations for steps in the View/Edit Job Properties dialog box.

Change Assistant allows you to set the status for these sub-steps: DBTSFIX, UpgradePeopleTools and LoadBaseData.

To modify job properties:

1. Highlight or select the step.

2. Select Edit, Job Properties.

3. Enter changes to a specific job property, or add comments, and click OK.

Running ProcessScheduler Steps

This section discusses how to:

*   determine when to run Process Scheduler steps.

*   prepare to run Process Scheduler steps.

*   work with Process Scheduler steps.

*   ensure Process Scheduler security authentication.

Determining When to Run Process Scheduler Steps

Running the ProcessScheduler step type is designed to improve performance and quicken completion times of long-running, data-intensive steps, that can be run in parallel in an application upgrade. In most cases, the steps that would require Process Scheduler processing are delivered in your upgrade template configured to run on a Process Scheduler server. However, if you are creating a custom template, decide that improved performance can be gained by running a step through Process Scheduler, as opposed to running through a remote agent, you can configure a process to be run by a ProcessScheduler step.

Before setting up an upgrade process to be run through Process Scheduler:

*   always consult your specific upgrade documentation for any recommendations, considerations, or restrictions.

*   make sure Process Scheduler is configured and defined within your upgrade environment.

Note: Refer to the PeopleSoft upgrade documentation for your upgrade path for additional information.

Preparing to Run Process Scheduler Steps

Before running an upgrade process though Process Scheduler, the following items need to addressed:

Task	Documentation Reference
Set up Process Scheduler.	See PeopleSoft Process Scheduler
Define Process Scheduler servers in your upgrade environment.	See Configuring and Working With The Upgrade Environment.
Include a ProcessScheduler step type in your upgrade template.	See Step Parameters.

Working With Process Scheduler Steps

This section discusses how to:

*   View Process Scheduler logs.

*   Restart Process Scheduler steps.

*   Cancel Process Scheduler steps.

Viewing Process Scheduler Logs

If in your upgrade environment you have configured Change Assistant to be able to access Process Scheduler logging information, you can view the Process Scheduler processing information from within Change Assistant just as you would for any other step (click on the step and select Edit, View Log).

The status returned by Change Assistant for the step matches the status returned by Process Scheduler itself. The log files generated by Process Scheduler are not parsed for warnings or errors. Therefore, even though Change Assistant may show a status of Complete for a Process Scheduler step type, you should review the generated log files for more details.

Restarting Process Scheduler Steps

If a Process Scheduler step has failed or has been stopped, you can restart the process by setting the step to Restart. This is most useful for restart-aware process definitions using Application Engine. When a step has been set to Restart, Change Assistant resubmits the process requests to Process Scheduler.

Canceling Process Scheduler Steps

While Change Assistant is executing the ProcessScheduler step, you can kill the step, by clicking on the step and selecting Run, Kill. This is equivalent to stopping or cancelling scheduled processes on the Process Scheduler. When you 'kill' the step, Change Assistant connects to the Process Scheduler, which issues "cancel" commands to the appropriate processes.

Ensuring Process Scheduler Security Authentication

PeopleSoft Change Assistant uses the PROCESSREQUEST component interface object to submit jobs to run on the PeopleSoft Process Scheduler server. You must ensure the user submitting the process has the appropriate authentication set for the PROCESSREQUEST object in the database the process runs against. You must edit security permissions to run the PROCESSREQUEST object.

To set up PROCESSREQUEST component interface security:

1. Log in to PeopleSoft through the browser.

2. Select PeopleTools, Security, Permissions & Roles, Permission Lists.

3. Select the permission list for which you want to set security. The Permission List component appears.

4. Access the component interfaces page and select the PROCESSREQUEST component interface.

5. Click Edit.

   The Component Interface Permissions page appears, showing all of the methods (both standard and user-defined) in the component interface and their method access.

6. Set the access permission for each method.

   Select Full Access or No Access. You must grant full access to at least one method to make the component interface available for testing and other online use.

7. Click OK, and then Save.

Chapter 12

Using Data Conversion Utilities

Understanding Data Conversion Utilities

The Upgrade Data Conversion Application Engine Programs are organized into a series of Drivers or Groups that guide the flow and order of execution at runtime for a particular upgrade path.

This topic contains information regarding People Tools Impact Analysis (PTIA) and the PS_PTIA_DCAEPGMS table. The PTIA process consists of two Application Engine programs and is intended to optimize the data conversion process by analyzing Source and Target tables and state records to determine actual dependencies between Application Engine sections. This allows you to run your data conversion process during your PeopleSoft application upgrade with optimal performance.

Using the PTIA Data Conversion Process
This section discusses:

- Understanding the PTIA Data Conversion Process

- Reviewing PTIA Initial Analysis

- Reviewing Dependency Analysis

- Reviewing Runtime for PTIADATACONV

- Reviewing PTIA Reporting

Understanding the PTIA Data Conversion Process
The PeopleTools Impact Analysis (PTIA) process uses many pieces of the previous style data conversion delivered in PeopleSoft 9.1 applications and lower. For example, PTIA uses the Application Engine section grouping and sequencing in the PS_PTIA_DCAEPGMS table for its dependency modeling. The PTIA process also uses the terminology – *root or top section*. A *root or top section* is an Application Engine section defined in PS_PTIA_DCAEPGMS. We use *root or top section* to distinguish between sections being called from the data conversion program as opposed to sections being called from an Application Engine call section step.

The PTIA process includes analyzing the insert, update, and delete SQL steps in your data conversion to determine the Source and Target tables and state records that are used. This includes analyzing dynamic SQL, App Classes, SQLExec's, and platform-specific code.

The Application Engine program gathers a list of Application Engine sections required for data conversion from a given upgrade path. These sections are analyzed and SQL statements are extracted and stored in the Application Engine Analyzer repository. Each SQL statement is analyzed to derive a list of tables that are manipulated or queried during the execution of that SQL. Once all the SQL is analyzed, the information is used to derive section dependency information, which is then saved in the Application Engine Analyzer repository. PTIA allows the Application Engine data conversion to run out of the box on a number of threads.

There are two types of analysis for PTIA: initial and dependency. This section will describe both analysis types in detail.

Reviewing PTIA Initial Analysis

This section discusses:

- Understanding Initial Analysis

- Reviewing Data Conversion Query Parsing

- Reviewing Custom Data Conversion Code

- Reviewing Table Usage Information

- Reviewing Non Parsable SQL

- Reviewing the Data Conversion Repositories

Understanding Initial Analysis

The first part of the PTIA process is the PTIAANALYSIS Application Engine, also known as the Application Engine Analyzer. PTIAANALYSIS accepts one parameter for the upgrade path, and then queries PS_PTIA_DCAEPGMS to retrieve all the groups and sections for that upgrade path, ordering by group and sequence. Starting with the first group and first sequence, PTIAANALYSIS parses each Application Engine section definition following the flow from step to step and through any nested call sections. As it follows the flow, it inserts rows into the PS_PTIA_ANALYSIS table for each Application Engine Section, Step, and Action it comes across. PTIAANALYSIS maintains a counter as it goes and increments the counter as it writes each Action to the PS_PTIA_ANALYSIS table. By the end of this first task, the PS_PTIA_ANALYSIS table will describe the entire upgrade from top to bottom, from the first Application Engine section in the first Upgrade Group to the last section in the last Upgrade Group. By querying the PS_PTIA_ANALYSIS table and ordering by PTIA_AESTMTSEQ, the whole will be described, including any nested call sections.

It is important to note that the PS_PTIA_ANALYSIS table contains every actual Step in the chosen upgrade path. During the data conversion runtime phase, it is likely that not all these steps will be executed because specific data composition and various application options will prevent some sections or steps from running. With the PTIA process, data composition can affect the data conversion runtime flow, which makes it impossible to predetermine the exact runtime flow the conversion will follow.

The PTIAANALYSIS Application Engine reads the data conversion code for your defined upgrade path (where the path is defined in the PS_PTIA_DCAEPGMS table with PTIA_UPG_CONV_TYPE= "MAIN").

The Application Engine Analyzer program leverages two PeopleCode functions included with PeopleSoft PeopleTools 8.50 or higher. The two PeopleCode functions are:

- GetProgText: A function that retrieves a PeopleCode program as text.

- ResolveMetaSQL: A function that returns a string of SQL text that has had its metasql resolved.

Reviewing Data Conversion Query Parsing

After PTIAANALYSIS determines the upgrade path flow, it traverses the flow again looking at all the different Step Actions to determine which SQL is being executed by that Step. Most action types are straightforward; SQL, Do Select. PeopleCode is the most complicated action type. A Java program parses the PeopleCode and pulls all the SQL executed in the PeopleCode. The results of the action type analysis end up in a table called PS_PTIA_DTLIDSQLS, which stores a reference to PS_PTIA_ANALYSIS, along with the SQL statements associated with each Step Action. In the case of PeopleCode, there may be

many rows in the PS_PTIA_DTLIDSQLS table for each PeopleCode reference in PS_PTIA_ANALYSIS. In addition, a second shadow table, called PS_PTIA_DTLIDSQLSR, is also populated during action type analysis. The only difference between PS_PTIA_DTLIDSQLS and PS_PTIA_DTLIDSQLSR is that PS_PTIA_DTLIDSQLSR contains the fully resolved SQL statements. For example, if the original SQL in a Step was:

```
UPDATE PS_BEN_DEFN_COST SET RATE_TBL_ID = %Substring(%Sql(UPG_HC_221,RATE_TBL_ID),1⇒
,4) %Concat '-2' WHERE RATE_TYPE='2' AND RATE_TBL_ID IN ( SELECT RATE_TBL_ID FROM P⇒
S_UPG_BN_RATES WHERE RATE_TYPE='2')
```

Then this would be resolved to platform-specific SQL. In the case of SQL server it would be:

```
UPDATE PS_BEN_DEFN_COST SET RATE_TBL_ID = SUBSTRING(RTRIM(RATE_TBL_ID),1,4) + '-2' ⇒
WHERE RATE_TYPE='2' AND RATE_TBL_ID IN (SELECT RATE_TBL_ID FROM PS_UPG_BN_RATES WHE⇒
RE RATE_TYPE='2')
```

Each of these SQL statements is further parsed to determine the tables that participate in the query. The results are stored in the PS_PTIA_DTLIDTBLS table. A query can have zero or one target tables. If the query is an INSERT, UPDATE, DELETE, etc, then there will be one target. If the query is a select statement, then there will be no target table. For the previously stated query, you would expect to see 2 rows in the PS_PTIA_DTLIDTBLS table. The first row would be for the PS_BEN_DEFN_COST table with an PTIA_TABLEUSAGE value of T because it is the target table of the query. The second row would be for the PS_UPG_BN_RATES table with an PTIA_TABLEUSAGE value of S because it is a source table in the query.

At this point we have gathered all the information we need about the specific upgrade path to build a dependency model. The dependency model is solely based on which tables are affected by which steps and follows some very simple rules. Most of these rules are inherent in the Upgrade Group model.

Reviewing Custom Data Conversion Code

You can include custom data conversion code in the Initial Analysis and subsequent steps in the PTIA process by adding a row (or rows) to the PS_PTIA_DCAEPGMS table for each custom Application Engine section that is to be executed, where a row is defined as PTIA_UPG_PATH, PTIA_UPG_GROUP, SEQ_NUM, AE_APPLID, AE_SECTION, ACTIVE_FLAG, PTIA_UPG_CONV_TYPE, PTIA_UPG_GROUP_LVL.

Reviewing Table Usage Information

The data conversion analysis process attempts not only to identify the tables that are used in a given Application Engine step, but also how the tables are being used in the context of each step.

This information is stored in the analysis tables and documented in the Table Usage and Action columns of delivered PTIA reports, such as PTIA0001.SQR.

Valid values for the Table Usage column are:

- *S* for Data Source

- *T* for Data Target

- *X* for Unknown

Note: An X value in the Table Usage column for the PS_PTIA_DUAL, PS_PTIA_COMMON_AET, PS_PTIA_NORECNAME, or PS_PTIA_STATE_AE tables is expected and does not impact the subsequent Dependency Analysis Process.

See <u>Reviewing Dependency Analysis</u>

Valid values for the Action column are:

- CREATE

- DELETE

- DROP

- INSERT

- SELECT

- TRUNCATE

- UPDATE

- UPDSTATS

- UNKNOWN

- OTHER

A valid value for the action "Unknown" is only applicable to PeopleCode steps and only occurs in instances when the parser encounters syntax such as `GETRECORD`, `GETROWSET`, `CREATERECORD`, or `CREATEROWSET`, and cannot determine which actions were being done against the variable.

A valid value for the action "Other" occurs in instances when the parser encounters syntax such as the "Invalid SQL Override" or other non-SQL statements such as application function calls.

Reviewing Non Parsable SQL

The data conversion analysis process may mark certain SQL statements as non parsable. This designation refers to SQL statements that the Application Engine Analysis process could not correctly process. When a SQL statement is marked non parsable, there are three options that you can use:

- Modify the SQL so that the Application Engine Analyzer can process the statement. The following table compares sample non parsable and parsable SQL statements:

NON PARSABLE SQL	PARSABLE SQL
UPDATE %Table(%BIND(RECNAME)) SET RELATIONSHIP = 'C' WHERE RELATIONSHIP IN ('S', 'D')	• UPDATE %TABLE(BN_834_MEMBER) SET RELATIONSHIP = 'C' WHERE RELATIONSHIP IN ('S', 'D') • UPDATE %TABLE(DEP_BEN_EFF) SET RELATIONSHIP = 'C' WHERE RELATIONSHIP IN ('S', 'D') • UPDATE %Table(EMERGENCY_CNTCT) SET RELATIONSHIP = 'C' WHERE RELATIONSHIP IN ('S', 'D')

• For non parsable SQL statements in PeopleCode, add an override line directly above the non parsable SQL to manually document the Source and Target tables that are in use.

Note: There is no override option for Application Engine SQL steps that are marked as non parsable.

Note: Entering inaccurate or incomplete information in the override statement may result in data conversion sections being run in the incorrect dependent order, which can produce incorrect conversion results, such as data errors.

Note: Tables defined in the override statement require the *PS_* prefix.

Correct = PS_JOB

Incorrect = JOB

The following table gives sample override lines for various situations:

Syntax	*Sample Override Lines*
When Source and Target tables are explicitly known and static	For example: • REMSQLANALYSIS:T:\<Tgt Table>,\<Tgt Table>:S:\<SRC Table>,\<SRC Table>; • REMSQLANALYSIS:T::S:\<SRC Table>,\<SRC Table>; • REMSQLANALYSIS:T:\<Tgt Table>,\<Tgt Table>:S:;

Syntax	Sample Override Lines
When Source and/or Target Tables are determined based on a query	For example: • REM SQLANALYSIS:T:%SQL(SQLid [, paramlist]):S:[table name]; • REM SQLANALYSIS:T:<Tgt Table>,<Tgt Table>:S: %SQL(SQLid [, paramlist]); • REM SQLANALYSIS:T:%SQL(SQLid [, paramlist]):S: %SQL(SQLid [, paramlist]); • REM SQLANALYSIS:T::S:%SQL(SQLid [, paramlist]); • REM SQLANALYSIS:T:%SQL(SQLid [, paramlist]):S:; Where: *SQLid*: Specify the name of an existing SQL definition. *paramlist*: Specify a list of arguments for dynamic substitutions at runtime. The first argument replaces all occurrences of %P(1) in the referenced SQL definition, the second argument replaces %P(2), and so forth. **Note:** The paramlist arguments must be static values. Variable values in the parmlist are not permitted. **Note:** The Query is resolved at the time the Data Conversion Analysis is executed. It is NOT resolved during the Data Conversion Runtime. **Note:** The Query must return one or more valid RECNAME values. No other return results are permitted.
Where there is no Source or Target table to be defined an/or the non parsable SQL is to be excluded from the table and dependency analysis.	REMSQLANALYSIS:T::S:PS_PTIA_NORECNAME; **Note:** The "REMSQLANALYSIS:T::S:;" syntax is not a valid override and will be marked as "Invalid" by the PTIAANALYSIS Program.

• Leave the SQL as it is. This results in the non parsable SQL being marked as "dependent" on all steps that exist prior to it, and all steps subsequent to the non parsable SQL become dependent on it.

Note: This will likely result in slowing the runtime of data conversion and is *not* recommended.

Reviewing the Data Conversion Repositories

The tables in the Data Conversion Analysis repository hold the following data:

- Step actions stored in execution order.

- SQL clauses extracted from step actions.

- Tables featured in SQL clause.

- Bind variables used in SQL.

Analysis information is stored in the following tables:

- PS_PTIA_DCAEPGMS

- PS_PTIA_ANALYSIS

- PS_PTIA_ANALYSISTX

- PS_PTIA_DATACONV

- PS_PTIA_DTLIDSQLS

- PS_PTIA_DTLIDSQLSR

- PS_PTIA_DTLIDTBLS

- PS_PTIA_RUNDEPEND

- PS_PTIA_SECDEPEND

- PS_PTIA_SECLISTTMP

- PS_PTIA_STEPDEPEND

The following Analysis tables make up the PTIA process:

PS_PTIA_DATACONV

The PS_PTIA_DATACONV table is based on the table definition for PS_PTIA_DCAEPGMS. It stores the upgrade Application Engine sections for the chosen upgrade path.

COLUMN	DESCRIPTION
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Stores the text equivalent of the standard DBTYPE codes
PTIA_UPG_GROUP	Upgrade Group
PTIA_UPG_GROUP_LVL	Upgrade Group Level
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
SEQ_NUM	Upgrade Sequence Copied from PS_PTIA_DCAEPGMS
AE_APPLID	Upgrade Application Engine Copied from PS_PTIA_ DCAEPGMS

COLUMN	DESCRIPTION
AE_SECTION	Upgrade Application Engine Section Copied from PS_PTIA_ DCAEPGMS
ACTIVE_FLAG	Active Flag Copied from PS_PTIA_DCAEPGMS
PTIA_RUNDURATION	Elapsed time for this section to run during data conversion
PTIA_RUNSTATUSFLAG	Run Status Flag (Y-complete, N-not run yet, R-Running, F-Failed)
PTIA_GUID	GUID generated by the Data Conversion runtime engine

PS_PTIA_ANALYSIS

This is the main analysis table. The Application Engine Analyzer (PTIAANALYSIS) writes a row to this table for every Action in each Root Section of the specified upgrade path.

COLUMN	DESCRIPTION
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Stores the text equivalent of the standard DBTYPE codes
PTIA_UPG_GROUP	Upgrade Group
PTIA_UPG_GROUP_LVL	Upgrade Group Level
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
SEQ_NUM	Upgrade Sequence copied from PS_PTIA_DCAEPGMS
PTIA_TOPAEAPPLID	Upgrade Application Engine copied from PS_PTIA_ DCAEPGMS
PTIA_TOPAESECTN	Upgrade Application Engine Section copied from PS_PTIA_ DCAEPGMS
PTIA_TOPAESTEP	Upgrade Section Step
PTIA_TOPAESEQNUM	Upgrade Section Sequence Number
PTIA_AELEVEL	Nesting level for Call Section
AE_APPLID	Actual Application Engine Program (same as PTIA_ TOPAEAPPLID if PTIA_AELEVEL is 1)
AE_SECTION	Actual Section (same as PTIA_TOPAESECTN if PTIA_ AELEVEL is 1)

COLUMN	DESCRIPTION
AE_STEP	Actual Step (same as PTIA_TOPAESTEP if PTIA_AELEVEL is 1)
AE_SEQ_NUM	Actual Seq Num (same as PTIA_TOPAESEQNUM if PTIA_AELEVEL is 1)
MARKET	Market
DBTYPE	DBTYPE
AE_DO_SECTION	If Step Action is Call Section, then this is the section to be called
AE_DO_APPL_ID	If Step Action is Call Section, then this is the program to be called
AE_DYNAMIC_DO	Indicates the Call Section is a dynamic call section
STEP_DESCR	Step Description
AE_STMT_TYPE	Action Type e.g. S-SQL, P-PeopleCode, D-DoSelect, H-DoWhen etc
PTIA_STMTTYPENUM	Numeric identified for AE_STMT_TYPE (used for ordering step actions)
PTIA_AESTMTSEQ	Sequence used to order the steps actions for the whole upgrade
AE_REUSE_STMT	Standard Application Engine Reuse Statement flag
AE_DO_SELECT_TYPE	Standard Application Engine Do Select Type
DETAIL_ID	Section.Step.Action identifier used as a key to most PTIA tables
PTIA_INFO1	Extra Information mostly related to FUNCLIB calls
PTIA_INFO2	Extra Information mostly related to FUNCLIB calls
PTIA_INFO3	Extra Information mostly related to FUNCLIB calls
PTIA_INFO4	Extra Information mostly related to FUNCLIB calls
PTIA_INFO5	Extra Information mostly related to FUNCLIB calls
SQLID	For SQL step, the SQLID of the SQL this step action executes
PTIA_STMTDESCR	Description copied from Application Engine Step Description

COLUMN	DESCRIPTION
PTIA_HASPARENTS	This Step has dependencies on other one or more other Steps
PTIA_HASCHILDREN	One or more other Steps have a dependency on this step
PTIA_HASWHERE	The SQL has a where clause – Mostly used by PeopleSoft Development

PS_PTIA_DTLIDSQLS

This table holds a reference to every SQL in the conversion code for the specified upgrade path.

COLUMN	DESCRIPTION
PTIA_GUID	GUID generated by the Data Conversion runtime engine
DETAIL_ID	Section.Step.Action identifier used as a key to most PTIA tables
AE_APPLID	Actual Application Engine Program
DBTYPE	DBTYPE
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
PTIA_SQLNUM	SQL Number, for peoplecode there may be many SQL statements
PTIA_AESTMTLEN	Length of the text of the SQL statement
PTIA_OBJ_TYPE	S-SQL or P-PeopleCode
TABLE_NAME	Main Table in the SQL Statement, Blank if SQL is SELECT with many tables
PTIA_DMLACTION	INSERT, UPDATE, DELETE, SELECT etc
PTIA_LINENUM	Refers to the PeopleCode line number where the SQL is defined
PTIA_SQLPASSDPARSE	Indicates whether SQL parser was able to successfully parse the SQL statement
DESCR254	Description column

COLUMN	DESCRIPTION
PTIA_PARAMCLAUSE	Bind variable used in the SQL
PTIA_INFO1	Extra Information mostly related to FUNCLIB calls
PTIA_INFO2	Extra Information mostly related to FUNCLIB calls
PTIA_INFO3	Extra Information mostly related to FUNCLIB calls
PTIA_INFO4	Extra Information mostly related to FUNCLIB calls
PTIA_INFO5	Extra Information mostly related to FUNCLIB calls
PTIA_CHUNKSEQ	Statement Chunk Sequence
PTIA_TEXTCHUNK	Statement executed by this Step

PS_PTIA_DTLIDSQLSR

This table differs slightly from the PS_PTIA_DTLIDSQLS table in that the SQL statement has been fully resolved into platform-specific SQL. This makes it much easier to see what is happening in the SQL.

COLUMN	DESCRIPTION
PTIA_GUID	GUID generated by the Data Conversion runtime engine
DETAIL_ID	Section.Step.Action identifier used as a key to most PTIA tables
AE_APPLID	Actual Application Engine Program
DBTYPE	DBTYPE
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
PTIA_SQLNUM	SQL Number, for PeopleCode there may be many SQL statements
PTIA_CHUNKSEQ	Statement Chunk Sequence
PTIA_TEXTCHUNK	Statement executed by this Step

PS_PTIA_DTLIDTBLS

This table holds a reference to every SQL in the conversion code for the specified upgrade path and which Tables or Records are in use for each piece of SQL.

COLUMN	DESCRIPTION
PTIA_GUID	GUID generated by the Data Conversion runtime engine
DETAIL_ID	Section.Step.Action identifier used as a key to most PTIA tables
AE_APPLID	Actual Application Engine Program
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
PTIA_SQLNUM	SQL Number, for peoplecode there may be many SQL statements
RECNAME	Record Name
TABLE_NAME	Associated Table Name
PTIA_TABLEUSAGE	T-Target, S-Source
PTIA_TABLETYPE	R-Record, S-State Record, U-Upgrade Table, V-View, T-TempTable
PTIA_INFO1	Extra Information mostly related to FUNCLIB calls
PTIA_INFO2	Extra Information mostly related to FUNCLIB calls
PTIA_INFO3	Extra Information mostly related to FUNCLIB calls
PTIA_INFO4	Extra Information mostly related to FUNCLIB calls
PTIA_INFO5	Extra Information mostly related to FUNCLIB calls

PS_PTIA_STEPDEPEND

By querying PS_PYIA_DTLIDTBLS and PS_PTIA_ANALYSIS, it is possible to determine which steps have dependencies and what those dependencies are.

COLUMN	DESCRIPTION
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS

COLUMN	DESCRIPTION
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
PTIA_P_UPG_GROUP	Parent Data Conversion Group
PTIA_P_UPGGRPLVL	Parent Data Conversion Group Level
PTIA_P_SEQNUM	Parent Application Engine Section Sequence Number
PTIA_P_TOPAEAPPLID	Parent Data Conversion Application Engine Program
PTIA_P_TOPAESECTN	Parent Data Conversion Application Engine Section
PTIA_P_TOPAESTEP	Parent Data Conversion Application Engine Step
PTIA_P_TOPAESEQNUM	Parent Data Conversion Application Engine Step Sequence
PTIA_P_AEAPPLID	Parent Application Engine Program
PTIA_P_AESECTION	Parent Application Engine Section
PTIA_P_AESTEP	Parent Application Engine Step
PTIA_P_AESEQNUM	Parent Application Engine Step Sequence within the Section
PTIA_P_AESTMTSEQ	Parent Application Engine Step Sequence across whole upgrade
PTIA_P_DETAILID	Parent Application Engine Step Detail ID
PTIA_P_SQLNUM	Parent Application Engine Detail ID SQL Sequence
PTIA_C_UPG_GROUP	Child Data Conversion Group
PTIA_C_UPGGRPLVL	Child Data Conversion Group Level
PTIA_C_SEQNUM	Child Application Engine Section Sequence Number
PTIA_C_TOPAEAPPLID	Child Data Conversion Application Engine Program
PTIA_C_TOPAESECTN	Child Data Conversion Application Engine Section
PTIA_C_TOPAESTEP	Child Data Conversion Application Engine Step
PTIA_C_TOPAESEQNUM	Child Data Conversion Application Engine Step Sequence
PTIA_C_AEAPPLID	Child Application Engine Program

COLUMN	DESCRIPTION
PTIA_C_AESECTION	Child Application Engine Section
PTIA_C_AESTEP	Child Application Engine Step
PTIA_C_AESEQNUM	Child Application Engine Step Sequence within the Section
PTIA_C_AESTMTSEQ	Child Application Engine Step Sequence across whole upgrade
PTIA_C_DETAILID	Child Application Engine Step Detail ID
PTIA_C_SQLNUM	Child Application Engine Detail ID SQL Sequence
PTIA_TABLENAME	Common table referenced by the parent and child step
PTIA_P_TABLEUSAGE	Parent table usage T-Target, S-Source
PTIA_C_TABLEUSAGE	Child table usage T-Target, S-Source

PS_PTIA_ SECDEPEND

This table is an aggregation of PS_PTIA_STEPDEPEND to the Section level.

COLUMN	DESCRIPTION
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_UPG_CONV_TYPE	Conversion type: MAIN or DDL
PTIA_P_UPG_GROUP	Parent Data Conversion Group
PTIA_P_UPGGRPLVL	Parent Data Conversion Group Level
PTIA_P_TOPSEQNUM	Parent Application Engine Section Sequence Number
PTIA_P_TOPAEAPPLID	Parent Data Conversion Application Engine Program
PTIA_P_TOPAESECTN	Parent Data Conversion Application Engine Section
PTIA_P_AESTMTSEQ	Parent Application Engine Step Sequence across whole upgrade
PTIA_C_UPG_GROUP	Child Data Conversion Group
PTIA_C_UPGGRPLVL	Child Data Conversion Group Level

COLUMN	DESCRIPTION
PTIA_C_TOPSEQNUM	Child Application Engine Section Sequence Number
PTIA_C_TOPAEAPPLID	Child Data Conversion Application Engine Program
PTIA_C_TOPAESECTN	Child Data Conversion Application Engine Section
PTIA_C_AESTMTSEQ	Child Application Engine Step Sequence across whole upgrade
PTIA_DEPENDSOURCE	Dependency Rule
PTIA_DEPENDRULE	DEPENDENT or INDEPENDENT
PTIA_EXCLUDEFLAG	Indicates whether this dependency should be excluded from the runtime dependency calculation

PS_PTIA_RUNDEPEND

This table represents the section dependency model. You can query this table for any given data conversion Application Engine Section to determine what it depends on and what depends on it. The runtime data conversion Application Engine (PTIADATACONV) uses this table to determine which sections are eligible to run.

COLUMN	DESCRIPTION
PTIA_UPG_PATH	Upgrade Path copied from PS_PTIA_DCAEPGMS
PTIA_DBTYPE	Text equivalent of the standard DBTYPE codes
PTIA_P_UPG_GROUP	Parent Data Conversion Group
PTIA_P_TOPSEQNUM	Parent AE Section Sequence Number
PTIA_P_TOPAEAPPLID	Parent Data Conversion AE Program
PTIA_P_TOPAESECTN	Parent Data Conversion AE Section
PTIA_C_UPG_GROUP	Child Data Conversion Group
PTIA_C_TOPSEQNUM	Child AE Section Sequence Number
PTIA_C_TOPAEAPPLID	Child Data Conversion AE Program
PTIA_C_TOPAESECTN	Child Data Conversion AE Section
PTIA_DEPTH	Dependency Nesting

Reviewing Dependency Analysis

This section discusses:

• Understanding Dependency Analysis

• Reviewing Data Conversion Runtime Rules

Understanding Dependency Analysis

The table usage information identified in the Initial Analysis is subsequently used to determine the dependencies between AE Steps. The Step Dependency Information is then aggregated to the "Root Section" level where a Root Section is defined as a row in the PS_PTIA_DCAEPGMS table (PTIA_UPG_PATH, PTIA_UPG_GROUP, SEQ_NUM, AE_APPLID, AE_SECTION, ACTIVE_FLAG, PTIA_CONV_TYPE, PTIA_UPG_GROUP_LVL).

Reviewing Data Conversion Runtime Rules

The following rules are the data conversion runtime rules:

• Dependencies are derived from tables referenced in SQL or PeopleCode actions in Upgrade Sections.

• Dependencies follow the Upgrade Group sequencing. If Section ABC in Upgrade Group 1 updates a given table, then any Section assigned a higher sequence than ABC that updates or queries that same table cannot run until Section ABC is complete.

• Upgrade groups are further grouped into levels. For example, objects defined in Level 2 are dependent on objects defined in Level 1. Additionally, objects defined in Level 3 are dependent on objects defined in Level 1 and Level 2.

• Upgrade groups within the same level do not depend on each other. If Section QWE in Upgrade Group 2 updates table FFF and Section ASD in Upgrade Group 3 also updates table FFF and Upgrade Groups 2 and 3 are at the same level, there is no dependency created.

• Upgrade groups create dependencies on sections within their own upgrade group and upgrade groups of lower levels. If Section ABC in Upgrade Group 1 updates table FFF and Section QWE in Upgrade Group 2 also updates table FFF, and Upgrade Group 1 is in a lower level than Upgrade Group 2, then Section QWE becomes dependent on Section ABC.

• Tables as sources do not create dependencies. If Section ZXC in Upgrade Group 1 selects from table FFF, and then Section BNM in Upgrade Group 1 also selects from table FFF, no dependency is created.

• If a Section has a SQL statement that PTIAANALYSIS cannot understand, the SQL is flagged as non parsable from the parser point of view (the Data Conversion will still run fine) and a hard dependency is created. This means for every Section with a query that cannot be parsed, it becomes dependent on every Section sequentially above it in its Upgrade Group, and on every Section in Upgrade Group 1. Furthermore, every Section sequentially afterward becomes dependent on it.

• Usage of the PS_PTIA_DUAL, PS_PTIA_COMMON_AET, or PS_PTIA_NORECNAME tables never results in a dependency.

Example of Dependency Rules Calculation

In the following example, the highlighted row (with values in *italics*) would be dependent on itself and all items in Level's MAIN-1 and MAIN-2, but not the other items in Level MAIN-3 nor items in Level DDL-1.

PATH	GROUP	SEQ_NUM	AE_APPLID	AE_SECTION	PTIA_CONV_ TYPE	GROUP_ LEVEL
HC89	1	260	UPG_HR89	HCHRS01	MAIN	1
HC89	1	265	UPG_FG89	FGHCS01	MAIN	1
HC89	3	230	UPG_BN89	HCBNS06	MAIN	2
HC89	4	165	UPG_GPBR90	HCBRP040	MAIN	2
HC89	7	40	UPG_EP89	HCEPS25	MAIN	2
HC89	7	50	UPG_EP89	HCEPS30	MAIN	2
HC89	10	20	UPG_TL89	HCTLK01	MAIN	2
HC89	80	140	UPG_TL90	HCTLP04	MAIN	3
HC89	80	160	UPG_TL90	HCTLP06	MAIN	3
HC89	*85*	*170*	*UPG_PY90*	*HCPYM01*	*MAIN*	*3*
HC89	85	180	UPG_PY90	HCPYP01	MAIN	3
HC89	10	200	UPG_PY90	HCPYP09	DDL	1
HC89	10	210	UPG_PY90	HCPYP10	DDL	1

Reviewing Runtime for PTIADATACONV
This section discusses:

* Understanding Runtime for PTIADATACONV

* Querying the PTIA Tables

Understanding Runtime for PTIADATACONV

All runtime information for PTIADATACONV is stored in the following tables:

* PS_PTIA_DATACONV

* PS_PTIA_RUNSTATUS

* PS_PTIA_RUNDETAIL

* PS_PTIA_RUNCOUNT

The PTIADATACONV Application Engine leverages the Dependency Analysis to optimize the runtime of the data conversion. The runtime of the data conversion is improved in the new PeopleSoft release by

running multiple instances of PTIADATACONV in parallel, executing against a single set of dependency information. The optimal number of instances to be initiated will vary.

PTIADATACONV determines which "Root Sections" are able to run and executes them. A Root Section is able to run when all Root Sections that are dependent on it have completed successfully.

In the event that multiple root sections are able to run at the same time, steps that have the largest number of dependent Root Sections and/or Root Sections that have the longest runtime (in a previous run), are given priority.

In the event of failure, the instance of PTIADATACONV that encountered the error will mark the step as "Failed" and stop. All other instances of PTIADATACONV will continue to run. Steps that are dependent on a "Failed" step will be marked as "Blocked" and will not be executed as part of the current run. Upon restarting the process, the "Failed" section and any "Blocked" sections will be executed.

The following list describes the PTIADATACONV program flow:

• The run is initialized.

  This initial phase determines if this is a brand new run or if it is a restart of a previously failed run. If it is a new run, then PTIADATACONV sets up a thread in PS_PTIA_RUNSTATUS.

• PTIADATACONV performs a simple test to verify that there is work to do.

  If there is work to do, then PTIADATACONV runs Data Conversion Application Engine Sections that have not already run. This is a fairly simple Do While loop that counts eligible sections left to run. If there are no more sections left to run, processing stops. The work inside the loop consists of executing a process to check the status of any other thread that is running. If a thread dies, it cannot clean itself up, so one of the other threads has to perform the cleanup. The cleanup mostly consists of setting the status flag in PS_PTIA_DATACONV to "F" for the AE Section that failed.

• SQLs run to look for work to do.

  The SQL object PTIA_FINDSECTIONTORUN finds the next eligible section to run. If the query returns nothing, we execute another SQL object called PTIA_COUNTSECTIONSNOTDONE to count how many Sections are left to run. If PTIA_FINDSECTIONTORUN returns no work to do and PTIA_COUNTSECTIONSNOTDONE returns Sections still need to be run, then there must be a Section already running that must complete before anything else can run. If there is no work to do, the loop issues a pause before the loop completes and executes the next loop.

• PTIADATACONV performs more housekeeping to reset statuses on successful completion of all Data Conversion Application Engine Sections.

• A completion message is written to the log file.

Reviewing PTIA Reporting
This section discusses:

• Understanding PTIA Reporting

• Reviewing the Tables Referenced Report

• Reviewing the Customization Impacts Report

• Reviewing Execution Report by Section – Duration

- Reviewing Execution Report by Section – Start Time

- Reviewing the Execution Report by Step

- Reviewing the Execution by Thread Report

- Reviewing the Thread Duration Report

- Reviewing the Execution Comparison Report

- Reviewing the Table Analysis Report

- Reviewing the Data Conversion Report

Understanding PTIA Reporting

You can query all tables populated and leveraged by PTIA (as identified previously) through the various platform specific query tools or psquery. You can gather information in the PTIA tables to identify the following:

- Tables referenced in the data conversion code.

- Steps impacted by customizations (prior to the initial data conversion run).

- Performance issues (after the initial data conversion run).

- Impact of changes (run to run timing comparisons).

Oracle has delivered a series of standard reports to address the most commonly accessed information in the PTIA repository.

Reviewing the Tables Referenced Report

PTIA0001.SQR lists all tables referenced within the Application Engine data conversion programs. For each table listed, the report displays the section and step in which it is used, whether it is a data source or data target table, and the type of SQL statement in which it is referenced. This report is sorted by table name. Data for this report comes from the PS_PTIA_ANALYSIS, PS_PTIA_DTLIDSQLS, and PS_PTIA_DTLIDTBLS tables. This report can be run anytime after the PTIAANALYSIS Application Engine program has run and populated the PTIA tables used by this SQR.

Reviewing the Customization Impacts Report

PTIA0002.SQR shows the section/steps within the Application Engine data conversion programs that referenced tables with custom added fields. This report is sourced from the PS_PTIA_ANALYSIS table and the PSPROJECTITEM table. This report must be run after the customizations project has been compared against the New Release Demo database.

Reviewing Execution Report by Section – Duration

PTIA0003.SQR shows the duration or execution time for each Application Engine section. Since this report is at a section level, the information is sourced from the PS_PTIA_RUNDETAIL table. The report is ordered by execution time with the poorest performing steps at the top. This report can be run anytime after the PS_PTIA_RUNDETAIL table has been populated for the data conversion run on which you want to report.

Reviewing Execution Report by Section – Start Time

PTIA0004.SQR shows the duration or execution time for each section. Since this report is at a section level, the information will be sourced from the PS_PTIA_RUNDETAIL table. The report would be ordered by start time so that you can see the order in which the sections were executed. This report can be run anytime after the PS_PTIA_RUNDETAIL table has been populated for the data conversion run on which you want to report.

Reviewing the Execution Report by Step

PTIA0005.SQR shows the execution time for each section and the associated steps that were run.

This report requires a trace of 16,384 or higher.

Since this report is at a step level, it assumes that a trace of 16,384 or higher has been run so that the step information could be obtained from the PS_PTIA_TIMINGS_DT table. If the appropriate trace has not been run, then a report is not created and output files will be produced. The report will be ordered by execution time with the poorest performing steps at the top.

Reviewing the Execution by Thread Report

PTIA0006.SQR shows the execution timing of each Application Engine section run as part of the data conversion process. This report is sorted so that you can see which sections were executed by each thread. This report is sourced from the PS_PTIA_RUNDETAIL table.

Reviewing the Thread Duration Report

PTIA0007.SQR shows the total duration time for each thread used during the data conversion process. This report is sourced from the PS_PTIA_RUNDETAIL table. It can be run anytime after the PS_PTIA_RUNDETAIL table has been populated from the data conversion run on which you want to report.

Reviewing the Execution Comparison Report

PTIA0008.SQR shows the execution duration from the current run of data conversion as compared to the execution duration from the previous run of data conversion. This report is sourced from the PS_PTIA_RUNDETAIL table. This report can be run anytime after the PS_PTIA_RUNDETAIL table has been populated for the data conversion runs on which you want to report.

Reviewing the Table Analysis Report

PTIA0009.SQR indicates how a particular application table is impacted by the create/alter scripts as well as the data conversion process during the PeopleSoft upgrade. This report is sourced from the PS_PTUALTRECDATA, PS_PTUALTRECFLDDAT, PS_PTIA_ALTRECDATA, PS_PTIA_ANALYSIS, and PS_PTIA_DTLIDTBLS tables. This report can be run after the Alter Analyzer and the AE Analyzer processes have successfully completed. This report is designed to be run against the initial pass database as the data stored in the tables during the Move to Production will differ.

Reviewing the Data Conversion Report

Each of the upgrade data conversion sections contains comments that describe the processing performed by the section. Oracle delivered an SQR (PTIA0010.sqr) to list all of these comments by the group and sequence numbers that determine how they run. The name of this report is PTIA0010.

To run PTIA0010:

1. Using SQRW, run SQR PTIA0010 on your copy of Production database.

2. When prompted for upgrade path, enter (for example):

    HC90

    CR90

    CR91

Using the Upgrade Driver Program

The sequence of Application Engine sections that are run by an upgrade driver is maintained in the PS_PTIA_DCAEPGMS table. The Application Engine sections defined in the PS_PTIA_DCAEPGMS table are referred to as *root sections*.

There are two categories of Upgrade Groups:

• MAIN – Core Data Conversion

• DDL – Data Conversion sections that contain Drop Table Statements (only)

Upgrade groups contain one or more Application Engine sections that are ordered within the group by sequence number. The Application Engine program PTIADATACONV is used to execute the MAIN and the DDL data conversion groups.

When data conversion is executed using the PTIADATACONV Application Program, the sequence number is used to determine the "Relative Run Order" of Application Engine sections that reference the same table or tables, but not the "Absolute Run Order" of the upgrade group(s).

This section discusses:

• Defining an Upgrade Path

• Accessing the Define Data Conversion Page

Defining an Upgrade Path
Before you can define data conversion sections, you must define an upgrade path.

To define an upgrade path:

1. From your browser, sign in to the Demo database.

2. Select PeopleTools, Lifecycle Tools, Upgrades, Define Upgrade Paths.

3. The Define Upgrade Path page appears.

4. Click theAdd a New Value tab.

5. Enter a value for Upgrade Path.

6. Click Add.

7. Select a value for Active Flag.

8. Enter description for the new upgrade path.

9. Click Save.

Image: Define Upgrade Path page

This example illustrates the fields and controls on the Define Upgrade Path page.

After you have defined an upgrade path, you can add sections for the upgrade path on the Define Data Conversion page.

Accessing the Define Data Conversion Page
Before you run data conversion, you may need to change what the Upgrade Driver program runs. You can add, remove, or deactivate Application Engine sections through the Define Data Conversion page.

To access the Define Data Conversion page:

1. From your browser, sign in to the Demo database.

2. Select PeopleTools, Lifecycle Tools, Upgrades, Define Data Conversion.

3. The Define Data Conversion page appears.

4. Enter your upgrade path.

   For example:

   HC90

   CR90

5. Click Search.

The Define Data Conversion page displays information for the selected upgrade path, as shown in the example below. Following the example of the Define Data Conversion page are descriptions for each section of the page.

Image: Define Data Conversion page

This example illustrates the fields and controls on the Define Data Conversion page. You can find definitions for the fields and controls later on this page.

Upgrade Path	This field contains the upgrade path on which the section will be run.
Program Name	This is the Application Engine program that contains the section.
Group Number	This is the group number. All sections with the same group number will be run during the same run of the PTIA_ DATACONV Application Engine program
Group Level	This is the group level.
Conv Type	This is the conversion type. PTIA supports two categories: MAIN and DDL
Section	This is the section that will be called from the PTIA_ DATACONV Application Engine program.
Sequence	This is the order in which the sections will be called during the run of PTIA_DATACONV for the group number.
Active Flag	This field determines whether the section will be run. If the value of this field is *Active*, the section will be run. If the

value is *Inactive*, it will not be run. If you need to remove a section, change the value in this field to *Inactive*.

Short Description   This field contains the Section description.

Long Descr   This field is optional.

This section also discusses:

• Adding a new Section on the Define Data Conversion Page

• Inactivating a Section on the Define Data Conversion Page

Adding a new Section on the Define Data Conversion Page

Follow the instructions below to add a new section to the Define Data Conversion page.

Note: To add a new section, the Application Engine program and section must exist on the Demo database.

To add a new section to the Define Data Conversion page:

1. From your browser, sign in to the Demo database.

2. Select PeopleTools, Lifecycle Tools, Upgrades, Define Data Conversion.

3. The Define Data Conversion page appears.

4. Enter your upgrade path.

   For example:

   HC90

   CR90

5. Click Search.

   The Define Data Conversion page displays information for the selected upgrade path.

6. Add a new row.

7. Select a value for Program Name.

8. Enter a value for Group Number.

   Note: Each group number corresponds to a data conversion step in the PeopleSoft Change Assistant template. If you select a group number that already exists in the PS_PTIA_DCAEPGMS table, your section will be executed when PeopleSoft Change Assistant runs the data conversion step that corresponds to the group number you selected. Alternatively, if you assign a group number to your new section that does not already exist in PS_PTIA_DCAEPGMS, you must add a new step to your PeopleSoft Change Assistant template. The new template step will have the same properties as the other data conversion steps, except for the group number specified in the step properties Parameters box.

9. Enter values for Group Level and Conv Type.

10. Select a value for Sectionand enter value for Sequence.

11. Select a value for Active Flag.

12. The Short Descriptionfield is populated from the Section description. The Long Descrfield is optional.

13. Click Save.

Inactivating a Section on the Define Data Conversion Page

Follow the instructions below to deactivate a section on the Define Data Conversion page. If a section is deactivated, the section will not run as part of data conversion.

To inactivate a section on the Define Data Conversion page:

1. From your browser, sign in to the Demo database.

2. Select PeopleTools, Lifecycle Tools, Upgrades, Define Data Conversion.

3. The Define Data Conversion page appears.

4. Enter your upgrade path.

   For example:

   HC90

   CR90

5. Click Search.

6. Find the row with the Program Name and Section you want to remove and change the value of the Active Flag field to *Inactive*.

7. Click Save.

Part VI

Comparing and Merging

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Chapter 13

Using Compare/Copy Managed Objects or Merge Select Object Types Action

Comparing and Copying Managed Objects Overview

You create and maintain upgrade projects using the Application Designer project management features. Many of the same features are accessible through Project Administration in Change Assistant. Projects can be viewed and copied and compare reports can be executed and viewed either through Change Assistant Project Administration or Application Designer.

You create data migration projects in PIA. Using the Data Migration Workbench, you can copy the data migration project to a file, compare from file and copy from file. In Change Assistant, you can copy the data migration project to a file, compare from file and copy from file, as well as view the compare reports.

Related Links
"Using Projects" (PeopleTools 8.53: PeopleSoft Application Designer Developer's Guide)
"Preparing Projects for an Upgrade" (PeopleTools 8.53: Application Designer Lifecycle Management Guide)
"Setting Project Properties" (PeopleTools 8.53: PeopleSoft Application Designer Developer's Guide)

Administering Projects

To access the Administering Projects tool:

1. In Change Assistant, select Tools, Change Actions.

2. Select Compare/Copy Managed Objects or Merge Select Object Types.

3. Click Next and select Compare/Copy Managed Objects.

4. Click Finish and select the environment to use from the list, or create a new environment.

   See Selecting Application Upgrade Option

5. Select File, Open to open an existing definition. Definition types are:

Managed Object Compare	Select this option to open the compare reports for a project. Only compare reports created with the option *Generate Output to Tables* are available from the drop down list.
ADS Compare	Select the Data Migration project to display.
Project	Select this option to display the project status and actions.

You can open projects that have been created in Application Designer.

If you are already in Compare/Copy Managed Objects or Merge Select Object Types action, you can open the Project Administration menu from the toolbar by selecting Tools, Project Administration.

Viewing Managed Object Compare Reports

When you select the Managed Object Compare and select a project, the compare report is displayed. You can expand and collapse the objects to display.

Image: Managed Object Compare page

This example illustrates the fields and controls on the Managed Object Compare page. You can find definitions for the fields and controls later on this page.

The Project Administration interface can logically be divided into three areas for the compare report:

1. Project-based data

2. Compare results

3. Copy actions

Project-Based Data

These columns display details for definitions in the compare project:

Object	Displays the name of the definition, plus any other key values, in a hierarchical tree view.
Src (Source) Status	Displays the definition status in the source (current) database.
Tgt (Target) Status	Displays the definition status in the source (current) database.

Definition Status

By default, Source Status and Target Status are set to Unknown.

Following a compare, the values in the Source Status and Target Status columns are updated as follows:

Unknown	Definition has not been compared. This is the default status for all definitions inserted manually into a project and the permanent status of all non-comparison definitions.
Absent	The definition was found in the other database, but not in this one. When upgrading to a new PeopleSoft release, all new PeopleSoft definitions should have Absent status in the target database and all of your custom definitions should have Absent in the source database.
Changed	The definition has been compared, the LASTUPDOPRID value is PPLSOFT, and the LASTUPDDTM value is greater than the date/time stamp of the comparison release database. This indicates that PeopleSoft modified the definition since the comparison release.
Unchanged	The definition has been compared, the LASTUPDOPRID value is PPLSOFT, and the LASTUPDDTM value is less than or equal to the date/time stamp of the comparison release database. This indicates that PeopleSoft modified the definition prior to the comparison release.
*Changed	The definition has been compared, the LASTUPDOPRID value is *not* PPLSOFT, and the LASTUPDDTM value is greater than the date/time stamp of the comparison release database. This indicates that a customer modified the definition since the comparison release.
*Unchanged	The definition has been compared, the LASTUPDOPRID value is *not* PPLSOFT, and the LASTUPDDTM value is less than or equal to the date/time stamp of the comparison release database. This indicates that a customer modified the definition prior to the comparison release.
Same	The definition has been compared and is defined the same in both databases. When a definition in one database has this status its counterpart in the other database will have the equivalent status. This status can be seen when performing a project comparison because with a project comparison the definitions are static; the project is not repopulated based on the comparison results. This status is not seen in a database comparison, because when doing so the project is populated only with definitions defined differently.

See "Working with Definition Status" (PeopleTools 8.53: Application Designer Lifecycle Management Guide).

Compare Results

The following table describes the columns that display compare results.

Attribute	The attribute of the definition being compared.
Source Value	The value for the attribute in the source database.

Target Value	The value for the attribute in the target database.

Copy Actions

By default Action is set to Copy and Upgrade is checked.

The following table describes the columns that enable you to specify copy actions.

Action	Displays the action that is performed if the definition is copied into the target database.
Upgrade	Select to upgrade the definition during a copy.
Done	The system changes the Done checkbox to selected when the definition has been copied. You cannot select Done check boxes yourself, but you can deselect them. Only definitions that have Upgrade selected and Done deselected are copied during an upgrade.

See "Working with Upgrade Definition Columns" (PeopleTools 8.53: Application Designer Lifecycle Management Guide).

Filtering

Select View, Filtering to define filters for the Source or Target status column.

Select View, Filtering to filter the listed items based on the following statuses for either source or target:

- Absent
- Changed
- Changed*
- Same
- Unchanged
- Unchanged*
- Unknown

A checkmark indicates that a status is selected. By default, all statuses are selected.

Viewing ADS Compare Reports

When you select ADS Compare and select a project, the compare report is displayed. Expand each section of the report to view the details.

Image: ADS Compare page

This example illustrates the fields and controls on the ADS Compare page. You can find definitions for the fields and controls later on this page.

Object	Src Status	Tgt Status	Attribute	Source Value	Target Value
MSG					
MESSAGE_SET_NBR=30000					
	Changed	Changed	VERSION	15	1
MESSAGE_SET_NBR=30000 ar					
	Changed	Changed	LAST_UPDATE_DTTM	2013-01-09-08.37.16.762000	2002-05-08-16.22.12.000000
	Changed	Changed	MESSAGE_TEXT	AE program %1 has changed Custom…	%1 has changed Customer ID %2 to …

The ADS Compare report has 2 sections:

1. Data Migration project-based data.

2. Compare results.

Data Migration Project-Based Data

These columns display details for the data in the compare project:

Object   Displays the data set name and key values for the data, in a hierarchical tree view.

Src (Source) Status   Displays the definition status in the source (current) database.

                                    For data migration projects the status is either:

                                    • Changed

                                    • Absent

Tgt (Target) Status   Displays the definition status in the source (current) database.

                                    For data migration projects the status is either:

                                    • Changed

                                    • Absent

Compare Results

The following table describes the columns that display compare results.

Attribute   The attribute of the definition being compared.

Source Value   The value for the attribute in the source database.

Target Value   The value for the attribute in the target database.

Viewing Projects

When you select Projects and select a project, the project status is displayed. You can expand and collapse the objects to display.

Image: Project Administration - Project page

This example illustrates the fields and controls on the Project Administration - Project page. You can find definitions for the fields and controls later on this page.

Project Administration allows you to perform all of the same actions as in Application Designer Upgrade View for the project.

For details see "Working with Upgrade Definition Columns" (PeopleTools 8.53: Application Designer Lifecycle Management Guide)

Working With Project Administration Menu Options

This section describes the menu options available when using Project Administration.

File Menu

The File menu contains these Project Administration options:

Menu Option	Description
Open	Opens a managed object compare, ADS compare or project.
Save Project	Saves the project. **Note:** Only available for projects.

Menu Option	Description
Save Project As	Creates a copy of the project. **Note:** Only available for projects.
Project Properties	Opens the Project Properties dialog box. **Note:** Only available for projects.
Exit	Exits Project Administration.

View Menu

The View menu contains these Project Administration options:

Menu Option	Description
Filtering	Select the status to display for the source and target database.

Tools Menu

The Tools menu contains these Project Administration options:

Menu Option	Description
Validate Project	Run the validate utility to make sure that all definitions included in the project actually exist in your database.
Compare and Report	Run a compare report to a database. **Note:** Only available for projects.
Copy Project	Copy the project to a database. **Note:** Only available for managed object compare or project.

Comparing Definitions

To compare definitions in Project Administration:

1. In Change Assistant, select Tools, Project Administration.

    Note: The action type must be Compare/Copy Managed Objects.

2. Select the Source database from the available environments or create a new environment and click OK.

3. Select File, Open and select the definition type Project.

4. Select the Project you want to compare and click Open.

5. Select Tools, Compare and Report, To Database.

    Select the Target environment from the available environments or create a new environment and click OK.

6. The Compare and Report Dialog is displayed. Enter your compare options and then click Compare.

    The Compare and Report dialog box is the same as Application Designer. For details see "Setting Upgrade Options" (PeopleTools 8.53: Application Designer Lifecycle Management Guide)

7. To view the Compare Report use the Managed Object Compare for the project (select Open, for the definition select managed Object Compare and then select the project).

Image: Project Administration window with compare results

This example illustrates the Project Administration window with compare results.

Related Links
"Reviewing Upgrade Settings" (PeopleTools 8.53: Application Designer Lifecycle Management Guide)

Copying Definitions

To copy definitions in Project Administration:

1. In Change Assistant, select Tools, Project Administration.

    Note: The action type must be Compare/Copy Managed Objects.

2. Select the Source database from the available environments or create a new environment and click OK.

3. Select File, Open and select the definition type Project.

4. Select the Project you want to copy and click Open.

5. Review the Action and Upgrade columns to insure you have the correct selections.

6. Select Tools, Copy, To Database.

   Select the Target environment from the available environments or create a new environment and click OK.

7. The Copy Database dialog is displayed. Enter your copy options and then click Copy.

   The Copy Database dialog box is the same as Application Designer. For details see "Copying Projects to a Target Database" (PeopleTools 8.53: Application Designer Lifecycle Management Guide)

8. The Done column will be updated when the copy is complete

Validating Projects

An important part of the PeopleSoft upgrade process involves validating your upgrade project. PeopleSoft Application Designer includes a validate utility to make sure that all definitions included in the project actually exist in your database. This same functionality is available in Project Administration.

To validate a project:

1. Open the project in Project Administration.

2. Select Tools, Validate Project.

Related Links
"Validating Projects" (PeopleTools 8.53: PeopleSoft Application Designer Developer's Guide)

Understanding Merging PeopleCode, SQL, XSLT Programs

Change Assistant enables you to compare the same PeopleCode, SQL or XSLT programs shared among three databases. You can view the text together while the system detects each difference and clearly indicates the differences using visual queues. During this comparison, you choose which lines from each program to carry forward into the merged version.

Beginning a New Merge Session

To begin a new merge session in Change Assistant:

1. Select Tools, Change Actions.

2. Select Compare/Copy Managed Objects or Merge Select Object Types.

3. Click Next.

4. Select Begin New Merge Session.

5. Click Finish.

6. Select your merge databases and merge type and click Next.

7. Define the merge rules and click Next.

8. Click merge to start the full database merge.

Selecting Merge Databases
The merge is a 3–way merge, so you must select the parent and child databases for the merge.

Image: Merge Databases page

This example illustrates the fields and controls on the Merge Databases page. You can find definitions for the fields and controls later on this page.

Merge Session Name	Enter a name for the merge session.
Parent Database	Select an environment for the parent database.
Child 1 Database (Target)	Select an environment for the child 1 database.
Child 2 Database	Select an environment for the child 2 database.
Add Environment	Click this button to add a new environment. The database configuration wizard will open. See Selecting Application Upgrade Option
Merge PeopleCode	Select for a PeopleCode merge.

Merge SQL, XSLT   Select to merge SQL and XSLT

Defining Merge Rules
Use the Merge Configuration page to define how the code will be merged.

Image: Merge Default Rules page

This example illustrates the fields and controls on the Merge Default Rules page. You can find definitions for the fields and controls later on this page.

Using the Merge Interface

When you perform a merge, Change Assistant:

- Compares the Parent database to the Child 1 database to detect changes in Child 1.

- Compares the Parent database to the Child 2 database to detect changes in Child 2 of those objects changed in Child 1.

- Displays the compare results on the merge page.

Merge Page

Select Tools, Project Administration to open the Merge page.

Image: Merge Page

This example illustrates the fields and controls on the Merge page. You can find definitions for the fields and controls later on this page.
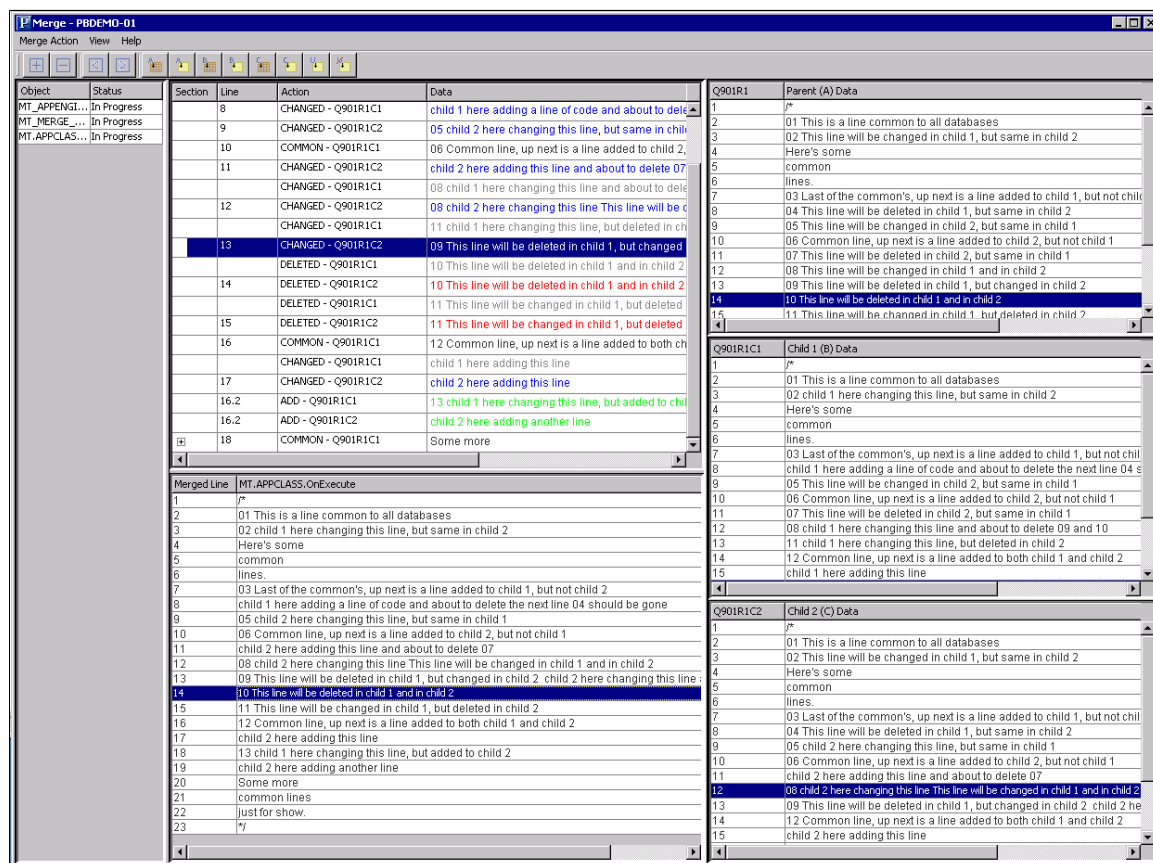
The Merge page contains these panes:

- Program list

- Merge edit pane

- Merge output pane

- Parent (A) Data

- Child 1 (B) Data

- Child 2 (C) Data

Program List

This pane lists the programs that were changed in Child 1 (If something was changed only in Child 2, it won't show up here)

If the entire program name is not visible, hover over the name to display a tooltip with the full name.

Double-click an item in the list to open it for merging.

You can select a status for each program to indicate whether it is in progress, completed, or has no action.

Merge Edit Pane

Change Assistant displays the comparison in the merge edit pane. Lines from Child 1 and Child 2 are listed in the merge pane and in the output pane according to the merge rules.

In the merge edit pane, the Action column shows the state of the line and the database to which it belongs. The lines are also color coded to show the state of each line. The color codes are, by default:

Action	*Color*
COMMON	Black
ADDED	Green
CHANGED	Blue
DELETED	Red
COMMENT	Gray
READ ONLY	Black

Select View, Colors and Fonts to change the line display attributes.

Common lines are grouped in collapsed sections. Click the expand icon to expand each section.

Click in the text area of a line to edit the text.

To add lines to the merge edit pane from the individual data panes :

1. Highlight a line in the data pane.

2. Highlight a line in the merge edit pane.

   The new line will be inserted below the highlighted line.

3. Click an action icon to either insert the line or insert it as a note.

To add a blank line or delete a line, select the line and click the Add line icon or the Delete line icon on the Merge toolbar.

The Merge toolbar contains these options:

                              Add line.

                              Delete line.

	Previous difference.
	Next difference.
	Insert Parent line.
	Insert Parent line as note.
	Insert Child 1 line.
	Insert Child 1 line as note.
	Insert Child 2 line.
	Insert Child 2 line as note.

Merge Output Pane

The output pane displays the current merge results. Initially, the output pane displays the results of the comparison based on the merge rules. When you apply changes, the new merge appears in the pane.

Data Windows

When you select a program, Change Assistant displays the three versions of the program in the respective Parent, Child 1, and Child 2 windows.

Merge Menu

The Merge menu contains these options:

New Session	Create a new merge session.
Open Session	Open an existing merge session. [Crashes CA]
Save Session	Save the session.
Apply to Target	Apply changes to the Child 1 (Target) database and display the merged program in the merge worksheet pane.
Set Merge Rules	Opens the Edit Session Rules dialog.

See <u>Defining Merge Rules</u>.

Purge Session   Purge the merge.

Appendix A

Working With Scripts

Understanding Process, Scripts, and Syntax

Before Change Assistant runs SQL and Data Mover scripts, it determines whether the scripts need updating. This ensures that logs are sent to directories that are known to Change Assistant and that the scripts run properly.

The following table shows the processes, what scripts are updated, and the updated syntax.

Process	Script Files	Updated Syntax
DataMoverBootstrap DataMoverUser LoadBaseData	<process name>.dms	SET LOG statements
DB2 z/OS SQL Commands SQL Scripts UpdatePeopleTools	<process name>.sql	CONNECT TO … SET CURRENT SQLID =
Oracle SQL Commands SQL Scripts UpdatePeopleTools	<process name>.sql	WHENEVER SQLERROR EXIT SET ECHO ON SET TIME ON SPOOL… SPOOL OFF EXIT
Informix SQL Commands SQL Scripts UpdatePeopleTools	<process name>.sql	CONNECT TO …
DB2 UDB SQL Commands SQL Scripts UpdatePeopleTools	<process name>.sql	CONNECT TO …

Running Scripts Outside of Change Assistant

If you are running a script outside of Change Assistant, keep in mind that the default behavior of Change Assistant is to stop when any errors are encountered. To replicate that behavior outside of Change Assistant, you will need to run the script using the correct options. The following table displays the command line options required per database platform to either stop at errors or continue when errors are encountered.

Database	*Stop/Continue at Errors*
Oracle	Exit on error: <sqltool> <accessID>/ <password>@<dbname>@<scriptname> Prepend script with: `WHENEVER SQLERROR EXIT` Continue on error: <sqltool> <accessID>/ <password>@<dbname>@<scriptname> Prepend script with: `WHENEVER SQLERROR CONTINUE`
DB2 z/OS	Exit on error: <sqltool> /c /w /i DB2 -tvf <script name> -z <log name> -s Continue on error: <sqltool> /c /w /i DB2 -tvf <script name> -z <log name>
DB2 LUW	Exit on error: <sqltool> /c /w /i DB2 -vf <script name> -z <log name> -s Continue on error: <sqltool> /c /w /i DB2 -vf <script name> -z <log name>
Informix	Exit on error: <sqltool> -e -a - <script file> >> <log file> 2>&1 Continue on error: <sqltool> -e - <script file> >> <log file> 2>&1
Microsoft SQL Server	Exit on error: <sqltool> -U <accessID> -P <password> -s <server name> -D <database name> -i <script name> -o <log name> -e -n -I -b Continue on error: <sqltool> -U <accessID> -P <password> -s <server name> -D <database name> -i <script name> -o <log name> -e -n -I

Database	Stop/Continue at Errors
Sybase	No option to stop on error.

Appendix B

Modifying Step Properties and Parameters

Step Types

When creating custom steps, select one of these step types.

Note: When creating step types that Application Designer executes, such as Build Project or Compare and Report, if there are specific settings that need to be set for Application Designer, make sure to specify those using the Build, Upgrade, or Object Types buttons that appear to the right of the Step Type dropdown list. Use these buttons to save any necessary settings to the Change Assistant template. At run time, any Application Designer settings saved in the template override the current settings for Application Designer on the machine where an Application Designer process runs.

Step Type	Definition
Application Engine	Runs the Application Engine process indicated by the Script/ Procedure value under Step Properties.
ApplicationEngineWithRunControl	Runs an Application Engine process with run controls. Use the Options button to select the application engine program and enter the run control parameters. For ADS Compare/Copy see Setting AE With Run Control Options for ADS Compare/Copy Global Payroll (GP) application engine programs are used to move GP rules and data between databases. There are 7 application engine programs available. The same parameters are used for all the GP application engine programs. Run Control ID needs to be the same name as the Package ID. Package ID is the Package ID of the rule package. Version indicates if this package is to be versioned, the default is Y.
Build Project	Builds the project specified in the step properties parameter as #Project= (for example, #Project=ALLTABS). The project is built through the PeopleTools command line. Use the Build button to select options based on the instructions in the update documentation for your product and path. **Note:** The Build dialog box that appears displays identical options to Application Designer. See "Selecting Build Options and Running the Build Process" (PeopleTools 8.53: PeopleSoft Application Designer Developer's Guide).

Step Type	Definition
Compare And Report	Runs the project compare (which produces compare reports) process using the project specified in the step properties parameter as #Project= (for example, #Project=ALLTABS). The compare is performed through the PeopleTools command line. For the Compare and Report and all Copy ... step types, use the Upgrade button to select the appropriate options, which are identical to those provided for Upgrade Options in Application Designer. See "Setting Upgrade Options" (PeopleTools 8.53: Application Designer Lifecycle Management Guide).
Compare from file	Runs the project compare (which produces compare reports) process using the project specified in the step properties parameter as #Project= (for example, #Project=PROJECT1). The compare is performed through the PeopleTools command line. Use the Upgrade button to select the definition types to compare and enter the Import/Export Directory that contains the file. Use the Options button on the Compare from File dialog box to select the appropriate options, which are identical to those provided for Upgrade Options in Application Designer. See "Setting Upgrade Options" (PeopleTools 8.53: Application Designer Lifecycle Management Guide).
Copy Database	Copies a project from the source database to the target database as specified under the Step Properties. The project used is the one specified in the step properties parameter as #Project= (for example, #Project=ALLTABS). The copy is performed through the PeopleTools command line.
Copy from file	Copies a project from a file. This is used in conjunction with the Copy To File. It uses the project specified in the Step Properties parameter as #Project= (for example #Project=ALLTABS). Use the Upgrade button to select the definition types to copy and enter the Import/Export Directory that contains the file.
Copy to file	Copies a project to a file. This is used in conjunction with the Copy From File option. It uses the project specified in the Step Properties parameter as #Project= (for example #Project=ALLTABS). Use the Upgrade button to select the definition types to copy and enter the Import/Export Directory for the file.

Step Type	Definition
Create project	Creates a project within Change Assistant. Use the Object Type button to launch the Create Project dialog box where you can select any combination of definition types to include in the project, such as pages, records, fields and so on.

Note: If you select Pages, the system inserts all the page types into the project, including pages, subpage and secondary pages. |
| Merge project | Merges two project definitions.

For example, this is used in upgrades during the "Merge IB Project" step, which merges pre and post-PeopleTools 8.48 Integration Broker metadata. |
Data Mover-Bootstrap	Runs Data Mover scripts as the access ID specified in the credentials panel in the Apply Wizard (bootstrap mode).
Data Mover-User	Runs Data Mover scripts as the user ID specified in the credentials panel in the Apply Wizard (non-bootstrap mode).
DBTSFIX	(Applies to DB2 z/OS, DB2 LUW, Oracle, and Informix). Change Assistant determines the source and target releases of the databases defined under Step Properties as Source and Target. Once this is completed, Change Assistant determines which release scripts need to be generated by the DBTSFIX sqr to produce release scripts for your environment.
Deploy file	Deploys files in change packages to different servers.
FileCopy	Enables you to copy files or directories.

File Copy properties include:

• Source Path

• Destination Path

• Overwrite Existing Files check box.

The Source and Target Paths can be defined as:

• actual paths for example: *C:\temp*

• variablesfor example: *%STAGINGDIRECTORY%*

• combination of variables and fixed paths for example: *%STAGINGDIRECTORY%\IMAGE* |

Step Type	Definition
Execute process	Enables you to include custom processes, such as bat files, that you can run as part of a Change Assistant job. Enter the file path to the file in the Parameters edit box. For example, if you want to run backup.bat, enter the following in the Parameters edit box: *c:\bat\backup.bat* **Note:** Your custom file needs to be able to close without needing human interaction. Change Assistant does not officially recognize the step as being successfully completed until the processes ran by the bat file have been closed.
Load Base Data	Change Assistant determines the source and target releases when running either the DBTSFIX or UpgradePeopleTools steps (depending on your database type). Once these are determined, Change Assistant will dynamically define which Load Base Data scripts need to be run for the original target release and the languages that you have installed.
Manual Stop	Defined as a step you must run manually. Change Assistant automatically sets the run status to Stop. After you have manually completed the step, you must change the Job Status to Complete.

Step Type	Definition

ProcessScheduler	Runs the specified upgrade process through Process Scheduler. To further define the step, you use these *required* parameters:
	
	#USE_PRCS_SERVER=
	
	#PROCESS_TYPE=
	
	#PROCESS_NAME=
	
	#RUNCONTROLID=
	
	#NUM_INSTANCES=
	
	Note: If you don't specify the value to each parameter correctly, the step will fail.
	
	Example: To run one instance of an Application Engine program on SERVER1, specify parameters as:
	
	`#USE_PRCS_SERVER=SERVER1`
	`#PROCESS_TYPE=Application Engine`
	`#PROCESS_NAME=MYAE`
	`#RUNCONTROLID=TEST`
	`#NUM_INSTANCES=1`
	
	Example: To run three instances of an SQR report (XRFWIN) on SERVER2, specify parameters as:
	
	`#USE_PRCS_SERVER=SERVER2`
	`#PROCESS_TYPE=SQR Report`
	`#PROCESS_NAME=XRFWIN`
	`#RUNCONTROLID=MYID`
	`#NUM_INSTANCES=3`
	
	See Step Parameters.

PUMMaintenanceLogSync	This step is only used for PUM updates, it will update the maintenance log for the target database on the PI. The maintenance log for the target database is used to determine the *Already Applied* updates in PUM dependency calculations. This is the same process that is run in the Change Package Wizard when you click Next on the Patching Source Database Information page to populate target database information on the PI.
SQL Command	Runs the SQL command defined in the Parameters value under the Step Properties. Change Assistant runs the command using the SQL Query tool specified in the Database Configuration dialog box. For most SQL Query Tools, Change Assistant stops on an error.

Step Type	Definition
SQL Script	Runs the SQL script defined in the Script/Procedure value under the Step Properties. Change Assistant runs the script using the SQL Query tools specified on the Database Configuration. For most SQL Query Tools, Change Assistant stops on an error.
SQR Report	Runs SQRs using the pssqr command line. If parameters are included in the Parameters section of the step properties, Change Assistant will obtain the SQR settings from Configuration Manager for the Profile selected in the Job Database Configuration.
UpgradePeopleTools	Change Assistant determines the source and target releases of the databases defined under Step Properties as Source and Target. Once this is completed, Change Assistant then determines which Release scripts to run in order to upgrade your PeopleTools release from the original source release to the new target release.
UpdateChangePackage	UpdateChangePackage is a specialized function within the Change Packager relating to the updating of change packages created using Update Manager.

Note: There is no limitation to the number of steps you can add to a template.

Setting AE With Run Control Options for ADS Compare/Copy

The application engine process PTADSAEPRCS is used to copy a data migration project a a file, copy a data migration project from a file or compare a data migration project from a file.

To set the AE run control options:

1. Insert a new step in the template and select Type *ApplicationEngineWithRunControl* or open an existing step with the type *ApplicationEngineWithRunControl*.

2. Make sure the orientation is set correctly.

   • Source is used for Copy to File.

   • Target is used for Compare From File and Copy From File.

3. Click the Options button.

Image: AE With Run Control Options dialog box

This example illustrates the fields and controls on the AE With Run Control Options dialog box. You can find definitions for the fields and controls later on this page.

Application Engine Process	Currently the only available option is ADS Compare/Copy
Action	Select either Copy or Compare
Option	Depending on the action selected, the available options are enabled. For a copy action, you can select To File or From File. For the Compare action only From File is enabled.
Project Name/Run Control	Enter the Data Migration Project Name. The project name is also used as the run control and is automatically populated in the Run Control ID.
Area Name	Enter the name of the area (folder) for the file. When you select Copy to File, the file will be written to the Staging directory defined for the job in a folder PTADSAEPRCS\<area name>. For example: D:\Staging\PTADSAEPRCS\TOOLS
Overwrite Existing	Select this check box if you want to overwrite an existing file.

Step Parameters

Depending on the step type, you may need to include additional parameters in the Parameter edit box of the Step Properties dialog box.

Parameter	Description
#Project=	Used primarily for functions that require a project name, like Build Project, Create Project, and Merge Project. For the Merge Project step type, you can specify two projects separated by a comma. For example, `#PROJECT=PRJ656265,PRJ656265_IB_PRE848`
#Directory=	Used when you need to run a script that is not located in the one of standard home directories defined for the environment. For example: `#Directory=#OutputDirectory`

#RunLocation=
 	
#FileLocation=
	By default the scripts and processes are run on one of the current home directories defined for the environment. However if the script or process needs to run on the old release, you need to specify the old release home directories using the variable #ALL_OLD_PATHS_TGT. Example:
	
	`#RunLocation=#ALL_OLD_PATHS_TGT`
	`#FileLocation=#ALL_OLD_PATHS_TGT`

#P1= through #P5=	Used to pass parameters to SQR reports, for example, TEST. sqr. In this case, you would pass the necessary value, such as: `#P1=#OutputDirectory`
#OutputDirectory=	Used to specify the Output Directory variable that is defined in the Options, Change Assistant, Directories screen.
#NT=	Used for DB2 Command Center, for Non-Terminated SQL Scripts. **Note:** The #NT parameter applies to DB2 LUW only. It is ignored for DB2 zOS.
#Type=	Enables you to specify the type of record to insert into the project. Choose from the following record types: All Records, Table, View/Query, View/Derived, SubRecord, Stored Procedure, Temporary Table, Dynamic View.
#RCID=	Enables the user to override the run control ID used for Application Engine processes.
#CI =	Connect ID (Used for Data Mover – Tools).
#CW =	Connect password (Used for Data Mover – Tools).
#EXTRACT_DMS=	Extracts DMS export script from file (Used for Data Mover – Tools).
#DBSETUP=	Extracts dbsetup DMS import script from file and database connectivity parameters (Used for Data Mover – Tools).

Parameter	Description
#UNICODE=	Generates DMS script for UNICODE database (default is NON-UNICODE) (Used for Data Mover – Tools).
#TABLESPACE=	Default tablespace (PTMINITS) (Used for Data Mover – Tools, DB2 LUW, Oracle and Informix only).
#DBSPACE=	Physical dbname.tablespace (PTMINIDB.TABLESPACE)) (Used for Data Mover – Tools, DB2 z/OS only).
#STOGROUP_TS=	Storage group for tablespace (Used for Data Mover – Tools, DB2 z/OS only).
#STOGROUP_IDX=	Storage group for index (Used for Data Mover – Tools, DB2 z/OS only).
#TABLEOWNER=	Database owner ID (same as sqlid and tableowner) (Used for Data Mover – Tools, DB2 z/OS only).
#INDEXSPC=	Default tablespace (PTMINITS) (Used for Data Mover – Tools, Informix only).
#USE_PRCS_SERVER=	(Used only for ProcessScheduler step types). Enter the name of the Process Scheduler server to run the step. Valid values are SERVER1 or SERVER2, which correlate to the Process Scheduler server definitions you have defined in your upgrade environment.
#PROCESS_TYPE=	(Used only for ProcessScheduler step types). Enter the process type, as defined in Process Scheduler. For example, Application Engine, SQR Report, Data Mover, and so on. Note: This parameter is case sensitive. That is, the value must appear in the exact case as the process type in Process Scheduler. For example, for an Application Engine program, the process type parameter should appear as *PROCESS_TYPE=Application Engine*, not *PROCESS_ TYPE=APPLICATION ENGINE*.
#PROCESS_NAME=	(Used only for ProcessScheduler step types). Enter the process name, such as DDDAUDIT.
#RUNCONTROLID=	(Used only for ProcessScheduler step types). Enter the appropriate run control ID. Note: If NUM_INSTANCES is greater than one, Change Assistant will append unique sequence numbers to the end of the Run Control ID before requests are submitted to the Process Scheduler. This is required for submitting multiple instances of the same process. If NUM_INSTANCES is equal to one, Change Assistant will NOT append unique sequence numbers to the end of the Run Control ID.

Parameter	Description
#NUM_INSTANCES=	(Used only for ProcessScheduler step types). Used by Change Assistant to schedule multiple processes through Process Scheduler as individual process requests. However, the actual number of instances simultaneously executed on the Process Server is controlled by the Max Concurrent setting for the process type in the Process Scheduler server definition.
#TST #TC #PFX	Used with the PTFTest step to identify the test, test case and prefix.

Variables for All Step Types that Use Path

The order by which the PeopleTools runtime will pick up objects from the file system is as follows:

1. PS_CUST_HOME

2. PS_APP_HOME

3. PS_HOME

Change Assistant will loop through the paths in order of precedence until it finds the first instance of the file object at which time it will execute the step.

The following variables can be used for parameters requiring a path.

Variable	Description
#ALL_PATHS_TGT	Uses the path values defined for the target database current environment.
#ALL_PATHS_SRC	Uses the path values defined for the source database current environment.
#ALL_PATHS_ODMO	Uses the path values defined for the copy of demo database current environment.
#ALL_PATHS_PROD	Uses the path values defined for the production database current environment.
#ALL_OLD_PATHS_TGT	Uses the path values defined for the target database old environment.

Filter Query Variables

The following variables in filter queries can be used to determine whether databases are the same platform.

Variable	Description
#PLATFORM_TGT	Uses the platform values defined for the target database current environment.
#PLATFORM_SRC	Uses the platform values defined for the source database current environment.
#PLATFORM_ODMO	Uses the platform values defined for the copy of demo database current environment.
#PLATFORM_PROD	Uses the platform values defined for the production database current environment.

Example: Compare and Report

In order to run a compare and report to a database, the databases must be on the same platform. A query filter can be set on the step to remove non-relevant steps, so only the applicable steps will run.

Step Set	Filter
CompareAndReport Review Compares CopyProject	#PLATFORM_SRC=#PLATFORM_TGT returns true
CopyToFile CompareFromFile Review Compares CopyFromFile	#PLATFORM_SRC=#PLATFORM_TGT returns false

Platform Used in Command Line

Steps where the command line includes the platform are:

• ApplicationEngine

• ApplicationEngineWithRunControl

• BuildProject

• CompareAndReport

• CopyDatabase

• CopyfromFile

• CopyToFile

• CreateProject

- MergeProject

- DataMoverBootstrap

- DataMoverUser

- SQLCommand

- SQLScript

- SQRReport

Appendix C

Clearing Environment Management Framework Cache

Clearing Environment Management Framework Cache Overview

To ensure consistent behavior across all the elements of the Environment Management Framework, at times, it is necessary to clear the cache stored within each element. Clearing the cache just on the web server for the Hub, for example, is not sufficient. To re-initialize the entire framework, you need to perform this cleanup on:

- All agents

- Change Assistant

- Viewer

- Hub

When to Clear Environment Management Framework Cache

After analyzing customer environments and consulting PeopleSoft support, the following list reflects the most common situations in which it is recommended that you clear cache files:

- After applying a maintenance pack. Maintenance packs deliver a large number of files. Clearing the cache after applying a maintenance pack may increase performance for applying future updates.

- After applying a PeopleTools patch. Information related to previous PeopleTools releases stored in the cached directories can cause a variety of issues for Change Assistant.

- After receiving a warning during file deploys or during the validate process (Tools, Validate). This is typically related to cached references to peer IDs that are no longer used. Clearing the cache removes references to unused peer IDs.

- After Change Assistant hangs during re-validation. This is often a sign of cache issues.

- After receiving notifications that you need to apply prerequisites that have already been applied.

Note: The above list reflects the most common situations when cache should be cleared, not every possible situation. If you are encountering unexpected behavior, one element of your troubleshooting should be clearing the cache.

Clearing EMF Cache

To clear EMF cache:

1. Close the Change Assistant, stop all agents, and stop PSEMHUB.

2. Delete cache files from Change Assistant, agents, and Viewer.

   a. Navigate to the following EMF locations:

EMF Element	Location
Change Assistant	Change Assistant installation location. For example, c:\Program Files\PeopleSoft\Change Assistant \envmetadata
Agents	PS_HOME\PSEMAgent\envmetadata
Viewer	PS_HOME\PSEMViewer\envmetadata

   b. Delete the following directories:

   \PersistentStorage

   \ScratchPad

   \transactions (if it exists)

   \data\ids

   c. For Change Assistant and agents only, delete the following file:

   \data\search-results.xml

3. Delete cached files on PSEMHUB.

   a. On the web server, navigate to PIA_HOME\webserv\peoplesoft\applications*domain*\PSEMHUB \envmetadata.

   b. Delete the files stored in these directories:

   \scratchpad

   \PersistentStorage

   \transactions (if it exists)

   c. Delete all objects in \data (files and subdirectories, but not the \data directory).

   For example,

   \data*.*

4. Restart PSEMHUB.

5. Restart all agents.

6. Restart Change Assistant and Environment Management Viewer as needed.

Appendix D

Troubleshooting Change Assistant and EMF

Peer Cannot Connect to the Hub

When an Environment Management peer (typically an agent or the viewer) can't communicate with the hub, the following error messages appear in the logs and stdout:

```
Broken connection - attempting to reconnect
RemoteException while connecting to server - retrying attempt 1
RemoteException while connecting to server - retrying attempt 2
RemoteException while connecting to server - retrying attempt 3
```

The peer periodically attempts to reconnect to the hub (by default every ten seconds) with the parameters that are specified in the configuration.properties file.

Determining the Error Condition

The peer may not be able to communicate with the hub for one of the following reasons:

*   The peer is started but the hub is not started.

    The peer reconnects once the hub is started.

*   The peer is started but the web server is configured to run on a different machine.

    Edit the configuration.properties file and change the hubURL parameter.

*   The peer is started but the web server is configured to listen on a different port.

    Users continue to see the error messages described previously. Edit the configuration.properties file and change the port number for the hubURL parameter. Shut down and restart the peer.

*   The peer is running and communicating with the hub, and the PIA web server is shut down.

    Users see the broken connection error message. Once the PIA web server is started, the connection is restored.

When the peer has a pinginterval configuration parameter set to a high value (60 seconds or more), the following exception might appear in the log:

```
INFO Thread-48 org.apache.commons.httpclient.HttpMethodBase - Recoverable
 exception caught when processing request WARN Thread-48
org.apache.commons.httpclient.HttpMethodBase
- Recoverable exception caught but MethodRetryHandler.retryMethod() returned
false, rethrowing exception Broken connection - attempting to reconnect
Sending pulse from 'com.peoplesoft.emf.peer:id=5'
```

This is due to an HTTP client connection timeout which does not affect functionality.

Ensuring the Correct Configuration

To ensure that you've configured the peer (agent or viewer) to properly connect with the hub, try each of the following actions in turn:

- Ping the hub host machine.

  At a command prompt, enter `ping machinename`, using the machine name configured in the hubURL setting. You should see messages indicating a reply from the machine.

- Ping the hub host domain.

  At a command prompt, enter `ping hostdomain`, using the fully qualified domain name as it's configured in the hubURL setting; for example, *mymachine.mydomain.com*. You should see messages indicating a reply from the machine.

- Use an IP address in the hubURL.

  In configuration.properties, replace the domain name in the hubURL setting with the machine's IP address, then restart the peer.

- Ensure that you specify the right port number in the hubURL.

  In configuration.properties, the port number in the hubURL setting must be <PIA port> if you set up PIA for a single server. In single server configurations, the hub uses the same port to which PIA is configured.

  In multi-server configurations, the hub uses the application default port, which is 8001. If you need to change this setting, it must be done in the web server configuration files.

Agent-Specific Resolutions

If an agent is still experiencing connection difficulties, delete the following agent directories if they exist:

- *PS_HOME*\PSEMAgent\envmetadata\data\ids

- *PS_HOME*\PSEMAgent\envmetadata\PersistentStorage

- *PS_HOME*\PSEMAgent\envmetadata\transactions

Note: You must also delete these directories after you install an additional hub on the same machine which doesn't replace the existing hub, then shut down the old hub and start the new hub using the same settings.

Viewer-Specific Resolutions

If the viewer Java application can't connect to the hub, first ensure that you specify the right port number when launching the viewer program.

If you set up PIA for a single server, 80 is the default port number, if you set up PIA for multiple servers, 8081 is the default listening port number for PSEMHUB.

If the viewer is still experiencing connection difficulties, delete the following viewer directories if they exist:

- *PS_HOME*\PSEMViewer\envmetadata\data\ids

- *PS_HOME*\PSEMViewer\envmetadata\PersistentStorage

- *PS_HOME*\PSEMViewer\envmetadata\transactions

Note: You must also delete these directories after you install an additional hub on the same machine which doesn't replace the existing hub, then shut down the old hub and start the new hub using the same settings.

Servlet Request Processor Exception

When running WebSphere on multiple servers the following error can occur in the stdout log of the server running PSEMHUB:

```
[10/21/03 20:32:44:826 PDT]  136aa03 OSEListenerDi E PLGN0021E:
Servlet Request Processor Exception:
Virtual Host/WebGroup Not Found : The host pt-lnx03.peoplesoft.com
on port 6080 has not been defined
```

Use the following steps to correct the error: (the host now can accept redirected queries from your reverse proxy. Normally this configuration is applied during PIA install).

1. Open your WebSphere administration console.

2. Select Environment, Virtual Hosts, default_host, Host Aliases.

3. Add *.* so the host now can accept redirected queries from the reverse proxy.

   Normally this configuration is applied during PIA install.

Error Initializing Agent

When starting agents, if you receive the following error message, determine whether an agent is already running:

```
Error initializing agent. Verify if another agent is not
running on this machine or if you have the required permission to run the
agent.
```

If the console for the agent is not visible, check the task manager for the list of Java processes that are currently running. Stop a running agent by invoking the scripts to stop the agents and then restart the desired agent.

Determine whether the agent port is available. If not, choose a different port to start the agent.

Distributed Object Manager Errors

When running process, such as Application Engine, through the Process Scheduler (by way of Change Assistant) the following error can occur if you do not have security set appropriately for the PROCESSREQUEST.

```
Connecting to App Server: 10.138.124.216:9000
Error, exception caught: Distributed Object Manager: Page=Create Language=%2 (1,4)
```

See Ensuring Process Scheduler Security Authentication.

Cloned Databases Not Being Unique

When copying databases, it is extremely important to delete the GUID value in the new (copied) database. If not deleted, the hub will assume that the two environments are the same, leading to confusing environment records.

To resolve this, set the value of the GUID field in the PSOPTIONS table to <space> in the new database. You can insert the blank value in the PSOPTIONS table using the SQL tool at your site. The next time an application server connects to the database, the system generates a new, unique GUID.

Large SQL Scripts Fail on Microsoft SQL Server

In some situations, depending on various factors, such as memory available on the Change Assistant workstation, large SQL scripts can fail when run against Microsoft SQL Server. For example, this can occur when running the Microsoft conversion script during an upgrade.

To resolve this issue:

• Set the step executing the SQL script to run manually.

• Split the script into at least three separate scripts and run them individually.

Process Scheduler Logs Retrieved Using FTP Losing Formatting

When reviewing Process Scheduler files retrieved by way of FTP, in some cases formatting is lost.

This is typically an issue with the ANSI setting on the FTP server. For example, on a vsftpd server, in the vsftpd.conf file, make sure `ascii_download_enable` is set to *YES*. If not, stop the FTP daemon, modify the setting, and restart the FTP daemon. (Adjust this information as needed for your FTP server).

Errors Found in Log Files

Change Assistant scans log files that are generated when various processes run, such as SQL, Data Mover, SQR, CopyDatabase and so on. The following table describes what logs are produced and what Change Assistant determines to be an error:

The log files generated by Process Scheduler are not parsed for warnings or errors. Therefore, even though Change Assistant may show a status of Complete for a Process Scheduler step type, you should review the generated log files for more details.

Processes	Log File	Error	Warning Status
Application Engine	<process name>_out.log	Restart Failed. Invalid, Error. Abended. Abort. Not Defined.	Warning.
Build Project CompareAndReport CopyDatabase CopyFromFile CopyToFile CreateProject	<process name>.log	Error. Invalid PeopleCode. Copy process cancelled. Project <xxx> does not exist.	Warning.
DataMoverBootstrap DataMoverTools DataMoverUser LoadBaseData	<process name>_out.log **Note:** Any logs generated by the Data Mover SET LOG statement will also be available.	Unsuccessful. PSDMTX Error.	Warning.
DBTSFIX SQRReport	<process name>_0.out <process name>_out.log **Note:** Change Assistant retrieves the SQR log files using the SQR settings in the Configuration Manager.	TNS Error. Program Aborting. Not Defined Error.	NA

Processes	Log File	Error	Warning Status
Deploy File	<process name>_out.log	Failure. • Unable to connect. • Environment Management Components are Unavailable. Warning status.	NA
DSAutoGeneration DSCompile DSCustomReport DSPatchCorrection DSPatchImport	<process name>_out.log <process name>.log	Failed. Warning status.	NA
DSGetLogs DSInitialImport DSRunJob	<process name>_out.log <process name>_detailed.log <process name>.log	Failed. Warning status.	NA
ProcessScheduler		The log files generated by Process Scheduler are not parsed for warnings or errors. Therefore, even though Change Assistant may show a status of Complete for a Process Scheduler step type, you should review the generated log files for more details	

Processes	*Log File*	*Error*	*Warning Status*
SQLCommand SQLScript UpdatePeopleTools	\<process name\>.log	DB2 z/OS and DB2 UDB: • SQLSTATE=value (value cannot be 02000). • SQLxxxxxN. • DB2xxxxxE. Oracle: ORA. Informix: • Error. • Transaction rolled back. Sybase: Msg Microsoft SQL Server: • Msg[Microsoft]. • Cannot open database, access denied. • Specified SQL Server not found. Transaction rolled back. • ConnectionOpen (Connect()). • Login failed.	Warning.