

**Oracle® Communications
Billing and Revenue Management**

Upgrade Guide

Release 7.5

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Preface

This book provides information on how to upgrade your existing system to later versions of Oracle Communications Billing and Revenue Management (BRM) releases.

Audience

This document is intended for systems integrators, system administrators, database administrators, and other individuals who are responsible for installing and upgrading BRM from release to release.

Downloading Oracle Communications Documentation

Product documentation is located on Oracle Help Center:

<http://docs.oracle.com>

Additional Oracle Communications documentation is available from the Oracle software delivery Web site:

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Document Revision History

The following table lists the revision history for this book.

Version	Date	Description
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Version	Date	Description
E16723-02	May 2012	Documentation updates for BRM 7.5 Patch Set 1. <ul style="list-style-type: none"> ■ Made minor formatting and text changes.
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E16723-07	October 2013	Documentation updates for BRM 7.5 Patch Set 6. <ul style="list-style-type: none"> ■ Added the "Removing the Unused Procedures and Packages from the BRM Database" section in the following chapters: Upgrading from Portal 7.3 to BRM 7.4 Upgrading from BRM 7.3.1 to BRM 7.4
E16723-08	August 2014	Documentation updates for BRM 7.5 Patch Set 9. <ul style="list-style-type: none"> ■ Documentation added for RADIUS Manager.
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E16723-10	December 2015	Documentation updates for BRM 7.5 Patch Set 14. <ul style="list-style-type: none"> ■ Updated the following sections: Restricting Schema Creation Tasks Involved in the BRM 7.4-to-7.5 Upgrade Process

Part I

About Upgrading

This part contains a general overview about upgrading your Oracle Communications Billing and Revenue Management (BRM) software.

Part I contains the following chapter:

- [About Upgrading BRM Releases](#)

About Upgrading BRM Releases

This chapter provides general information on how to upgrade your existing system to the latest Oracle Communications Billing and Revenue Management (BRM) release.

In this document, the BRM release running on your production system is called the *old* release. The release you are upgrading to is called the *new* release. For example, if you are upgrading from BRM 7.4 to BRM 7.5, BRM 7.4 is the old release, and BRM 7.5 is the new release.

About Upgrading BRM to a New Release

Upgrading to a new release is a four-part process:

1. Plan the upgrade process.
2. Implement and test the upgrade on a test system.
3. Prepare to upgrade your production system.
4. Implement and test the upgrade on the production system.

The upgrade process includes these tasks:

- **Install BRM 7.5** (without installing the database schema).
- **Update the BRM database.** The new BRM release includes an updated database schema with new tables and indexes. You use upgrade scripts to update your BRM database to the new schema.
- **Update the Pipeline Manager database.** The new release includes an updated database schema with new tables and indexes. You use upgrade scripts to update your Pipeline Manager database to the new schema.
- **Reimplement customizations.**
 - Source code for policy opcodes can change in a new release. You must merge your old release customizations into the new policy source code and recompile the policy Foams.
 - To support new functionality, the new software includes new configuration files. You must update those files to include the customizations made to your old system.
 - Other customizations in your system; such as customized invoicing, reports, general ledger reporting, and client applications; might need to be updated to work with the new BRM software.
- **Implement new features.** You can implement new BRM functionality to improve your BRM system. See the information about new features in *BRM Release Notes*.

The basic steps for upgrading are:

1. Back up files.
2. Turn off service authentication and authorization.
3. Shut down the old release.
4. Back up your the old release's database.
5. Install BRM 7.5 (without installing the database schema).
6. Upgrade the BRM database schema.
7. Upgrade the Pipeline Manager database schema.
8. Install BRM 7.5 client applications and optional components.
9. Add customizations.
10. Restore service authentication.

Note: There are additional steps if you use a multidatabase system, and optional steps for loading data.

About Maintaining Access to the BRM System during the Upgrade Process

Whether you can maintain access to the BRM system during the upgrade process:

- Upgrading from BRM 7.4 to BRM 7.5
- Upgrading from earlier versions to BRM 7.4

Upgrading from BRM 7.4 to BRM 7.5

Important: You cannot provide access to your BRM system while the upgrade is in progress.

This temporary stoppage of service is because of the following reasons:

- BRM 7.5 does not support AAA Gateway Manager. It requires a migration to Oracle Communications Service Broker (OCSB) Online Mediation Controller.

Note: Support for RADIUS Manager is added in BRM 7.5 Patch Set 9.

- The migration process between the two systems does not permit any actions in the system being upgraded.

See *Oracle Communications Online Charging Solution* document for details on the migration process.

Upgrading from Earlier Versions to BRM 7.4

When you upgrade your production system, you must shut down BRM. This typically means that BRM cannot perform authentication and accounts cannot be created.

To minimize service outage while you upgrade, follow these tips:

- Upgrade the database during off-peak hours, and do a phased upgrade. Switch authentication to promiscuous mode. See *BRM RADIUS Manager* located in the *Oracle Communications Billing and Revenue Management (BRM) 7.4 Documentation*.
- Use custom applications to support authentication for services other than dialup services.
- Use a custom application to register customers over the Web and to store registered accounts, which can be loaded into BRM after the upgrade.

Direct and Incremental Upgrades

Direct upgrades are performed with a single set of upgrade scripts. This set directly transforms the old database into the new BRM database. BRM 7.5 includes one direct upgrade script, which is from BRM 7.4 to BRM 7.5.

Incremental upgrades involve multiple sets of upgrade scripts. If you are upgrading to BRM 7.5 from any release earlier than BRM 7.4, you must perform an incremental upgrade. That is, you must first upgrade your database to BRM 7.4, and then upgrade from BRM 7.4 to BRM 7.5. For example, to upgrade from BRM 7.3 to BRM 7.5, you first run a set of scripts to upgrade the BRM database from 7.3 to 7.4, and then you run another upgrade script to upgrade the database from BRM 7.4 to BRM 7.5. In this case, Release 7.4 is called the *interim release*.

To perform an incremental upgrade to BRM 7.5:

1. Install the BRM 7.4 server software.
2. Run the upgrade scripts to upgrade your database from the previous release to BRM 7.4.
3. Run the BRM 7.4 `pin_setup` scripts.
4. Install BRM 7.5 (without installing the database schema).
5. Run the upgrade script to upgrade your database from BRM 7.4 to BRM 7.5.

Important: You perform other upgrade tasks, such as updating policy source code, *only* in the new release.

Planning Your Upgrade

To plan your upgrade, you can perform the following tasks:

1. [Identifying Your Upgrade Team](#)
2. [Identifying Who Is Affected by the Upgrade](#)
3. [Collecting Information about Your System](#)
4. [Determining the Impact of New Features](#)
5. [Estimating How Long the Upgrade Will Take](#)

Identifying Your Upgrade Team

Your upgrade team should include the following team members:

- A database administrator to manage the database upgrade and tune the database.
- A system administrator to manage the hardware and system architecture.

- A business analyst to make business decisions about changes to your BRM implementation.
- A customer service representative (CSR) supervisor to assess the impact on CSRs and to train CSRs on new client applications.

Identifying Who Is Affected by the Upgrade

You should identify who might be affected by the upgrade. For example:

- You might need to give your customers advance notice of any system downtime.
- If your branded service providers use BRM client applications, you should provide training to support new features. In addition, branded service providers might want to tell their customers about possible system downtime.
- Tell your system administrators in advance about any changes to the system architecture.
- Train CSRs on new client application functionality. If a separate staff handles customer management, they need the new client applications. In addition, if there are changes to service functionality, you can tell your CSR staff to expect more service calls than usual.
- If you have any software interfaces to third-party organizations, such as a credit card processor, inform them about anything that might affect your interface.
- Notify Oracle so that we can help you anticipate and avoid problems. Technical support might have additional information about upgrading BRM or information specific to your implementation.

Collecting Information about Your System

When you upgrade, you must know all the customizations you implemented in the old release. To prepare for the upgrade, find or create the following documents:

- **Implementation design documents.** When you first implemented BRM, you should have created documents that explained your business requirements and the customizations you made to meet those requirements. These documents help you create a list of customized components. You can also compare these documents with the documentation on new BRM features to find out whether any of your customizations can now be implemented by using standard BRM functionality.
- **List of customized components.** This should list every file created or modified for the original implementation. You need this list to know which files must be checked against the new release for changes.

Customizations might include the following:

- Additional Data Managers (DMs)
- Custom Facility Modules (FMs)
- Custom client applications
- Custom DLLs
- Custom reports
- Custom **iScripts**
- Merging container **DESC.dsc** files

- Updating registry files with new registry entries
- Modified storable classes
- Additional storable classes
- Custom table indexes
- Modified configuration, properties, and INI files
- Custom Web pages
- A gateway service that provides access to a legacy system

Determining the Impact of New Features

You might need to make changes to your current system to accommodate new functionality in the new release. For example, if the new release changes how resource rounding works, you might need to modify your price list to support the new rounding method.

See "[Upgrading BRM and Pipeline Manager](#)" for more information.

The following features are typically affected by new releases:

- Price lists (rating)
- Billing and invoicing
- General ledger (G/L IDs)
- Web pages
- BRM reports
- Client applications used by CSRs
- Components that integrate credit card processors and tax software
- Discount balancing

In addition, new features might include default functionality that you implemented as a customization. In that case, it is best to replace your customizations with the new feature.

Estimating How Long the Upgrade Will Take

When estimating the time it will take to upgrade, consider the following:

- [How Long Will It Take to Run the Database Upgrade Scripts?](#)
- [How Long Will It Take to Plan, Prepare for, Test, and Perform the Upgrade?](#)

How Long Will It Take to Run the Database Upgrade Scripts?

This is an important consideration because services might be suspended and authentication and authorization might be unavailable while you upgrade the database.

The best way to determine how long the database upgrade will take is to run the upgrade scripts on a test system that duplicates the data in your production system (see "[Creating Test Environments](#)"). If this is not possible, you can estimate the time by installing and reviewing the upgrade scripts and the *upgrade_path_schema_diff.html* file included with the upgrade scripts. This shows you which tables are affected by the upgrade. For example, adding columns to a very large EVENT_T table can take a long time.

In general, it takes longer to upgrade large databases with large tables. A large database can take from 8 to 48 hours to upgrade.

Reducing BRM System Downtime by Purging or Archiving Old Data

The upgrade scripts convert your old release data to the new release format. The time required to complete an upgrade is directly proportional to the size of your database. To save time, purge or archive data that is no longer required before you shut down your production system to perform the upgrade.

Because event tables consume most of the space in a database, you can significantly reduce the size of the database by purging unneeded event objects. If you cannot purge event objects, archive those that are no longer needed.

How Long Will It Take to Plan, Prepare for, Test, and Perform the Upgrade?

Depending on the size and complexity of your BRM implementation, the entire upgrade process can take from 2 to 8 months. If your system architecture and customization documentation is complete and up-to-date, the time is significantly shorter.

For help with your upgrade, contact Oracle.

Updating Your System Environment

Before upgrading, prepare your system environment:

- Install the latest releases.

Install the latest BRM-supported release of your operating system and database software. Include the latest patches. If you are not running the latest supported release of Oracle, you might need to upgrade your database software before upgrading BRM. For more information, see the following:

- For a list of hardware and software supported by BRM, see “Hardware and Software Requirements” in *BRM Installation Guide*.
- For general database information, see “Database Configuration and Tuning” in *BRM Installation Guide*.

- Check disk space and memory.

Ensure that your test environments and production system include the disk space and memory required for the new BRM release. The requirements might differ from the requirements for the old release. For more information, see the following:

- For disk space requirements, see “Hardware and Software Requirements” in *BRM Installation Guide*.
- For information on memory configuration, see “Improving BRM Performance” in *BRM System Administrator’s Guide*.

- Tune your system.

Upgrading is faster and easier if you *first* tune your system for optimal performance. For assistance with estimating the hardware and storage requirements for your BRM system, contact Oracle for more information.

Creating Test Environments

To test your upgrade, create the environments described in this section. You use these environments to do the following:

- Compare the default behavior of the old and new releases.
- Determine what customizations you made in the old release.
- Test the upgrade process and its results.

Tip:

- You can install multiple BRM instances on a single UNIX machine. See “Installing and Configuring Multiple Instances of BRM on One Machine” in *BRM Installation Guide*.
 - If you install BRM on multiple systems, you can save time by compressing and moving folders and files instead of running the BRM installer on each system. When you copy the files to other systems, you might need to change some configuration file values, such as port numbers, manually if you do not use the automated installer.
-
-

Old Baseline Release

Your *old baseline release* system should run the old BRM release with the latest ServicePak but without any customizations. Use this system to do the following:

- Determine what default behavior in the old release has changed in the new release by comparing the old baseline release with the ["New Baseline Release"](#).
- Determine what customizations you made in the old release by comparing the old baseline release with your existing system, which this document calls the ["Old Customized Release"](#).

Old Customized Release

Your *old customized release* system should run the old BRM release with your customizations. This system should be identical to your current production system. To ensure that your test upgrade ("[New Customized Release \(Test System\)](#)") is working properly, compare the behavior of the new customized release with the old customized release.

New Baseline Release

Your *new baseline release* system should run the new BRM release without any customizations. Use this system to find out how the latest BRM release works.

New Customized Release (Test System)

Your *new customized release* (or test) system should run the new BRM release with your customizations and an upgraded BRM database. Use this system to test the following aspects of the upgrade:

- **The upgrade process.** The procedures used to create this system should be as close as possible to the procedures used to upgrade your production system. This ensures that you test such tasks as turning authentication on and off and copying over configuration files.

For information on the standard procedure for upgrading a production system, see ["Upgrading Your Production System"](#).

Tip: To create this system, perform a test upgrade on your "[Old Customized Release](#)".

- **The upgrade results.** To test the outcome of your upgrade process, run all tests on this system. See "[Testing Your Upgraded System](#)".

Tip: This system's database should include the same data as your "[Old Customized Release](#)" database. That way, you can run tests on the same data and compare the results

Transferring Customizations to the New Release

This section explains how to transfer customizations from the old release to the new release:

- [Upgrading Customized Policy Source Files](#)
- [Updating Configuration Files](#)
- [Updating Database Customizations](#)
- [Updating Custom Reports](#)
- [Updating Custom Applications](#)

Tip: When you upgrade to a new BRM release, you first install the default BRM server configuration, and you then install your customized files. To ensure that you add all your customized files to the new release, create a package that includes all your customized files.

Upgrading Customized Policy Source Files

New releases often include changes to policy opcodes. If you customized your policy opcodes, you might need to re-create your customizations after you install the new BRM release:

1. See your internal documentation to find out what customizations were made to policy source files. If the customizations were not documented, use a diff tool to compare the source code in the "[Old Baseline Release](#)" with the source code in your "[Old Customized Release](#)". Source code is stored in the *BRM_Home/source* folder.
2. When you know what your customizations are, use a diff tool to compare your customized source code with the source code in the "[New Baseline Release](#)".
3. Determine whether new features implement any of your customizations or make them irrelevant.
4. Merge the policy source file customizations that you still need into the new release source code. As you do so, find any changes to input and output flists. It is common for fields to change or to change from required to optional (or vice versa).
5. Using the libraries in the new release, recompile your custom code in the new release.
6. Test the new source code by using the functionality that it customizes.

Updating Configuration Files

When you install a new BRM release, you install new configuration files, such as the Connection Manager (CM) `pin.conf` file. You must update these files to include the customizations you made to them in your old system. For more information, see “Using Configuration Files to Connect and Configure Components” in *BRM System Administrator’s Guide*.

Updating Database Customizations

If you added custom classes to your old release, corresponding custom tables were added to your BRM database, and corresponding custom definitions were added to your BRM data dictionary. These customizations are *not* modified by the database upgrade scripts.

Modifying the Content of Custom Tables

Depending on how the new release differs from the old release, you *might* need to modify the old data in your custom tables to accommodate the new release. For example, a custom table might store phone numbers in the following format: 408-555-1212. Opcodes in the new release, however, might need a different format, such as 1-408-555-1212.

Important: To upgrade the old data to the new format, you should create custom SQL scripts and incorporate them into the upgrade configuration file, `upgrade.cfg`, *before running the database upgrade scripts*.

Modifying the Structure of Custom Tables

Depending on the changes introduced by the new release, you *might* need to modify the structure of your custom database tables. For example, you might need to add, delete, or change the size of a column. To make such changes, use either Developer Center or the `pin_deploy` utility after running the database upgrade scripts. Those tools will automatically update your new database schema and data dictionary.

Note: To identify undocumented database customizations in your old release, compare the database schema in the “[Old Baseline Release](#)” with the database schema in your “[Old Customized Release](#)”.

Fixing Standard Database Objects with Nonstandard Object IDs

When you run the database upgrade scripts, the scripts overwrite standard database objects. If you deleted standard objects and re-created them with nonstandard object IDs when customizing BRM, the upgrade scripts delete those objects.

To drop a standard object from the upgraded database and re-create the object with a nonstandard ID, use the `testnap create 1 poid` command. This command enables you to use the POID in the input file to re-create the object instead of using a value from the POID sequence.

Updating Custom Reports

Since BRM reports read data stored in objects, changes to the database schema often require changes to reports. Sometimes it is easier to design new reports to work with

the new database schema than to update old reports, especially when there are large-scale schema changes.

For more information, see "About BRM Reports" in *BRM Reports*.

Updating Custom Applications

Use your "New Customized Release (Test System)" to test all custom applications that call opcodes or manipulate data in the database. Changes to storable classes and opcodes in the new release might make such applications function differently.

Note: Event objects created before release 6.7 do not have a sub-balance array. You might need to take this into consideration when designing your BRM application.

Important: You must recompile your custom applications with the new BRM libraries.

Testing Your Upgraded System

To test your "New Customized Release (Test System)", perform the tests listed in "Testing Checklist". When testing, cover all aspects of the system, including CSR activity, customer logins and service usage, and billing.

Tip: Create an upgrade process document that includes a checklist of the upgrade tasks. Part of your test is to ensure that the checklist is complete because you will use it when upgrading your production system.

When you have completed all your tests without finding any errors, run all the tests again, *twice*. You should run through the tests twice without error before considering the test cycle complete.

If you find any problems that indicate a BRM problem, submit it to Oracle.

Important: Document all customizations you make during the upgrade. You will need to know about them the next time you upgrade.

Running Old and New Versions in Parallel

A good way to test your upgraded BRM implementation is to run the old release and the new release in parallel. To do so, run the old system as your production system, and import all your data into the new system. You can then run billing and perform other tasks on both systems and compare the results.

Testing the BRM Database

When you install a new BRM release, you run upgrade scripts to update the database schema. The scripts update the database tables and fields, including the BRM database definition. The scripts modify only default BRM objects and do not affect custom objects.

You should load actual production data into the test environment to run the database upgrade scripts with your real information. If you do not have enough hardware to load the entire database, include at least some account information.

When running the upgrade scripts on your test system, look for the following:

- Data errors in your current database
- Custom tables and fields that are not being used

Important: If you are performing an incremental upgrade, you must run database upgrade scripts for *each* incremental release. For more information, see "[Direct and Incremental Upgrades](#)".

Troubleshooting Your Upgraded System

For information about BRM error messages and other problems that you encounter in your upgraded system, see the following documents:

- "Reference Guide to BRM Error Codes" in *BRM System Administrator's Guide*
- "Resolving Problems in Your BRM System" in *BRM System Administrator's Guide*

Upgrading BRM can expose implementation problems. While running tests, some problems you find might be caused in part by the following:

- **Missing data.** If your initial BRM implementation included the conversion and migration of legacy data, the conversion might not have created all necessary objects or fully populated all fields. In addition, data is sometimes mistakenly deleted. The missing data might not affect the existing BRM implementation, but later versions of BRM might need it.
- **Undocumented customizations.** If you find what appears to be an undocumented customization, compare the "[Old Baseline Release](#)" with your "[Old Customized Release](#)". If you find an undocumented customization, be sure to document it!
- **New functionality.** BRM functionality changes between releases. These changes might enable or require you to get rid of or change some of your customizations.

For information about how new functionality affects your system, see "[Upgrading BRM and Pipeline Manager](#)".

Testing Checklist

You should have a list of tests that were performed during your initial BRM and Pipeline Manager implementation. In addition to running all those tests, you might run new tests to cover new functionality.

Important: Before running tests in a *production* environment, ensure that all entries for the **pin_virtual_time** utility were removed from configuration files. If you are running in a *test* environment, it is not necessary to remove entries for the **pin_virtual_time** utility.

These are the basic tests you should perform on your test system:

- Create accounts using the client applications and your Web interface.
- Run billing, including requesting and receiving payments. Check all log files and invoices after running billing.

- Run the `/pin_ledger_report` utility on your "Old Customized Release" and your test system, and compare the results. If the database on both systems includes the same data, the results should be the same.

Note: New functionality, such as a change in how end times are computed, can produce different results.

- Run all the client applications that your implementation uses.
- Test your price list by committing it to the database and purchasing every plan and deal.
- Test all your optional components, such as LDAP Manager and GSM Manager. See "About Maintaining Access to the BRM System during the Upgrade Process".
- Test credit card processing, including a live connection to the credit card processor.
- Test tax calculation.
- Test Web pages.
- Test all localized client applications to ensure that they correctly display and handle data in the local language.
- Test all functionality that involves multiple currencies.
- Run all BRM reports that you use. If possible, run the reports against the same data in your "Old Customized Release" and your test system.
- Review all log files for warnings and errors. See "About Monitoring BRM" in *BRM System Administrator's Guide*.
- Test all interfaces to external systems.
- If you plan to import usage data into the database after running the upgrade scripts, test the import process with an importing tool such as Rated Event (RE) Loader.
- Develop and test a fallback plan in case you run into problems during the production system upgrade. For example, after you shut down your production system, you should create a full backup of the system in case you need to restore it.
- Run Pipeline Manager. Enter the input data to the `/data/in/` directory.
- Run `pin_rel` utility to load the rated CDRs to the BRM database.
- Test the Oracle database to check whether the account information from the Pipeline Manager database syncs with the BRM database.

Preparing for the Production System Upgrade

Before you upgrade your production system, do the following:

- Make a backup of the data in your production system.

Caution: Do not begin your upgrade until you have backed up your production system.

- Ensure that all files required for customizing the system are available and ready to be copied to the upgraded system. This might include configuration files and Facility Modules (FMs). Test the procedure for copying these files to the upgraded system.
- Be prepared to run a full integration test on your production system after the upgrade scripts have run. Prepare any test scripts and test them before shutting down BRM.
- Inform anyone who needs to know about the upgrade. See ["Identifying Who Is Affected by the Upgrade"](#).
- Create a checklist for the upgrade procedure. (You should have created one while testing the upgrade. See ["Testing Checklist"](#).)
- Prepare a production staging system. This system includes the ["New Baseline Release"](#) with your customized files. You build this system after testing is complete. It serves as a clean system from which to copy files to your production system. To avoid resource contention, run this system on its own dedicated hardware to simulate production performance more accurately. If you have limited resources, you can use your ["New Customized Release \(Test System\)"](#) system as the production staging system.

Upgrading Your Production System

The procedures used to upgrade your production system should be almost identical to the procedures used to create your ["New Customized Release \(Test System\)"](#).

To upgrade your production system from BRM 7.4 to BRM 7.5, see ["Upgrading BRM and Pipeline Manager"](#).

Part II

Upgrade Impacts

This part contains information on the impacts of upgrades from one release to another for different versions of the Oracle Communications Billing and Revenue Management (BRM) software.

Part II contains the following chapters:

- [Feature Changes from BRM 7.4 to BRM 7.5](#)
- [Storable Class Changes from BRM 7.4 to BRM 7.5](#)
- [Opcode Changes from BRM 7.4 to BRM 7.5](#)
- [Utility Changes from BRM 7.4 to BRM 7.5](#)
- [Notification Event Changes from BRM 7.4 to BRM 7.5](#)

Feature Changes from BRM 7.4 to BRM 7.5

This chapter provides upgrade impact information for Oracle Communications Billing and Revenue Management (BRM) Release 7.4 to BRM 7.5. It describes the feature changes that affect your BRM system and what you must consider when you upgrade from 7.4 to 7.5.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

AAA Gateway

The following are the changes made to AAA Gateway in BRM 7.5.

AAA Gateway Manager Replaced by Online Mediation Controller

BRM 7.5 no longer supports AAA Gateway Manager. You must now use Oracle Communications Service Broker (OCSB) Online Mediation Controller instead. You can also use Online Mediation Controller to interface with IMS networks, or you can use RADIUS Manager. Support for RADIUS Manager was added in BRM 7.5 Patch Set 9.

For more information, see the following documents:

- *Oracle Communications Service Broker Concepts Guide*
- *Oracle Communications Service Broker Online Mediation Controller Implementation Guide*

These documents are part of the Oracle Communications Service Broker 6.0 documentation set.

Customer Center

The following are the changes made to Customer Center in BRM 7.5.

Correct Validity Period Set When Product Is Purchased Using Customer Center

In earlier releases, the correct product validity period was not saved in the BRM database when doing product customizations. This issue is now fixed and Customer Center now passes the appropriate values for the unit and offset fields to the subscription and registration opcodes.

Invoicing

The following are the changes made to invoicing in BRM 7.5.

Enhanced Invoice Document

The invoice document now displays the breakdown of usage charges, including the gross usage charges and applicable discounts and taxes. For example, if the net usage charge is \$355.08, the invoice document displays the breakdown as:

Gross Charge: 348, Discount: (25.20), and Tax: 32.28.

Invoice Utilities

Previously, the `pin_inv_doc_gen` utility displayed an error message when the `InvoiceList.xml` file listed more than 14 account and bill unit pairs. Because the `InvoiceList.xml` file can now list more than 14 account and bill unit pairs, the utility no longer displays an error message.

For more information on generating invoices by using BI Publisher, see "Generating BI Publisher Invoice Documents for a List of Accounts" in *BRM Designing and Generating Invoices*.

Pipeline Manager

The following are the changes made to Pipeline Manager in BRM 7.5.

Rating Multiple Events for a Service

In previous releases, you could map multiple Pipeline Manager service codes to a single BRM service type. However, you could map only one event type to a single BRM service type. This implied that you could map only one event type to a Pipeline Manager service code. For example, to rate GSM usage events, you map the Pipeline Manager service code TEL to only one event type, `/event/delayed/session/telco/gsm`.

Now, the one-to-one event type and service type mapping restriction has been removed. You can now map multiple event types to a single service type to rate multiple events for a service. For example, to rate GSM and GSMTEL usage events for GSM Telephony service, you can map the `/event/delayed/session/telco/gsm` and `/event/delayed/session/telco/gsmstel` event types to the `/service/telco/gsm/telephony` service type.

For more information, see the discussion of mapping events to services in *BRM Setting Up Pricing and Rating*.

System Administration

The following are the changes made to system administration in BRM 7.5.

IMDB Cache Manager Replaces TIMOS DM

BRM no longer supports Transactional In-Memory Object Store (TIMOS) DM. To cache a subset of BRM data in memory, you must now use In-Memory Database (IMDB) Cache Manager.

The following describes the differences between a BRM system with TIMOS DM and a BRM system with IMDB Cache Manager:

- In a BRM system with TIMOS DM, BRM objects from the BRM database are cached in the TIMOS DM reference object cache (ROC). TIMOS DM handles all of the database operations in the TIMOS DM ROC. In this setup, all client requests for authentication, authorization, and accounting (AAA) flow through TIMOS

DM. Requests for all other data, such as billing and customer service representative (CSR) operations, flow through Oracle DM and are forwarded to the BRM database.

- In a BRM system with IMDB Cache Manager, the ROC technology used in TIMOS DM is replaced with the Oracle IMDB Cache. BRM objects from the BRM database are cached in the Oracle IMDB Cache. The Oracle IMDB Cache caching agent handles the database operations in the Oracle IMDB Cache and sends requests for data that is not stored in the Oracle IMDB Cache to the BRM database. In this setup, *all* client requests (AAA, billing, CSR, and so on) flow through IMDB Cache DM (Oracle DM is not used).

For more information, see the discussion about IMDB Cache Manager in *BRM System Administrator's Guide*.

Storable Class Changes from BRM 7.4 to BRM 7.5

This chapter provides upgrade impact information between Oracle Communications Billing and Revenue Management (BRM) Release 7.4 and BRM 7.5. It describes the storable class changes that affect your BRM system and what you must consider when you upgrade from BRM 7.4 to BRM 7.5. It also provides information about storable class index and schema changes.

See ["About Upgrading BRM Releases"](#) for information on planning your upgrade implementation, such as setting up your development and test environments.

New Storable Classes

[Table 3–1](#) lists all storable classes that were added between BRM 7.4 and BRM 7.5.

Table 3–1 *New Storable Classes in BRM 7.5*

New Storable Class	Description
<code>/config/lifecycle_states</code>	This class contains the state machine configuration for the prepaid lifecycle.
<code>/config/service_state_map</code>	This class contains the mapping between STATUS, STATUS_FLAGS, and LIFECYCLE_STATE of the service object. The index of this array element is the value of LIFECYCLE_STATE.
<code>/config/subscriber_preferences_map</code>	This class contains the mapping between the preference name and the ID.
<code>/event/billing/corrective_bill</code>	This event object is created when a corrective bill is generated.
<code>/history_bills</code>	This object represents a copy of the bill object. It is created when a corrective bill is generated.
<code>/profile/subscriber_preferences</code>	This class holds the subscriber preferences for the associated service or account.
<code>/status_dm</code>	This object contains information on the DM. The first part of the information contains the PID, the memory usage, and the transaction queue. The next part of the information contains each of the back ends and the front ends.

Changed Storable Classes

[Table 3–2](#) lists all storable classes that were changed between BRM 7.4 and BRM 7.5.

Table 3–2 Changes to Storable Classes in BRM 7.5

Changed Storable Class	Description
/config/business_params	<p>The following parameter was added:</p> <ul style="list-style-type: none"> ProductLevelValidation: To enable deal dependency validations when products or discounts are in either canceled state or inactive state. By default, it is set to disabled. <p>The purchase time dependency validations between deals are performed irrespective of the value of ProductLevelValidation.</p>
/journal	<p>The /journal object now gets updated with free resource data.</p>
/active_session	<p>The following array was added:</p> <p>PIN_FLD_THRESHOLDS: An array containing three new fields:</p> <ul style="list-style-type: none"> PIN_FLD_RESOURCE_ID: Holds the resource ID for thresholds check. PIN_FLD_CREDIT_THRESHOLDS: Holds the current value for credit thresholds. PIN_FLD_CREDIT_THRESHOLDS_FIXED: Holds the fixed value for credit thresholds.
/associated_bus_profile	<p>The following array was added:</p> <p>PIN_FLD_TEMPLATE_ARRAY: An array containing two new fields:</p> <ul style="list-style-type: none"> PIN_FLD_TEMPLATE_NAME: This is the name of the template (for corrective invoicing) configured in Template_Name of the corresponding invoicing /config/business_profile object. PIN_FLD_REPORT_NAME: This is the name of the report (for corrective invoicing) configured in Report_Name of the corresponding invoicing /config/business_profile object.
/collections_action	<p>The following field was changed:</p> <p>PIN_FLD_STATUS: The following values are changed:</p> <ul style="list-style-type: none"> CANCELLED is changed from 2 to 1. COMPLETED is changed from 1 to 2.
/config/aaa	<p>The following array was added:</p> <p>PIN_FLD_SCALED_DELAY_INFO: An array containing one new field:</p> <ul style="list-style-type: none"> PIN_FLD_MAX_DELAY_TIME: Stores the maximum value permitted for SCALED_DELAY.
/deal	<p>The following field was added:</p> <ul style="list-style-type: none"> PIN_FLD_CODE: Reserved for future use.
/event	<p>The following field was changed:</p> <p>PIN_FLD_SESSION_OBJ is now writable.</p>
/event/billing/cycle/tax	<p>The following field was changed:</p> <p>PIN_FLD_TAX_CODE is now writable.</p>
/group/plan_list	<p>The following substruct was added:</p> <p>PIN_FLD_PLAN_LIST_CODE: A substruct containing one new field:</p> <ul style="list-style-type: none"> PIN_FLD_CODE: The plan list's unique code.

Table 3–2 (Cont.) Changes to Storable Classes in BRM 7.5

Changed Storable Class	Description
/item	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_FLAGS: Marks special items. For example: You can mark special items to show the items separately in invoices, or include /exclude items from invoices, or mark items for taxation to avoid double taxation for Bill_Now.
/plan	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_CODE: Reserved for future use.
/product	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_RATE_PLAN_CODE: Reserved for future use.
/rate_plan	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_CODE: The /rate_plan object's code.
/rate_plan_selector	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_CODE: The /rate_plan_selector object's code.
/rollover	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_CODE: The /rollover object's code.
/service	The following fields were added: <ul style="list-style-type: none"> ■ PIN_FLD_LIFECYCLE_STATE: The lifecycle state of a service. ■ PIN_FLD_SERVICE_STATE_EXPIRATION_T: The expiration time of the service state.
/sponsorship	The following field was added: <ul style="list-style-type: none"> ■ PIN_FLD_CODE: Reserved for future use.

Obsoleted Storable Classes

There are no obsoleted storable classes in BRM 7.5.

Opcode Changes from BRM 7.4 to BRM 7.5

This chapter describes the opcode changes that affect your Oracle Communications Billing and Revenue Management (BRM) system and what you must consider when you upgrade from BRM 7.4 to BRM 7.5.

See "[About Upgrading BRM Releases](#)" for information on planning your upgrade implementation, such as setting up your development and test environments.

New Policy Opcodes

The following policy opcodes were added between BRM 7.4 and BRM 7.5:

- [Accounts Receivable FM Policy Opcodes](#)
- [Billing FM Policy Opcodes](#)
- [Customer FM Policy Opcodes](#)
- [General Ledger FM Policy Opcodes](#)
- [Number Manager FM Policy Opcodes](#)

Accounts Receivable FM Policy Opcodes

PCM_OP_AR_POL_PRE_EVENT_ADJUSTMENT

Enables you to customize the input flist by adding or deleting events. Customizing the input flist enables you to include amounts from events into the total amount available for adjustments.

Billing FM Policy Opcodes

PCM_OP_BILL_POL_VALID_CORRECTIVE_BILL

Validates a bill unit (/billinfo object) at the time of corrective billing. It performs default policy validations and any custom validations that you provide. This policy opcode is called by the PCM_OP_BILL_MAKE_CORRECTIVE_BILL opcode.

Customer FM Policy Opcodes

PCM_OP_CUST_POL_PRE_DELETE_PAYINFO

Performs custom actions on a /payinfo storable object before the deletion of that /payinfo object.

General Ledger FM Policy Opcodes

PCM_OP_GL_POL_PRE_UPDATE_JOURNAL

Enables customization of general ledger data before it is recorded into **/journal** objects.

Number Manager FM Policy Opcodes

PCM_OP_NUM_POL_DEVICE_DELETE

- Checks the state of the device.
- If the device state is `PIN_NUM_STATE_NEW` or `PIN_NUM_STATE_UNASSIGNED`, enables you to delete the device; otherwise, it generates an error and does not enable you to delete the device.

This policy opcode is called by the `PCM_OP_DEVICE_POL_DELETE` policy opcode.

New Standard Opcodes

The following standard opcodes were added between BRM 7.4 and BRM 7.5:

- [Billing FM Standard Opcodes](#)
- [Price List FM Standard Opcodes](#)

Billing FM Standard Opcodes

PCM_OP_BILL_MAKE_CORRECTIVE_BILL

Enables you to create a corrective bill for a **/billinfo** object at the time of billing. This opcode is called by the `pin_make_corrective_bill` utility. If the `PCM_OP_POL_BILL_MAKE_CORRECTIVE_BILL` policy opcode is called with the **-validate_only** parameter, this opcode does not generate a corrective bill for the selected bill, but it validates whether a corrective bill can be generated for that bill.

Price List FM Standard Opcodes

PCM_OP_PRICE_GET_DISCOUNT_INFO

Retrieves real-time discount data along with pipeline discount model data from the BRM database.

Changed Policy Opcodes

The following policy opcodes were changed between BRM 7.4 and BRM 7.5.

- [Billing FM Policy Opcodes](#)
- [Customer FM Policy Opcodes](#)
- [Payment FM Policy Opcodes](#)
- [Rating FM Policy Opcodes](#)
- [Subscription Management FM Policy Opcodes](#)

Billing FM Policy Opcodes

The following are the changes made to Billing FM policy opcodes in BRM 7.5.

PCM_OP_BILL_POL_GET_EVENT_SPECIFIC_DETAILS

New input fields

- PIN_FLD_INVOICE_DATA

Customer FM Policy Opcodes

The following are the changes made to Customer FM policy opcodes in BRM 7.5.

PCM_OP_CUST_POL_COMPARE_PASSWD

New input fields

- PIN_FLD_EXTENDED_INFO substruct

Payment FM Policy Opcodes

The following are the changes made to Payment FM policy opcodes in BRM 7.5.

PCM_OP_PYMT_POL_OVER_PAYMENT

New input fields

- PIN_FLD_BAL_GRP_OBJ

New output fields

- PIN_FLD_BAL_GRP_OBJ

PCM_OP_PYMT_POL_UNDER_PAYMENT

New input fields

- PIN_FLD_BAL_GRP_OBJ

New output fields

- PIN_FLD_BAL_GRP_OBJ

Rating FM Policy Opcodes

The following are the changes made to Rating FM policy opcodes in BRM 7.5.

PCM_OP_RATE_POL_PRE_RATING

New output fields

- PIN_FLD_CUSTOM_INFO substruct

Subscription Management FM Policy Opcodes

The following are the changes made to Subscription Management FM policy opcodes in BRM 7.5.

PCM_OP_SUBSCRIPTION_POL_PRE_TRANSITION_PLAN

Changed output fields

- PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_POL_SPEC_FOLD

Changed input fields

- PIN_FLD_SERVICE_OBJ

Changed output fields

- PIN_FLD_SERVICE_OBJ

Changed Standard Opcodes

The following standard opcodes were changed between BRM 7.4 and BRM 7.5.

- [Activity FM Standard Opcodes](#)
- [Accounts Receivable FM Standard Opcodes](#)
- [Balance FM Standard Opcodes](#)
- [Billing FM Standard Opcodes](#)
- [Collections FM Standard Opcodes](#)
- [Customer FM Standard Opcodes](#)
- [Number Manager FM Standard Opcodes](#)
- [Payment FM Standard Opcodes](#)
- [Pricing FM Standard Opcodes](#)
- [Process Audit FM Standard Opcodes](#)
- [Rating FM Standard Opcodes](#)
- [Rerating FM Standard Opcodes](#)
- [SDK FM Standard Opcodes](#)
- [Services Framework AAA Manager FM Standard Opcodes](#)
- [Subscription Management FM Standard Opcodes](#)

Activity FM Standard Opcodes

The following are the changes made to Activity FM standard opcodes in BRM 7.5.

PCM_OP_ACT_USAGE

New output fields

PIN_FLD_RESULTS array

- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_RATE_PLAN_OBJ

Accounts Receivable FM Standard Opcodes

The following are the changes made to Accounts Receivable FM standard opcodes in BRM 7.5.

PCM_OP_AR_EVENT_ADJUSTMENT

New output fields

- PIN_FLD_ADJUSTMENT_INFO array:

- PIN_FLD_DISCOUNT

PCM_OP_AR_GET_ACCT_ACTION_ITEMS

New input fields

- PIN_FLD_BILL_NO
- PIN_FLD_FLAGS

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_FLAGS

PCM_OP_AR_GET_ACCT_BILLS

New input fields

- PIN_FLD_FLAGS

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ORIG_NUM
 - PIN_FLD_NAME
 - PIN_FLD_AMOUNT_ORIG
 - PIN_FLD_LAST_BILL_T
 - PIN_FLD_REASON_DOMAIN_ID
 - PIN_FLD_REASON_ID
 - PIN_FLD_INV_TYPE

PCM_OP_AR_GET_BILL_ITEMS

New input fields

- PIN_FLD_BILL_NO
- PIN_FLD_FLAGS

New output fields

- PIN_FLD_BILLED_AMOUNT
- PIN_FLD_UNBILLED_AMOUNT
- PIN_FLD_RESULTS array:
 - PIN_FLD_BILLED_AMOUNT
 - PIN_FLD_UNBILLED_AMOUNT

PCM_OP_AR_GET_BILLS

New input fields

- PIN_FLD_FLAGS

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ORIG_NUM

- PIN_FLD_NAME
- PIN_FLD_AMOUNT_ORIG
- PIN_FLD_LAST_BILL_T
- PIN_FLD_REASON_DOMAIN_ID
- PIN_FLD_REASON_ID
- PIN_FLD_INV_TYPE

Balance FM Standard Opcodes

The following are the changes made to Balance FM standard opcodes in BRM 7.5.

PCM_OP_BAL_CHANGE_VALIDITY

New input fields

- PIN_FLD_SERVICE_OBJ

PCM_OP_BAL_GET_ACCT_BAL_GRP_AND_SVC

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_STATUS
 - PIN_FLD_LAST_STATUS_T
 - PIN_FLD_ITEM_POID_LIST
 - PIN_FLD_NEXT_ITEM_POID_LIST

PCM_OP_BAL_GET_BALANCES

New output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_CREDIT_THRESHOLDS_FIXED

Billing FM Standard Opcodes

The following are the changes made to Billing FM standard opcodes in BRM 7.5.

PCM_OP_BILL_GET_ITEM_EVENT_CHARGE_DISCOUNT

New output fields

PIN_FLD_RESULTS array

- PIN_FLD_EVENTS array:
 - PIN_FLD_TIMEZONE_ID

Collections FM Standard Opcodes

The following are the changes made to Collections FM standard opcodes in BRM 7.5.

PCM_OP_COLLECTIONS_PROCESS_BILLINFO**New input fields**

- PIN_FLD_PROCESSING_TIME

Customer FM Standard Opcodes

The following are the changes made to Customer FM standard opcodes in BRM 7.5.

PCM_OP_CUST_COMMIT_CUSTOMER

You can now make calls to the PCM_OP_CUST_COMMIT_CUSTOMER opcode any time within one transaction. The order of calling the PCM_OP_CUST_COMMIT_CUSTOMER opcode is not relevant.

New input fields

- PIN_FLD_TXN_FLAGS

Changed input fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

- PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

New output fields

PIN_FLD_PAYINFO array:

- PIN_FLD_FLAGS

Changed output fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:

- * PIN_FLD_PURCHASE_START_T
- * PIN_FLD_PURCHASE_END_T
- * PIN_FLD_CYCLE_START_T
- * PIN_FLD_CYCLE_END_T
- * PIN_FLD_USAGE_START_T
- * PIN_FLD_USAGE_END_T

PIN_FLD_PAYINFO array:

- PIN_FLD_FLAGS

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T

- * PIN_FLD_CYCLE_END_T
- * PIN_FLD_USAGE_START_T
- * PIN_FLD_USAGE_END_T

PCM_OP_CUST_CREATE_CUSTOMER

Changed input fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

Changed output fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T

- * PIN_FLD_PURCHASE_END_T
- * PIN_FLD_CYCLE_START_T
- * PIN_FLD_CYCLE_END_T
- * PIN_FLD_USAGE_START_T
- * PIN_FLD_USAGE_END_T
- PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PCM_OP_CUST_CREATE_TOPUP

New output fields

- PIN_FLD_STATUS

PCM_OP_CUST_MODIFY_CUSTOMER

Changed input fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T

- * PIN_FLD_PURCHASE_END_T
- * PIN_FLD_CYCLE_START_T
- * PIN_FLD_CYCLE_END_T
- * PIN_FLD_USAGE_START_T
- * PIN_FLD_USAGE_END_T
- PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

- PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

Changed output fields

PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

PIN_FLD_SERVICES array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T

- * PIN_FLD_CYCLE_END_T
- * PIN_FLD_USAGE_START_T
- * PIN_FLD_USAGE_END_T

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T
 - PIN_FLD_DISCOUNTS array:
 - * PIN_FLD_PURCHASE_START_T
 - * PIN_FLD_PURCHASE_END_T
 - * PIN_FLD_CYCLE_START_T
 - * PIN_FLD_CYCLE_END_T
 - * PIN_FLD_USAGE_START_T
 - * PIN_FLD_USAGE_END_T

Number Manager FM Standard Opcodes

The following are the changes made to Number Manager FM standard opcodes in BRM 7.5.

PCM_OP_NUM_MODIFY_BLOCK

New input fields

- PIN_FLD_REQ_MODE
- PIN_FLD_NUMBER_INFO array:
 - PIN_FLD_CATEGORY_ID
 - PIN_FLD_CATEGORY_VERSION
 - PIN_FLD_NETWORK_ELEMENT
 - PIN_FLD_VANITY

Payment FM Standard Opcodes

The following are the changes made to Payment FM standard opcodes in BRM 7.5.

PCM_OP_PYMT_COLLECT

New input fields

PIN_FLD_CHARGES array:

- PIN_FLD_BILLINFO array:

- PIN_FLD_ACTG_TYPE

Pricing FM Standard Opcodes

The following are the changes made to Pricing FM standard opcodes in BRM 7.5.

PCM_OP_PRICE_COMMIT_BEST_PRICING

New input fields

PIN_FLD_BEST_PRICING array:

- PIN_FLD_DEAL_CODE
- PIN_FLD_DEALS array:
 - PIN_FLD_DEAL_CODE

PCM_OP_PRICE_COMMIT_DEAL

New input fields

- PIN_FLD_DEALS array:
 - PIN_FLD_CODE

PCM_OP_PRICE_COMMIT_DEPENDENCY

New input fields

- PIN_FLD_DEPENDENCIES array:
 - PIN_FLD_DEPENDEE_CODE
 - PIN_FLD_DEPENDENT_CODE

PCM_OP_PRICE_COMMIT_DISCOUNT

New input fields

- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_FLAGS

Changed input fields

- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_PURCHASE_MIN
 - PIN_FLD_PURCHASE_MAX
 - PIN_FLD_OWN_MIN
 - PIN_FLD_OWN_MAX
 - PIN_FLD_PRIORITY

PCM_OP_PRICE_COMMIT_PLAN

New input fields

PIN_FLD_PLAN array:

- PIN_FLD_CODE

- PIN_FLD_SERVICES array:
 - PIN_FLD_DEALS array:
 - * PIN_FLD_DEAL_CODE

PCM_OP_PRICE_COMMIT_PLAN_LIST

New input fields

- PIN_FLD_PLAN_LISTS array:
 - PIN_FLD_CODE
 - PIN_FLD_PLAN array:
 - * PIN_FLD_CODE

PCM_OP_PRICE_COMMIT_PRODUCT

New input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_FLAGS
- PIN_FLD_USAGE_MAP array:
 - PIN_FLD_RATE_PLAN_CODE
 - PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - * PIN_FLD_CODE
- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_CODE
- PIN_FLD_ROLLOVERS array:
 - PIN_FLD_CODE

Changed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_PURCHASE_MIN
- PIN_FLD_PURCHASE_MAX
- PIN_FLD_OWN_MIN
- PIN_FLD_OWN_MAX
- PIN_FLD_PARTIAL
- PIN_FLD_PRIORITY
- PIN_FLD_USAGE_MAP array:
 - PIN_FLD_TOD_MODE
 - PIN_FLD_TIMEZONE_MODE
 - PIN_FLD_MIN_QUANTITY
 - PIN_FLD_MIN_UNIT
 - PIN_FLD_INCR_QUANTITY

- PIN_FLD_INCR_UNIT
- PIN_FLD_ROUNDING_MODE
- PIN_FLD_RATE_PLAN_SELECTOR array:
 - * PIN_FLD_SELECTOR
- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_TAX_WHEN
 - PIN_FLD_RATE_TIERS array:
 - * PIN_FLD_DATE_RANGES array

PCM_OP_PRICE_COMMIT_SPONSORSHIP

New input fields

- PIN_FLD_SPONSORSHIPS array:
 - PIN_FLD_CODE

PCM_OP_PRICE_COMMIT_TRANSITION

New input fields

- PIN_FLD_TRANSITIONS array:
 - PIN_FLD_FROM_CODE
 - PIN_FLD_TO_CODE

PCM_OP_PRICE_SET_PRICE_LIST

New input fields

PIN_FLD_PLAN_LISTS array:

- PIN_FLD_CODE

PIN_FLD_PLAN array:

- PIN_FLD_CODE

PIN_FLD_BEST_PRICING array:

- PIN_FLD_DEAL_CODE

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_CODE

PIN_FLD_DEPENDENCIES array:

- PIN_FLD_DEPENDEE_CODE
- PIN_FLD_DEPENDENT_CODE

PIN_FLD_TRANSITIONS array:

- PIN_FLD_FROM_CODE
- PIN_FLD_TO_CODE

PIN_FLD_DEALS array:

- PIN_FLD_CODE

PIN_FLD_PRODUCTS array:

- PIN_FLD_FLAGS
- PIN_FLD_USAGE_MAP array:
 - PIN_FLD_RATE_PLAN_CODE
 - PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - * PIN_FLD_CODE
- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_CODE
- PIN_FLD_ROLLOVERS array:
 - PIN_FLD_CODE

PIN_FLD_DISCOUNTS array:

- PIN_FLD_FLAGS
- PIN_FLD_SPONSORSHIPS array:
- PIN_FLD_CODE

Changed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_PURCHASE_MIN
- PIN_FLD_PURCHASE_MAX
- PIN_FLD_OWN_MIN
- PIN_FLD_OWN_MAX
- PIN_FLD_PARTIAL
- PIN_FLD_PRIORITY
- PIN_FLD_USAGE_MAP array:
 - PIN_FLD_TOD_MODE
 - PIN_FLD_TIMEZONE_MODE
 - PIN_FLD_MIN_QUANTITY
 - PIN_FLD_MIN_UNIT
 - PIN_FLD_INCR_QUANTITY
 - PIN_FLD_INCR_UNIT
 - PIN_FLD_ROUNDING_MODE
 - PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - * PIN_FLD_SELECTOR
- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_TAX_WHEN
 - PIN_FLD_RATE_TIERS array:
 - * PIN_FLD_DATE_RANGES

PIN_FLD_DISCOUNTS array:

- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_PURCHASE_MIN
- PIN_FLD_PURCHASE_MAX
- PIN_FLD_OWN_MIN
- PIN_FLD_OWN_MAX
- PIN_FLD_PRIORITY

Process Audit FM Standard Opcodes

The following are the changes made to Process Audit FM standard opcodes in BRM 7.5.

PCM_OP_PROCESS_AUDIT_SEARCH

Removed output fields

- PIN_FLD_EVENT_COUNT

New output fields

- PIN_FLD_BATCH_TOTAL

Rating FM Standard Opcodes

The following are the changes made to Rating FM standard opcodes in BRM 7.5.

PCM_OP_RATE_EVENT

New input fields

- PIN_FLD_EVENT substruct:
 - PIN_FLD_CUSTOM_INFO substruct

New output fields

- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_RATE_PLAN_OBJ

Rerating FM Standard Opcodes

The following are the changes made to Rerating FM standard opcodes in BRM 7.5.

PCM_OP_RERATE_INSERT_RERATE_REQUEST

New input fields

- PIN_FLD_RERATE_FLAGS

SDK FM Standard Opcodes

The following are the changes made to SDK FM standard opcodes in BRM 7.5.

PCM_OP_SDK_SET_OBJ_SPECS

Changed input fields

- PIN_FLD_OBJ_DESC array:
 - PIN_FLD_WRITE_ACCESS

Services Framework AAA Manager FM Standard Opcodes

The following are the changes made to Services Framework AAA Manager FM standard opcodes in BRM 7.5.

PCM_OP_TCF_AAA_SERVICE_PRICE_ENQUIRY

New input fields

- PIN_FLD_START_T
- PIN_FLD_END_T

Subscription Management FM Standard Opcodes

The following are the changes made to Subscription Management FM standard opcodes in BRM 7.5.

PCM_OP_SUBSCRIPTION_CANCEL_DEAL

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_RUM_NAME
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_BAL_IMPACTS
 - PIN_FLD_SUB_BAL_IMPACTS
 - PIN_FLD_CYCLE_INFO
 - PIN_FLD_UNRATED_QUANTITY
 - PIN_FLD_NET_QUANTITY
 - PIN_FLD_RATING_STATUS

PCM_OP_SUBSCRIPTION_CHANGE_OPTIONS

New input fields

- PIN_FLD_PAYINFO array

PCM_OP_SUBSCRIPTION_PURCHASE_DEAL

Changed input fields

PIN_FLD_DEAL_INFO substruct:

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CYCLE_DISCOUNT

PCM_OP_SUBSCRIPTION_PURCHASE_PRODUCT

Changed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_CYCLE_DISCOUNT

PCM_OP_SUBSCRIPTION_SERVICE_BALGRP_TRANSFER

Changed input fields

PIN_FLD_DEALS array:

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_PRODUCTS array:
 - * PIN_FLD_CYCLE_DISCOUNT

PCM_OP_SUBSCRIPTION_SHARING_GROUP_MODIFY

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_SERVICE_OBJ

PCM_OP_SUBSCRIPTION_TRANSITION_PLAN

Changed input fields

- You can pass product information in the PIN_FLD_PRODUCTS field located in the PIN_FLD_DEAL_INFO substruct of the input flist.

PCM_OP_TERM_IP_DIALUP_AUTHENTICATE

New output fields

- PIN_FLD_ACTION_MODE
- PIN_FLD_ARGS array

PCM_OP_TERM_IP_DIALUP_UPDATE_ACCOUNTING

New output fields

- PIN_FLD_DELAY_TIME
- PIN_FLD_END_T

Renamed Opcodes

There are no renamed opcodes in BRM 7.5.

Obsoleted Policy Opcodes

The following policy opcodes were obsoleted between BRM 7.4 and BRM 7.5.

- [Collections FM Policy Opcodes](#)

Collections FM Policy Opcodes

The following Collections FM policy opcode was obsoleted in BRM 7.5.

PCM_OP_COLLECTIONS_POL_PUBLISH_EVENT**Obsoleted Standard Opcodes**

The following standard opcodes were obsoleted between BRM 7.4 and BRM 7.5.

- [Balance FM Standard Opcodes](#)
- [Billing FM Standard Opcodes](#)
- [Balance Monitoring FM Standard Opcodes](#)
- [Collections FM Standard Opcodes](#)

Balance FM Standard Opcodes

The following Balance FM standard opcodes were obsoleted in BRM 7.5.

PCM_OP_BAL_APPLY_MULTI_BAL_IMPACTS**PCM_OP_BAL_CHANGE_VALIDITY_FROM_STRING****PCM_OP_BAL_SET_FIRST_USAGE_VALIDITY****Billing FM Standard Opcodes**

The following Billing FM standard opcode was obsoleted in BRM 7.5.

PCM_OP_BILL_GET_ARA_SUMMARY**Balance Monitoring FM Standard Opcodes**

The following Balance Monitoring FM standard opcodes were obsoleted in BRM 7.5.

PCM_OP_MONITOR_ADD_RERATE_REQUEST**PCM_OP_MONITOR_VALIDATE_MONITOR_MEMBERS****Collections FM Standard Opcodes**

The following Collections FM standard opcode was obsoleted in BRM 7.5.

PCM_OP_COLLECTIONS_PUBLISH_EVENT

Utility Changes from BRM 7.4 to BRM 7.5

This chapter provides upgrade impacts information for Oracle Communications Billing and Revenue Management (BRM) Release 7.4 to BRM 7.5. It describes the utility changes that affect your BRM system, and what you must consider when you upgrade from 7.4 to 7.5.

See "[About Upgrading BRM Releases](#)" for information on planning your upgrade implementation, such as setting up your development and test environments.

Changed Utilities

[Table 5–1](#) contains a list of the utilities that were changed between BRM 7.4 and BRM 7.5 releases.

Table 5–1 Changes to Utilities in BRM 7.5

Changed Utility	Description
load_pin_impact_category	<p>If the environment is upgraded from an older version of BRM to BRM 7.5, you must run load_pin_impact_category to enable the change in BRM.</p> <p>When you run the following:</p> <pre>> cd \${PIN_HOME}/sys/data/config > load_pin_impact_category</pre> <p>The expected output is</p> <pre>> using config file (./pin_impact_category) > object '/config/impact_category' created successfully</pre>
load_pin_network_elements	<p>The following optional parameters have been added in the load_pin_network_elements utility for loading the pin_network_elements file:</p> <ul style="list-style-type: none"> ▪ -r: Deletes the existing /config/network_element object and creates a new object with the network elements provided in the pin_network_elements file. ▪ -i: Appends the new elements in the pin_network_elements file to the existing elements in the /config/network_element object. This is the default.

Notification Event Changes from BRM 7.4 to BRM 7.5

This chapter provides upgrade impact information for Oracle Communications Billing and Revenue Management (BRM) 7.4 to BRM Release 7.5. It describes the notification event changes that affect your BRM system, and what you must consider when you upgrade from 7.4 to 7.5.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

Changed Notification Events

No notification events were modified between BRM 7.4 and BRM 7.5.

Part III

Upgrade Impacts from Previous Releases

This part contains information on the impacts of upgrades from one release to another for different versions of the Oracle Communications Billing and Revenue Management (BRM) software.

Part III contains the following chapters:

- [Feature Changes from BRM 7.3.1 to BRM 7.4](#)
- [Storable Class Changes from BRM 7.3.1 to BRM 7.4](#)
- [Opcode Changes from BRM 7.3.1 to BRM 7.4](#)
- [Utility Changes from BRM 7.3.1 to BRM 7.4](#)
- [Pipeline Manager Changes from BRM 7.3.1 to BRM 7.4](#)
- [Notification Event Changes from BRM 7.3.1 to BRM 7.4](#)
- [Feature Changes from Portal 7.3 to BRM 7.3.1](#)
- [Storable Class Changes from Portal 7.3 to BRM 7.3.1](#)
- [Opcode Changes from Portal 7.3 to BRM 7.3.1](#)
- [Utility Changes from Portal 7.3 to BRM 7.3.1](#)
- [Pipeline Manager Changes from Portal 7.3 to BRM 7.3.1](#)
- [Notification Event Changes from Portal 7.3 to BRM 7.3.1](#)

Feature Changes from BRM 7.3.1 to BRM 7.4

This chapter provides upgrade impact information for Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1 to BRM 7.4. It describes the feature changes that affect your BRM system and what you must consider when you upgrade from 7.3.1 to 7.4.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

AAA Gateway Manager

This section describes the changes to AAA Gateway Manager in BRM 7.4.

Diameter Changes

Previously, the AAA Gateway Manager supported Diameter GSM service requests by calling the GSM AAA opcodes. It now supports GSM services by calling the Services Framework AAA opcodes (TCF AAA opcodes). As a result, the Diameter grammar file has been changed to map Diameter requests to TCF AAA opcodes.

GSM-specific information is now passed to the opcode input flist in the PIN_FLD_GSM_INFO field under the PIN_FLD_EXTENDED_INFO substruct.

To support other services (for example, GPRS), you define the service type, `/service/telco/gprs`, and add the PIN_FLD_GPRS_INFO field under the PIN_FLD_EXTENDED_INFO substruct in the input grammar.

Additionally, Credit-Control-Request event messages have been modified to support Service Price Enquiry and Balance Check messages.

Billing

This section describes the changes to billing in BRM 7.4.

Accounting Type Set at Bill Unit Level

You can now set the accounting type at the bill unit level. This enables accounts with multiple bill units to have different settings for each bill. For example, an account with two bill units can have one bill unit with an open item accounting type and another bill unit with a balance forward accounting type.

Note: Child bill units must have the same accounting type as their parent bill unit.

In previous releases, the accounting type was set at the account level.

For information, see "About Accounting Types" in *BRM Configuring and Running Billing*.

GSM AAA Standard Opcodes

Previously, the AAA Gateway Manager supported GSM service requests by calling the GSM AAA opcodes. It now supports GSM services by calling the Services Framework AAA opcodes (TCF AAA opcodes).

Important: These opcodes will become obsolete in a future release. Any enhancements or bug fixes will be made to the TCF AAA opcodes. If you are using GSM AAA opcodes listed in [Table 7-1](#), you should use the TCF AAA opcodes instead.

Table 7-1 Replacement TCF AAA Opcodes for GSM AAA Opcodes

GSM AAA Opcode	Replacement TCF AAA Opcode
PCM_OP_GSM_AAA_AUTHORIZE	PCM_OP_TCF_AAA_AUTHORIZE
PCM_OP_GSM_AAA_UPDATE_ACCOUNTING	PCM_OP_TCF_AAA_UPDATE_ACCOUNTING
PCM_OP_GSM_AAA_REAUTHORIZE	PCM_OP_TCF_AAA_REAUTHORIZE
PCM_OP_GSM_AAA_UPDATE_AND_REAUTHORIZE	PCM_OP_TCF_AAA_UPDATE_AND_REAUTHORIZE
PCM_OP_GSM_AAA_AUTHENTICATE	PCM_OP_TCF_AAA_AUTHENTICATE
PCM_OP_GSM_AAA_CANCEL_AUTHORIZATION	PCM_OP_TCF_AAA_CANCEL_AUTHORIZATION
PCM_OP_GSM_AAA_START_ACCOUNTING	PCM_OP_TCF_AAA_START_ACCOUNTING
PCM_OP_GSM_AAA_STOP_ACCOUNTING	PCM_OP_TCF_AAA_STOP_ACCOUNTING
PCM_OP_GSM_AAA_ACCOUNTING_ON	PCM_OP_TCF_AAA_ACCOUNTING_ON
PCM_OP_GSM_AAA_ACCOUNTING_OFF	PCM_OP_TCF_AAA_ACCOUNTING_OFF

Pricing

This section describes the changes to pricing in BRM 7.4.

LoadIfwConfig Enhancements

In previous releases, the **LoadIfwConfig** utility was used primarily to migrate price list data from a legacy database to the Pipeline Manager database. The utility has been enhanced to also transfer data from one Pipeline Manager database to another, such as from a test database to a production database.

Caution: The enhanced **LoadIfwConfig** utility is not backwards compatible with previous versions of the utility. Any data exported by a previous version of the utility must also be loaded with that same version. In addition, any custom scripts or procedures that are dependent on the utility's functionality might need to be modified to work with the new version.

To support transferring data between Pipeline Manager databases, the utility now:

- Supports regular expressions for field values.
- Avoids redundant database fetches by looking up data in the cache first.
- Retrieves data from dependent tables.
- Updates lower-level objects that do not have a CODE column.
- Loads data from multiple databases into the Pipeline Manager database.
- Includes an option for dumping all pipeline data into an XML file.
- Supports all pipeline registry settings in all operation modes.
- Enables you to specify the number of rows retrieved on each trip to the database.
- Handles larger input files.
- Provides more descriptive error messages.
- Consolidates schema definition and mapping information into one XSD file.

For more information, see "Transferring Data Between Pipeline Manager Databases" in *BRM Configuring Pipeline Rating and Discounting*.

RADIUS Manager

This section describes the changes to RADIUS Manager in BRM 7.4.

RADIUS Configuration File Changes

The RADIUS configuration file (*BRM_home/apps/radius/config*) has been modified to include configuration of the new RADIUS dictionary file (**dictionary-RFC2865**) and configuration of the new RADIUS module, **mod_unit**.

For more information on the RADIUS Manager enhancements, see the information about new features in *BRM Release Notes*.

Roaming Manager

Previously, the input grammar description files for TAP3.11 and RAP contained syntax checking and other types of validations as well as the mapping of input data to the EDR container. The new input grammar files do not contain any syntax or validation checks. The new input grammar files map TAP3.11 and RAP input data to staging fields in the EDR container. New input mapping iScripts have been created to copy data from staging fields to the business fields in the EDR container. All the validations are now done using new validation iScripts.

Additionally, a new generic block description file has been created. The generic block description file is used with the TAP3.11 and RAP block description files to form complete block descriptions.

Important: To configure roaming using the new grammar files and mapping and validation iScripts, see "Setting Up Pipeline Manager For Roaming Incollect Processing" in *BRM Configuring Roaming in Pipeline Manager* and "Setting Up Pipeline Manager For Roaming Outcollect Processing" in *BRM Configuring Roaming in Pipeline Manager*.

Table 7–2 lists the new description, validation, and iScript files:

Table 7–2 Generic Block File Description

File Name	Description
GenericBlock.dsc	Generic block descriptions.
TAP_0311_Blocks.dsc	Block descriptions for TAP3.11.
TAP_0311_InGrammar.dsc	Maps TAP3.11 input data to staging fields in the EDR container.
ISC_TAP_0311_Validations.isc	Performs validation of TAP3.11 input data
ISC_TAP_0311_InMap.isc	Maps TAP3.11 data in the staging fields to business fields in the EDR container.
RAP_0103_Blocks.dsc	Block description for RAP.
RAP_0103_AckOutGrammar.dsc	Output grammar for RAP acknowledgment.
RAP_0103_InGrammar.dsc	Maps TAP3.11 input data to staging fields in the EDR container.
RAP_0103_OutGrammar.dsc	Output grammar for RAP.
RAP_0103_MissingReturn.dsc	Grammar for RAP missing return used by RAP_0103_OutGrammar.dsc.
RAP_0103_FatalReturn.dsc	Grammar for RAP fatal return used by RAP_0103_OutGrammar.dsc.
ISC_RAP_0103_InMap.isc	Maps TAP3.11 data in the staging fields to business fields in the EDR container.

Services Framework

This section describes the changes to Services Framework in BRM 7.4.

Services Framework Now Supports Non-Telco Services

You use Services Framework to collect data about customers; manage and provision services; and process authentication, authorization, and accounting (AAA) requests. In previous releases, Services Framework performed these functions for telco services only. Services Framework now enables non-telco services to leverage Services Framework's functionalities, transforming it into a service management framework for any service type.

This enhancement affects the following:

- Provisioning. See "[About Provisioning Non-Telco Services](#)".
- Service management. See "[About Managing Non-Telco Services](#)".
- AAA. See "[About Processing AAA Requests for Non-Telco Services](#)".

About Provisioning Non-Telco Services

Services Framework provisioning has been enhanced to support non-telco service and event types. To support non-telco service types, Services Framework provisioning includes these changes:

- Previously, Services Framework provisioned telco services (*/service/telco/**) only and ignored all other service types. Services Framework now also provisions any non-telco service type that is listed in the new */config/service_framework/permitted_service_types* object. It also determines the provisioning configuration object to use for non-telco services by reading the */config/service_framework/permitted_service_types* object. See "Specifying the Non-Telco Services Supported by Services Framework" in *BRM Telco Integration*.
- Services Framework can now provision service orders in Confirmed mode, in addition to the already supported Queued mode. See "About Provisioning Modes" in *BRM Telco Integration*.

For more information, see "About Provisioning Services" in *BRM Telco Integration*.

About Managing Non-Telco Services

Previously, Services Framework managed telco services (*/service/telco/**) only and ignored all other service types. Services Framework now also manages any non-telco service type that is listed in the */config/service_framework/permitted_service_types* object. It also determines the provisioning configuration object to use for non-telco services by reading the */config/service_framework/permitted_service_types* object.

For more information, see "About Managing Prepaid Services and Extended Rating Attributes" in *BRM Telco Integration*.

About Processing AAA Requests for Non-Telco Services

To support non-telco services, Services Framework AAA Manager includes these changes:

- The Services Framework AAA opcodes now check the service type passed in the input flist and create the PIN_FLD_TELCO_INFO substruct only if the service type passed in the input flist is a telco service (*/service/telco/**).
- The duplicate check criteria for non-telco services is different than that for telco services:
 - For non-telco services, the PCM_OP_TCF_AAA_SEARCH_SESSION helper opcode searches for sessions based on the authorization ID.
 - For telco services, the PCM_OP_TCF_AAA_SEARCH_SESSION helper opcode searches for sessions based on both the authorization ID and the network correlation ID.
- Previously, Services Framework AAA Manager checked for duplicate authentication and authorization requests only and did not check for duplicate requests for other AAA actions, such as reauthorization, update accounting, and stop accounting. Services Framework AAA now checks for any duplicate AAA request.

For more information, see "About Performing AAA For Prepaid Services" in *BRM Telco Integration*.

System Administration

This section describes the changes to system administration in BRM 7.4.

MD5 Password Encryption No Longer Supported

BRM no longer supports MD5 encryption for passwords. The default BRM password encryption method is now AES.

Storable Class Changes from BRM 7.3.1 to BRM 7.4

This chapter provides upgrade impacts information for Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1 to BRM 7.4. It describes the storable class changes that affect your BRM system, and what you must consider when you upgrade from 7.3.1 to 7.4. It also provides information about storable class index and schema changes.

See "[Storable Class Changes from BRM 7.3.1 to BRM 7.4](#)" for information on planning your upgrade implementation, such as setting up your development and test environments.

Changed Storable Classes

[Table 8-1](#) lists all storable classes that were changed between BRM 7.3.1 and BRM 7.4.

Table 8–1 Changed Storable Classes (BRM 7.3.1 to BRM 7.4)

Changed Storable Class	Description
/account	<p>The following field was removed:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_ACTG_TYPE <p>The following fields were changed:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. ▪ PIN_FLD_NEXT_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters.
/billinfo	<p>The following fields were added:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_ACTG_TYPE: The bill unit's accounting type: open item accounting (1) or cycle forward accounting (2). ▪ PIN_FLD_ASSOC_BUS_PROFILE_OBJ_LIST: A link to the /associated_bus_profile object that includes the business profile object for Invoice. <p>The following fields were changed:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_EVENT_POID_LIST: The length of this field was changed from 2000 to 4000 characters. ▪ PIN_FLD_BAL_GRP_OBJ is now auditable.
/config/credit_profile	<p>The following field was added to the PIN_FLD_PROFILES array:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of fixed credit threshold values, in ascending order. BRM generates notification events when a customer's balance crosses above or below the fixed threshold value.
/discount	<p>The following field was added:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_CODE: The discount's unique code.
/event	<p>The following field was added:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_NAP_IP_ADDRESS: IP Address of the client machine.
/event/audit/service_balgrp_transfer	<p>The following fields were changed:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. ▪ PIN_FLD_NEXT_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters.
/event/audit/subscription	<p>The following fields were changed:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. ▪ PIN_FLD_NEXT_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters.
/event/billing/charge/cc	<p>The following field was removed from the PIN_FLD_CC_INFO array:</p> <ul style="list-style-type: none"> ▪ PIN_FLD_SECURITY_ID

Table 8–1 (Cont.) Changed Storable Classes (BRM 7.3.1 to BRM 7.4)

Changed Storable Class	Description
/event/billing/limit	<p>The following field was added to the PIN_FLD_LIMIT array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of fixed credit threshold values, in ascending order. BRM generates notification events when a customer's balance crosses above or below the fixed threshold value.
/event/billing/validate/cc	<p>The following field was removed from the PIN_FLD_CC_INFO array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_SECURITY_ID
/event/customer/billinfo	<p>The following field was added:</p> <ul style="list-style-type: none"> ■ PIN_FLD_BAL_GRP_OBJ
/invoice	<p>The following fields were added:</p> <ul style="list-style-type: none"> ■ PIN_FLD_STATUS: The status of the Invoice object with respect to the fact whether the Final Invoice Document has been generated or not. Values: (1) Pending, or (2) Generated, or (4) Regenerated. ■ PIN_FLD_BILLINFO_OBJ: Link to the /billinfo object for this Invoice object is created. ■ PIN_FLD_REPORT_NAME: Link to the BIP Report Name configured in the report name of Invoicing Business Profile pointed by the billinfo whose invoice is generated. ■ PIN_FLD_TEMPLATE_NAME: Link to the template name configured in the template name of Invoicing Business Profile pointed by the billinfo whose invoice is generated.
/item	<p>The following field was changed:</p> <ul style="list-style-type: none"> ■ PIN_FLD_EVENT_POID_LIST: The length of this field was changed from 2000 to 4000 characters.
/payinfo/cc	<p>The following field was removed from the PIN_FLD_CC_INFO array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_SECURITY_ID
/plan	<p>The following field was added to the PIN_FLD_LIMIT array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of fixed credit threshold values, in ascending order. BRM generates notification events when a customer's balance crosses above or below the fixed threshold value. <p>The following field was added to the PIN_FLD_LIMIT array under the PIN_FLD_BAL_INFO array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of fixed credit threshold values, in ascending order. BRM generates notification events when a customer's balance crosses above or below the fixed threshold value.
/process_audit/export_gl	<p>The following field was changed:</p> <p>PIN_FLD_GL_REPORT_POID_LIST: The length of this field was changed from 255 to 4000 characters.</p>
/product	<p>The following field was added:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CODE: The product's unique code.

Table 8–1 (Cont.) Changed Storable Classes (BRM 7.3.1 to BRM 7.4)

Changed Storable Class	Description
/service	<p>The following fields were added to the PIN_FLD_TRANSFER_LIST array:</p> <ul style="list-style-type: none"> PIN_FLD_BAL_GRP_OBJ: The /balance_group object from which the line service is transferred. PIN_FLD_BILLINFO_OBJ: The /billinfo object from which the line service is transferred. <p>The following fields were changed:</p> <ul style="list-style-type: none"> PIN_FLD_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. PIN_FLD_NEXT_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. <p>The following fields under PIN_FLD_TRANSFER_LIST array were changed:</p> <ul style="list-style-type: none"> PIN_FLD_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters. PIN_FLD_NEXT_ITEM_POID_LIST: The length of this field was changed from 2000 to 4000 characters.
/service/admin_client	<p>The following fields were added:</p> <ul style="list-style-type: none"> PIN_FLD_LOCK_INFO: A substruct containing two new fields: PIN_FLD_LOGIN_ATTEMPTS: The number of incorrect login attempts. PIN_FLD_LOCK_STATUS: The status of the login service. 1=Service locked, 0=normal.
/service/pcm_client	<p>The following fields were added:</p> <ul style="list-style-type: none"> PIN_FLD_LOCK_INFO: A substruct containing two new fields: PIN_FLD_LOGIN_ATTEMPTS: The number of incorrect login attempts. PIN_FLD_LOCK_STATUS: The status of the login service. 1=Service locked, 0=normal.
/sponsorship	NA

Obsoleted Storable Classes

Table 8–2 lists all storable classes that were obsoleted between BRM 7.3.1 and BRM 7.4.

Table 8–2 Storable Classed Obsoleted in BRM 7.4

Removed Storable Class	Description
/config/gprs	Obsolete
/config/gsmtags	Obsolete
/config/gsmtags/data	Obsolete
/config/gsmtags/fax	Obsolete
/config/gsmtags/sms	Obsolete
/config/gsmtags/telephony	Obsolete
/config/license	Obsolete

Table 8–2 (Cont.) Storable Classed Obsoleted in BRM 7.4

Removed Storable Class	Description
/config/link_batchstat	Obsolete
/config/pin_archive	Obsolete
/data/archive	Obsolete
/event/activity/sms	Obsolete
/event/session/call	Obsolete
/service/ip/gprs	Obsolete
/service/ip/cable	Obsolete
/service/sms	Obsolete

Opcode Changes from BRM 7.3.1 to BRM 7.4

This chapter describes the opcode changes that affect your Oracle Communications Billing and Revenue Management (BRM) system and what you must consider when you upgrade from BRM 7.3.1 to BRM 7.4.

See "[About Upgrading BRM Releases](#)" for information on planning your upgrade implementation, such as setting up your development and test environments.

Changed Policy Opcodes

The following policy opcodes were changed between BRM 7.3.1 and BRM 7.4.

- [Activity FM Policy Opcodes](#)
- [Billing FM Policy Opcodes](#)
- [Content Manager FM Policy Opcodes](#)
- [Customer FM Policy Opcodes](#)
- [GPRS Manager 3.0 FM Policy Opcodes](#)
- [GSM AAA Manager FM Helper Policy Opcodes](#)
- [GSM Manager FM Policy Opcodes](#)
- [IMT Manager FM Policy Opcodes](#)
- [IP Address Manager FM Policy Opcodes](#)
- [Payment FM Policy Opcodes](#)
- [Price List FM Policy Opcodes](#)
- [Process Audit FM Policy Opcodes](#)
- [Provisioning FM Policy Opcodes](#)
- [RADIUS Manager FM Policy Opcodes](#)
- [Rating FM Policy Opcodes](#)
- [Resource Reservation FM Policy Opcodes](#)
- [Services Framework Manager FM Policy Opcodes](#)
- [Subscription Management FM Policy Opcodes](#)
- [Voucher Management FM Policy Opcodes](#)

Activity FM Policy Opcodes

The following are the changes made to Activity FM policy opcodes in BRM 7.4.

PCM_OP_ACT_POL_SPEC_EVENT_CACHE

New output fields

- PIN_FLD_BAL_IMPACTS array:
 - PIN_FLD_IMPACT_TYPE
 - PIN_FLD_TAX_CODE

PCM_OP_ACT_POL_SPEC_GLID

Changed to fetch the correct GLID value.

New input fields

- PIN_FLD_EVENT_MISC_DETAILS array

Billing FM Policy Opcodes

The following are the changes made to billing FM policy opcodes in BRM 7.4.

PCM_OP_BILL_POL_GET_EVENT_SPECIFIC_DETAILS

Changed output fields

- PIN_FLD_BYTES_IN integer is now PIN_FLD_BYTES_DOWNLINK decimal field.
- PIN_FLD_BYTES_OUT integer is now PIN_FLD_BYTES_UPLINK decimal field.

PCM_OP_BILL_POL_GET_PENDING_ITEMS

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_WRITEOFF

PCM_OP_BILL_POL_VALID_WRITEOFF

New input fields

- PIN_FLD_ITEMS array

Content Manager FM Policy Opcodes

The following are the changes made to content manager FM policy opcodes in BRM 7.4.

PCM_OP_CONTENT_POL_ACCOUNTING

New input fields

- PIN_FLD_BAL_IMPACTS array

Customer FM Policy Opcodes

The following are the changes made to customer FM policy opcodes in BRM 7.4.

PCM_OP_CUST_POL_GET_PLANS

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_POST_COMMIT

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_PRE_COMMIT

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_PREP_ACCTINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

Removed input fields

- PIN_FLD_ACTG_TYPE from the PIN_FLD_ACCTINFO array

Removed output fields

- PIN_FLD_ACTG_TYPE from the PIN_FLD_ACCTINFO array

PCM_OP_CUST_POL_PREP_BILLINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

New input fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

New output fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

PCM_OP_CUST_POL_PREP_LIMIT

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_PREP_PAYINFO

New input fields

- PIN_FLD_FLAGS

PCM_OP_CUST_POL_PREP_TOPUP

New input fields

PIN_FLD_TOPUP_INFO array:

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_GROUP_TOPUP_INFO array:
 - PIN_FLD_PARENT

Changed input fields

- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.
- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now optional.

New output fields

- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_ACCOUNT_OBJ

Changed output fields

- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.
- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now optional.

PCM_OP_CUST_POL_READ_PLAN

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_TRANSITION_PLANS

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_VALID_ACCTINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

Removed input fields

- PIN_FLD_ACTG_TYPE from the PIN_FLD_ACCTINFO array

PCM_OP_CUST_POL_VALID_BILLINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

New input fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

PCM_OP_CUST_POL_VALID_LIMIT

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_POL_VALID_NAMEINFO**New input fields**

- PIN_FLD_NAMEINFO array:
 - PIN_FLD_FLAGS

PCM_OP_CUST_POL_VALID_TOPUP**New input fields**

PIN_FLD_TOPUP_INFO array:

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_GROUP_TOPUP_INFO array:

- PIN_FLD_PARENT

Changed input fields

- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.
- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now optional.

GPRS Manager 3.0 FM Policy Opcodes

The following are the changes made to GPRS Manager 3.0 FM policy opcodes in BRM 7.4.

PCM_OP_GPRS_POL_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

GSM AAA Manager FM Helper Policy Opcodes

The following are the changes made to GSM AAA Manager FM Helper policy opcodes in BRM 7.4.

PCM_OP_GSM_AAA_POL_POST_PROCESS

New input fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array
- PIN_FLD_BALANCES array

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

GSM Manager FM Policy Opcodes

The following are the changes made to GSM Manager FM policy opcodes in BRM 7.4.

PCM_OP_GSM_POL_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

IMT Manager FM Policy Opcodes

The following are the changes made to IMT Manager FM policy opcodes in BRM 7.4.

PCM_OP_IMT_POL_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

PCM_OP_PDC_POL_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

IP Address Manager FM Policy Opcodes

The following are the changes made to IP Address Manager FM policy opcodes in BRM 7.4.

PCM_OP_IP_POL_DEVICE_CREATE

Changed to support the following feature:

- Performing duplicate search for a range of IP devices or individual IP device while creating a range of IP devices.

New input fields

- PIN_FLD_DEVICE_IP substruct

- PIN_FLD_END_ADDRESS

Payment FM Policy Opcodes

The following are the changes made to Payment FM policy opcodes in BRM 7.4.

PCM_OP_PYMT_POL_PURCHASE_DEAL

New input fields

- PIN_FLD_TOPUP_RESOURCE_INFO substruct:
 - PIN_FLD_SUB_BAL_IMPACTS array

New output fields

- PIN_FLD_SUB_BAL_IMPACTS array
- PIN_FLD_TAX_JURISDICTIONS array

PCM_OP_PYMT_POL_VALID_VOUCHER

New output fields

- PIN_FLD_TOPUP_RESOURCE_INFO substruct:
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_TAX_JURISDICTIONS array

Price List FM Policy Opcodes

The following are the changes made to Price List FM policy opcodes in BRM 7.4.

PCM_OP_PRICE_POL_PREP_DISCOUNT

New input fields

- PIN_FLD_CODE

New output fields

- PIN_FLD_CODE

PCM_OP_PRICE_POL_PREP_PRODUCT

New input fields

- PIN_FLD_CODE
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Changed input fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved out of the PIN_FLD_RATE_PLANS array.

Removed input fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR_TREE substruct

New output fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:

- PIN_FLD_CODE

Changed output fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved out of the PIN_FLD_RATE_PLANS array.

Removed output fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR_TREE substruct

PCM_OP_PRICE_POL_VALID_DISCOUNT

New input fields

- PIN_FLD_CODE

PCM_OP_PRICE_POL_VALID_PRODUCT

New input fields

- PIN_FLD_CODE
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Changed input fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved out of the PIN_FLD_RATE_PLANS array.

Removed input fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR_TREE substruct

Process Audit FM Policy Opcodes

The following are the changes made to Process Audit FM policy opcodes in BRM 7.4.

PCM_OP_PROCESS_AUDIT_POL_CREATE

Removed input fields

- PIN_FLD_FAILED_ACCOUNTS array:
 - PIN_FLD_FAILED_ACCOUNT_OBJ
 - PIN_FLD_FAILED_BILL_OBJ
 - PIN_FLD_FAILED_ERROR_CODE

Removed output fields

- PIN_FLD_FAILED_ACCOUNTS array:
 - PIN_FLD_FAILED_ACCOUNT_OBJ
 - PIN_FLD_FAILED_BILL_OBJ
 - PIN_FLD_FAILED_ERROR_CODE

Provisioning FM Policy Opcodes

The following are the changes made to Provisioning FM policy opcodes in BRM 7.4.

PCM_OP_PROV_POL_UPDATE_SVC_ORDER

New input fields

- PIN_FLD_EXTENDED_INFO substruct:
 - PIN_FLD_PARAMS array

New output fields

- PIN_FLD_EXTENDED_INFO substruct:
 - PIN_FLD_PARAMS array

RADIUS Manager FM Policy Opcodes

The following are the changes made to RADIUS Manager FM policy opcodes in BRM 7.4.

PCM_OP_TERM_POL_ACCOUNTING

Changed to pass the custom attributes in response to an accounting request.

New input fields

- PIN_FLD_INHERITED_INFO substruct:
 - PIN_FLD_PROGRAM_NAME

New output fields

- PIN_FLD_INHERITED_INFO substruct:
 - PIN_FLD_PROGRAM_NAME
- PIN_FLD_ARGS array

Rating FM Policy Opcodes

The following are the changes made to Rating FM policy opcodes in BRM 7.4.

PCM_OP_RATE_POL_POST_TAX

New input fields

- PIN_FLD_EVENT_OBJ
- PIN_FLD_TAXES array:
 - PIN_FLD_FIELD_NAMES array
- PIN_FLD_SUBTOTAL array:
 - PIN_FLD_FIELD_NAMES array

New output fields

- PIN_FLD_EVENT_OBJ

PCM_OP_RATE_POL_PRE_TAX

Changed to support the customization of Vertex Q Series. See "Customizing Vertex Communications Tax Q Series to Provide Custom Input Tax Data" in *BRM Calculating Taxes*.

New input fields

- PIN_FLD_EVENT_OBJ

- PIN_FLD_ACCOUNT_NO
- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_NAME
- PIN_FLD_EXEMPTIONS array
- PIN_FLD_TAXES array:
 - PIN_FLD_TAX_CODE
 - PIN_FLD_GL_ID
 - PIN_FLD_AMOUNT_TAXED
 - PIN_FLD_COMMAND
 - PIN_FLD_INTERNATIONAL_IND
 - PIN_FLD_SERVICE_TYPE
 - PIN_FLD_TAXCODE_MAP
 - PIN_FLD_COUNT
 - PIN_FLD_ELAPSED_TIME
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_NAME
- PIN_FLD_LOCATION
- PIN_FLD_VAT_CERT
- PIN_FLD_VATINFO array
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_REGULATED_FLAG
- PIN_FLD_BILL_OBJ
- PIN_FLD_ROUNDING_MODE
- PIN_FLD_ROUNDING

Changed input fields

- PIN_FLD_ORDER_ACCEPT in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_ORDER_ORIGIN in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_SHIP_TO in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_SHIP_FROM in the PIN_FLD_TAXES array is now mandatory.

New output fields

- PIN_FLD_STATUS_FLAGS
- PIN_FLD_FIELD_NAMES array
- PIN_FLD_EVENT_OBJ
- PIN_FLD_ACCOUNT_NO

- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_NAME
- PIN_FLD_EXEMPTIONS array
- PIN_FLD_TAXES array:
 - PIN_FLD_TAX_CODE
 - PIN_FLD_GL_ID
 - PIN_FLD_AMOUNT_TAXED
 - PIN_FLD_COMMAND
 - PIN_FLD_INTERNATIONAL_IND
 - PIN_FLD_SERVICE_TYPE
 - PIN_FLD_TAXCODE_MAP
 - PIN_FLD_COUNT
 - PIN_FLD_ELAPSED_TIME
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_NAME
- PIN_FLD_LOCATION
- PIN_FLD_VAT_CERT
- PIN_FLD_VATINFO array
- PIN_FLD_RESULTS array
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_REGULATED_FLAG
- PIN_FLD_BILL_OBJ
- PIN_FLD_ROUNDING_MODE
- PIN_FLD_ROUNDING

Changed output fields

- PIN_FLD_ORDER_ACCEPT in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_ORDER_ORIGIN in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_SHIP_TO in the PIN_FLD_TAXES array is now mandatory.
- PIN_FLD_SHIP_FROM in the PIN_FLD_TAXES array is now mandatory.

Resource Reservation FM Policy Opcodes

The following are the changes made to Resource Reservation FM policy opcodes in BRM 7.4.

PCM_OP_RESERVE_POL_POST_DISPUTE**New input fields**

- PIN_FLD_POID
- PIN_FLD_ITEM_OBJ

New output fields

- PIN_FLD_RESERVATION_LIST array

PCM_OP_RESERVE_POL_POST_SETTLEMENT**New input fields**

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_DESCR
- PIN_FLD_ITEM_OBJ

New output fields

- PIN_FLD_ACCOUNT_OBJ

Services Framework Manager FM Policy Opcodes

The following are the changes made to Services Framework Manager FM policy opcodes in BRM 7.4.

PCM_OP_TCF_POL_APPLY_PARAMETER**Removed input fields**

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Subscription Management FM Policy Opcodes

The following are the changes made to Subscription Management FM policy opcodes in BRM 7.4.

PCM_OP_SUBSCRIPTION_POL_PRE_TRANSITION_PLAN

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Voucher Management FM Policy Opcodes

The following are the changes made to Voucher Management FM policy opcodes in BRM 7.4.

PCM_OP_VOUCHER_POL_DEVICE_ASSOCIATE

Changed to record tax information for voucher top-ups with tax.

New output fields

- PIN_FLD_EXTENDED_INFO substruct:
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_TAX_JURISDICTIONS array

PCM_OP_VOUCHER_POL_ORDER_SET_ATTR

New output fields

- PIN_FLD_VOUCHER_ORDERS array:
 - PIN_FLD_CARD_EXPIRATION

Changed Standard Opcodes

The following standard opcodes were changed between BRM 7.3.1 and BRM 7.4.

- [Accounts Receivable FM Standard Opcodes](#)
- [Active Session Manager FM Standard Opcodes](#)
- [Activity FM Standard Opcodes](#)
- [Balance FM Standard Opcodes](#)
- [Billing FM Standard Opcodes](#)
- [Collections FM Opcodes](#)
- [Context Management Opcodes](#)
- [Customer FM Standard Opcodes](#)
- [GPRS Manager 3.0 FM Standard Opcodes](#)
- [GSM AAA Manager FM Standard Opcodes](#)
- [GSM Manager FM Standard Opcodes](#)
- [Invoicing FM Standard Opcodes](#)
- [Payment FM Standard Opcodes](#)
- [Pricing FM Standard Opcodes](#)
- [Process Audit FM Standard Opcodes](#)
- [Provisioning FM Standard Opcodes](#)
- [RADIUS Manager FM Standard Opcodes](#)
- [Rating FM Standard Opcodes](#)

- [Resource Reservation FM Standard Opcodes](#)
- [Services Framework AAA Manager FM Standard Opcodes](#)
- [Services Framework Manager FM Provisioning Opcodes](#)
- [Subscription Management FM Standard Opcodes](#)
- [Voucher Manager FM Standard Opcodes](#)

Accounts Receivable FM Standard Opcodes

The following are the changes made to Accounts Receivable FM standard opcodes in BRM 7.4.

PCM_OP_AR_ACCOUNT_WRITEOFF

Changed to perform validations to prevent second account write-off without reversing the previous write-off. See "About Account Write-Offs" in *BRM Managing Accounts Receivable*.

Removed input fields

- PIN_FLD_STR_VERSION
- PIN_FLD_STRING_ID

New output fields

PIN_FLD_RESULTS array:

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_POID
- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_ACCOUNT_OBJ

Changed output fields

- PIN_FLD_BILLINFO_OBJ in the PIN_FLD_RESULTS array is now optional.
- PIN_FLD_RESULT in the PIN_FLD_RESULTS array is now optional.

PCM_OP_AR_BILL_SETTLEMENT

Changed to support the settlement of the full bill-dispute amount "Settling Disputed Bills" in *BRM Managing Accounts Receivable*.

Changed input fields

- PIN_FLD_AMOUNT is now optional.

PCM_OP_AR_BILL_WRITEOFF

Removed input fields

- PIN_FLD_START_T
- PIN_FLD_STR_VERSION
- PIN_FLD_STRING_ID

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_ACCOUNT_OBJ

PCM_OP_AR_BILLINFO_WRITEOFF

Removed input fields

- PIN_FLD_STR_VERSION
- PIN_FLD_STRING_ID

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_ACCOUNT_OBJ

PCM_OP_AR_GET_BILL_ITEMS

Changed to support the display of top-ups under correct bill. See "Retrieving a List of Bill Items for a Bill Unit" in *BRM Managing Accounts Receivable*.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ

PCM_OP_AR_EVENT_ADJUSTMENT

Removed input fields

- PIN_FLD_STRING_ID
- PIN_FLD_STR_VERSION

PCM_OP_AR_GET_DISPUTE_DETAILS

New output fields

- PIN_FLD_AGGREGATE_AMOUNTS array:
 - PIN_FLD_DISCOUNT
 - PIN_FLD_DISPUTED
 - PIN_FLD_ALLOCATED

PCM_OP_AR_ITEM_DISPUTE

Changed to perform validation when the specified dispute amount is more than the net item due. See "Disputing Items" in *BRM Managing Accounts Receivable*.

New output fields

- PIN_FLD_AMOUNT

PCM_OP_AR_ITEM_SETTLEMENT

Changed to perform validation when the specified settlement amount is more than the net disputed amount of the item. See "Settling Disputed Items" in *BRM Managing Accounts Receivable*.

New output fields

- PIN_FLD_AMOUNT

PCM_OP_AR_ITEM_WRITEOFF

Changed to prevent account write-off when the account due is zero. See "How BRM Performs Write-Offs" in *BRM Managing Accounts Receivable*.

New input fields

- PIN_FLD_AR_BILLINFO_OBJ
- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_ITEMS array:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_DISPUTED
 - PIN_FLD_STATUS
 - PIN_FLD_EFFECTIVE_T
 - PIN_FLD_ITEM_TOTAL
 - PIN_FLD_RECVD
 - PIN_FLD_ADJUSTED
 - PIN_FLD_TRANSFERED
 - PIN_FLD_CURRENCY

Removed input fields

- PIN_FLD_START_T
- PIN_FLD_STRING_ID
- PIN_FLD_STR_VERSION

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_ACCOUNT_OBJ

Active Session Manager FM Standard Opcodes

The following are the changes made to Active Session Manager FM standard opcodes in BRM 7.4.

PCM_OP_ASM_UPDATE_ACTIVE_SESSION

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID

Activity FM Standard Opcodes

The following are the changes made to Activity FM standard opcodes in BRM 7.4.

PCM_OP_ACT_ACTIVITY

Changed to support the direct debit mode feature.

New input fields

- PIN_FLD_FLAGS
- PIN_FLD_ACTIVE_SESSION_ID

Changed input fields

- PIN_FLD_RATE_PLAN_NAME is now optional.

PCM_OP_ACT_AUTHORIZE

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID

Removed input fields

- PIN_FLD_USAGE_TYPE
- PIN_FLD_SCALED_DELAY_TIME

New output fields

- PIN_FLD_RESERVATION_LIST array:
 - PIN_FLD_ACCOUNT_OBJ

Removed output fields

- PIN_FLD_RUM_NAME from the PIN_FLD_BALANCES array.

PCM_OP_ACT_CHECK_RESOURCE_THRESHOLD

Changed to call the PCM_OP_ACT_POL_SET_RESOURCE_STATUS policy opcode after the resource availability status is computed. See "How BRM Reduces Authorization Latencies" and "How BRM Uses a Scaled Delay Time to Reduce Network Spikes during a Tariff Change" in *BRM Telco Integration*.

New input fields

- PIN_FLD_EXTENDED_INFO substruct

PCM_OP_ACT_END_SESSION

Changed to support the direct debit mode feature.

New input fields

- PIN_FLD_FLAGS

PCM_OP_ACT_LOGIN

Changed to support logging of CSR activities. See "Logging Customer Service Representative Activities" in *BRM System Administrator's Guide*.

New input fields

- PIN_FLD_NAP_IP_ADDRESS

PCM_OP_ACT_MULTI_AUTHORIZE

Changed input fields

- PIN_FLD_SERVICE_OBJ in the PIN_FLD_EVENT substruct is now optional.
- PIN_FLD_ACCOUNT_OBJ in the PIN_FLD_EVENT substruct is now optional.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_RESULTS array:
 - PIN_FLD_SERVICE_OBJ
- PIN_FLD_VALID_TO
- PIN_FLD_BALANCES array:
 - PIN_FLD_RESERVED_AMOUNT
 - PIN_FLD_NEXT_BAL
 - PIN_FLD_CURRENTBAL
 - PIN_FLD_CREDIT_FLOOR
 - PIN_FLD_CREDIT_LIMIT
 - PIN_FLD_CREDIT_THRESHOLDS
 - PIN_FLD_CREDIT_THRESHOLDS_FIXED

Changed output fields

- PIN_FLD_AMOUNT in the PIN_FLD_BALANCES array is now optional.

PCM_OP_ACT_REAUTHORIZE

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID
- PIN_FLD_FLAGS (optional) has been added to the PIN_FLD_RATING_INFO substruct.

PCM_OP_ACT_USAGE

New input fields

- PIN_FLD_EVENT array:
 - PIN_FLD_EFFECTIVE_T
 - PIN_FLD_CYCLE_INFO substruct
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_TYPE
 - PIN_FLD_EVENT_TYPE
- PIN_FLD_CYCLE_DISCOUNTS array
- PIN_FLD_DISCOUNT_LIST array:
 - PIN_FLD_EFFECTIVE_T
 - PIN_FLD_INSTANTIATED_T
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_CYCLE_FEE_FLAGS
- PIN_FLD_QUANTITY
- PIN_FLD_ORIGINAL_SCALE
- PIN_FLD_NAME
- PIN_FLD_BALANCES array:
 - PIN_FLD_RESERVED_AMOUNT
 - PIN_FLD_NEXT_BAL
 - PIN_FLD_CURRENT_BAL
 - PIN_FLD_CREDIT_FLOOR
 - PIN_FLD_CREDIT_LIMIT
 - PIN_FLD_CREDIT_THRESHOLDS
 - PIN_FLD_CREDIT_THRESHOLDS_FIXED

Changed input fields

- PIN_FLD_LAST_MODIFIED_T in the PIN_FLD_PRODUCTS array is now PIN_FLD_EFFECTIVE_T.

New output fields

PIN_FLD_RESULTS array:

- PIN_FLD_NET_QUANTITY
- PIN_FLD_RUM_NAME
- PIN_FLD_BALANCE_IMPACTS array:

- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_OFFERING_OBJ
- PIN_FLD_IMPACT_CATEGORY
- PIN_FLD_LINEAGE

Balance FM Standard Opcodes

The following are the changes made to Balance FM standard opcodes in BRM 7.4.

PCM_OP_BAL_GET_BALANCES

Changed to support the following feature:

- Moving balance groups to a different bill unit. See "About Transferring Services between Balance Groups" in *BRM Managing Accounts Receivable*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

This opcode now determines which **/balance_group** object to retrieve by using the event end time and the **/service** object's PIN_FLD_TRANSFER_LIST array. If a balance group is not specified in the array, the opcode retrieves the service-level balance group. See "Finding a Balance Group and Its Balances" in *BRM Managing Accounts Receivable*.

New input fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

New output fields

- PIN_FLD_EFFECTIVE_T
- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_BAL_GET_BAL_GRP_AND_SVC

Changed to support the following feature:

- Moving balance groups to a different bill unit. See "About Transferring Services between Balance Groups" in *BRM Managing Accounts Receivable*.

This opcode now determines which **/balance_group** object to retrieve by using the event end time and the **/service** object's PIN_FLD_TRANSFER_LIST array. If a balance group is not specified in the array, the opcode retrieves the service-level balance group. See "Finding a Balance Group and Its Balances" in *BRM Managing Accounts Receivable*.

There are no changes to this opcode's input and output fields.

PCM_OP_BAL_GET_MONITOR_BAL

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_BAL_GET_PREPAID_BALANCES

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

New output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

Billing FM Standard Opcodes

The following are the changes made to Billing FM standard opcodes in BRM 7.4.

PCM_OP_BILL_SET_LIMIT_AND_CR

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_RULES array is now optional.
- PIN_FLD_CONSUMPTION_RULE in the PIN_FLD_RULES array is now mandatory.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed output fields

- PIN_FLD_CONSUMPTION_RULE in the PIN_FLD_RULES array is now mandatory.

PCM_OP_BILL_TRANSFER_BALANCE

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_THRESHOLDS array

Collections FM Opcodes

The following are the changes made to Collections FM standard opcodes in BRM 7.4.

PCM_OP_COLLECTIONS_PROCESS_BILLINFO

Changed to support the following feature:

- Enabling external client applications to track and manage collections activities. See "About Integrating Collections Manager with Custom Client Applications" in *BRM Collections Manager*.

This opcode now generates the `/event/audit/collections/action` event when an account enters or exits collections. See Executing automatic collections actions under "Managing Overdue Balance Collection" in *BRM Collections Manager*.

There are no changes to this opcode's input and output flists.

PCM_OP_COLLECTIONS_TAKE_ACTION

Changed to support the following feature:

- Enabling external client applications to track and manage collections activities. See "About Integrating Collections Manager with Custom Client Applications" in *BRM Collections Manager*.

This opcode now generates the `/event/audit/collections/action` event after the opcode performs a custom or system action. See the discussion about executing pending actions for a bill unit under "Performing System Collections Actions" in *BRM Collections Manager*.

There are no changes to this opcode's input and output flists.

Context Management Opcodes

The following are the changes made to Context Management FM standard opcodes in BRM 7.4.

PCM_CONTEXT_OPEN

Changed to support the following feature:

- Disabling the auto-reconnect feature of the Connection Manager (CM). See "Automatic Logout" in *BRM System Administrator's Guide*.

New input fields

- PIN_FLD_AUTO_RECONNECT

Customer FM Standard Opcodes

The following are the changes made to Customer FM standard opcodes in BRM 7.4.

PCM_OP_CUST_CHANGE_BUSINESS_PROFILE

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_COMMIT_CUSTOMER

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE
- PIN_FLD_PAYINFO array:
 - PIN_FLD_FLAGS

Changed input fields

- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

Changed output fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

PCM_OP_CUST_CREATE_ACCT

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

Changed output fields

- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

PCM_OP_CUST_CREATE_BAL_GRP

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

PCM_OP_CUST_CREATE_BILLINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

New input fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

PCM_OP_CUST_CREATE_CUSTOMER

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed output fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

PCM_OP_CUST_CREATE_PAYINFO

New input fields

- PIN_FLD_FLAGS

PCM_OP_CUST_CREATE_PROFILE

Changed to support the following feature:

- Creating **/profile** objects through the BRM JCA Resource Adapter. See "Connecting J2EE-Compliant Applications to BRM" in *BRM Web Services Manager*.

New input fields

- PIN_FLD_NAME
- PIN_FLD_PROFILES array

Note: The PIN_FLD_PROFILES array can have only one element. If more than one element is passed, the opcode ignores the array.

Changed input fields

- The PIN_FLD_INHERITED_INFO substruct was moved to the PIN_FLD_PROFILES array.

Note: For backwards compatibility, the opcode still accepts input flists sent in the old format.

PCM_OP_CUST_CREATE_TOPUP

New input fields

- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_GROUP_TOPUP_INFO array:
 - PIN_FLD_PARENT

Changed input fields

- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now optional.
- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.

PCM_OP_CUST_MODIFY_CUSTOMER

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

- Moving balance groups to a different bill unit. See "About Transferring Services Between Balance Groups" in *BRM Managing Accounts Receivable*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE
- PIN_FLD_PAYINFO array:
 - PIN_FLD_FLAGS

Changed input fields

- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

Changed output fields

- PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

PCM_OP_CUST_MODIFY_PROFILE

Changed to support the following feature:

- Modifying **/profile** objects through the BRM JCA Resource Adapter. See "Connecting J2EE-Compliant Applications to BRM" in *BRM Web Services Manager*.

New input fields

- PIN_FLD_PROFILES array

Note: The PIN_FLD_PROFILES array can have only one element. If more than one element is passed, the opcode ignores the array.

Changed input fields

- The PIN_FLD_INHERITED_INFO substruct was moved to the PIN_FLD_PROFILES array.

Note: For backwards compatibility, the opcode still accepts input flists sent in the old format.

PCM_OP_CUST_MODIFY_TOPUP

New input fields

PIN_FLD_TOPUP_INFO array:

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_GROUP_TOPUP_INFO:
 - PIN_FLD_PARENT

Changed input fields

- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.

PCM_OP_CUST_PREP_CUSTOMER

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFSET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFSET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

PCM_OP_CUST_SET_ACCTINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

Removed input fields

- PIN_FLD_ACTG_TYPE

PCM_OP_CUST_SET_BAL_GRP

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:

- PIN_FLD_THRESHOLDS array

PCM_OP_CUST_SET_BILLINFO

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

New input fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE

PCM_OP_CUST_SET_TOPUP

New input fields

- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_GROUP_TOPUP_INFO array:
 - PIN_FLD_PARENT

Changed input fields

- PIN_FLD_PARENT was moved from the PIN_FLD_GROUP_TOPUP_INFO array into the PIN_FLD_TOPUP_INFO array.
- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now optional.

PCM_OP_CUST_UPDATE_CUSTOMER

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.
- Moving balance groups to a different bill unit. See "About Transferring Services Between Balance Groups" in *BRM Managing Accounts Receivable*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACTG_TYPE
- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_PARENT
- PIN_FLD_PAYINFO array:
 - PIN_FLD_FLAGS

Changed input fields

- PIN_FLD_PAYMENT_OFFSEET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.

New output fields

- PIN_FLD_LIMIT array
 - PIN_FLD_THRESHOLDS array

Changed output fields

- PIN_FLD_PAYMENT_OFFSETOFFSET in the PIN_FLD_PAYINFO array is now PIN_FLD_PAYMENT_OFFSET.
- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.

PCM_OP_CUST_UPDATE_SERVICES

New input fields

- PIN_FLD_FLAGS

PCM_OP_CUST_VALIDATE_CUSTOMER

Changed to support the following feature:

- Supporting the accounting type at the bill unit level. See "About Accounting Types" in *BRM Configuring and Running Billing*.

Changed input fields

- PIN_FLD_ACTG_TYPE was moved from the PIN_FLD_ACCTINFO array into the PIN_FLD_BILLINFO array.

GPRS Manager 3.0 FM Standard Opcodes

The following are the changes made to GPRS Manager 3.0 FM standard opcodes in BRM 7.4.

PCM_OP_GPRS_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

GSM AAA Manager FM Standard Opcodes

The following are the changes made to GSM AAA Manager FM standard opcodes in BRM 7.4.

PCM_OP_GSM_AAA_AUTHORIZE

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

PCM_OP_GSM_AAA_CANCEL_AUTHORIZATION**New input fields**

- PIN_FLD_OBJ_TYPE
- PIN_FLD_NETWORK_SESSION_CORRELATION
- PIN_FLD_SESSION_TYPE
- PIN_FLD_SESSION_ID
- PIN_FLD_ORIGIN_NETWORK
- PIN_FLD_DESTINATION_NETWORK
- PIN_FLD_CALLING_NUMBER
- PIN_FLD_CALLED_NUMBER
- PIN_FLD_SVC_TYPE
- PIN_FLD_SVC_CODE
- PIN_FLD_USAGE_CLASS
- PIN_FLD_PRIMARY_MSID
- PIN_FLD_SECONDARY_MSID
- PIN_FLD_SERVICE_CODES array
- PIN_FLD_EXTENDED_INFO substruct

PCM_OP_GSM_AAA_REAUTHORIZE**New input fields**

- PIN_FLD_UNIT_MEASURE

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

PCM_OP_GSM_AAA_STOP_ACCOUNTING

Changed to support the direct debit mode feature.

New input fields

- PIN_FLD_MODE

New output fields

- PIN_FLD_QUANTITY
- PIN_FLD_RUM_NAME

- PIN_FLD_RUM_MAP array
- PIN_FLD_RESULT
- PIN_FLD_REASON

PCM_OP_GSM_AAA_UPDATE_AND_REAUTHORIZE

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

GSM Manager FM Standard Opcodes

The following are the changes made to GSM Manager FM standard opcodes in BRM 7.4.

PCM_OP_GSM_APPLY_PARAMETER

Removed input fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Removed output fields

PIN_FLD_PRODUCTS array:

- PIN_FLD_PROD_PROVISIONING_TAGS array:
 - PIN_FLD_DATE_CHANGE_IMPACT

Invoicing FM Standard Opcodes

The following are the changes made to Invoicing FM standard opcodes in BRM 7.4.

PCM_OP_INV_MAKE_INVOICE

Changed to support the following feature:

- Adding Siebel CRM promotion names to BRM invoices. See "Adding Siebel CRM Promotion Names to Invoices" in *BRM Release Notes*.

There are no changes to this opcode's input and output flists.

Payment FM Standard Opcodes

The following are the changes made to Payment FM standard opcodes in BRM 7.4.

PCM_OP_PYMT_COLLECT

Changed to support the following feature:

- Allocating account-level payments to multiple bill units. See "Allocating Account-Level Payments to Multiple Bill Units" in *BRM Configuring and Collecting Payments*.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_RESULTS array

PCM_OP_PYMT_ITEM_SEARCH

Changed to support the following feature:

- Allocating payment to multiple bill units in Payment Tool. See "Allocating Account-Level Payments to Multiple Bill Units" in *BRM Configuring and Collecting Payments*.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_AR_BILLINFO_OBJ

PCM_OP_PYMT_MBI_DISTRIBUTE

New input fields

- PIN_FLD_END_T

PCM_OP_PYMT_RECYCLE_PAYMENT

Changed to support the following feature:

- Allocating account-level payments to multiple bill units. See "Allocating Account-Level Payments to Multiple Bill Units" in *BRM Configuring and Collecting Payments*.

Changed input fields

- The PIN_FLD_CHARGES array is now mandatory.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_RESULTS array

PCM_OP_PYMT_SELECT_ITEMS

Changed to support the following feature:

- Allocating account-level payments to multiple bill units. See "Allocating Account-Level Payments to Multiple Bill Units" in *BRM Configuring and Collecting Payments*.

New input fields

- PIN_FLD_END_T
- PIN_FLD_BILLINFO array:
 - PIN_FLD_CURRENCY
- PIN_FLD_PAYMENT_REASONS array

New output fields

- PIN_FLD_CHARGES array:

- PIN_FLD_PAYMENT_REASONS array
- PIN_FLD_BILLINFO array

PCM_OP_PYMT_TOPUP

New input fields

- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_NEXT_TOPUP_T
 - PIN_FLD_TOPUP_INTERVAL

New output fields

- PIN_FLD_BAL_IMPACTS array:
 - PIN_FLD_IMPACT_TYPE

PCM_OP_PYMT_VALIDATE

Changed to support the following feature:

- Allocating account-level payments to multiple bill units. See "Allocating Account-Level Payments to Multiple Bill Units" in *BRM Configuring and Collecting Payments*.

New input fields

- PIN_FLD_CHARGES array:
 - PIN_FLD_ACH
- PIN_FLD_BATCH_INFO array

Pricing FM Standard Opcodes

The following are the changes made to Pricing FM standard opcodes in BRM 7.4.

PCM_OP_PRICE_COMMIT_DEAL

New input fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE
- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_CODE

PCM_OP_PRICE_COMMIT_DISCOUNT

Changed to support the following feature:

- Exporting discount data to external CRM applications. See "Understanding the Synchronization Queue Data Manager" in *BRM Synchronization Queue Manager*.

New input fields

- PIN_FLD_PIPELINE_DISC_MODELS array
- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_CODE

New output fields

- PIN_FLD_DISCOUNTS array

PCM_OP_PRICE_COMMIT_PLAN

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_PLAN array.
- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_BAL_INFO array.

PCM_OP_PRICE_COMMIT_PRODUCT

New input fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Changed input fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved from the PIN_FLD_RATE_PLANS array into the PIN_FLD_PRODUCTS array.

Removed input fields

- PIN_FLD_RATE_PLAN_SELECTOR
 - PIN_FLD_SELECTOR_TREE substruct

PCM_OP_PRICE_GET_PRICE_LIST

Changed to support the following feature:

- Enabling the **loadpricelist** utility to import and export pricing data based on the service type and object modification time. See "Using the XML Pricing Interface to Create a Price List" in *BRM Setting Up Pricing and Rating*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_PERMITTED
- PIN_FLD_MOD_T
- PIN_FLD_NAME

New output fields

- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_BAL_INFO array.
- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_PLAN array.
- PIN_FLD_PRODUCTS array:

- PIN_FLD_CODE
- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_CODE
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Removed output fields

- PIN_FLD_RATE_PLAN_SELECTOR:
 - PIN_FLD_SELECTOR_TREE substruct

PCM_OP_PRICE_GET_PRODUCT_INFO

Changed to support the following feature:

- Exporting product provisioning tags to external CRM applications. See "Understanding the Synchronization Queue Data Manager" in *BRM Synchronization Queue Manager*.

New output fields

- PIN_FLD_PROVISIONING_TAG_INFO array
- PIN_FLD_POID
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE

Changed output fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR substruct was changed to PIN_FLD_SELECTOR buffer.

PCM_OP_PRICE_PREP_TAILORMADE_PRODUCT

New input fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE

Changed input fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved from the PIN_FLD_RATE_PLANS array into the PIN_FLD_PRODUCTS array.

New output fields

- PIN_FLD_POID
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Removed output fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR_TREE substruct

PCM_OP_PRICE_SET_PRICE_LIST

Changed to support the following feature:

- Exporting /**sponsorship** objects to external CRM applications. See "Understanding the Synchronization Queue Data Manager" in *BRM Synchronization Queue Manager*.
- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_PLAN array.
- PIN_FLD_THRESHOLDS array in the PIN_FLD_LIMIT array of the PIN_FLD_BAL_INFO array.
- PIN_FLD_CODE in the PIN_FLD_DISCOUNTS array and the PIN_FLD_PRODUCTS array of the PIN_FLD_DEALS array.
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_CODE
- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_CODE
 - PIN_FLD_PIPELINE_DISC_MODELS array
- PIN_FLD_RATE_PLANS array:
 - PIN_FLD_CYCLE_FEE_FLAGS
- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR

Changed input fields

- PIN_FLD_PIPELINE_RATEPLANS array was moved from the PIN_FLD_RATE_PLANS array into the PIN_FLD_PRODUCTS array.

Removed input fields

- PIN_FLD_RATE_PLAN_SELECTOR substruct:
 - PIN_FLD_SELECTOR_TREE substruct

New output fields

- PIN_FLD_DISCOUNTS array

Process Audit FM Standard Opcodes

The following are the changes made to Process Audit FM standard opcodes in BRM 7.4.

PCM_OP_PROCESS_AUDIT_CREATE**Removed input fields**

- PIN_FLD_FAILED_ACCOUNTS array:
 - PIN_FLD_FAILED_ACCOUNT_OBJ
 - PIN_FLD_FAILED_BILL_OBJ
 - PIN_FLD_FAILED_ERROR_CODE

Provisioning FM Standard Opcodes

The following are the changes made to Provisioning FM standard opcodes in BRM 7.4.

PCM_OP_PROV_PUBLISH_SVC_ORDER

Removed output fields

- PIN_FLD_STATUS
- PIN_FLD_STATUS_FLAGS
- PIN_FLD_STATUS_MSG
- PIN_FLD_EXTENDED_INFO

PCM_OP_PROV_UPDATE_SVC_ORDER

New input fields

- PIN_FLD_PROGRAM_NAME
- PIN_FLD_EXTENDED_INFO substruct:
 - PIN_FLD_PARAMS

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_RATING_STATUS

RADIUS Manager FM Standard Opcodes

The following are the changes made to RADIUS Manager FM standard opcodes in BRM 7.4.

PCM_OP_TERM_IP_DIALUP_START_ACCOUNTING

New output fields

- PIN_FLD_ARGS array

PCM_OP_TERM_IP_DIALUP_STOP_ACCOUNTING

New output fields

- PIN_FLD_ARGS array

PCM_OP_TERM_IP_DIALUP_UPDATE_ACCOUNTING

New input fields

- PIN_FLD_ELAPSED_TIME
- PIN_FLD_BYTES_IN
- PIN_FLD_BYTES_OUT
- PIN_FLD_PACKETS_IN
- PIN_FLD_PACKETS_OUT
- PIN_FLD_DESCR

Changed input fields

- PIN_FLD_STATUS mandatory is now PIN_FLD_UNITS optional.

New output fields

- PIN_FLD_ARGS array

Rating FM Standard Opcodes

The following are the changes made to Rating FM standard opcodes in BRM 7.4.

PCM_OP_RATE_TAX_CALC

New input fields

- PIN_FLD_EVENT_OBJ

New output fields

- PIN_FLD_EVENT_OBJ

Resource Reservation FM Standard Opcodes

The following are the changes made to Resource Reservation FM standard opcodes in BRM 7.4.

PCM_OP_RESERVE_CREATE

New output fields

- PIN_FLD_BAL_GRP_OBJ

Removed output fields

- PIN_FLD_BALANCE_GROUP from the PIN_FLD_RESERVATION_LIST array.

PCM_OP_RESERVE_EXTEND

New input fields

- PIN_FLD_FLAGS

Services Framework AAA Manager FM Standard Opcodes

The following are the changes made to Services Framework AAA Manager FM standard opcodes in BRM 7.4.

PCM_OP_TCF_AAA_ACCOUNTING

Changed to support the direct debit mode feature.

New input fields

- PIN_FLD_MODE

New output fields

- PIN_FLD_QUANTITY
- PIN_FLD_RUM_NAME
- PIN_FLD_RUM_MAP array
- PIN_FLD_RESULT
- PIN_FLD_REASON

PCM_OP_TCF_AAA_ACCOUNTING_OFF

New input fields

- PIN_FLD_OBJ_TYPE

PCM_OP_TCF_AAA_ACCOUNTING_PREP_INPUT

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID
- PIN_FLD_MODE

Changed input fields

- PIN_FLD_SESSION_ID in the PIN_FLD_SESSION_INFO array is now optional.

PCM_OP_TCF_AAA_AUTHORIZE

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

PCM_OP_TCF_AAA_AUTHORIZE_PREP_INPUT

Removed input fields

- PIN_FLD_SESSION_INFO array

PCM_OP_TCF_AAA_CANCEL_AUTHORIZATION

New input fields

- PIN_FLD_OBJ_TYPE
- PIN_FLD_SESSION_TYPE
- PIN_FLD_EXTENDED_INFO substruct
- PIN_FLD_SESSION_ID
- PIN_FLD_ORIGIN_NETWORK

- PIN_FLD_DESTINATION_NETWORK
- PIN_FLD_CALLING_NUMBER
- PIN_FLD_CALLED_NUMBER
- PIN_FLD_SVC_TYPE
- PIN_FLD_SVC_CODE
- PIN_FLD_USAGE_CLASS
- PIN_FLD_PRIMARY_MSID
- PIN_FLD_SECONDARY_MSID
- PIN_FLD_SERVICE_CODES array

PCM_OP_TCF_AAA_PREP_INPUT

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID

Changed input fields

- PIN_FLD_SESSION_ID in the PIN_FLD_SESSION_INFO array is now optional.

PCM_OP_TCF_AAA_REAUTHORIZE

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_SESSION_ID
- PIN_FLD_UNIT_MEASURE

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

PCM_OP_TCF_AAA_REAUTHORIZE_PREP_INPUT

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About

Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_UNIT_MEASURE
- PIN_FLD_SESSION_ID

Changed input fields

- PIN_FLD_SESSION_ID in the PIN_FLD_SESSION_INFO array is now optional.

PCM_OP_TCF_AAA_STOP_ACCOUNTING

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_MODE

New output fields

- PIN_FLD_QUANTITY
- PIN_FLD_RUM_NAME
- PIN_FLD_RUM_MAP array
- PIN_FLD_RESULT
- PIN_FLD_REASON
- PIN_FLD_SESSION_INFO array:
 - PIN_FLD_SESSION_ID

PCM_OP_TCF_AAA_STOP_ACCOUNTING_PREP_INPUT

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

New input fields

- PIN_FLD_MODE

Changed input fields

- PIN_FLD_SESSION_ID in the PIN_FLD_SESSION_INFO array is now optional.

PCM_OP_TCF_AAA_UPDATE_ACCOUNTING_PREP_INPUT

Changed to support the following feature:

- In addition to checking for duplicate authentication and authorization requests, Services Framework AAA Manager now checks for other duplicate AAA actions, such as reauthorization, update accounting, and stop accounting. See "About Performing AAA for Prepaid Services" in *BRM Telco Integration*.

Changed input fields

- PIN_FLD_SESSION_ID in the PIN_FLD_SESSION_INFO array is now optional.

PCM_OP_TCF_AAA_UPDATE_AND_REAUTHORIZE

Changed to support aggregating the input volume upload or download with the already reserved quota.

New input fields

- PIN_FLD_UNIT_MEASURE

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_LIST array

Removed output fields

- PIN_FLD_BALANCES array:
 - PIN_FLD_RUM_NAME

Services Framework Manager FM Provisioning Opcodes

The following are the changes made to Services Framework Manager FM standard opcodes in BRM 7.4.

PCM_OP_TCF_SVC_LISTENER

New input fields

- PIN_FLD_PRODUCTS array

Subscription Management FM Standard Opcodes

The following are the changes made to Subscription Management FM standard opcodes in BRM 7.4.

PCM_OP_SUBSCRIPTION_CALC_BEST_PRICING

New output fields

- PIN_FLD_RESULTS array
 - PIN_FLD_ACCOUNT_OBJ

PCM_OP_SUBSCRIPTION_CANCEL_DISCOUNT

Changed to perform additional validations when backdating a discount cancellation. See "How Discounts are Canceled" in *BRM Managing Customers*.

There are no changes to this opcode's input and output flists.

PCM_OP_SUBSCRIPTION_CANCEL_PRODUCT

Changed to perform additional validations when backdating a product cancellation. See "How Products are Canceled" in *BRM Managing Customers*.

There are no changes to this opcode's input and output flists.

PCM_OP_SUBSCRIPTION_CHANGE_OPTIONS

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array
 - PIN_FLD_THRESHOLDS array

PCM_OP_SUBSCRIPTION_PURCHASE_DISCOUNT

Changed to perform additional validations when backdating a discount purchase. See "How Discounts are Purchased" in *BRM Managing Customers*.

There are no changes to this opcode's input and output fields.

PCM_OP_SUBSCRIPTION_PURCHASE_PRODUCT

Changed to perform additional validations when backdating a product purchase. See "How Products are Purchased" in *BRM Managing Customers*.

There are no changes to this opcode's input and output fields.

PCM_OP_SUBSCRIPTION_READ_ACCT_PRODUCTS

Changed to retrieve the alias list of the services.

New output fields

- PIN_FLD_DEALS array
- PIN_FLD_SERVICES array:
 - PIN_FLD_ALIAS_LIST array

PCM_OP_SUBSCRIPTION_SERVICE_BALGRP_TRANSFER

New input fields

- PIN_FLD_PAYINFO array:
 - PIN_FLD_FLAGS

PCM_OP_SUBSCRIPTION_SET_DISCOUNTINFO

Changed to perform additional validations when backdating the discount's purchase, cycle, or usage start and end dates to a backdated date. See "Setting Discount Purchase, Cycle, and Usage Start and End Times" in *BRM Managing Customers*.

There are no changes to this opcode's input and output fields.

PCM_OP_SUBSCRIPTION_SET_DISCOUNT_STATUS

Changed to perform additional validations when backdating the discount status change. See "How BRM Changes Discount Status" in *BRM Managing Customers*.

There are no changes to this opcode's input and output fields.

PCM_OP_SUBSCRIPTION_PROVISION_ERA

New input fields

- PIN_FLD_STR_VAL

PCM_OP_SUBSCRIPTION_SET_PRODINFO

Changed to perform additional validations when backdating the product's purchase, cycle, or usage start and end dates to a backdated date. See "Changing the Purchase, Usage, and Cycle Start and End Times" in *BRM Managing Customers*.

Removed input fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_PURCHASE_END_DETAILS
 - PIN_FLD_CYCLE_END_DETAILS
 - PIN_FLD_USAGE_END_DETAILS

PCM_OP_SUBSCRIPTION_SET_PRODUCT_STATUS

Changed to perform additional validations when backdating the product status change. See "How BRM Changes Product Status" in *BRM Managing Customers*.

There are no changes to this opcode's input and output fields.

PCM_OP_SUBSCRIPTION_TRANSFER_SUBSCRIPTION

Changed to return the POIDs of the products and discounts in both the old and new subscriber accounts affected by the transfer.

New input fields

- PIN_FLD_PAYINFO array:
 - PIN_FLD_FLAGS

New output fields

- PIN_FLD_ACTION_INFO array

PCM_OP_SUBSCRIPTION_TRANSITION_PLAN

Changed to support the following feature:

- Enabling credit thresholds to be set to a fixed value, such as 50 minutes or \$90. See "About Credit Thresholds and Credit Floors" in *BRM Setting Up Pricing and Rating*.

New input fields

- PIN_FLD_LIMIT array:
 - PIN_FLD_THRESHOLDS array

Changed input fields

- PIN_FLD_FROM_SERVICE and PIN_FLD_TO_SERVICE substructs in the PIN_FLD_SERVICES array are now optional.

Removed input fields

- PIN_FLD_LIMIT array

Voucher Manager FM Standard Opcodes

The following are the changes made to Voucher Manager FM standard opcodes in BRM 7.4.

PCM_OP_VOUCHER_ASSOCIATE_VOUCHER

Changed to record tax information for voucher top-ups with tax.

New output fields

- PIN_FLD_SUB_BAL_IMPACTS array
- PIN_FLD_TAX_JURISDICTIONS array

Renamed Opcodes

There are no renamed opcodes in BRM 7.4.

Utility Changes from BRM 7.3.1 to BRM 7.4

This chapter provides upgrade impacts information for Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1 to BRM 7.4. It describes the utility changes that affect your BRM system, and what you must consider when you upgrade from 7.3.1 to 7.4.

See "[About Upgrading BRM Releases](#)" for information on planning your upgrade implementation, such as setting up your development and test environments.

Changed Utilities

[Table 10–1](#) provides a list of the utilities that were changed between BRM 7.3.1 and BRM 7.4 releases.

Table 10–1 *Changed Utilities*

Changed Utility	Description
<code>rad_tester</code>	<p>You can use <code>rad_tester</code> to simulate sending AAA requests to the RADIUS server.</p> <p>In addition, a new packet, <code>update_pkt.sample</code>, has been created to support interim accounting requests. You use this packet along with <code>rad_tester</code> to simulate update accounting requests from the NAS.</p>

Pipeline Manager Changes from BRM 7.3.1 to BRM 7.4

This chapter provides upgrade impact information for Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1 to BRM 7.4. It describes the Pipeline Manager EDR changes that affect your BRM system and what you must consider when you upgrade from 7.3.1 to 7.4.

See ["About Upgrading BRM Releases"](#) for information on planning your upgrade implementation, such as setting up your development and test environments.

Changed Pipeline Manager Modules

[Table 11–1](#) lists Pipeline Manager modules that were changed between BRM 7.3.1 release and BRM 7.4.

Table 11–1 *Changed Pipeline Manager Modules*

Changed Module	Description
"DAT_PortalConfig"	This module includes the following new semaphore entries: <ul style="list-style-type: none"> ▪ CreditProfilePrintData ▪ CreditProfileReload See "Semaphore File Entries" in <i>BRM Configuring Pipeline Rating and Discounting</i> .
"FCT_ApplyBalance"	This module includes the following new registry entries: <ul style="list-style-type: none"> ▪ PortalConfigDataModule ▪ OutputPrefix ▪ OutputDirectory ▪ NumberOfNotificationLimit See "Registry Entries" in <i>BRM Configuring Pipeline Rating and Discounting</i> .
"FCT_Discount"	Enhanced to support non-duration resources for prepaid credit limit checks. See "About Credit Limit Checks in the Real-Time Discounting Pipeline" in <i>BRM Telco Integration</i> .

New BRM EDR Container Fields

The following tables list the new BRM EDR container fields for the following entities:

- [Associated CAMEL Extension Record](#)
- [Associated Roaming Extension Record](#)

- [Associated Suspense Extension Record](#)
- [Charge Breakdown Record Tax Packet](#)
- [Header Record](#)
- [Supplementary Charge Packet Record](#)
- [Total Advised Charge Value List](#)

Associated CAMEL Extension Record

[Table 11-2](#) lists the new fields for the Associated CAMEL Extension Record.

Table 11-2 New Fields for the Associated CAMEL Extension Record

Name	Format	Description
EXCHANGE_RATE	Decimal	Contains the exchange rate which has been used to convert the Incoming currency to the internal currency.

Associated Roaming Extension Record

[Table 11-3](#) lists the new fields for the Associated Roaming Extension Record.

Table 11-3 New Fields for the Associated Roaming Extension Record

Name	Format	Description
TAP_CURRENCY	String	Currency used for TAP3 and TAP 311.

Associated Suspense Extension Record

[Table 11-4](#) lists the new fields for the Associated Suspense Extension Record.

Table 11-4 New Fields for the Associated Suspense Extension Record

Name	Format	Description
RECYCLING_MODE	Integer	Mandatory. Calculated. Equal to <code>DETAIL.INTERN_PROCESS_STATUS</code>

Charge Breakdown Record Tax Packet

[Table 11-5](#) lists the new fields for the Charge Breakdown Record Tax Packet.

Table 11-5 New Fields for the Charge Breakdown Record Tax Packet

Name	Format	Description
CHARGE_INFORMATION_COUNTER	Integer	-
CHARGE_INFORMATION_COUNTER	Integer	-

Header Record

[Table 11-6](#) lists the new fields for the Header Record.

Table 11–6 New Fields for the Header Record

Name	Format	Description
TAP_FILE_TYPE	String	Type of TAP file, TAP3 or TAP311.

Supplementary Charge Packet Record

Table 11–7 lists the new fields for the Supplementary Charge Packet Record.

Table 11–7 New Fields for the Supplementary Charge Packet Record

Name	Format	Description
CHARGE_REFUND_INDICATOR	Integer	Optional. Charge refund indicator item.

Total Advised Charge Value List

Table 11–8 lists the new fields for the Total Advised Charge Value List.

Table 11–8 New Fields for the Total Advised Charge Value List

Name	Format	Description
TOTAL_ADVISEDCHARGE	Decimal	-
TOTAL_ADVISEDCHARGE_REFUND	Decimal	-
ADVISED_CHARGE_CURRENCY	String	Optional. AdvisedChargeCurrency item.
TOTAL_COMMISSION;	Decimal	-
TOTAL_COMMISSION_REFUND	Decimal	-

New AAA EDR Container Fields

Table 11–9 lists the new function module fields for AAA EDR.

Table 11–9 New Function Module Fields for AAA EDR

Name	Format	Description
SESSION_ID	String	Timer id needed to cancel the timer Required by FCT_Timer.
REACTOR_IDPRE	Integer	Internal Field: 1st part of the reactor's address
REACTOR_IDPOST	Integer	Internal Field: 2nd part of the reactor's address
A_NUMBER	String	Specifies the event originator. Used for number portability.
B_NUMBER	String	Specifies the event receiver. Used for number portability.
CHARGING_START_TIMESTAMP	Date	Specifies the event charging timestamp. Used for number portability.

Table 11–9 (Cont.) New Function Module Fields for AAA EDR

Name	Format	Description
SOURCE_NETWORK	String	Specifies the source network. This can either be the PLMN ID or any logical operator code. Used for number portability.
SOURCE_NETWORK_TYPE	String	Optional. Specifies the source network type, for example GSM 900. Used for number portability.
DESTINATION_NETWORK	String	Specifies the network to which an event is routed. Used for number portability.
DESTINATION_NETWORK_TYPE	String	Optional. Specifies the destination network type, for example GSM 900. Used for number portability.
IGNORE_NP	Integer	State variable to indicate NP data needs to be looked up. Used for number portability.

Changed Opcode Blocks

The AAA EDR container has been changed as follows:

- Input and output blocks for the following TCF AAA opcodes have been added:
 - PCM_OP_TCF_AAA_AUTHENTICATE
 - PCM_OP_TCF_AAA_AUTHORIZE
 - PCM_OP_TCF_AAA_UPDATE_AND_REAUTHORIZE
 - PCM_OP_TCF_AAA_CANCEL_AUTHORIZATION
 - PCM_OP_TCF_AAA_STOP_ACCOUNTING
 - PCM_OP_TCF_AAA_START_ACCOUNTING
 - PCM_OP_TCF_AAA_UPDATE_ACCOUNTING
 - PCM_OP_TCF_AAA_QUERY_BALANCE
 - PCM_OP_TCF_AAA_SERVICE_PRICE_ENQUIRY
 - PCM_OP_TCF_AAA_ACCOUNTING_ON
 - PCM_OP_TCF_AAA_ACCOUNTING_OFF
- Input and output blocks for the following GSM AAA opcodes have been removed:
 - PCM_OP_GSM_AAA_AUTHORIZE
 - PCM_OP_GSM_AAA_UPDATE_ACCOUNTING
 - PCM_OP_GSM_AAA_REAUTHORIZE
 - PCM_OP_GSM_AAA_UPDATE_AND_REAUTHORIZE
 - PCM_OP_GSM_AAA_AUTHENTICATE
 - PCM_OP_GSM_AAA_CANCEL_AUTHORIZATION
 - PCM_OP_GSM_AAA_START_ACCOUNTING
 - PCM_OP_GSM_AAA_STOP_ACCOUNTING

- PCM_OP_GSM_AAA_ACCOUNTING_ON
- PCM_OP_GSM_AAA_ACCOUNTING_OFF

Notification Event Changes from BRM 7.3.1 to BRM 7.4

This chapter provides upgrade impact information for Oracle Communications Billing and Revenue Management (BRM) 7.3.1 to BRM Release 7.4. It describes the notification event changes that affect your BRM system, and what you must consider when you upgrade from 7.3.1 to 7.4.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

Changed Notification Events

[Table 12-1](#) lists all notification events that were modified between BRM 7.3.1 and BRM 7.4.

Table 12–1 Changed Notification Events

Changed Notification Event	Description
/event/notification/threshold	<p>The following fields were added to the PIN_FLD_BALANCES substruct:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CURRENT_BAL: The current balance after the amount was impacted. Applicable only when applying balance impacts. ■ PIN_FLD_CREDIT_FLOOR: The baseline for calculating percentage for threshold triggers. Credit floor does not enforce any limits on current balance. ■ PIN_FLD_CREDIT_LIMIT: The limit for this resource. Current balance cannot exceed this limit unless the current balance is affected by a limit override rate or manually adjusted by a CSR. ■ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of separated threshold amounts, in ascending order, to trigger when the resource balance crosses a boundary when the value is increasing. ■ PIN_FLD_EVENT_TYPE: The type of event against which this notification was raised. ■ PIN_FLD_CALLING_NUMBER: The originating phone number of the call. Usually, this is the MSISDN number, but can be different (for example, in a calling card scenario). This is also called the A number. ■ PIN_FLD_CALLED_NUMBER: The destination number of the call. This is also called the B number. <p>The following fields were added to the PIN_FLD_THRESHOLDS array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_ALERT_TYPE: The threshold's alert type: Limit (1), or Percent Threshold (2), or Floor (3), or Fixed Thresholds (4). ■ PIN_FLD_REASON: The reason for this breach. It can be (0x01) Upward Breach, or (0x02) Downward Breach, or (0x04) Upward Reset, or (0x08) Downward Reset, or (0x10) Indeterminate.

Table 12–1 (Cont.) Changed Notification Events

Changed Notification Event	Description
/event/notification/threshold_below	<p>The following fields were added to the PIN_FLD_BALANCES substruct:</p> <ul style="list-style-type: none"> ■ PIN_FLD_CURRENT_BAL: The current balance after the amount was impacted. Applicable only when applying balance impacts. ■ PIN_FLD_CREDIT_FLOOR: The baseline for calculating percentage for threshold triggers. The credit floor does not enforce any limits on current balance. ■ PIN_FLD_CREDIT_LIMIT: The limit for this resource. Current balance cannot exceed this limit unless the current balance is affected by a limit override rate or manually adjusted by a CSR. ■ PIN_FLD_CREDIT_THRESHOLDS_FIXED: A list of separated threshold amounts, in ascending order, to trigger when the resource balance crosses a boundary when the value is increasing or decreasing. ■ PIN_FLD_EVENT_TYPE: The type of event against which this notification was raised. ■ PIN_FLD_CALLING_NUMBER: The originating phone number of the call. Usually, this is the MSISDN number, but can be different (for example, in a calling card scenario). This is also called the A number. ■ STRING PIN_FLD_CALLING_NUMBER: The destination number of the call. This is also called the B number. <p>The following fields were added to the PIN_FLD_THRESHOLDS array:</p> <ul style="list-style-type: none"> ■ PIN_FLD_ALERT_TYPE: The threshold's alert type: Limit (1), or Percent Threshold (2), or Floor (3), or Fixed Thresholds (4). ■ PIN_FLD_REASON: The reason for this breach: (0x01) Upward Breach, or (0x02) Downward Breach, or (0x04) Upward Reset, or (0x08) Downward Reset, or (0x10) Indeterminate.

Feature Changes from Portal 7.3 to BRM 7.3.1

This chapter provides upgrade impacts information for Portal™ Release 7.3 to Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1. It describes the feature changes that affect your Portal system, and what you must consider when you upgrade from 7.3 to 7.3.1.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

AAA Gateway Manager Changes

This section discusses the changes made to the AAA Gateway Manager from Portal release 7.3 to BRM 7.3.1.

MBI Protocol Support

AAA Gateway Manager now supports the new versions of the message-based interface (MBI) protocol: HP-MBI protocol version 1.29 and HP-OCSAC CDR version 1.19. New message types are supported and changes have been made to the existing grammar to support the new versions of the MBI protocol.

GSM Requests-to-Opcode Mapping Changes

The GSM requests are now mapped to the Services Framework AAA opcodes instead of to the GSM AAA opcodes as shown in [Table 13–1](#). GSM-specific data are included in the EXTENDED_INFO block of the Services Framework AAA block.

Table 13–1 GSM Requests to Services Framework AAA Opcode Mapping

GSM Request	Opcode Called
Authorize_req Authorize_conf Authorize_reject	PCM_OP_TCF_AAA_AUTHORIZE
Reauthorize_req	PCM_OP_TCF_AAA_UPDATE_AND_REAUTHORIZE
End_req End_ack	PCM_OP_TCF_AAA_STOP_ACCOUNTING If the reason for terminating the call is DESTINATION_BUSY , NO_ANSWER , CALLER_ABANDON , or SMS_FAILURE , PCM_OP_TCF_AAA_CANCEL_AUTHORIZATION is called.

MBI Administrative Messages-to-Opcode Mapping Changes

The MBI administrative messages shown in [Table 13–2](#) are mapped to Services Framework AAA opcodes with the service type set to `/service/telco` to close all open sessions irrespective of the service sub-type:

Table 13–2 MBI Administrative Messages to Services Framework AAA Opcode Mapping

MBI Administrative Request	Opcode Called
StartUp_req StartUp_res	PCM_OP_TCF_AAA_ACCOUNTING_ON
ShutDown_req ShutDown_res	PCM_OP_TCF_AAA_ACCOUNTING_OFF

MBI Grammar and Mapping File Changes

The existing grammar and mapping files in the `Pipeline_Home/formatDesc/Formats/MBI` directory have been renamed as shown in [Table 13–3](#):

Table 13–3 New MBI Grammar and Mapping File Names

Old Name	New Name
MBI_v1.10_InGrammar.dsc	MBI_v1_InGrammar.dsc
MBI_v1.10_InMap.dsc	MBI_v1_InMap.dsc
MBI_v1.10.dsc	MBI_v1.dsc
MBI_v1.10_OutGrammar.dsc	MBI_v1_OutGrammar.dsc
MBI_v1.10_OutMap.dsc	MBI_v1_OutMap.dsc

MBI CDR Grammar and Mapping File Changes

The existing grammar and mapping files in the `Pipeline_Home/formatDesc/Formats/MBI_CDR` directory have been renamed as shown in [Table 13–4](#):

Table 13–4 New MBI CDR Grammar and Mapping File Names

Old Name	New Name
OCSAC_CDR_2.0_InGrammar.dsc	OCSAC_CDR_v1_InGrammar.dsc
OCSAC_CDR_2.0_InMap.dsc	OCSAC_CDR_v1_InMap.dsc
OCSAC_CDR_2.0.dsc	OCSAC_CDR_v1.dsc

EDR Container Changes

To map MBI requests to the Services Framework AAA opcodes, the AAA EDR container has been changed as follows:

- Input and output blocks for the following Services Framework AAA opcodes have been added:
 - PCM_OP_TCF_AAA_AUTHORIZE
 - PCM_OP_TCF_AAA_UPDATE_AND_REAUTHORIZE
 - PCM_OP_TCF_AAA_STOP_ACCOUNTING
 - PCM_OP_TCF_AAA_CANCEL_AUTHORIZATION

- PCM_OP_TCF_AAA_ACCOUNTING_ON
- PCM_OP_TCF_AAA_ACCOUNTING_OFF
- GSM-specific data has been added in the EXTENDED_INFO.GSM_INFO block.
- GPRS-specific data has been added in the EXTENDED_INFO.GPRS_INFO block.

Note: The AAA EDR container includes input and output blocks for GSM AAA opcodes to support GSM requests in Diameter protocol and flist format, which are mapped to GSM AAA opcodes.

The ASS_MBI_INFO and ASS_OCSAC_INFO blocks have been enhanced to support additional fields defined in the MBI v1.29 specification and the OCSAC CDR v1.19 specification respectively.

Changes to the MBI Registry File

By default, the **ServicesSupported** entry in the **mbi.reg** file is commented. By default, all telco services (**/service/telco**) are supported. If you want to support only a specific service, for example GSM service, you can uncomment the **ServicesSupported** entry and specify a service, for example **/service/telco/gsm**.

Timeout and Replay Pipeline Changes

The following iScripts and iRules used by the Timeout and Replay pipelines have been modified to map requests to Services Framework AAA opcodes:

- ISC_GenericPostOpcode
- ISC_TimeoutDefaultResponse
- ISC_TimeoutPreZone
- ISC_TimeoutProcessedResponse
- ISC_ReplayPostOpcode
- IRL_ReplayRouter
- IRL_TimeoutRouter
- IRL_Router

Note: These iScripts and iRules map also to GSM AAA opcodes to support requests in Diameter protocol and flist format.

Pipeline Manager Changes

This section discusses the changes made to the Pipeline Manager from Portal release 7.3 to BRM 7.3.1.

Pipeline Manager Uses Business Parameter Settings from the BRM Database

Pipeline Manager now uses business parameter settings (**/config/business_params**) from the BRM database rather than pipeline registry entries to determine whether optional BRM features and functionality are enabled. The **DAT_PortalConfig** module has been enhanced to retrieve business parameter settings from the BRM database at pipeline initialization and store them in internal memory. Other data modules that

require business parameter settings retrieve them directly from the DAT_PortalConfig module's memory. For more information, see "Using Business Parameter Settings from the BRM Database" in *BRM System Administrator's Guide*.

Taxation Changes

BRM no longer supports Vertex CommTax21. Vertex Communications Tax Q Series is now supported. Vertex plans to discontinue support for CommTax21 soon.

Communications Tax Q Series does not support the customization of DM Vertex to collect extra data. If you added or uncommented the **extra_tax_data** entry in the Vertex DM configuration file (*BRM_Home/sys/dm_vertex/pin.conf*), you should remove that entry.

In addition, Vertex Quantum is now called Vertex Sales Tax Q Series.

The names of the two BRM Vertex managers are unchanged:

- Vertex Manager: Supports Vertex Sales Tax Q Series and Vertex Communications Tax Q Series.
- Vertex Quantum Manager: Supports Vertex Sales Tax Q Series. This manager does *not* support Vertex Communications Tax Q Series.

Configuration file (**pin.conf**) entries and package names related to Sales Tax Q Series continue to include "Quantum."

Telco Framework Changes

This section discusses the changes made to the Telco Framework (Services Framework) from Portal release 7.3 to BRM 7.3.1.

Telco Framework Renamed to Services Framework

Telco Framework (TCF) has been renamed to Services Framework. Likewise, TCF Manager has been renamed to Services Framework Manager, and TCF AAA Manager has been renamed Services Framework AAA Manager.

Note: The Services Framework opcodes, objects, and utilities still continue to have "TCF" in their names.

Storable Class Changes from Portal 7.3 to BRM 7.3.1

This chapter provides upgrade impacts information for Portal™ Release 7.3 to Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1. It describes the storable class changes that affect your Portal system, and what you must consider when you upgrade from 7.3 to 7.3.1. It also provides information about storable class index and schema changes.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

Changed Storable Classes

[Table 14–1](#) lists all storable classes that were changed between Portal 7.3 and BRM 7.3.1.

Table 14–1 *Changed Storable Classes*

Changed Storable Class	Description
/event/customer/billinfo	The following fields were added: <ul style="list-style-type: none">▪ PIN_FLD_LAST_BILL_T stores the date that the current billing cycle started and the previous billing cycle ended.▪ PIN_FLD_FUTURE_BILL stores the date that the future billing cycle ends.

Opcode Changes from Portal 7.3 to BRM 7.3.1

This chapter describes the opcode changes that affect your Portal™ system and what you must consider when you upgrade from Portal 7.3 to Oracle Communications Billing and Revenue Management (BRM) 7.3.1.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

Note: Not all opcode changes were caused by feature enhancements. When appropriate, the feature that caused a change is provided in the opcode description.

Changed Policy Opcodes

The following policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

Activity FM Policy Opcodes

The following Activity FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_ACT_POL_CONFIG_BILLING_CYCLE

Removed input fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_ACT_POL_PRE_AUTHORIZE

Removed output fields

- PIN_FLD_FLAG_TRY_CALC_MAX

PCM_OP_ACT_POL_PRE_REAUTHORIZE

Removed output fields

- PIN_FLD_FLAG_TRY_CALC_MAX

PCM_OP_ACT_POL_SPEC_EVENT_CACHE

Changed input fields

- PIN_FLD_ITEM_OBJ in the PIN_FLD_BAL_IMPACTS array is now mandatory.

Removed input fields

- PIN_FLD_NAME

- PIN_FLD_SESSION_OBJ
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_DESCR
- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_USERID
- PIN_FLD_SYS_DESCR
- PIN_FLD_PROVIDER_ID
- PIN_FLD_PROVIDER_IPADDR
- PIN_FLD_EVENT_NO
- PIN_FLD_CURRENCY
- PIN_FLD_TAX_LOCALES
- PIN_FLD_TOTAL array
- PIN_FLD_TAX_JURISDICTIONS array

Accounts Receivable FM Policy Opcodes

The following Accounts Receivable FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_AR_POL_REVERSE_WRITEOFF

Removed input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_DESCR
- PIN_FLD_START_T
- PIN_FLD_END_T

New output fields

- PIN_FLD_PROGRAM_NAME

Billing FM Policy Opcodes

The following billing policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_BILL_POL_BILL_PRE_COMMIT

Removed input fields

- PIN_FLD_ACCOUNT_NO
- PIN_FLD_BILL_OBJ

PCM_OP_BILL_POL_CHECK_SUPPRESSION

Changed input fields

- PIN_FLD_STATUS is now mandatory

PCM_OP_BILL_POL_EVENT_SEARCH**Changed input fields**

- PIN_FLD_ITEM_OBJ_INFO array is now PIN_FLD_ITEMS array.

Changed output fields

- PIN_FLD_RESOURCE_ID in the PIN_FLD_BAL_IMPACTS array is now optional.

PCM_OP_BILL_POL_GET_PENDING_ITEMS**New input fields**

- PIN_FLD_ITEMS array

Changed input fields

- PIN_FLD_PAY_TYPE is now optional
- PIN_FLD_ACTG_NEXT_T is now optional

Removed input fields

- PIN_FLD_END_T
- PIN_FLD_BILL_WHEN
- PIN_FLD_BILL_ACTGCYCLES_LEFT
- PIN_FLD_FLAGS
- PIN_FLD_ITEMS array

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_RECVD
 - PIN_FLD_BILL_OBJ

Changed output fields

- PIN_FLD_RESULTS array is now optional

PCM_OP_BILL_POL_POST_BILLING**New input fields**

- PIN_FLD_OPEN_BAL
- PIN_FLD_PENDING_BAL

Changed input fields

- PIN_FLD_BILL_TYPE was replaced by PIN_FLD_PAY_TYPE optional field.

Removed input fields

- PIN_FLD_END_T

Removed output fields

- PIN_FLD_ACTG_NEXT_T

PCM_OP_BILL_POL_SPEC_BILLNO**Changed input fields**

- PIN_FLD_BILL_TYPE is now PIN_FLD_PAY_TYPE.
- PIN_FLD_NAME is now mandatory.

- PIN_FLD_PARENT is now the PIN_FLD_BILLINFO_OBJ mandatory field.

Removed input fields

- PIN_FLD_CREATED_T
- PIN_FLD_MOD_T
- PIN_FLD_CURRENCY
- PIN_FLD_TOTAL_DUE

Changed output fields

- PIN_FLD_NAME is now mandatory.
- PIN_FLD_PARENT is now the PIN_FLD_BILLINFO_OBJ mandatory field.

Removed output fields

- PIN_FLD_CREATED_T
- PIN_FLD_MOD_T
- PIN_FLD_CURRENCY
- PIN_FLD_TOTAL_DUE

PCM_OP_BILL_POL_SPEC_FUTURE_CYCLE

Changed input fields

- PIN_FLD_BILL_TYPE is now PIN_FLD_PAY_TYPE.

Removed input fields

- PIN_FLD_ACTG_LAST_T
- PIN_FLD_ACTG_FUTURE_T
- PIN_FLD_BILL_WHEN
- PIN_FLD_BILL_ACTGCYCLES_LEFT
- PIN_FLD_ACTG_FUTURE_DOM

PCM_OP_BILL_POL_VALID_TRANSFER

Removed input fields

- PIN_FLD_DESCR
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_ITEMS array:
 - PIN_FLD_ITEM_OBJ
 - PIN_FLD_AMOUNT
 - PIN_FLD_CURRENCY

PCM_OP_CONTENT_POL_ACCOUNTING

Removed input fields

- PIN_FLD_OBJ_TYPE

Removed output fields

- PIN_FLD_OBJ_TYPE

PCM_OP_CONTENT_POL_AUTHORIZE**New output fields**

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_CONTENT_POL_POST_ACCOUNTING**Changed input fields**

- PIN_FLD_CONTENT_PROVIDER_ID is now optional.
- PIN_FLD_CONTENT_CATEGORY_NAME is now optional.
- PIN_FLD_DESCR is now mandatory.
- PIN_FLD_END_T is now mandatory.

PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS**New output fields**

- PIN_FLD_EXTENDED_DATA array

Removed output fields

- PIN_FLD_OBJ_TYPE
- PIN_FLD_EXTENDED_INFO

Customer FM Policy Opcodes

The following customer FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_CUST_POL_CANONICALIZE**Changed input fields**

- PIN_FLD_STR_VALS array is now optional.

Changed output fields

- PIN_FLD_STR_VALS array is now optional.

PCM_OP_CUST_POL_GET_CONFIG**Removed input fields**

- PIN_FLD_NAME
- PIN_FLD_DESCR
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_INFO array
- PIN_FLD_SERVICES array
- PIN_FLD_NAMEINFO array

Removed output fields

- PIN_FLD_BAL_INFO array

PCM_OP_CUST_POL_GET_DB_LIST

New output fields

- PIN_FLD_VERSION
- PIN_FLD_VALUE
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_NAME
- PIN_FLD_HOSTNAME
- PIN_FLD_DESCR
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_WRITE_ACCESS
- PIN_FLD_READ_ACCESS
- PIN_FLD_MOD_T
- PIN_FLD_CREATED_T

PCM_OP_CUST_POL_GET_DB_NO

New input fields

- PIN_FLD_BILLINFO array
- PIN_FLD_GROUP_INFO substruct
- PIN_FLD_SERVICES array

PCM_OP_CUST_POL_GET_DEALS

Changed output fields

- PIN_FLD_PRODUCTS array is now optional.

PCM_OP_CUST_POL_GET_PLANS

Removed input fields

- PIN_FLD_AAC_SOURCE
- PIN_FLD_AAC_VENDOR
- PIN_FLD_AAC_PACKAGE
- PIN_FLD_AAC_PROMO_CODE
- PIN_FLD_AAC_SERIAL_NUM

PCM_OP_CUST_POL_POST_COMMIT

New input fields

- PIN_FLD_ACCTINFO array

Changed input fields

- PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_OBJ
- PIN_FLD_AAC_ACCESS was moved into the PIN_FLD_ACCTINFO array.
- PIN_FLD_AAC_SOURCE was moved into the PIN_FLD_ACCTINFO array.

PCM_OP_CUST_POL_PRE_COMMIT

New input fields

- PIN_FLD_ACCTINFO array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_AR_BILLINFO_OBJ
 - PIN_FLD_PARENT_BILLINFO_OBJ
 - PIN_FLD_CURRENCY_SECONDARY
 - PIN_FLD_BILLING_SEGMENT
 - PIN_FLD_EFFECTIVE_T
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_TERM
 - PIN_FLD_PAYMENT_OFFESET
 - PIN_FLD_INV_TYPE
- PIN_FLD_INHERITED_INFO substruct in the PIN_FLD_PAYINFO array:
 - PIN_FLD_INV_INFO array
 - PIN_FLD_CC_INFO array
 - PIN_FLD_DD_INFO array
 - PIN_FLD_BAL_INFO array

Changed input fields

- The following fields were moved into the PIN_FLD_ACCTINFO array:
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_AAC_ACCESS
 - PIN_FLD_AAC_SOURCE
 - PIN_FLD_AAC_VENDOR
 - PIN_FLD_AAC_PACKAGE
 - PIN_FLD_AAC_PROMO_CODE
 - PIN_FLD_AAC_SERIAL_NUM
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY

- PIN_FLD_TYPE in the PIN_FLD_PHONES array in the PIN_FLD_NAMEINFO array is now optional.
- PIN_FLD_LIMIT array was moved into PIN_FLD_BAL_INFO array.

Removed input fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_MERCHANT
 - PIN_FLD_BILL_MODE
 - PIN_FLD_BILL_TYPE
 - PIN_FLD_PARENT
 - PIN_FLD_ACCESS_CODE1
 - PIN_FLD_ACCESS_CODE2
- PIN_FLD_NAMEINFO_INDEX in the PIN_FLD_PAYINFO array.

PCM_OP_CUST_POL_PREP_ACCTINFO

Removed input fields

- PIN_FLD_BAL_INFO array

Changed output fields

- PIN_FLD_ACTG_TYPE in the PIN_FLD_ACCTINFO array is now optional.

Removed output fields

- PIN_FLD_BAL_INFO array

PCM_OP_CUST_POL_PREP_LOCALE

Changed output fields

- PIN_FLD_LOCALE is now optional.

PCM_OP_CUST_POL_PREP_NAMEINFO

New output fields

- PIN_FLD_CANON_COUNTRY in the PIN_FLD_NAMEINFO array.

PCM_OP_CUST_POL_PREP_STATUS

New input fields

- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_END_T
- PIN_FLD_CLOSE_WHEN_T

New output fields

- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_END_T

Changed output fields

- PIN_FLD_CLOSE_WHEN_T is now mandatory.

PCM_OP_CUST_POL_SET_BRANDINFO

New output fields

- PIN_FLD_FIELD array in the PIN_FLD_FIELD array.

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_TAX_CALC

New input fields

- PIN_FLD_COMMAND
- PIN_FLD_ROUNDING
- PIN_FLD_ROUNDING_MODE

Removed input fields

- PIN_FLD_COMMAND in the PIN_FLD_TAXES array.

New output fields

- PIN_FLD_TAXPKG_TYPE in the PIN_FLD_TAXES array.

Changed output fields

- PIN_FLD_SUBTOTAL array is now mandatory.
- PIN_FLD_LOCATION_MODE in the PIN_FLD_SUBTOTAL array is now mandatory.

Removed output fields

- PIN_FLD_TAXPKG_TYPE

PCM_OP_CUST_POL_TRANSITION_DEALS

New output fields

- PIN_FLD_PURCHASE_START_DETAILS
- PIN_FLD_PURCHASE_END_DETAILS
- PIN_FLD_CYCLE_START_DETAILS
- PIN_FLD_CYCLE_END_DETAILS
- PIN_FLD_USAGE_START_DETAILS
- PIN_FLD_USAGE_END_DETAILS
- PIN_FLD_STATUS
- PIN_FLD_STATUS_FLAGS

PCM_OP_CUST_POL_TRANSITION_PLANS

Changed output fields

- PIN_FLD_LIMIT array was moved into the PIN_FLD_PLAN array.

PCM_OP_CUST_POL_VALID_AACINFO

Removed output fields

- PIN_FLD_FIELD array

PCM_OP_CUST_POL_VALID_ACCTINFO

Removed input fields

- PIN_FLD_BAL_INFO array

New output fields

- PIN_FLD_RESULT
- PIN_FLD_FIELD array

Removed output fields

- PIN_FLD_ACCTINFO

PCM_OP_CUST_POL_VALID_BILLINFO

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_LIMIT

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.
- PIN_FLD_UNKNOWN in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_LOCALE

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_LOGIN

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.
- PIN_FLD_UNKNOWN in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_NAMEINFO

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_PAYINFO

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_PROFILE

Changed input fields

- PIN_FLD_INHERITED_INFO substruct is now mandatory.

Changed output fields

- PIN_FLD_DESCR in the PIN_FLD_FIELD array is now mandatory.

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_STATUS**New input fields**

- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_END_T

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.
- PIN_FLD_UNKNOWN in the PIN_FLD_FIELD array.

PCM_OP_CUST_POL_VALID_TAXINFO**New input fields**

- PIN_FLD_SESSION_OBJ
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_EXEMPTIONS array

GPRS AAA Manager FM Policy Opcodes

The following GPRS AAA Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GPRS_AAA_POL_AUTHORIZE**Changed input fields**

- PIN_FLD_SS_ACTION_CODE in the PIN_FLD_SERVICE_CODES array is now mandatory.
- PIN_FLD_SS_CODE in the PIN_FLD_SERVICE_CODES array is now mandatory.

PCM_OP_GPRS_AAA_POL_AUTHORIZE_PREP_INPUT**Changed input fields**

- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_EXTENDED_INFO substruct is now an integer type.
- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_SESSION_INFO array is now an integer type.
- The following fields in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_SESSION_INFO array are now optional:
 - PIN_FLD_PDP_TYPE
 - PIN_FLD_PDP_ADDRESS
 - PIN_FLD_PDP_RADDRESS

Changed output fields

- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_EXTENDED_INFO substruct is now an integer type.

PCM_OP_GPRS_AAA_POL_REAUTHORIZE_PREP_INPUT**Changed input fields**

- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_EXTENDED_INFO substruct is now an integer type.
- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_SESSION array is now an integer type.

Changed output fields

- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_EXTENDED_INFO substruct is now an integer type.

PCM_OP_GPRS_AAA_POL_STOP_ACCOUNTING_PREP_INPUT

Changed output fields

- PIN_FLD_EXTENDED_INFO substruct is now PIN_FLD_INHERITED_INFO substruct.

PCM_OP_GPRS_AAA_POL_UPDATE_ACCOUNTING_PREP_INPUT

Changed input fields

- PIN_FLD_EXTENDED_INFO substruct is now PIN_FLD_INHERITED_INFO substruct.
- PIN_FLD_SESSION_ID in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_INHERITED_INFO substruct is now an integer type.
- PIN_FLD_PDP_TYPE in the PIN_FLD_GPRS_INFO substruct in the PIN_FLD_INHERITED_INFO substruct is now mandatory.

GSM AAA Manager FM Policy Opcodes

The following GSM AAA Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GSM_AAA_POL_SEARCH_SESSION

Removed input fields

- PIN_FLD_PROVIDER_ID

GSM Manager FM Policy Opcodes

The following GSM Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GSM_POL_APPLY_PARAMETER

New input fields

- PIN_FLD_GSM_INFO substruct in the PIN_FLD_INHERITED_INFO substruct in the PIN_FLD_SERVICES array.

Changed output fields

- PIN_FLD_GSM_INFO substruct in the PIN_FLD_INHERITED_INFO substruct in the PIN_FLD_SERVICES array.

Invoice Manager FM Policy Opcodes

The following Invoice Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_INV_POL_FORMAT_INVOICE

Changed input fields

- PIN_FLD_LOCALE in the PIN_FLD_ACCTINFO array is now optional.

PCM_OP_INV_POL_FORMAT_INVOICE_HTML

Changed input fields

- The following fields in the PIN_FLD_ACCTINFO array are now optional:
 - PIN_FLD_CURRENCY_SECONDARY
 - PIN_FLD_BILL_TYPE
 - PIN_FLD_LOCALE
- PIN_FLD_LOGIN in the PIN_FLD_AR_ITEMS array is now mandatory.

PCM_OP_INV_POL_FORMAT_VIEW_INVOICE

Changed input fields

- PIN_FLD_HEADER_NUM and PIN_FLD_HEADER_STR are now optional.

PCM_OP_INV_POL_PREP_INVOICE

Changed input fields

- PIN_FLD_LOCALE in the PIN_FLD_ACCTINFO array is now optional.

Changed output fields

- PIN_FLD_LOCALE in the PIN_FLD_ACCTINFO array is now optional.

PCM_OP_INV_POL_SELECT

Changed input fields

- PIN_FLD_LOCALE in the PIN_FLD_ACCTINFO array is now optional.

Changed output fields

- PIN_FLD_LOCALE in the PIN_FLD_ACCTINFO array is now optional.

Number Manager Policy Opcodes

The following Number Manager policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_NUM_POL_CANONICALIZE

Changed output fields

- PIN_FLD_NUMBERS array is now optional.

PCM_OP_NUM_POL_DEVICE_ASSOCIATE

New output fields

- PIN_FLD_SERVICES array:
 - PIN_FLD_END_T
 - PIN_FLD_DESCR

PCM_OP_NUM_POL_DEVICE_CREATE

Changed input fields

- PIN_FLD_DEVICE_ID is now mandatory.

Changed output fields

- PIN_FLD_VANITY and PIN_FLD_NETWORK_ELEMENT fields in the PIN_FLD_DEVICE_NUM substruct are now optional.

Payment FM Policy Opcodes

The following Payment FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PYMT_POL_VALID_VOUCHER

New output fields

- PIN_FLD_EXPIRATION_T

Pricing FM Policy Opcodes

The following payment FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PRICE_POL_PREP_DEAL

Removed input fields

- PIN_FLD_FLAGS in the PIN_FLD_PRODUCTS array.

Removed output fields

- PIN_FLD_FLAGS in the PIN_FLD_PRODUCTS array.

PCM_OP_PRICE_POL_PREP_PRODUCT

Removed input fields

- PIN_FLD_TAX_SUPPLIER

Removed output fields

- PIN_FLD_TAX_SUPPLIER

PCM_OP_PRICE_POL_VALID_PRODUCT

Removed input fields

- PIN_FLD_TAX_SUPPLIER

Process Audit FM Policy Opcodes

The following Process Audit FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PROCESS_AUDIT_POL_ALERT

New input fields

- PIN_FLD_THRESHOLDS array

New output fields

- PIN_FLD_POID
- PIN_FLD_MESSAGES array
- PIN_FLD_RESULT

PCM_OP_PROCESS_AUDIT_POL_CREATE

New input fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROCESS_NAME
- PIN_FLD_TOTAL_RECORDS
- PIN_FLD_SUCCESSFUL_RECORDS
- PIN_FLD_FAILED_RECORDS
- PIN_FLD_BILLING_INFO substruct in the PIN_FLD_INHERITED_INFO substruct.

Removed input fields

- PIN_FLD_PIPE_LINE_INFO substruct and PIN_FLD_FAILED_CDRS array in the PIN_FLD_INHERITED_INFO substruct.

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROCESS_NAME
- PIN_FLD_TOTAL_RECORDS
- PIN_FLD_SUCCESSFUL_RECORDS
- PIN_FLD_FAILED_RECORDS

Changed output fields

- PIN_FLD_BILLING_SEGMENTS array was moved into the PIN_FLD_INHERITED substruct.

Removed output fields

- PIN_FLD_PIPE_LINE_INFO substruct
- PIN_FLD_FAILED_CDRS array

PCM_OP_PROCESS_AUDIT_POL_CREATE_AND_LINK

Changed input fields

- The following fields were moved into the PIN_FLD_GROUP_DETAILS array:
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_EVENT_COUNT

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROCESS_NAME
- PIN_FLD_BATCH_STAT substruct
- PIN_FLD_GROUP_DETAILS array

- PIN_FLD_TOTAL_RECORDS
- PIN_FLD_SUCCESSFUL_RECORDS
- PIN_FLD_FAILED_RECORDS
- PIN_FLD_PROCESS_START_T
- PIN_FLD_PROCESS_END_T
- PIN_FLD_HOSTNAME
- PIN_FLD_ACTION

PCM_OP_PROCESS_AUDIT_POL_CREATE_WRITEOFF_SUMMARY

New input fields

- PIN_FLD_POID
- PIN_FLD_RESULTS array

New output fields

- PIN_FLD_POID
- PIN_FLD_GROUP_DETAILS array

Rating FM Policy Opcodes

The following Rating FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_RATE_POL_MAP_TAX_SUPPLIER

Changed input fields

- PIN_FLD_PRODUCTS array is now optional.

Changed output fields

- PIN_FLD_POID is now optional.

PCM_OP_RATE_POL_POST_TAX

New input fields

- PIN_FLD_RESULT
- PIN_FLD_NAMEINFO array

Changed input fields

- PIN_FLD_DESCR and PIN_FLD_LOCATION_MODE fields in the PIN_FLD_TAXES array are now mandatory.

New output fields

- PIN_FLD_MESSAGES array

PCM_OP_RATE_POL_PRE_TAX

Changed input fields

- The following fields in the PIN_FLD_TAXES array are now optional:
 - PIN_FLD_ORDER_ACCEPT
 - PIN_FLD_ORDER_ORIGIN

- PIN_FLD_SHIP_TO
- PIN_FLD_SHIP_FROM

Removed input fields

- PIN_FLD_ACCOUNT_NO
- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_NAME
- PIN_FLD_EXEMPTIONS array
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_NAME
- PIN_FLD_LOCATION
- PIN_FLD_VAT_CERT
- PIN_FLD_VATINFO array
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_REGULATED_FLAG
- PIN_FLD_BILL_OBJ
- PIN_FLD_TAXES array:
 - PIN_FLD_TAX_CODE
 - PIN_FLD_AMOUNT_TAXED
 - PIN_FLD_COMMAND
 - PIN_FLD_INTERNATIONAL_IND
 - PIN_FLD_SERVICE_TYPE
 - PIN_FLD_TAXCODE_MAP
 - PIN_FLD_COUNT
 - PIN_FLD_ELAPSED_TIME

Changed output fields

- The following fields in the PIN_FLD_TAXES array are now optional:
 - PIN_FLD_ORDER_ACCEPT
 - PIN_FLD_ORDER_ORIGIN
 - PIN_FLD_SHIP_TO
 - PIN_FLD_SHIP_FROM

Removed output fields

- PIN_FLD_ACCOUNT_NO
- PIN_FLD_START_T
- PIN_FLD_END_T

- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_NAME
- PIN_FLD_EXEMPTIONS array
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_NAME
- PIN_FLD_LOCATION
- PIN_FLD_VAT_CERT
- PIN_FLD_VATINFO array
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_REGULATED_FLAG
- PIN_FLD_BILL_OBJ
- PIN_FLD_BUFFER
- PIN_FLD_TAXES array:
 - PIN_FLD_TAX_CODE
 - PIN_FLD_AMOUNT_TAXED
 - PIN_FLD_COMMAND
 - PIN_FLD_INTERNATIONAL_IND
 - PIN_FLD_SERVICE_TYPE
 - PIN_FLD_TAXCODE_MAP
 - PIN_FLD_COUNT
 - PIN_FLD_ELAPSED_TIME

PCM_OP_RATE_POL_TAX_LOC

Changed input fields

- PIN_FLD_ACCOUNT_OBJ is now optional.

Removed output fields

- PIN_FLD_INTERNATIONAL_IND
- PIN_FLD_SERVICE_TYPE
- PIN_FLD_LOCATION_MODE

Remittance FM Policy Opcodes

The following Remittance FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_REMIT_POL_SPEC_QTY

Changed input fields

- PIN_FLD_RUM_NAME is now optional.

PCM_OP_REPL_POL_PUSH**Changed input fields**

- PIN_FLD_SUPPLIER_OBJ is now mandatory.

Resource Reservation FM Policy Opcodes

The following Resource Reservation FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_RESERVE_POL_PREP_CREATE**New input fields**

- PIN_FLD_RESERVATION_OBJ
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_RESERVATION_NO

Changed input fields

- PIN_FLD_EXPIRATION_T is now optional.

Removed input fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_SESSION_OBJ
- PIN_FLD_QUANTITY
- PIN_FLD_BALANCES array
- PIN_FLD_AVAILABLE_RESOURCE array
- PIN_FLD_RESERVATION_NO

Removed output fields

- PIN_FLD_QUANTITY
- PIN_FLD_BALANCES array

PCM_OP_RESERVE_POL_PREP_EXTEND**New input fields**

- PIN_FLD_RESERVATION_NO
- PIN_FLD_RESERVATION_MODE
- PIN_FLD_END_T

Removed input fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_QUANTITY
- PIN_FLD_BALANCES array
- PIN_FLD_AVAILABLE_RESOURCE array

New output fields

- PIN_FLD_RESERVATION_NO

- PIN_FLD_RESERVATION_MODE

Removed output fields

- PIN_FLD_QUANTITY
- PIN_FLD_BALANCES array

SIM Card Manager FM Policy Opcodes

The following SIM Card Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SIM_POL_DEVICE_ASSOCIATE

Changed output fields

- PIN_FLD_ACCOUNT_OBJ in the PIN_FLD_SERVICES array is now mandatory.

PCM_OP_SIM_POL_DEVICE_CREATE

Changed input fields

- The following fields in the PIN_FLD_DEVICE_SIM substruct has changed:
 - PIN_FLD_NETWORK_ELEMENT is now optional.
 - PIN_FLD_IMSI is now mandatory.

Changed output fields

- The following fields in the PIN_FLD_DEVICE_SIM substruct has changed:
 - PIN_FLD_NETWORK_ELEMENT is now optional.
 - PIN_FLD_IMSI is now mandatory.

PCM_OP_SIM_POL_DEVICE_SET_ATTR

New input fields

- PIN_FLD_DEVICE_ID

New output fields

- PIN_FLD_DEVICE_ID

Subscription FM Policy Opcodes

The following Subscription FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SUBSCRIPTION_POL_COUNT_LINES

Removed input fields

- PIN_FLD_PSEUDO_FLD_EVENT_NOTIFICATION_BILLING_START substruct
- PIN_FLD_PSEUDO_FLD_EVENT_NOTIFICATION_BILLING_START_PARTIAL substruct
- PIN_FLD_PSEUDO_FLD_EVENT_GROUP_SHARING_DISCOUNT_CREATE substruct

New output fields

- PIN_FLD_NAME

- PIN_FLD_USERID
- PIN_FLD_SESSION_OBJ
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_START_T
- PIN_FLD_END_T

Removed output fields

- PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_POL_GENERATE_RERATE_REQUEST

New input fields

- PIN_FLD_RERATE_ACCOUNTS array

New output fields

- PIN_FLD_RERATE_ACCOUNTS array

PCM_OP_SUBSCRIPTION_POL_NOTIFY_AGGREGATION

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_SESSION_OBJ
- PIN_FLD_SUB_BAL_IMPACTS array
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_DESCR
- PIN_FLD_END_T
- PIN_FLD_EFFECTIVE_T

Removed output fields

- PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_POL_PRE_FOLD

Changed input fields

- PIN_FLD_END_T is now optional.

Removed input fields

- PIN_FLD_ACCOUNT_NO
- PIN_FLD_STATUS
- PIN_FLD_STATUS_FLAGS
- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_SECONDARY
- PIN_FLD_BILL_WHEN
- PIN_FLD_BILL_TYPE
- PIN_FLD_LAST_BILL_OBJ

- PIN_FLD_START_T
- PIN_FLD_ACTG_LAST_T
- PIN_FLD_ACTG_NEXT_T
- PIN_FLD_BILL_ACTGCYCLES_LEFT
- PIN_FLD_CLOSE_WHEN_T
- PIN_FLD_ITEM_OBJ
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_STATUS
 - PIN_FLD_FLAGS
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_QUANTITY
 - PIN_FLD_SERVICE_OBJ

New output fields

- PIN_FLD_POID

PCM_OP_SUBSCRIPTION_POL_PREP_FOLD

New input fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_PRODUCT_OBJ
 - PIN_FLD_OFFERING_OBJ

Removed input fields

- PIN_FLD_START_T

Removed output fields

- PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_POL_SNOWBALL_DISCOUNT

Removed input fields

- PIN_FLD_RATED_TIMEZONE_ID
- PIN_FLD_TIMEZONE_MODE
- PIN_FLD_TIMEZONE_ADJ_START_T
- PIN_FLD_TIMEZONE_ADJ_END_T

Removed output fields

- PIN_FLD_RATED_TIMEZONE_ID
- PIN_FLD_TIMEZONE_MODE
- PIN_FLD_TIMEZONE_ADJ_START_T
- PIN_FLD_TIMEZONE_ADJ_END_T

PCM_OP_SUBSCRIPTION_POL_SPEC_CANCEL

Removed input fields

- PIN_FLD_OFFERING_OBJ in the PIN_FLD_PRODUCTS array.

Removed output fields

- PIN_FLD_OFFERING_OBJ in the PIN_FLD_PRODUCTS array.

PCM_OP_SUBSCRIPTION_POL_SPEC_CYCLE_FEE_INTERVAL

New input fields

- PIN_FLD_SCALE

Changed input fields

- PIN_FLD_UNITS is now PIN_FLD_UNIT

New output fields

- PIN_FLD_SCALE

PCM_OP_SUBSCRIPTION_POL_SPEC_FOLD

Removed input fields

- PIN_FLD_CREATED_T
- PIN_FLD_MOD_T

PCM_OP_SUBSCRIPTION_POL_SPEC_RERATE

Changed input fields

- The following fields in the PIN_FLD_ARGS array are now optional:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_POID
 - PIN_FLD_SERVICE_OBJ

PCM_OP_SUBSCRIPTION_POL_UPDATE_CDC

New input fields

- PIN_FLD_EVENT_TYPE
- PIN_FLD_PSEUDO_FLD_PCM_OP_CUST_SET_STATUS substruct

Removed input fields

- PIN_FLD_FLAGS

New output fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_EVENT_TYPE
- PIN_FLD_PSEUDO_FLD_PCM_OP_CUST_SET_STATUS substruct

Removed output fields

- PIN_FLD_RESULTS array

Services Framework AAA Manager FM Policy Opcodes

The following Services Framework AAA Manager FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_TCF_AAA_POL_MATCH_CONTINUATION_CALL

Changed input fields

- PIN_FLD_EXTENDED_INFO substruct is now optional.
- PIN_FLD_TELCO_INFO substruct in the PIN_FLD_EXTENDED_INFO substruct is now optional.
- PIN_FLD_CALLED_TO in the PIN_FLD_TELCO substruct is now optional.

Voucher FM Policy Opcodes

The following Voucher FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_VOUCHER_POL_DEVICE_ASSOCIATE

New input fields

- PIN_FLD_SERVICE_OBJ in the PIN_FLD_SERVICES array.

Changed input fields

- PIN_FLD_ACCOUNT_OBJ in the PIN_FLD_SERVICES array is now optional.

Removed input fields

- PIN_FLD_DEAL_OBJ in the PIN_FLD_DEVICE_VOUCHER substruct in the PIN_FLD_EXTENDED_INFO substruct.

New output fields

- PIN_FLD_SERVICE_OBJ in the PIN_FLD_SERVICES array.
- PIN_FLD_EXTENDED_INFO substruct:
 - PIN_FLD_DEVICE_VOUCHER array:
 - PIN_FLD_DEVICE_ID
 - PIN_FLD_EXPIRATION_T
 - PIN_FLD_BAL_IMPACTS array

Changed output fields

- PIN_FLD_DEVICE_VOUCHER substruct in the PIN_FLD_EXTENDED_INFO substruct is now mandatory.
- PIN_FLD_VOUCHER_PIN in the PIN_FLD_DEVICE_VOUCHER substruct in the PIN_FLD_EXTENDED_INFO substruct is now mandatory.

Removed output fields

- PIN_FLD_DEAL_OBJ in the PIN_FLD_DEVICE_VOUCHER substruct in the PIN_FLD_EXTENDED_INFO substruct.

Zone Map FM Policy Opcodes

The following Zone Map FM policy opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_ZONEMAP_POL_GET_LINEAGE**New input fields**

- PIN_FLD_ZONEMAP_NAME
- PIN_FLD_ZONEMAP_TARGET
- PIN_FLD_ZONEMAP_SEARCH_TYPE

New output fields

- PIN_FLD_ZONEMAP_LINEAGE

PCM_OP_ZONEMAP_POL_SET_ZONEMAP**Changed input fields**

- PIN_FLD_POID is now optional.

Changed Standard Opcodes

The following standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

Activity FM Standard Opcodes

The following Activity FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_ACT_ACTIVITY**New output fields**

- PIN_FLD_ACTIVE_SESSION_ID
- PIN_FLD_SUB_BAL_IMPACTS array
- PIN_FLD_UNRATED_QUANTITY
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_RATING_STATUS
- PIN_FLD_BALANCES array

PCM_OP_ACT_AUTHORIZE**New input fields**

- PIN_FLD_END_T
- PIN_FLD_SESSION_OBJ
- PIN_FLD_SCALED_DELAY_TIME

Changed input fields

- PIN_FLD_MIN_QUANTITY and PIN_FLD_RUM_MAP array were moved into the PIN_FLD_RATING_INFO substruct.

New output fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_EXPIRATION_T

Changed output fields

- PIN_FLD_RATING_STATUS is now mandatory.

Removed output fields

- PIN_FLD_TIMEZONE_ID

PCM_OP_ACT_CALC_MAX_USAGE

Removed input fields

- PIN_FLD_END_T in the PIN_FLD_EVENT substruct.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_UNRATED_QUANTITY
 - PIN_FLD_NET_QUANTITY

PCM_OP_ACT_FIND

New input fields

- PIN_FLD_USERID

New output fields

- PIN_FLD_STATUS

PCM_OP_ACT_FIND_VERIFY

Changed output fields

- PIN_FLD_REASON is now mandatory.

PCM_OP_ACT_MULTI_AUTHORIZE

Changed input fields

- PIN_FLD_LOGIN is now mandatory.
- The following fields were moved into the PIN_FLD_SERVICES array:
 - PIN_FLD_USAGE_TYPE
 - PIN_FLD_EVENT substruct
 - PIN_FLD_BALANCES array
 - PIN_FLD_EXTENDED_INFO substruct

Changed output fields

- PIN_FLD_NET_QUANTITY and PIN_FLD_UNRATED_QUANTITY in the PIN_FLD_RUM_MAP array are now mandatory.

PCM_OP_ACT_REAUTHORIZE

New input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_SCALED_DELAY_TIME

Changed input fields

- PIN_FLD_SERVICE_OBJ is now optional.
- PIN_FLD_MIN_QUANTITY was moved into the PIN_FLD_RATING_INFO substruct.

Removed input fields

- PIN_FLD_PROGRAM_NAME
- PIN_FLD_RESERVATION_OBJ
- PIN_FLD_RESERVATION_LIST array

Changed output fields

- PIN_FLD_ACTIVE_SESSION_ID is now mandatory.

Removed output fields

- PIN_FLD_TIMEZONE_ID

New output fields

- PIN_FLD_EXPIRATION_T

PCM_OP_ACT_USAGE (input fields)**New input fields**

- PIN_FLD_READ_BALGRP_MODE
- PIN_FLD_DELETED_FLAG
- PIN_FLD_EVENT substruct:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_TOTAL array
 - PIN_FLD_MONITOR_IMPACTS array
- PIN_FLD_PRODUCTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_CYCLE_END_DETAILS
 - PIN_FLD_CYCLE_START_DETAILS
 - PIN_FLD_PURCHASE_END_DETAILS
 - PIN_FLD_PURCHASE_START_DETAILS
 - PIN_FLD_USAGE_END_DETAILS
 - PIN_FLD_USAGE_START_DETAILS
- PIN_FLD_DISCOUNT_LIST array in the PIN_FLD_DISCOUNTS array:
 - PIN_FLD_PURCHASE_START_DETAILS
 - PIN_FLD_PURCHASE_END_DETAILS
 - PIN_FLD_USAGE_START_DETAILS
 - PIN_FLD_USAGE_END_DETAILS
 - PIN_FLD_FIRST_USAGE
- PIN_FLD_EXEMPTIONS array:
 - PIN_FLD_CERTIFICATE_NUM
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T

Changed input fields

- PIN_FLD_START_T and PIN_FLD_END_T in the PIN_FLD_EVENT substruct are now optional.
- PIN_FLD_PLAN_OBJ, PIN_FLD_PRODUCT_OBJ and PIN_FLD_STATUS in the PIN_FLD_PRODUCTS array are now mandatory.
- PIN_FLD_VALID_TO and PIN_FLD_VALID_FROM in the PIN_FLD_PROFILE_DATA array are now mandatory.

Removed input fields

- PIN_FLD_ON_DEMAN_INFO substruct:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ
 - PIN_FLD_ITEM_POID_LIST
 - PIN_FLD_SPONSOR array
 - PIN_FLD_SERVICES array
- PIN_FLD_DISCOUNT_LIST array in PIN_FLD_DISCOUNTS array in PIN_FLD_PERIOD array:
 - PIN_FLD_OFFERING_OBJ
 - PIN_FLD_DISCOUNT_OBJ
 - PIN_FLD_SCALE
 - PIN_FLD_STATUS
 - PIN_FLD_TYPE
 - PIN_FLD_QUANTITY
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_FLAGS
- PIN_FLD_BAL_IMPACTS array
- PIN_FLD_TOTAL array
- PIN_FLD_INHERITED_INFO substruct
- PIN_FLD_MONITOR_IMPACTS array

PCM_OP_ACT_USAGE (output fields)

New output fields

- PIN_FLD_BAL_IMPACTS array:
 - PIN_FLD_IMPACT_TYPE
 - PIN_FLD_RESOURCE_ID
 - PIN_FLD_RESOURCE_ID_ORIG

- PIN_FLD_TAX_CODE
- PIN_FLD_RATE_TAG
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_ITEM_OBJ
- PIN_FLD_RATE_OBJ
- PIN_FLD_DISCOUNT
- PIN_FLD_PERCENT
- PIN_FLD_QUANTITY
- PIN_FLD_AMOUNT_DEFERRED
- PIN_FLD_AMOUNT
- PIN_FLD_AMOUNT_ORIG
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_GL_ID
- PIN_FLD_SUB_BAL_IMPACTS array in the PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_RESOURCE_ID
 - PIN_FLD_SUB_BALANCES array

Changed output fields

- PIN_FLD_SUB_BAL_IMPACTS was moved from PIN_FLD_BAL_IMPACTS array into the PIN_FLD_RESULTS array.
- The following fields in the PIN_FLD_RUM_MAP array in the PIN_FLD_RESULTS array are now mandatory:
 - PIN_FLD_NET_QUANTITY
 - PIN_FLD_RUM_NAME
 - PIN_FLD_UNRATED_QUANTITY
- PIN_FLD_EXTENDED_INFO substruct is now optional.

Removed output fields

- PIN_FLD_ON_DEMAND_INFO substruct:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ
 - PIN_FLD_ITEM_POID_LIST
 - PIN_FLD_SPONSOR array
 - PIN_FLD_SERVICES array

Accounts Receivable (A/R) Standard Opcodes

The following Accounts Receivable standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_AR_ACCOUNT_ADJUSTMENT

New output fields

- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_TOTAL array
 - PIN_FLD_RUM_MAP array
 - PIN_FLD_UNRATED_QUANTITY
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_RATING_STATUS
 - PIN_FLD_CYCLE_INFO substruct
- PIN_FLD_EXTENDED_INFO substruct
- PIN_FLD_ROLLOVER_INFO substruct

Changed output fields

- PIN_FLD_RESULTS array is now mandatory.

PCM_OP_AR_ACCOUNT_WRITEOFF

Changed output fields

- PIN_FLD_BILLINFO in the PIN_FLD_RESULTS array is now PIN_FLD_BILLINFO_OBJ

PCM_OP_AR_BILL_ADJUSTMENT

New input fields

- PIN_FLD_END_T

Changed input fields

- PIN_FLD_DESCR is now mandatory.

PCM_OP_AR_BILL_DISPUTE

New input fields

- PIN_FLD_END_T

Changed input fields

- PIN_FLD_AMOUNT is now mandatory.
- PIN_FLD_DESCR is now mandatory.

PCM_OP_AR_BILL_SETTLEMENT

New input fields

- PIN_FLD_END_T

Changed input fields

- PIN_FLD_DESCR is now mandatory.

Changed output fields

- PIN_FLD_DESCR is now mandatory.

PCM_OP_AR_BILLINFO_WRITEOFF**Changed input fields**

- PIN_FLD_DESCR is now mandatory.

PCM_OP_AR_EVENT_ADJUSTMENT**New input fields**

- PIN_FLD_STR_VERSION
- PIN_FLD_STRING_ID

New output fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_EVENTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_TOTAL array
 - PIN_FLD_RUM_MAP array
 - PIN_FLD_UNRATED_QUANTITY
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_RATING_STATUS
 - PIN_FLD_CYCLE_INFO substruct

Changed output fields

- PIN_FLD_EVENTS array is now optional.
- PIN_FLD_POID in the PIN_FLD_ITEMS array is now PIN_FLD_ITEM_OBJ

PCM_OP_AR_GET_ACCT_ACTION_ITEMS**New output fields**

- PIN_FLD_CREATED_T
- PIN_FLD_DISPUTE_TYPE
- PIN_FLD_ADJUSTMENT_TYPE
- PIN_FLD_SETTLEMENT_TYPE
- PIN_FLD_RESOURCE_IMPACTED
- PIN_FLD_RESOURCE_ID
- PIN_FLD_EVENTS array
- PIN_FLD_AGGREGATE_AMOUNTS array

Changed output fields

- PIN_FLD_ITEM_NAME is now PIN_FLD_NAME

Removed output fields

- PIN_FLD_DUE_T

PCM_OP_AR_GET_ACCT_BAL_SUMMARY

New output fields

- PIN_FLD_DISPUTE_TYPE
- PIN_FLD_ITEM_PENDING_FLAGS
- PCM_OP_AR_GET_ACCT_BILLS

Changed input fields

- PIN_FLD_STATUS is now optional.

PCM_OP_AR_GET_ACTION_ITEMS

Changed input fields

- PIN_FLD_AR_BILLINFO_OBJ is now optional.
- PCM_OP_AR_GET_ACTION_ITEMS

New output fields

- PIN_FLD_CREATED_T

Changed output fields

- PIN_FLD_ITEM_NAME is now PIN_FLD_NAME.
- PIN_FLD_RELATED_BILL_ITEM_OBJ and PIN_FLD_RELATED_ACTION_ITEM_OBJ are now optional.
- The following fields in the PIN_FLD_AGGREGATE_AMOUNTS array are now optional:
 - PIN_FLD_RESOURCE_ID
 - PIN_FLD_AMOUNT
 - PIN_FLD_DISCOUNT

Removed output fields

- PIN_FLD_DUE_T

PCM_OP_AR_GET_BAL_SUMMARY

New output fields

- PIN_FLD_DISPUTE_TYPE

Changed output fields

- PIN_FLD_ITEM_PENDING_FLAGS is now optional.

PCM_OP_AR_GET_BILL_ITEMS

Removed input fields

- PIN_FLD_AR_ACCOUNT_OBJ
- PIN_FLD_ACCOUNT_OBJ

New output fields

- PIN_FLD_RESULTS array:

- PIN_FLD_ADJUSTED
- PIN_FLD_DISPUTED
- PIN_FLD_RECVD
- PIN_FLD_WRITEOFF

Changed output fields

- PIN_FLD_ITEM_NAME is now PIN_FLD_NAME.
- PIN_FLD_ALLOCATED field in the PIN_FLD_RESULTS array is now optional.

Removed output fields

- PIN_FLD_DUE_T

PCM_OP_AR_GET_BILLS

Changed input fields

- PIN_FLD_STATUS is now optional.

New output fields

- PIN_FLD_START_T

PCM_OP_AR_GET_DISPUTES

New output fields

- PIN_FLD_SERVICE_OBJ

PCM_OP_AR_GET_ITEM_DETAIL

Changed output fields

- PIN_FLD_SYS_DESCR in the PIN_FLD_TRANSFERS_OUT array is now mandatory.

Removed output fields

- PIN_FLD_UNKNOWN

PCM_OP_AR_GET_ITEMS

Removed output fields

- PIN_FLD_UNKNOWN

PCM_OP_AR_ITEM_ADJUSTMENT

New output fields

- PIN_FLD_BAL_IMPACTS array
- PIN_FLD_SUB_BAL_IMPACTS array
- PIN_FLD_TOTAL array
- PIN_FLD_RUM_MAP array
- PIN_FLD_UNRATED_QUANTITY
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_RATING_STATUS

- PIN_FLD_CYCLE_INFO substruct

Changed output fields

- PIN_FLD_DESCR is now mandatory.

PCM_OP_AR_REVERSE_WRITEOFF

New input fields

- PIN_FLD_REASON_DOMAIN_ID
- PIN_FLD_REASON_ID

Removed input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_DESCR

Balance FM Standard Opcodes

The following Balance FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_BAL_CHANGE_VALIDITY

Changed input fields

- PIN_FLD_BAL_GRP_OBJ is now optional.

PCM_OP_BAL_GET_ACCT_BILLINFO

Changed output fields

- PIN_FLD_NAMEINFO array is now mandatory.

PCM_OP_BAL_GET_BAL_GRP_AND_SVC

New input fields

- PIN_FLD_END_T

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_SUBSCRIPTION_OBJ
- PIN_FLD_STATUS
- PIN_FLD_LAST_STATUS_T

Changed output fields

- PIN_FLD_SERVICE_OBJ is now mandatory.

PCM_OP_BAL_GET_BALANCES

New input fields

- PIN_FLD_BAL_INFO array

Changed input fields

- PIN_FLD_RESERVED_AMT in the PIN_FLD_BALANCES array is now PIN_FLD_RESERVED_AMOUNT.

New output fields

- PIN_FLD_REALTIME_CNTR
- PIN_FLD_SUB_BALANCES array:
 - PIN_FLD_VALID_FROM_DETAILS
 - PIN_FLD_VALID_TO_DETAILS

Changed output fields

- PIN_FLD_RESERVED_AMT in the PIN_FLD_BALANCES array is now PIN_FLD_RESERVED_AMOUNT.
- PIN_FLD_CONSUMPTION_RULE in the PIN_FLD_BALANCES array is now optional.

PCM_OP_BAL_GET_PREPAID_BALANCES

New input fields

- PIN_FLD_RESERVATION_OBJ

New output fields

- PIN_FLD_SUB_BALANCES array:
 - PIN_FLD_VALID_FROM_DETAILS
 - PIN_FLD_VALID_TO_DETAILS

Balance Monitoring FM Standard Opcodes

The following Balance Monitoring FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_MONITOR_HIERARCHY_CLEANUP

Changed input fields

- PIN_FLD_FLAGS and PIN_FLD_MEMBERS array in the PIN_FLD_PSUEDO_FLD_EVENT_GROUP_MEMBER substruct are now optional.
- PIN_FLD_PAY_TYPE in PIN_FLD_BILLINFO array is now optional

PCM_OP_MONITOR_PROCESS_BILLING_MONITORS

Changed input fields

- PIN_FLD_PARENT is now optional.

Base Opcodes

The following base opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SEARCH

Changed input fields

- PIN_FLD_TEMPLATE now takes the POID subcomponent as in “F1.subcomponent = V1,” where *subcomponent* can be **id**, **type**, **db**, or **rev**, in addition to the existing format “F1 = V1” in the **where** clause of the expression.

Billing FM Standard Opcodes

The following Billing FM opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_BILL_DEBIT

Removed input fields

- PIN_FLD_TYPE in the PIN_FLD_DEBIT array.

New output fields

- PIN_FLD_RESULT
- PIN_FLD_DESCR
- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_EXTENDED_INFO substruct
- PIN_FLD_ROLLOVER_INFO substruct
- PIN_FLD_RESULTS array:
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_SUB_BAL_IMPACTS array
 - PIN_FLD_TOTAL array
 - PIN_FLD_RUM_MAP array
 - PIN_FLD_UNRATED_QUANTITY
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_RATING_STATUS
 - PIN_FLD_CYCLE_INFO substruct

PCM_OP_BILL_FIND

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_NO
 - PIN_FLD_PARENT
 - PIN_FLD_ACCOUNT_OBJ

PCM_OP_BILL_GET_ITEM_EVENT_CHARGE_DISCOUNT

New output fields

- PIN_FLD_EVENTS array in the PIN_FLD_RESULTS array:
 - PIN_FLD_RUM_NAME
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_EVENT_OBJ
 - PIN_FLD_CREATED_T

PCM_OP_BILL_GROUP_ADD_MEMBER

Removed output fields

- PIN_FLD_RESULTS array

PCM_OP_BILL_GROUP_CREATE**New output fields**

- PIN_FLD_PARENT

PCM_OP_BILL_GROUP_DELETE_MEMBER**Removed input fields**

- PIN_FLD_FLAGS

PCM_OP_BILL_MAKE_BILL**New input fields**

- PIN_FLD_START_T
- PIN_FLD_FLAGS

Removed input fields

- PIN_FLD_SESSION_OBJ

New output fields

- PIN_FLD_CURRENT_TOTAL

Changed output fields

- PIN_FLD_REVENUES_ARRAY array is now PIN_FLD_REVENUES array.

PCM_OP_BILL_MAKE_BILL_NOW**Removed input fields**

- PIN_FLD_SESSION_OBJ
- PIN_FLD_ON_DEMAND_INFO substruct

Changed output fields

- PIN_FLD_LAST_BILL_OBJ and PIN_FLD_PENDING_RECV in the PIN_FLD_RESULTS array are now mandatory.

PCM_OP_BILL_MAKE_BILL_ON_DEMAND**Removed input fields**

- PIN_FLD_SESSION_OBJ
- PIN_FLD_ON_DEMAND_INFO substruct:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ
 - PIN_FLD_ITEM_POID_LIST
 - PIN_FLD_SPONSOR array
 - PIN_FLD_SERVICES array

Removed output fields

- PIN_FLD_ON_DEMAND_INFO substruct:
 - PIN_FLD_BILL_OBJ
 - PIN_FLD_AR_BILL_OBJ
 - PIN_FLD_ITEM_POID_LIST

- PIN_FLD_SPONSOR array
- PIN_FLD_SERVICES array

PCM_OP_BILL_MAKE_TRIAL_BILL

New output fields

- PIN_FLD_BILLINFO_OBJ

Changed output fields

- PIN_FLD_AMOUNT in the PIN_FLD_REVENUES array is now of type String.

PCM_OP_BILL_RESUME BILLING

Changed output fields

- PIN_FLD_BILLINFO array is now mandatory.

Channel FM Standard Opcodes

The following Channel FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_CHANNEL_SYNC

Removed input fields

- PIN_FLD_INVOKE_T
- PIN_FLD_LAST_INVOKE_T

Content Manager FM Standard Opcodes

The following Content Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_CONTENT_ACCOUNTING

Changed input fields

- PIN_FLD_LOGIN is now mandatory.
- PIN_FLD_AMOUNT is now mandatory.

PCM_OP_CONTENT_AUTHENTICATE

New input fields

- PIN_FLD_RESULT

New output fields

- PIN_FLD_LOGIN

Removed output fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_CONTENT_AUTHORIZE

New input fields

- PIN_FLD_EXPIRATION_T

Changed input fields

- PIN_FLD_QUANTITY is now mandatory.
- PIN_FLD_AMOUNT is now mandatory.

New output fields

- PIN_FLD_MIN_QUANTITY

PCM_OP_CONTENT_CANCEL_AUTHORIZATION

Changed input fields

- PIN_FLD_AUTHORIZATION_ID is now mandatory.

PCM_OP_CONTENT_FIND

Changed input fields

- PIN_FLD_LOGIN is now mandatory.

Customer FM Standard Opcodes

The following Customer FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_CUST_COMMIT_CUSTOMER (input fields)

New input fields

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_FLAGS
- PIN_FLD_PRODUCTS array in PIN_FLD_ACCTINFO array:
 - PIN_FLD_CYCLE_DISC_AMT
 - PIN_FLD_CYCLE_FEE_AMT
 - PIN_FLD_PURCHASE_DISC_AMT
 - PIN_FLD_PURCHASE_FEE_AMT
- PIN_FLD_PERMITTEDS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_ACCTINFO array.
- PIN_FLD_NAME and PIN_FLD_BILLINFO_OBJ in the PIN_FLD_BAL_INFO array.
- PIN_FLD_POID and PIN_FLD_PAYMENT_OFFESET in the PIN_FLD_PAYINFO array.
- PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_POID
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T

- PIN_FLD_END_T
- PIN_FLD_FLAGS
- PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_CYCLE_DISC_AMT
 - PIN_FLD_CYCLE_FEE_AMT
 - PIN_FLD_PURCHASE_DISC_AMT
 - PIN_FLD_PURCHASE_FEE_AMT
- PIN_FLD_DEALS array in the PIN_FLD_SERVICES array.

Changed input fields

- PIN_FLD_DEAL_INFO array in the PIN_FLD_ACCTINFO array is now of type SUBSTRUCT.
- PIN_FLD_PRODUCT_OBJ in the PIN_FLD_PRODUCTS array in the PIN_FLD_ACCTINFO array is now mandatory.
- The following fields in the PIN_FLD_PRODUCTS array in the PIN_FLD_ACCTINFO array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_CYCLE_DISCOUNT
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_USAGE_DISCOUNT
- The following fields in the PIN_FLD_DISCOUNTS array in the PIN_FLD_ACCTINFO array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
- PIN_FLD_CREDIT_LIMIT in the PIN_FLD_LIMIT array in the PIN_FLD_BAL_INFO array is now mandatory.
- PIN_FLD_BILL_INFO_ID in the PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_ID
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_DEBIT_EXP and PIN_FLD_DEBIT_NUM in the PIN_FLD_CC_INFO array in the PIN_FLD_PAYINFO array are now mandatory.

- PIN_FLD_BANK_NO in the PIN_FLD_DD_INFO array in the PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in the PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY
- PIN_FLD_PASSWD_CLEAR in the PIN_FLD_SERVICES array is now mandatory.
- PIN_FLD_DEAL_INFO array in the PIN_FLD_SERVICES array is now of type SUBSTRUCT.
- The following fields in the PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_CYCLE_DISCOUNT
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_USAGE_DISCOUNT

Removed input fields

- PIN_FLD_PRODUCTS array in the PIN_FLD_ACCTINFO array:
 - PIN_FLD_NAME
 - PIN_FLD_OWN_MAX
 - PIN_FLD_OWN_MIN
- PIN_FLD_DISCOUNTS array in the PIN_FLD_ACCTINFO array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_USAGE_DISCOUNT
- PIN_FLD_PERMITTED in the PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_ACCTINFO array.
- PIN_FLD_PAY_TYPE in the PIN_FLD_BILLINFO array in the PIN_FLD_BAL_INFO array.
- PIN_FLD_ACH in the PIN_FLD_PAYINFO array in the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYMENT_OFFSET in the PIN_FLD_BILLINFO array.
- PIN_FLD_DEALS array in the PIN_FLD_SERVICES array.

- PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_NAME
 - PIN_FLD_OWN_MAX
 - PIN_FLD_OWN_MIN
- PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_USAGE_DISCOUNT

PCM_OP_CUST_COMMIT_CUSTOMER (output fields)

The output flist is changed to add purchased offering POIDs and package IDs. This supports sending data to an external customer relationship manager (CRM) system.

New output fields

- PIN_FLD_FLAGS
- PIN_FLD_ACCTINFO array
- PIN_FLD_END_T
- PIN_FLD_START_T
- PIN_FLD_NAME in the PIN_FLD_BAL_INFO array.
- PIN_FLD_BILLINFO array:
 - PIN_FLD_POID
 - PIN_FLD_BUSINESS_PROFILE_OBJ
 - PIN_FLD_BILLINFO_ID
 - PIN_FLD_PAYINFO_OBJ
 - PIN_FLD_PARENT_FLAGS
 - PIN_FLD_ACTG_FUTURE_DOM
 - PIN_FLD_BILLING_STATUS
 - PIN_FLD_BILLING_STATUS_FLAGS
 - PIN_FLD_STATUS
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_SPONSOR_FLAGS
 - PIN_FLD_SPONSOREE_FLAGS
 - PIN_FLD_AR_BILLINFO_OBJ
 - PIN_FLD_PARENT_BILLINFO_OBJ
 - PIN_FLD_BILLING_SEGMENT
 - PIN_FLD_EFFECTIVE_T

- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAYMENT_TERM
 - PIN_FLD_PAYMENT_OFFESET
- PIN_FLD_ACTGINFO array
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_ALIAS_LIST array
 - PIN_FLD_PASSWD_STATUS
- PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_POID
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_FLAGS
- PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_OFFERING_OBJ
 - PIN_FLD_PACKAGE_ID
 - PIN_FLD_PURCHASE_DISC_AMT
 - PIN_FLD_PURCHASE_FEE_AMT
 - PIN_FLD_CYCLE_DISC_AMT
 - PIN_FLD_CYCLE_FEE_AMT
- PIN_FLD_PACKAGE_ID and PIN_FLD_OFFERING_OBJ in the PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array.
- PIN_FLD_PERMITTEDS array in the PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array.
- PIN_FLD_DEALS array in the PIN_FLD_SERVICES array.
- PIN_FLD_DEVICES array in the PIN_FLD_SERVICES array.
- PIN_FLD_SPONSOR array
- PIN_FLD_GROUP_INFO substruct
- PIN_FLD_TOPUP_INFO array

- PIN_FLD_HOST array
- PIN_FLD_HTTP_URL
- PIN_FLD_SUPPORT_PHONE

Changed output fields

- PIN_FLD_ACCOUNT_OBJ is now mandatory.
- The following fields were moved into the PIN_FLD_ACCTINFO array:
 - PIN_FLD_AAC_ACCESS
 - PIN_FLD_AAC_SOURCE
 - PIN_FLD_AAC_VENDOR
 - PIN_FLD_AAC_PACKAGE
 - PIN_FLD_AAC_PROMO_CODE
 - PIN_FLD_AAC_SERIAL_NUM
- PIN_FLD_CREDIT_LIMIT in the PIN_FLD_LIMIT in PIN_FLD_BAL_INFO array is now mandatory.
- PIN_FLD_PAY_TYPE in the PIN_FLD_BILLINFO array is now mandatory.
- PIN_FLD_BAL_GRP_OBJ in the PIN_FLD_BILLINFO array is now optional.
- PIN_FLD_BILLINFO_OBJ, PIN_FLD_ACCOUNT_OBJ, and PIN_FLD_SERVICE_OBJ in the PIN_FLD_BAL_INFO array are now optional.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in the PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY
 - PIN_FLD_PHONE
- PIN_FLD_LOCALE in the PIN_FLD_LOCALES array is now mandatory.
- PIN_FLD_DEAL_INFO array in the PIN_FLD_SERVICES array is now of type SUBSTRUCT.
- The following fields in the PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_CYCLE_DISCOUNT
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_USAGE_DISCOUNT

- The following fields in the PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
- PIN_FLD_STATUS and PIN_FLD_STATUS_FLAGS in the PIN_FLD_STATUSES array in the PIN_FLD_SERVICES array are now mandatory.
- PIN_FLD_PROFILE_OBJ in the PIN_FLD_PROFILES array is now mandatory.

Removed output fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACCOUNT_NO
 - PIN_FLD_MERCHANT
 - PIN_FLD_BILL_MODE
 - PIN_FLD_ACCESS_CODE1
 - PIN_FLD_ACCESS_CODE2
- PIN_FLD_SUBORD_INFO array in the PIN_FLD_INHERITED_INFO substruct in the PIN_FLD_PAYINFO array.
- PIN_FLD_DEALS array in the PIN_FLD_SERVICES array.
- PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_NAME
 - PIN_FLD_OWN_MAX
 - PIN_FLD_OWN_MIN
- PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_USAGE_DISCOUNT
- PIN_FLD_PERMITTED in the PIN_FLD_DISCOUNTS array in the PIN_FLD_DEAL_INFO substruct in the PIN_FLD_SERVICES array.
- PIN_FLD_FIELD array

PCM_OP_CUST_CREATE_ACCT (input fields)

New input fields

- PIN_FLD_GROUP_INFO substruct

- PIN_FLD_TOPUP_INFO array
- PIN_FLD_ACCOUNT_TYPE in the PIN_FLD_ACCTINFO array.
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_BILLINFO_OBJ
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PAYMENT_OFFSET

Changed input fields

- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in the PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY
- PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_BILLINFO array is now optional.
- PIN_FLD_BILLINFO array in the PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_PARENT is now PIN_FLD_PARENT_FLAGS

Removed input fields

- PIN_FLD_FLAGS
- PIN_FLD_DEAL_OBJ in the PIN_FLD_ACCTINFO array.
- PIN_FLD_SUBORD_INFO array in the PIN_FLD_PAYINFO array.

PCM_OP_CUST_CREATE_ACCT (output fields)

New output fields

- PIN_FLD_CURRENCY
- PIN_FLD_ACCOUNT_NO
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_SERVICE_OBJ
- PIN_FLD_BILLINFO array:
 - PIN_FLD_BILLING_SEGMENT
 - PIN_FLD_EFFECTIVE_T
- PIN_FLD_PAYINFO array
- PIN_FLD_PROFILES array

- PIN_FLD_GROUP_INFO substruct
- PIN_FLD_TOPUP_INFO array
- PIN_FLD_DESCR in the PIN_FLD_FIELD array.

Changed output fields

- PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_BILLINFO_OBJ and PIN_FLD_ACCOUNT_OBJ in the PIN_FLD_BAL_INFO array are now optional.
- PIN_FLD_BILLINFO array is now optional.
- PIN_FLD_BAL_GRP_OBJ in the PIN_FLD_BILLINFO array is now optional.
- PIN_FLD_RESULT is now optional.
- PIN_FLD_PARENT is now PIN_FLD_PARENT_FLAGS and it is now of type INT.

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.
- PIN_FLD_SPONSOR array

PCM_OP_CUST_CREATE_CUSTOMER (input fields)

New input fields

- PIN_FLD_DESCR
- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_ACCTINFO array:
 - PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_ACCOUNT_TYPE
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_BILLINFO_OBJ
- PIN_FLD_BAL_INFO in the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_OFFSEET
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_DEAL_INFO
- PIN_FLD_DEALS array in the PIN_FLD_SERVICES array:
 - PIN_FLD_TYPE
 - PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_DISCOUNTS array

- PIN_FLD_PERMITTEDS array
- PIN_FLD_PARENT in the PIN_FLD_GROUP_INFO substruct.
- PIN_FLD_TOPUP_INFO array

Changed input fields

- PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_BILLINFO array in the PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_BILLINFO array is now optional.
- PIN_FLD_BILL_INFO_ID in the PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_ID
- PIN_FLD_PARENT in the PIN_FLD_BILLINFO array is now PIN_FLD_PARENT_FLAGS and is of type INT.
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in the PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY
- PIN_FLD_DEAL_OBJ array in the PIN_FLD_DEALS array is now of type POID.

Removed input fields

- PIN_FLD_FLAGS
- PIN_FLD_SUBORD_INFO array in the PIN_FLD_INHERITED_INFO substruct.
- PIN_FLD_SUBSCRIPTION_OBJ and PIN_FLD_SUBSCRIPTION_INDEX in the PIN_FLD_SERVICES array.

PCM_OP_CUST_CREATE_CUSTOMER (output fields)

The output flist is changed to add purchased offering POIDs and package IDs. This supports sending data to an external customer relationship manager (CRM) system.

New output fields

- PIN_FLD_FLAGS
- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_ACCTINFO array
- PIN_FLD_END_T
- PIN_FLD_START_T
- PIN_FLD_STATUSES array
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_ACCOUNT_OBJ

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_BILLINFO array:
 - PIN_FLD_BILLINFO_ID
 - PIN_FLD_PAYINFO_OBJ
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PARENT_FLAG
 - PIN_FLD_BILL_WHEN
 - PIN_FLD_ACTG_FUTURE_DOM
 - PIN_FLD_BILLING_STATUS
 - PIN_FLD_BILLING_STATUS_FLAGS
 - PIN_FLD_STATUS
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_SPONSOR_FLAGS
 - PIN_FLD_SPONSOREE_FLAGS
 - PIN_FLD_AR_BILLINFO_OBJ
 - PIN_FLD_PARENT_BILLINFO_OBJ
 - PIN_FLD_BILLING_SEGMENT
 - PIN_FLD_EFFECTIVE_T
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_TERM
 - PIN_FLD_PAYMENT_OFFSET
- PIN_FLD_LAST_NAME in the PIN_FLD_NAMEINFO array.
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_ALIAS_LIST array
 - PIN_FLD_PASSWD_STATUS
 - PIN_FLD_DEAL_INFO substruct
- PIN_FLD_DEALS array:
 - PIN_FLD_TYPE
 - PIN_FLD_DEAL_INFO substruct
- PIN_FLD_DEVICES array.

- PIN_FLD_SPONSOR array
- PIN_FLD_GROUP_INFO substruct
- PIN_FLD_TOPUP_INFO array

Changed output fields

- PIN_FLD_ACCOUNT_OBJ is now mandatory.
- The following fields were moved into the PIN_FLD_ACCTINFO array:
 - PIN_FLD_AAC_ACCESS
 - PIN_FLD_AAC_SOURCE
 - PIN_FLD_AAC_VENDOR
 - PIN_FLD_AAC_PACKAGE
 - PIN_FLD_AAC_PROMO_CODE
 - PIN_FLD_AAC_SERIAL_NUM
- PIN_FLD_BAL_INFO array is now optional.
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_ADDRESS, PIN_FLD_CITY, and PIN_FLD_COUNTRY in the PIN_FLD_NAMEINFO array are now mandatory.
- PIN_FLD_PHONE in the PIN_FLD_PHONES array in the PIN_FLD_NAMEINFO array is now mandatory.
- PIN_FLD_LOCALE in the PIN_FLD_LOCALES array is now mandatory.
- PIN_FLD_LOGIN and PIN_FLD_PASSWD_CLEAR in the PIN_FLD_SERVICES array are now optional.
- PIN_FLD_DEAL_OBJ array in the PIN_FLD_DEALS array is now of type POID.
- PIN_FLD_STATUS and PIN_FLD_STATUS_FLAGS in the PIN_FLD_STATUSES array in the PIN_FLD_DEALS array are now mandatory.
- PIN_FLD_PROFILE_OBJ in the PIN_FLD_PROFILES array is now mandatory.

Removed output fields

- PIN_FLD_BILLINFO array in the PIN_FLD_BAL_INFO array.
- PIN_FLD_STATUSES array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACCOUNT_NO
 - PIN_FLD_MERCHANT
 - PIN_FLD_BILL_MODE
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PARENT
 - PIN_FLD_BILL_WHEN
 - PIN_FLD_ACCESS_CODE1
 - PIN_FLD_ACCESS_CODE2
- PIN_FLD_SUBORD_INFO in the PIN_FLD_INHERITED_INFO substruct.

- PIN_FLD_ACTGINFO array
- PIN_FLD_ACTG_FUTURE_DOM
- PIN_FLD_ACTG_TYPE
- PIN_FLD_GL_SEGMENT
- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_CREATE_PAYINFO

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_CREATE_PROFILE

New output fields

- PIN_FLD_RESULTS array

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_CREATE_SERVICE

New input fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_SERVICE_ID
- PIN_FLD_TYPE
- PIN_FLD_EFFECTIVE_T
- PIN_FLD_INHERITED_INFO substruct

Changed input fields

- PIN_FLD_LOGIN is now mandatory.
- PIN_FLD_PASSWD_CLEAR is now mandatory.

PCM_OP_CUST_FIND_PAYINFO

New input fields

- PIN_FLD_BILLINFO_OBJ

PCM_OP_CUST_INIT_SERVICE

New input fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_END_T
- PIN_FLD_START_T
- PIN_FLD_EFFECTIVE_T

New output fields

- PIN_FLD_FIELD array

PCM_OP_CUST_MODIFY_BAL_GRP

New input fields

- PIN_FLD_ACCOUNT_OBJ

Changed input fields

- PIN_FLD_BILLINFO_OBJ and PIN_FLD_NAME are now optional.

PCM_OP_CUST_MODIFY_CUSTOMER (input fields)

New input fields

- PIN_FLD_PROGRAM_NAME
- PIN_FLD_DEAL_INFO substruct in the PIN_FLD_ACCTINFO array.
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_PASSWD_STATUS
 - PIN_FLD_STATUSES array
 - PIN_FLD_PERMITTEDS array
- PIN_FLD_DEAL_INFO array in the PIN_FLD_SERVICES array:
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_FLAGS
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_TERM
 - PIN_FLD_PAYMENT_OFFSECT
 - PIN_FLD_INV_TYPE
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_RULES array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_POID
 - PIN_FLD_BUSINESS_PROFILE_OBJ
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_BILLING_SEGMENT
- PIN_FLD_DEALS array:

- PIN_FLD_DEAL_OBJ
- PIN_FLD_TYPE
- PIN_FLD_DEAL_INFO substruct

Changed input fields

- PIN_FLD_CURRENCY is now mandatory.
- PIN_FLD_CURRENCY_SECONDARY is now mandatory.
- PIN_FLD_DEAL_INFO array in PIN_FLD_SERVICES array is now of type substruct.
- The following fields in PIN_FLD_PRODUCTS array in PIN_FLD_DEAL_INFO substruct are now mandatory.
 - PIN_FLD_CYCLE_DISCOUNT
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_PRODUCT_OBJ
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_USAGE_DISCOUNT
 - PIN_FLD_CYCLE_DISCOUNT
- The following fields in the PIN_FLD_TOPUP_INFO array are now mandatory:
 - PIN_FLD_PAYINFO array
 - PIN_FLD_BILLINFO array
 - PIN_FLD_TOPUP_AMT
- PIN_FLD_BILL_INFO_ID in the PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_ID.
- The following fields in the PIN_FLD_DISCOUNTS array in the PIN_FLD_SERVICES array are now mandatory:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T

Removed input fields

- PIN_FLD_ACCTINFO array:
 - PIN_FLD_AAC_ACCESS
 - PIN_FLD_AAC_SOURCE

- PIN_FLD_AAC_VENDOR
- PIN_FLD_AAC_PACKAGE
- PIN_FLD_AAC_PROMO_CODE
- PIN_FLD_AAC_SERIAL_NUM
- PIN_FLD_PRODUCTS array in the PIN_FLD_DEAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_OWN_MAX
 - PIN_FLD_OWN_MIN
- PIN_FLD_SERVICES array:
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_SUBSCRIPTION_INDEX
- PIN_FLD_DISCOUNTS array in the PIN_FLD_SERVICES array:
 - PIN_FLD_USAGE_DISCOUNT
 - PIN_FLD_PERMITTED
- PIN_FLD_DISCOUNTS array in the PIN_FLD_SERVICES array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ

PCM_OP_CUST_MODIFY_CUSTOMER (output fields)

The output list is changed to add purchased offering POIDs and package IDs. This supports sending data to an external customer relationship manager (CRM) system.

New output fields

- PIN_FLD_END_T
- PIN_FLD_START_T
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_ACCTINFO array
- PIN_FLD_SERVICES array:
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_SERVICE_ID
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_ALIAS_LIST array
 - PIN_FLD_PASSWD_STATUS

- PIN_FLD_DEAL_OBJ
- PIN_FLD_DEALS array
- PIN_FLD_STATUSES array
- PIN_FLD_INHERITED_INFO substruct
- PIN_FLD_DEVICES array
- PIN_FLD_DEAL_INFO substruct in PIN_FLD_SERVICES array:
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_FLAGS
 - PIN_FLD_PERMITTEDS array
- PIN_FLD_BILLINFO array
- PIN_FLD_BAL_INFO array
- PIN_FLD_PAYINFO array
- PIN_FLD_PROFILES array
- PIN_FLD_TOPUP_INFO array

Changed output fields

- PIN_FLD_LOGIN and PIN_FLD_PASSWORD_CLEAR in PIN_FLD_SERVICES array are now optional.
- PIN_FLD_DEAL_INFO array in PIN_FLD_SERVICES is now of type substruct.
- The following fields in the PIN_FLD_PRODUCTS array are now mandatory:
 - PIN_FLD_PRODUCT_OBJ
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_CYCLE_DISCOUNT
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T
 - PIN_FLD_USAGE_DISCOUNT

Removed output fields

- PIN_FLD_PRODUCTS array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_NAME
 - PIN_FLD_OWN_MAX
 - PIN_FLD_OWN_MIN

- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_STATUS_FLAGS
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ
 - PIN_FLD_PERMITTED

PCM_OP_CUST_MODIFY_PAYINFO

Changed input fields

- PIN_FLD_INHERITED_INFO substruct is now mandatory.

New output fields

- PIN_FLD_PAYMENT_TERM
- PIN_FLD_PAYMENT_OFFSET

Removed output fields

- PIN_FLD_TYPE

PCM_OP_CUST_MODIFY_PROFILE

New input fields

- PIN_FLD_NAME

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.
- PCM_OP_CUST_PREP_CUSTOMER

New input fields

- PIN_FLD_DESCR
- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_ACCTINFO array:
 - PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_ACCOUNT_TYPE
 - PIN_FLD_CUSTOMER_SEGMENT_LIST
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_NAME
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_RULES array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_POID
 - PIN_FLD_BUSINESS_PROFILE_OBJ
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_BILLING_SEGMENT
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID

- PIN_FLD_PAY_TYPE
- PIN_FLD_PAYMENT_TERM
- PIN_FLD_PAYMENT_OFFESET
- PIN_FLD_INV_TYPE
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_SERVICE_ID
 - PIN_FLD_PASSWD_STATUS
 - PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_DEALS array
- PIN_FLD_PARENT in the PIN_FLD_GROUP_INFO substruct.

Changed input fields

- PIN_FLD_BILL_INFO_ID in the PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_ID.
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- PIN_FLD_LAST_NAME, PIN_FLD_ADDRESS, PIN_FLD_CITY, and PIN_FLD_COUNTRY in the PIN_FLD_NAMEINFO array are now mandatory.

Removed input fields

- PIN_FLD_FLAGS

PCM_OP_CUST_PREP_CUSTOMER

The output flist is changed to add purchased offering POIDs and package IDs. This supports sending data to an external customer relationship manager (CRM) system.

New output flist

- PIN_FLD_FLAGS
- PIN_FLD_ON_DEMAND_INFO substruct
- PIN_FLD_ACCTINFO array
- PIN_FLD_END_T
- PIN_FLD_START_T
- PIN_FLD_BAL_INFO array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_POID
 - PIN_FLD_BUSINESS_PROFILE_OBJ
 - PIN_FLD_BILLINFO_ID
 - PIN_FLD_PAYINFO_OBJ
 - PIN_FLD_BAL_GRP_OBJ
 - PIN_FLD_PAY_TYPE

- PIN_FLD_PARENT_FLAGS
- PIN_FLD_BILL_WHEN
- PIN_FLD_ACTG_FUTURE_DOM
- PIN_FLD_BILLING_STATUS
- PIN_FLD_BILLING_STATUS_FLAGS
- PIN_FLD_STATUS
- PIN_FLD_STATUS_FLAGS
- PIN_FLD_SPONSOR_FLAGS
- PIN_FLD_SPONSOREE_FLAGS
- PIN_FLD_AR_BILLINFO_OBJ
- PIN_FLD_PARENT_BILLINFO_OBJ
- PIN_FLD_BILLING_SEGMENT
- PIN_FLD_EFFECTIVE_T
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_TERM
 - PIN_FLD_PAYMENT_OFFSEET
 - PIN_FLD_INV_TYPE
- PIN_FLD_SERVICES array:
 - PIN_FLD_SUBSCRIPTION_INDEX
 - PIN_FLD_SUBSCRIPTION_OBJ
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_SERVICE_ID
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_ALIAS_LIST array
 - PIN_FLD_PASSWD_STATUS
 - PIN_FLD_DEAL_INFO substruct
 - PIN_FLD_DEALS array
 - PIN_FLD_PROFILES array
 - PIN_FLD_DEVICES array
- PIN_FLD_SPONSOR array
- PIN_FLD_GROUP_INFO substruct
- PIN_FLD_TOPUP_INFO array

Changed output fields

- PIN_FLD_ACCOUNT_OBJ is now mandatory.
- PIN_FLD_ACCTINFO array:

- PIN_FLD_DEAL_OBJ
- PIN_FLD_AAC_ACCESS
- PIN_FLD_AAC_SOURCE
- PIN_FLD_AAC_VENDOR
- PIN_FLD_AAC_PACKAGE
- PIN_FLD_AAC_PROMO_CODE
- PIN_FLD_AAC_SERIAL_NUM
- PIN_FLD_PAYINFO array is now mandatory.
- PIN_FLD_NAMEINFO array is now mandatory.
- The following fields in the PIN_FLD_NAMEINFO array are now mandatory:
 - PIN_FLD_LAST_NAME
 - PIN_FLD_ADDRESS
 - PIN_FLD_CITY
 - PIN_FLD_COUNTRY
- PIN_FLD_LOGIN and PIN_FLD_PASSWD_CLEAR in the PIN_FLD_SERVICES array are now optional.

Removed output fields

- PIN_FLD_BILLINFO array:
 - PIN_FLD_ACCOUNT_NO
 - PIN_FLD_MERCHANT
 - PIN_FLD_BILL_MODE
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PARENT
 - PIN_FLD_BILL_WHEN
 - PIN_FLD_ACCESS_CODE1
 - PIN_FLD_ACCESS_CODE2
- PIN_FLD_SUBORD_INFO array in the PIN_FLD_PAYINFO array.
- PIN_FLD_LOCALES array:
 - PIN_FLD_ACTGINFO array
 - PIN_FLD_ACTG_FUTURE_DOM
 - PIN_FLD_ACTG_TYPE
 - PIN_FLD_GL_SEGMENT
- PIN_FLD_TYPE in the PIN_FL_FIELD array.

PCM_OP_CUST_SET_ACCTINFO

New input fields

- PIN_FLD_ACCTINFO array
- PIN_FLD_BRAND_INFO substruct

Changed input fields

- PIN_FLD_PROGRAM_NAME is now optional.
- The following fields were moved into the PIN_FLD_ACCTINFO array:
 - PIN_FLD_AAC_ACCESS
 - PIN_FLD_AAC_SOURCE
 - PIN_FLD_AAC_VENDOR
 - PIN_FLD_AAC_PACKAGE
 - PIN_FLD_AAC_PROMO_CODE
 - PIN_FLD_AAC_SERIAL_NUM

Removed input fields

- PIN_FLD_ACTG_TYPE
- PIN_FLD_GL_SEGMENT
- PIN_FLD_CURRENCY
- PIN_FLD_CURRENCY_SECONDARY
- PIN_FLD_DEAL_OBJ
- PIN_FLD_ACCESS_CODE1
- PIN_FLD_ACCESS_CODE2
- PIN_FLD_BUSINESS_TYPE
- PIN_FLD_CUSTOMER_SEGMENT_LIST
- PIN_FLD_BAL_INFO array

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_BAL_GRP

Changed input fields

- PIN_FLD_PROGRAM_NAME is now mandatory.
- PIN_FLD_BILLINFO_OBJ and PIN_FLD_NAME fields in the PIN_FLD_BAL_INFO array are now optional.

PCM_OP_CUST_SET_BRANDINFO

Removed output fields

- PIN_FLD_FIELD array:
 - PIN_FLD_TYPE
 - PIN_FLD_UNKNOWN

PCM_OP_CUST_SET_LOCALE

New input fields

- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_TIMEZONE_ID
- PIN_FLD_EVENT_NO

- PIN_FLD_FLAGS
- PIN_FLD_QUANTITY

New output fields

- PIN_FLD_RESULT

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_LOGIN

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_NAMEINFO

Removed output field

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_PASSWD

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_PAYINFO

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_STATUS

New output fields

- PIN_FLD_OBJECT
- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_SERVICE_OBJ

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_SET_TAXINFO

Removed input fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_DESCR
- PIN_FLD_START_T
- PIN_FLD_END_T

PCM_OP_CUST_UPDATE_CUSTOMER (input fields)

New input fields

- PIN_FLD_ACCTINFO array:

- PIN_FLD_ACCOUNT_TYPE
- PIN_FLD_ACCESS_CODE1
- PIN_FLD_ACCESS_CODE2
- PIN_FLD_BAL_INFO array:
 - PIN_FLD_POID
 - PIN_FLD_NAME
 - PIN_FLD_BILLINFO array
 - PIN_FLD_LIMIT array
 - PIN_FLD_RULES array
- PIN_FLD_BILLINFO array:
 - PIN_FLD_BUSINESS_PROFILE_OBJ
 - PIN_FLD_PAYINFO array
 - PIN_FLD_BAL_INFO array
 - PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_PAYINFO array:
 - PIN_FLD_POID
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_PAYMENT_OFFSEET
 - PIN_FLD_INV_TYPE
- PIN_FLD_TOPUP_INFO array:
 - PIN_FLD_PAYINFO array
 - PIN_FLD_BILLINFO array
- PIN_FLD_BAL_INFO array in the PIN_FLD_GROUP_TOPUP_MEMBERS array.

Changed input fields

- PIN_FLD_TYPE in the PIN_FLD_PHONES array is now optional.
- PIN_FLD_BILL_INFO_ID in the PIN_FLD_BILLINFO array is now PIN_FLD_BILLINFO_ID.
- PIN_FLD_POID in the PIN_FLD_PROFILES array is now PIN_FLD_PROFILE_OBJ.
- PIN_FLD_TOPUP_AMT in the PIN_FLD_TOPUP_INFO array is now mandatory.

Removed input fields

- PIN_FLD_ACCTINFO array
 - PIN_FLD_ACTG_TYPE
 - PIN_FLD_GL_SEGMENT
- PIN_FLD_BAL_GRP_OBJ in the PIN_FLD_BAL_INFO array.

PCM_OP_CUST_UPDATE_CUSTOMER (output fields)

New output fields

- PIN_FLD_ACCTINFO array
- PIN_FLD_BAL_INFO array
- PIN_FLD_PAYINFO array
- PIN_FLD_BILLINFO array
- PIN_FLD_TOPUP_INFO array

Removed output fields

- PIN_FLD_RESULTS array
- PIN_FLD_TYPE in the PIN_FLD_FIELDS array.

PCM_OP_CUST_UPDATE_SERVICES

New input fields

- PIN_FLD_COMMAND in the PIN_FLD_SERVICES array.

Changed input fields

- PIN_FLD_NAME in the PIN_FLD_ALIAS_LIST array is now mandatory.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_ACCOUNT_OBJ

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

PCM_OP_CUST_VALID_FLD

Removed input fields

- PIN_FLD_TYPE

PCM_OP_CUST_VALIDATE_CUSTOMER

Changed input fields

- PIN_FLD_ACTG_TYPE and PIN_FLD_GL_SEGMENT were moved into the PIN_FLD_ACCTINFO array.

Removed output fields

- PIN_FLD_TYPE in the PIN_FLD_FIELD array.

Device FM Standard Opcodes

The following Device FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_DEVICE_ASSOCIATE

New output fields

- PIN_FLD_FLAGS
- PIN_FLD_END_T
- PIN_FLD_EXTENDED_INFO substruct

PCM_OP_DEVICE_CREATE

Removed input fields

- PIN_FLD_SOURCE
- PIN_FLD_MANUFACTURER

PCM_OP_DEVICE_SET_BRAND

New input fields

- PIN_FLD_NEW_BRAND

Filter Set FM Standard Opcodes

The following Filter Set FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_FILTER_SET_CREATE

New input fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_FILTER_SET_UPDATE

Changed input fields

- PIN_FLD_DESC is now mandatory.

Group FM Standard Opcodes

The following Group FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GROUP_ADD_MEMBER

Removed input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_DESCR

PCM_OP_GROUP_CREATE_GROUP

New input fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_GROUP_DELETE_MEMBER

New input fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_TIMEZONE_ID
- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_EVENT_NO
- PIN_FLD_FLAGS

- PIN_FLD_QUANTITY
- PIN_FLD_ITEM_OBJ

Changed input fields

- PIN_FLD_MEMBERS array is now optional.

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_POID

Removed output fields

- PIN_FLD_OBJECT

PCM_OP_GROUP_SET_PARENT

New input fields

- PIN_FLD_PARENT
- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_TIMEZONE_ID
- PIN_FLD_BILLINFO_OBJ
- PIN_FLD_SERVICE_OBJ
- PIN_FLD_EVENT_NO
- PIN_FLD_FLAGS
- PIN_FLD_QUANTITY
- PIN_FLD_ITEM_OBJ

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_SERVICE_OBJ

GSM AAA Manager FM Standard Opcodes

The following GSM AAA Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GSM_AAA_START_ACCOUNTING

New input fields

- PIN_FLD_BYTES_IN
- PIN_FLD_BYTES_OUT
- PIN_FLD_REQ_BYTES_IN
- PIN_FLD_REQ_BYTES_OUT

PCM_OP_GSM_AAA_STOP_ACCOUNTING

New input fields

- PIN_FLD_REQ_BYTES_IN
- PIN_FLD_REQ_BYTES_OUT

PCM_OP_GSM_AAA_UPDATE_ACCOUNTING

New input fields

- PIN_FLD_REQ_BYTES_IN
- PIN_FLD_REQ_BYTES_OUT

GSM Manager FM Standard Opcodes

The following GSM Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_GSM_APPLY_PARAMETER

New input fields

- PIN_FLD_GSM_INFO substruct

Changed input fields

- PIN_FLD_PROGRAM_NAME is now optional.

New output fields

- PIN_FLD_GSM_INFO in the PIN_FLD_INHERITED_INFO substruct.

IC FM Standard Opcodes

The following IC FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_IC_LOAD_SMS_REPORT

New input fields

- PIN_FLD_SMS_DAY UNKNOWN [0]

Removed input fields

- PIN_FLD_HOSTNAME

Invoicing FM Standard Opcodes

The following Invoicing FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_INV_DECODE_INVOICE_DATA

Removed output fields

- PIN_FLD_EXTENDED_INFO substruct

PCM_OP_INV_MAKE_INVOICE

Changed input fields

- PIN_FLD_BILLINFO array is now mandatory.

PCM_OP_INV_VIEW_INVOICE**New output fields**

- PIN_FLD_BUFFER in the PIN_FLD_FORMATS array.

Changed output fields

- PIN_FLD_HEADER_NUM and PIN_FLD_HEADER_STR are now optional.

Number Manager FM Standard Opcodes

The following Number Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_NUM_SPLIT_BLOCK**New input fields**

- PIN_FLD_LOCALE

Order Manager FM Standard Opcodes

The following Order Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_ORDER_UPDATE**New input fields**

- PIN_FLD_EXTENDED_INFO array:
 - PIN_FLD_ORDERS_DATA array
 - PIN_FLD_ORDER_OBJ

Removed input fields

- PIN_FLD_ORDER_OBJ in the PIN_FLD_ORDERS_DATA array.

Payment FM Standard Opcodes

The following Payment FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PYMT_APPLY_FEE**Changed input fields**

- PIN_FLD_COMMAND is now mandatory.
- PIN_FLD_STATUS is now optional.

PCM_OP_PYMT_CHARGE**Changed input fields**

- PIN_FLD_CHARGES array is now mandatory.
- PIN_FLD_PAY_TYPE is now mandatory.

Changed output fields

- PIN_FLD_STATUS is now optional

PCM_OP_PYMT_CHARGE_CC

Changed input fields

- PIN_FLD_CHARGES array is now mandatory.

Changed output fields

- PIN_FLD_CHARGES array is now mandatory.

PCM_OP_PYMT_CHARGE_DD

Changed input fields

- PIN_FLD_CHARGES array is now mandatory.

Changed output fields

- PIN_FLD_CHARGES array is now mandatory.

PCM_OP_PYMT_CHARGE_DDEBIT

Changed input fields

- PIN_FLD_CHARGES array is now mandatory.

Changed output fields

- PIN_FLD_CHARGES array is now mandatory.

PCM_OP_PYMT_COLLECT

New input fields

- PIN_FLD_AMOUNT

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ITEM_NO

Changed output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ is now mandatory.

PCM_OP_PYMT_GET_ACH_INFO

Changed output fields

- PIN_FLD_RESULTS array is now mandatory.

PCM_OP_PYMT_GRANT_INCENTIVE

Changed input fields

- PIN_FLD_PAY_TYPE in the PIN_FLD_INCENTIVE substruct is now mandatory.

Removed input fields

- PIN_FLD_TRANS_ID in the PIN_FLD_INCENTIVE substruct

PCM_OP_PYMT_RECOVER

New input fields

- PIN_FLD_SERVICE_OBJ

Changed input fields

- PIN_FLD_PAY_TYPE in the PIN_FLD_CHARGES array is now mandatory.

Changed output fields

- PIN_FLD_STATUS in the PIN_FLD_RESULTS array is now optional.

PCM_OP_PYMT_RECOVER_CC

New input fields

- PIN_FLD_POID_VAL in the PIN_FLD_BATCH_INFO array.

PCM_OP_PYMT_RECOVER_DD

New input fields

- PIN_FLD_POID_VAL in the PIN_FLD_BATCH_INFO array.

PCM_OP_PYMT_RECYCLE_PAYMENT

Changed input fields

- PIN_FLD_STATUS in the PIN_FLD_CHARGES array is now optional.

PCM_OP_PYMT_RECYCLED_PAYMENTS_SEARCH

Changed output fields

- PIN_FLD_STATUS in the PIN_FLD_PAYMENT substruct is now optional.

PCM_OP_PYMT_REVERSE_INCENTIVE

Changed input fields

- PIN_FLD_EVENT_OBJ is now mandatory.

Removed input fields

- PIN_FLD_REVERSAL_EVENT_OBJ

PCM_OP_PYMT_SELECT_ITEMS

Changed input fields

- PIN_FLD_PAY_TYPE and PIN_FLD_COMMAND are now mandatory.

Changed output fields

- The following fields were moved into the PIN_FLD_CHARGES array:
 - PIN_FLD_AMOUNT
 - PIN_FLD_CURRENCY
 - PIN_FLD_ACTG_TYPE
 - PIN_FLD_SELECT_RESULT
 - PIN_FLD_SELECT_STATUS
 - PIN_FLD_BILLINFO_OBJ
 - PIN_FLD_PAYINFO_OBJ
 - PIN_FLD_MERCHANT
 - PIN_FLD_ACH
 - PIN_FLD_PAY_TYPE
 - PIN_FLD_COMMAND

- PIN_FLD_ITEMS array
- PIN_FLD_EVENTS array

PCM_OP_PYMT_TOPUP

Changed input fields

- PIN_FLD_TYPE in the PIN_FLD_DD_INFO array in the PIN_FLD_PAYINFO array is now optional.

New output fields

- PIN_FLD_VOUCHERS_INFO array:
 - PIN_FLD_EXPIRATION_T

Permissioning FM Standard Opcodes

The following Permissioning FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PERM_ACL_GROUP_MODIFY

Changed input fields

- PIN_FLD_NAME is now mandatory.

Price FM Standard Opcodes

The following standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PRICE_COMMIT_PRODUCT

Removed input fields

- PIN_FLD_TAX_SUPPLIER in the PIN_FLD_PRODUCTS array

Changed input fields

- PIN_FLD_SELECTOR_RULESET is now PIN_FLD_SELECTOR_RULESET array.
- PIN_FLD_SELECTOR_RULES is now PIN_FLD_SELECTOR_RULES array.
- PIN_FLD_SELECTOR_RULE_LNK is now PIN_FLD_SELECTOR_RULE_LINK array.
- PIN_FLD_SELECTOR_DETAILS is now PIN_FLD_SELECTOR_DETAILS array.

PCM_OP_PRICE_GET_PRICE_LIST

Removed output fields

- PIN_FLD_TAX_SUPPLIER in the PIN_FLD_PRODUCTS array.

PCM_OP_PRICE_GET_PRODUCT_INFO

Removed output fields

- PIN_FLD_BAL_IMPACTS array in the PIN_FLD_QUANTITY_TIERS array:
 - PIN_FLD_START_T
 - PIN_FLD_END_T
 - PIN_FLD_UNKNOWN

PCM_OP_PRICE_PREP_TAILORMADE_PRODUCT (input fields)**New input fields**

- PIN_FLD_RATES array in the PIN_FLD_RATE_TIERS array:
 - PIN_FLD_PRORATE_FIRST
 - PIN_FLD_PRORATE_LAST
 - PIN_FLD_TYPE
 - PIN_FLD_STEP_TYPE
 - PIN_FLD_STEP_RESOURCE_ID
- PIN_FLD_PIPELINE_RATEPLANS array in the PIN_FLD_RATE_PLANS array:
 - PIN_FLD_VALID_FROM
 - PIN_FLD_STATUS_STR
 - PIN_FLD_ZONEMODEL
 - PIN_FLD_BASIC
 - PIN_FLD_BASIC_RATEPLAN

Changed input fields

- PIN_FLD_DERIVED_FROM_OBJ is now PIN_FLD_BASE_PRODUCT_OBJ
- PIN_FLD_RATES array was moved into the PIN_FLD_RATE_TIERS array.
- PIN_FLD_PIPELINE_RATEPLANS array was moved into PIN_FLD_RATE_PLANS array.
- PIN_FLD_SELECTOR_RULESET is now PIN_FLD_SELECTOR_RULESET array.

PCM_OP_PRICE_PREP_TAILORMADE_PRODUCT (output fields)**New output fields**

- PIN_FLD_SEPARATOR in the PIN_FLD_COLUMNS array in the PIN_FLD_SELECTOR_TREE substruct.
- PIN_FLD_RATE_PLANS array in the PIN_FLD_PRODUCTS array
 - PIN_FLD_EVENT_TYPE
 - PIN_FLD_TAX_CODE
 - PIN_FLD_TAX_WHEN
 - PIN_FLD_BILL_OFFSET
 - PIN_FLD_OFFSET_UNIT
- PIN_FLD_PRIORITY in the PIN_FLD_RATE_TIERS array in the PIN_FLD_RATE_PLANS array.
- PIN_FLD_BAL_IMPACTS array in the PIN_FLD_QUANTITY_TIERS array:
 - PIN_FLD_RELATIVE_START_OFFSET
 - PIN_FLD_RELATIVE_START_UNIT
 - PIN_FLD_RELATIVE_END_OFFSET
 - PIN_FLD_RELATIVE_END_UNIT

Changed output fields

- PIN_FLD_TAX_SUPPLIER_ID in the PIN_FLD_PRODUCTS array is now PIN_FLD_SUPPLIER_NAME
- PIN_FLD_SELECTOR in the PIN_FLD_RATE_PLAN_SELECTOR substruct is now PIN_FLD_SELECTOR_TREE
- PIN_FLD_FIXED_OPERAND is now PIN_FLD_FIXED_AMOUNT in the PIN_FLD_BAL_IMPACTS array in the PIN_FLD_QUANTITY_TIERS array.
- PIN_FLD_SCALED_OPERAND is now PIN_FLD_SCALED_AMOUNT in the PIN_FLD_BAL_IMPACTS array in the PIN_FLD_QUANTITY_TIERS array.
- PIN_FLD_SELECTOR_RULESET in the PIN_FLD_MODEL_SELECTORS array is now PIN_FLD_SELECTOR_RULESET array.
- PIN_FLD_SELECTOR_RULE_LNK in the PIN_FLD_SELECTOR_RULES array is now PIN_FLD_SELECTOR_RULE_LINK array.

Removed output fields

- PIN_FLD_RATES array in the PIN_FLD_RATE_PLANS array:
 - PIN_FLD_TAX_CODE
 - PIN_FLD_TAX_WHEN

Process Audit FM Standard Opcodes

The following Process Audit FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_PROCESS_AUDIT_CREATE

New input fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROCESS_NAME
- PIN_FLD_TOTAL_RECORDS
- PIN_FLD_SUCCESSFUL_RECORDS
- PIN_FLD_FAILED_RECORDS
- PIN_FLD_BILLING_INFO substruct

Removed input fields

- PIN_FLD_PIPE_LINE_INFO substruct
- PIN_FLD_FAILED_CDRS array

PCM_OP_PROCESS_AUDIT_CREATE_AND_LINK

Changed input fields

- PIN_FLD_USAGE_START_T, PIN_FLD_USAGE_END_T, and PIN_FLD_EVENT_COUNT were moved into the PIN_FLD_GROUP_DETAILS array.

PCM_OP_PROCESS_AUDIT_CREATE_WRITEOFF_SUMMARY

New input fields

- PIN_FLD_ACTIONS array
- PIN_FLD_POID

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_PROGRAM_NAME

New output fields

- PIN_FLD_POID

PCM_OP_PROCESS_AUDIT_LINK

Changed input fields

- PIN_FLD_ORIGINAL_BATCH_ID and PIN_FLD_SUSPENDED_FROM_BATCH_ID were moved to level 0.

New output fields

- PIN_FLD_ORIGINAL_BATCH_ID
- PIN_FLD_SUSPENDED_FROM_BATCH_ID

RADIUS Manager FM Standard Opcodes

The following RADIUS Manager standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_TERM_IP_DIALUP_STOP_ACCOUNTING

Removed input fields

- PIN_FLD_STATUS

Rating FM Standard Opcodes

The following Rating FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_RATE_TAX_CALC (input fields)

New input fields

- PIN_FLD_COMMAND
- PIN_FLD_TAXPKG_TYPE in PIN_FLD_TAXES array.
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_NAME
- PIN_FLD_LOCATION
- PIN_FLD_VAT_CERT
- PIN_FLD_NAME
- PIN_FLD_LOCATION

Changed input fields

- The following fields in PIN_FLD_TAXES array are now optional:
 - PIN_FLD_SHIP_TO
 - PIN_FLD_LOCATION_MODE
 - PIN_FLD_AMOUNT_TAXED

Removed input fields

- PIN_FLD_FLAGS
- PIN_FLD_ACCOUNT_NO
- PIN_FLD_CURRENCY_NAME
- PIN_FLD_TYPE and PIN_FLD_PERCENT in the PIN_FLD_EXEMPTIONS array.
- PIN_FLD_TAXES array:
 - PIN_FLD_ORDER_ACCEPT
 - PIN_FLD_ORDER_ORIGIN
 - PIN_FLD_SHIP_FROM
 - PIN_FLD_COMMAND
 - PIN_FLD_INTERNATIONAL_IND
 - PIN_FLD_SERVICE_TYPE
- PIN_FLD_RESIDENCE_FLAG
- PIN_FLD_INCORPORATED_FLAG
- PIN_FLD_BILL_OBJ

PCM_OP_RATE_TAX_CALC (output fields)

New output fields

- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_ITEM_OBJ
- PIN_FLD_TAX_SUPPLIER_INFO substruct
- PIN_FLD_EXEMPTIONS array
- PIN_FLD_VAT_CERT
- PIN_FLD_NAMEINFO array
- PIN_FLD_TELEPHONY substruct
- PIN_FLD_TELCO_INFO substruct
- PIN_FLD_WIRELESS_INFO substruct
- PIN_FLD_GSM_INFO substruct

Changed output fields

- PIN_FLD_TAXPKG_TYPE in PIN_FLD_TAXES array is now optional.

PCM_OP_RATE_TAX_EVENT (input fields)

New input fields

- PIN_FLD_BAL_GRP_OBJ in the PIN_FLD_BAL_IMPACTS array.

Changed input fields

- PIN_FLD_START_T is now mandatory.

Removed input fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_SESSION_OBJ
- PIN_FLD_CURRENCY

- PIN_FLD_FLAGS
- PIN_FLD_MIN_UNIT
- PIN_FLD_BAL_IMPACTS array:
 - PIN_FLD_PERCENT
 - PIN_FLD_PRODUCT_OBJ
 - PIN_FLD_RATE_OBJ
 - PIN_FLD_IMPACT_CATEGORY
 - PIN_FLD_GL_ID
 - PIN_FLD_OFFERING_OBJ
 - PIN_FLD_QUANTITY
 - PIN_FLD_RATE_TAG
 - PIN_FLD_IMPACT_TYPE
 - PIN_FLD_LINEAGE
 - PIN_FLD_DISCOUNT
- PIN_FLD_DISCOUNT
- PIN_FLD_PRODUCT substruct
- PIN_FLD_TIMEZONE_MODE
- PIN_FLD_USERID
- PIN_FLD_TOD_MODE
- PIN_FLD_PROGRAM_NAME
- PIN_FLD_SYS_DESCR
- PIN_FLD_TIMEZONE_ADJ_START_T
- PIN_FLD_TIMEZONE_ADJ_END_T
- PIN_FLD_CYCLE_INFO substruct
- PIN_FLD_NET_QUANTITY
- PIN_FLD_INCR_QUANTITY
- PIN_FLD_EARNED_END_T
- PIN_FLD_MIN_QUANTITY
- PIN_FLD_NAME
- PIN_FLD_UNIT
- PIN_FLD_ROUNDING_MODE
- PIN_FLD_TAX_SUPPLIER
- PIN_FLD_EARNED_TYPE
- PIN_FLD_RUM_NAME
- PIN_FLD_TOTAL array
- PIN_FLD_INCR_UNIT

PCM_OP_RATE_TAX_EVENT (output fields)

New output fields

- PIN_FLD_BAL_IMPACTS array

Changed output fields

- PIN_FLD_TAX_LOCALES is now optional.

Remittance FM Standard Opcodes

The following Remittance FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_REMIT_GET_PROVIDER

Changed input fields

- PIN_FLD_UNIT was moved from PIN_FLD_BAL_IMPACTS array to level 0.

Resource Reservation FM Standard Opcodes

The following Resource Reservation FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_RESERVE_EXTEND

New input fields

- PIN_FLD_RESERVATION_NO
- PIN_FLD_RESERVATION_STATUS

Changed input fields

- PIN_FLD_RESERVATION_MODE is now of type ENUM.

SDK FM Standard Opcodes

The following SDK FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SDK_DEL_FLD_SPECS

Changed input fields

- PIN_FLD_FIELD array is now mandatory.
- PIN_FLD_FIELD_NAME in PIN_FLD_FIELD array is now optional.

PCM_OP_SDK_DEL_OBJ_SPECS

Changed input fields

- PIN_FLD_OBJ_DESC array is now mandatory.
- PIN_FLD_ACTION in PIN_FLD_OBJ_DESC array is now mandatory.

Changed output fields

- PIN_FLD_RESULTS array is now mandatory.
- PIN_FLD_DESCR in PIN_FLD_RESULTS array is now optional.

PCM_OP_SDK_GET_FLD_SPECS**Changed input fields**

- PIN_FLD_FIELD array is now mandatory.
- PIN_FLD_FIELD_NAME in PIN_FLD_FIELD array is now optional.

Changed output fields

- PIN_FLD_FIELD array is now mandatory.
- PIN_FLD_FIELD_NAME and PIN_FLD_DESCR in the PIN_FLD_FIELD array are now optional.

PCM_OP_SDK_GET_OBJ_SPECS**Changed input fields**

- PIN_FLD_OBJ_DESC array is now mandatory.
- PIN_FLD_NAME in PIN_FLD_OBJ_DESC array is now optional.

Changed output fields

- PIN_FLD_OBJ_DESC array is now mandatory.
- The following fields in the PIN_FLD_OBJ_DESC array are now optional:
 - PIN_FLD_READ_ACCESS
 - PIN_FLD_WRITE_ACCESS
 - PIN_FLD_AUDIT_FLAG
 - PIN_FLD_CREATE_ACCESS
 - PIN_FLD_DESCR
 - PIN_FLD_LABEL
 - PIN_FLD_NAME
- PIN_FLD_OBJ_ELEM array is now mandatory.
- The following fields in the PIN_FLD_OBJ_ELEM array are now optional:
 - PIN_FLD_AUDITABLE
 - PIN_FLD_CREATE_PERMISSION
 - PIN_FLD_DESCR
 - PIN_FLD_ENCRYPTABLE
 - PIN_FLD_FIELD_NAME
 - PIN_FLD_LABEL
 - PIN_FLD_LENGTH
 - PIN_FLD_MOD_PERMISSION
 - PIN_FLD_ORDER

PCM_OP_SDK_SET_FLD_SPECS**Changed input fields**

- PIN_FLD_FIELD array is now mandatory.
- The following fields in the PIN_FLD_FIELD array are now optional:

- PIN_FLD_FIELD_NAME
- PIN_FLD_FIELD_TYPE
- PIN_FLD_STATUS

PCM_OP_SDK_SET_OBJ_SPECS

Changed input fields

- PIN_FLD_OBJ_DESC array is now mandatory.
- The following fields in the PIN_FLD_OBJ_DESC array are now optional:
 - PIN_FLD_READ_ACCESS
 - PIN_FLD_NAME
- The following fields in the PIN_FLD_OBJ_DESC array are now mandatory:
 - PIN_FLD_WRITE_ACCESS
 - PIN_FLD_SM_INFO
- PIN_FLD_OBJ_ELEM array is now mandatory.
- The following fields in the PIN_FLD_OBJ_ELEM array are now optional:
 - PIN_FLD_CREATE_PERMISSION
 - PIN_FLD_FIELD_NAME
 - PIN_FLD_MOD_PERMISSION
- PIN_FLD_SM_INFO in PIN_FLD_OBJ_ELEM array is now mandatory.

Changed output fields

- PIN_FLD_RESULTS array is now mandatory.

Subscription FM Standard Opcodes

The following Subscription FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SUBSCRIPTION_CALC_BEST_PRICING

New input fields

- PIN_FLD_SESSION_OBJ

New output fields

- PIN_FLD_POID in PIN_FLD_RESULTS array is now optional.
- PIN_FLD_RESULTS array:
 - PIN_FLD_SERVICE_OBJ
 - PIN_FLD_BASE_DEALINFO array
 - PIN_FLD_BEST_DEALINFO array

PCM_OP_SUBSCRIPTION_CANCEL_DEAL

New input fields

- PIN_FLD_DEAL_OBJ

PCM_OP_SUBSCRIPTION_CANCEL_DISCOUNT**Changed input fields**

- PIN_FLD_QUANTITY in PIN_FLD_DISCOUNTS array is now mandatory.

New output fields

- PIN_FLD_ACCOUNT_OBJ

Removed output fields

- PIN_FLD_UNKNOWN [0]

PCM_OP_SUBSCRIPTION_CANCEL_PRODUCT**New input fields**

- PIN_FLD_STATUS_FLAGS in the PIN_FLD_STATUSES array.

Changed input fields

- PIN_FLD_STATUSES array in PIN_FLD_PRODUCTS array is now optional.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_CYCLE_INFO substruct

PCM_OP_SUBSCRIPTION_CANCEL_SUBSCRIPTION**Removed input fields**

- PIN_FLD_SESSION_OBJ

New output fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_SUBSCRIPTION_CHANGE_DEAL**New output fields**

- PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_CYCLE_INFO substruct
 - PIN_FLD_PRODUCTS array
 - PIN_FLD_DISCOUNTS array
- PIN_FLD_RESULTS array in the PIN_FLD_RESULTS array:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_CYCLE_INFO substruct

Changed output fields

- PIN_FLD_RESULTS array in PIN_FLD_RESULTS array is now optional.

PCM_OP_SUBSCRIPTION_COUNT_LINES

Changed output fields

- PIN_FLD_RESULTS array is now optional.

PCM_OP_SUBSCRIPTION_CYCLE_FOLD

Changed input fields

- PIN_FLD_SERVICE_OBJ in PIN_FLD_BAL_INFO array is now mandatory.

Removed input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_DESCR
- PIN_FLD_START_T
- PIN_FLD_TIMEZONE_ID
- PIN_FLD_CREDIT_PROFILE in the PIN_FLD_BALANCES array in the PIN_FLD_BAL_INFO array.

Removed output fields

- PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_GET_PURCHASED_OFFERINGS

Changed output fields

- PIN_FLD_POID is now optional.

PCM_OP_SUBSCRIPTION_PROVISION_ERA

Changed output fields

- PIN_FLD_FIELD array:
 - PIN_FLD_FIELD_NUM
 - PIN_FLD_TYPE
 - PIN_FLD_ELEMENT_ID
 - PIN_FLD_RESULT
 - PIN_FLD_DESCR
 - PIN_FLD_FIELD

PCM_OP_SUBSCRIPTION_PURCHASE_DEAL

Changed to support sending product and discount data to an external customer relationship manager (CRM) system. See "How Deals are Purchased" in *BRM Managing Customers*.

New input fields

- PIN_FLD_DEAL_INFO substruct:
 - PIN_FLD_DEAL_OBJ
 - PIN_FLD_PLAN_OBJ
- PIN_FLD_STATUS_FLAGS in the PIN_FLD_PRODUCTS array.

Changed input fields

- PIN_FLD_DEAL_INFO substruct is now mandatory.
- The following fields in PIN_FLD_DEAL_INFO are now optional:
 - PIN_FLD_POID
 - PIN_FLD_NAME
 - PIN_FLD_DESCR
 - PIN_FLD_START_T
 - PIN_FLD_END_T
- PIN_FLD_PRODUCTS array is now optional.
- PIN_FLD_PURCHASE_DISCOUNT in PIN_FLD_PRODUCTS array is now optional.
- PIN_FLD_DISCOUNTS array is now optional.

Removed input fields

- PIN_FLD_UNKNOWN [0]

New output fields

- PIN_FLD_PRODUCTS array
- PIN_FLD_DISCOUNTS array
- PIN_FLD_RESULTS:
 - PIN_FLD_ACCOUNT_OBJ
 - PIN_FLD_BAL_IMPACTS array
 - PIN_FLD_CYCLE_INFO substruct

PCM_OP_SUBSCRIPTION_PURCHASE_DISCOUNT

Changed input fields

- PIN_FLD_DISCOUNTS array:
 - PIN_FLD_PURCHASE_START_T
 - PIN_FLD_PURCHASE_END_T
 - PIN_FLD_CYCLE_START_T
 - PIN_FLD_CYCLE_END_T
 - PIN_FLD_USAGE_START_T
 - PIN_FLD_USAGE_END_T

Removed input fields

- PIN_FLD_USAGE_DISCOUNT in the PIN_FLD_DISCOUNTS array.

New output fields

- PIN_FLD_DISCOUNTS array

PCM_OP_SUBSCRIPTION_PURCHASE_FEES

New input fields

- PIN_FLD_FLAGS
- PIN_FLD_CURRENCY

- PIN_FLD_ON_DEMAND_INFO substruct

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_IMPACTS array

PCM_OP_SUBSCRIPTION_PURCHASE_PRODUCT

Changed input fields

The following fields in PIN_FLD_PRODUCTS array are now mandatory:

- PIN_FLD_PURCHASE_START_T
- PIN_FLD_PURCHASE_END_T
- PIN_FLD_CYCLE_START_T
- PIN_FLD_CYCLE_END_T
- PIN_FLD_CYCLE_DISCOUNT
- PIN_FLD_USAGE_START_T
- PIN_FLD_USAGE_END_T
- PIN_FLD_USAGE_DISCOUNT

New output fields

- PIN_FLD_ACCOUNT_OBJ
- PIN_FLD_BAL_IMPACTS array
- PIN_FLD_CYCLE_INFO substruct

PCM_OP_SUBSCRIPTION_SET_DISCOUNT_STATUS

New output fields

- PIN_FLD_ACCOUNT_OBJ

Removed output fields

- PIN_FLD_UNKNOWN [0]

PCM_OP_SUBSCRIPTION_SET_DISCOUNTINFO

New output fields

- PIN_FLD_ACCOUNT_OBJ

Removed output fields

- PIN_FLD_UNKNOWN [0]

PCM_OP_SUBSCRIPTION_SET_PRODINFO

New input fields

- PIN_FLD_STATUS_FLAGS

New output fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_SUBSCRIPTION_SET_PRODUCT_STATUS

New output fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_SUBSCRIPTION_SHARING_GROUP_CREATE

New input fields

- PIN_FLD_PROGRAM_NAME
- PIN_FLD_BAL_GRP_OBJ

Removed input fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_END_T
- PIN_FLD_SESSION_OBJ

PCM_OP_SUBSCRIPTION_SHARING_GROUP_DELETE

New input fields

- PIN_FLD_DESCR

Changed input fields

- PIN_FLD_OFFERING_OBJ in PIN_FLD_DISCOUNTS array is now optional.

Removed input fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_SESSION_OBJ

PCM_OP_SUBSCRIPTION_SHARING_GROUP_MODIFY

New input fields

- PIN_FLD_DESCR

Removed input fields

- PIN_FLD_BAL_GRP_OBJ
- PIN_FLD_SESSION_OBJ

PCM_OP_SUBSCRIPTION_SHARING_GROUP_SET_PARENT

Removed input fields

- PIN_FLD_SESSION_OBJ
- PIN_FLD_END_T

PCM_OP_SUBSCRIPTION_TRANSFER_ROLLOVER

Changed input fields

- PIN_FLD_START_T and PIN_FLD_END_T are now optional.

PCM_OP_SUBSCRIPTION_TRANSFER_SUBSCRIPTION

New input fields

- PIN_FLD_START_T
- PIN_FLD_END_T
- PIN_FLD_EFFECTIVE_T in the PIN_FLD_BILLINFO array.
- PIN_FLD_PAYINFO array in the PIN_FLD_BILLINFO array:

- PIN_FLD_POID
- PIN_FLD_PAY_TYPE
- PIN_FLD_TYPE
- PIN_FLD_INV_TYPE
- PIN_FLD_PARENT
- PIN_FLD_CURRENCY
- PIN_FLD_PAYMENT_TERM
- PIN_FLD_SUBORD_INFO array in the PIN_FLD_INHERITED_INFO substruct in the PIN_FLD_PAYINFO array in the PIN_FLD_BILLINFO array.

Changed input fields

- PIN_FLD_PAYINFO was moved into PIN_FLD_BILLINFO array.
- The following fields in PIN_FLD_BILLINFO array are now optional:
 - PIN_FLD_POID
 - PIN_FLD_BILL_INFO_ID
 - PIN_FLD_PAYINFO_OBJ
 - PIN_FLD_PAY_TYPE
- PIN_FLD_INHERITED_INFO substruct in PIN_FLD_PAYINFO array in PIN_FLD_BILLINFO array is now mandatory.

Removed input fields

- PIN_FLD_PAYINFO array in the PIN_FLD_BILLINFO array.
- PIN_FLD_START_T
- PIN_FLD_END_T

New output fields

- PIN_FLD_ACCOUNT_OBJ

PCM_OP_SUBSCRIPTION_TRANSITION_DEAL

New input fields

- PIN_FLD_DEAL_OBJ

PCM_OP_SUBSCRIPTION_TRANSITION_PLAN

New input fields

- PIN_FLD_DEAL_OBJ in the PIN_FLD_DEAL_INFO substruct.

Changed input fields

- PIN_FLD_PACKAGE_ID in the PIN_FLD_DEAL_INFO substruct is now optional.

New output fields

- PIN_FLD_RESULTS array:
 - PIN_FLD_POID
 - PIN_FLD_RESULTS array

PCM_OP_SUBSCRIPTION_VALIDATE_DISCOUNT_DEPENDENCY**Changed input fields**

- PIN_FLD_PROGRAM_NAME is now optional.

Suspense FM Standard Opcodes

The following Suspense FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_SUSPENSE_EDIT_USAGE**New input fields**

- PIN_FLD_EDITS array:
 - PIN_FLD_OLD_VALUE
 - PIN_FLD_EXTENDED_INFO substruct

New output fields

- PIN_FLD_RESULT

PCM_OP_SUSPENSE_SEARCH_DELETE**New input fields**

- PIN_FLD_UNKNOWN [0]

Changed output fields

- PIN_FLD_MIN_POID and PIN_FLD_MAX_POID are now optional.

PCM_OP_SUSPENSE_SEARCH_EDIT**Changed input fields**

- PIN_FLD_FIELD_NAME and PIN_FLD_NEW_VALUE in the PIN_FLD_EDITS array are now optional.

Changed output fields

- PIN_FLD_POIDS array is now mandatory.
- PIN_FLD_MIN_POID and PIN_FLD_MAX_POID are now optional.

PCM_OP_SUSPENSE_SEARCH_RECYCLE**Changed input fields**

- The following fields are now optional:
 - PIN_FLD_FLAGS
 - PIN_FLD_TEMPLATE
 - PIN_FLD_ARGS array
 - PIN_FLD_MODE

Changed output fields

- PIN_FLD_MIN_POID and PIN_FLD_MAX_POID are now optional.

PCM_OP_SUSPENSE_SEARCH_WRITE_OFF**Changed output fields**

- PIN_FLD_MIN_POID and PIN_FLD_MAX_POID are now optional.

PCM_OP_SUSPENSE_UNDO_EDIT_USAGE

Changed output fields

- PIN_FLD_ACTION_OBJ is now optional.

Services Framework AAA Manager FM Standard Opcodes

The following Service Framework AAA Manager FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_TCF_AAA_ACCOUNTING

New input fields

- PIN_FLD_TERMINATE_CAUSE

Removed input fields

- PIN_FLD_NETWORK_SESSION_CORRELATION_ID

PCM_OP_TCF_AAA_ACCOUNTING_OFF

New input field

- PIN_FLD_DELETED_FLAG

PCM_OP_TCF_AAA_ACCOUNTING_ON

New input fields

- PIN_FLD_DELETED_FLAG

PCM_OP_TCF_AAA_AUTHENTICATE

Changed input fields

- PIN_FLD_PASSWORD is now PIN_FLD_PASSWD_CLEAR

Removed input fields

- PIN_FLD_ACTION

PCM_OP_TCF_AAA_AUTHORIZE

New input fields

- PIN_FLD_SERVICE_OBJ
- PIN_FLD_USAGE_TYPE
- PIN_FLD_SESSION_TYPE

PCM_OP_TCF_AAA_AUTHORIZE_PREP_INPUT

New input fields

- PIN_FLD_TERMINATE_CAUSE

PCM_OP_TCF_AAA_DETECT_CONTINUATION_CALL

Changed input fields

- PIN_FLD_SERVICE_CODES array and PIN_FLD_TELCO_INFO substruct were moved to level 0.

- PIN_FLD_EVENT substruct in PIN_FLD_RATING_INFO substruct is now optional.

Removed input fields

- PIN_FLD_INHERITED_INFO substruct

PCM_OP_TCF_AAA_REAUTHORIZE

New input fields

- PIN_FLD_SESSION_TYPE

PCM_OP_TCF_AAA_SEARCH_SESSION

New input fields

- PIN_FLD_OPCODE

PCM_OP_TCF_AAA_STOP_ACCOUNTING_PREP_INPUT

New input fields

- PIN_FLD_DROPPED_CALL_TERMINATE_CAUSE_ARRAY array in the PIN_FLD_TELCO_INFO substruct.

Changed input fields

- PIN_FLD_OPCODE is now optional.

PCM_OP_TCF_AAA_UPDATE_ACCOUNTING

New input fields

- PIN_FLD_UNIT

PCM_OP_TCF_AAA_UPDATE_ACCOUNTING_PREP_INPUT

New input fields

- PIN_FLD_UNIT
- PIN_FLD_TERMINATE_CAUSE

PCM_OP_TCF_PROV_CREATE_SVC_ORDER

Changed input fields

- PIN_FLD_USERID is now of type STR
- PIN_FLD_SERVICE_OBJ is now mandatory.

PCM_OP_TCF_PROV_HANDLE_SVC_ORDER

Changed input fields

- PIN_FLD_USERID is now of type POID.

PCM_OP_TCF_PROV_SERVICE_ORDER_NOTIFY

Changed input fields

- PIN_FLD_PROGRAM_NAME is now optional.
- PIN_FLD_SVC_ORDER substruct is now mandatory.
- PIN_FLD_NEW_STATE_ID in PIN_FLD_SVC_ORDER substruct is now PIN_FLD_NEW_STATE.

- PIN_FLD_USERID is now of type POID
- PIN_FLD_END_T is now optional.

PCM_OP_TCF_PROV_UPDATE_PROV_OBJECT**Changed input fields**

- PIN_FLD_USERID is now of type POID.
- PIN_FLD_SVC_ORDER substruct is now mandatory.

PCM_OP_TCF_PROV_UPDATE_SVC_ORDER**New input field**

- PIN_FLD_STATUS

Voucher FM Standard Opcodes

The following Voucher FM standard opcodes were changed between Portal 7.3 and BRM 7.3.1.

PCM_OP_VOUCHER_ASSOCIATE_VOUCHER**New output fields**

- PIN_FLD_DEVICE_VOUCHER substruct

Changed output fields

- The following fields were moved into the PIN_FLD_BAL_IMPACTS array:
 - PIN_FLD_RESOURCE_ID
 - PIN_FLD_AMOUNT
 - PIN_FLD_VALID_FROM
 - PIN_FLD_VALID_TO

Renamed Opcodes

These Telco Framework opcodes were renamed in BRM 7.3.1 as shown in [Table 15–1](#).

Table 15–1 Renamed Telco Framework Opcodes in BRM 7.3.1

Old Opcode Name	New Opcode Name
PCM_OP_TELCO_APPLY_PARAMETER	PCM_OP_TCF_APPLY_PARAMETER
PCM_OP_TELCO_PROPAGATE_STATUS	PCM_OP_TCF_PROPAGATE_STATUS
PCM_OP_TELCO_SVC_LISTENER	PCM_OP_TCF_SVC_LISTENER

Utility Changes from Portal 7.3 to BRM 7.3.1

This chapter provides upgrade impacts information for Portal™ Release 7.3 to Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1. It describes the utility changes that affect your Portal system, and what you must consider when you upgrade from 7.3 to 7.3.1.

For information on planning your upgrade implementation, such as setting up your development and test environments, see "[About Upgrading BRM Releases](#)".

Changed Utilities

Table 16–1 contains the changed utilities from Portal 7.3 to BRM 7.3.1.

Table 16–1 *Changed Utilities from Portal 7.3 to BRM 7.3.1*

Changed Utility	Description
<code>pin_ledger_report</code>	The <code>create_journal</code> mode is no longer supported in the <code>pin_ledger_report</code> utility. Instead, you create journal objects by using the new <code>create_journal.pl</code> script.

Pipeline Manager Changes from Portal 7.3 to BRM 7.3.1

This chapter provides upgrade impact information for Portal™ Release 7.3 to Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1. It describes the Pipeline Manager EDR changes that affect your Portal system and what you must consider when you upgrade from 7.3 to 7.3.1.

For information on planning your upgrade implementation, such as setting up your development and test environments, see ["About Upgrading BRM Releases"](#).

Changed Pipeline Manager Modules

[Table 17-1](#) contains the changed Pipeline Manager modules in BRM 7.3.1.

Table 17-1 Changed Pipeline Manager Modules in BRM 7.3.1

Changed Module	Description
"DAT_AccountBatch"	This module has been enhanced to determine whether balance monitoring is enabled by using the BalanceMonitoring entry from the multi_bal parameter instance of the /config/business_params object rather than the Pipeline Manager registry's ReadBalanceGroupMonitors entry. See "Using Business Parameter Settings from the BRM Database" in <i>BRM System Administrator's Guide</i> .
"DAT_BalanceBatch"	This module has been enhanced to determine whether to restrict the validity end time of first-usage resources by using the RestrictResourceValidityToOffer entry from the multi_bal parameter instance of the /config/business_params object rather than the Pipeline Manager registry's RestrictResourceValidityToOffer entry. See "Using Business Parameter Settings from the BRM Database" in <i>BRM System Administrator's Guide</i> .

Table 17–1 (Cont.) Changed Pipeline Manager Modules in BRM 7.3.1

Changed Module	Description
"DAT_Discount"	This module has been enhanced to determine the type of discount validity and exclusion rules to apply by using the ValidateDiscountDependency entry from the billing parameter instance of the /config/business_params object rather than the Pipeline Manager registry's SupportExclusion entry. See "Using Business Parameter Settings from the BRM Database" in <i>BRM System Administrator's Guide</i> .
"DAT_PortalConfig"	This module has been enhanced to retrieve business parameter settings from the BRM database's /config/business_params object and store them in internal memory. You can print to a file all business parameter settings stored in DAT_PortalConfig's memory by using the new CBPPrintData semaphore entry. See "Using Business Parameter Settings from the BRM Database" in <i>BRM System Administrator's Guide</i> . Due to the dependency of other data modules on DAT_PortalConfig, the DAT_PortalConfig registry entries must now appear before all other data module entries in the registry file.
"FCT_PreSuspense"	This module has been enhanced to enable you to determine whether an EDR's batch ID is preserved as it is processed by the pipeline. See "Tracking EDRs by Using Batch IDs" in <i>BRM Collecting Revenue Assurance Data</i> .

New EDR Container Fields

The following tables list the new BRM EDR container fields for the following entities:

- [Basic Detail Record](#)
- [Associated Charge Breakdown Record - Update Balance Packet](#)
- [Associated Charge Breakdown Record - Supplementary Charge Packet Record](#)
- [Split Charge PacketDiscount Sub-balance Packet](#)

Basic Detail Record

[Table 17–2](#) contains the new Basic Detail Record EDR container fields in BRM 7.3.1.

Table 17–2 New Basic Detail Record EDR Container Fields in BRM 7.3.1

Name	Format	Description
UNRATED_QUANTITY	Decimal	Unrated quantity filled in after credit limit check.
RERATE_TAG	Integer	Used for re-rating
NET_QUANTITY	Decimal	Contains the summation of the BALANCE_PACKET.PIN_QUANTITY for the associated RUM.

Associated Charge Breakdown Record - Update Balance Packet

[Table 17–3](#) contains the new Associated Charge Breakdown Record - Update Balance Packet EDR container fields in BRM 7.3.1.

Table 17–3 New Associated Charge Breakdown Record - Update Balance Packet EDR Container Fields in BRM 7.3.1

Name	Format	Description
CONTRIBUTOR	String	Balance group contributor.
GRANTOR	String	Balance group grantor.
GRANT_VALID_FROM	Date	Grant validity start time.
GRANT_VALID_TO	Date	Grant validity end time.

Associated Charge Breakdown Record - Supplementary Charge Packet Record

Table 17–4 contains the new Associated Charge Breakdown Record - Supplementary Charge Packet Record EDR container fields in BRM 7.3.1.

Table 17–4 New Associated Charge Breakdown Record - Supplementary Charge Packet Record EDR Container Fields in BRM 7.3.1

Name	Format	Description
QUANTITY_FROM	Decimal	Charge packet start quantity.
QUANTITY_TO	Decimal	Charge packet end quantity.

Split Charge Packet

Table 17–5 contains the new Split Charge Packet EDR container fields in BRM 7.3.1.

This optional record can be used with the charge packet.

Table 17–5 New Split Charge Packet EDR Container Fields in BRM 7.3.1

Name	Format	Description
RESOURCE_ID	Integer	Calculated Mandatory
RUM	String	Calculated Mandatory
QUANTITY_FROM	Decimal	Calculated Mandatory
QUANTITY_TO	Decimal	Calculated Mandatory
CHARGED_AMOUNT_VALUE	Decimal	Mandatory
INTERN_PACKET_INDEX	Integer	Added by discounting Optional
INTERN_SRC_PACKET_INDEX	Integer	NA

Discount Sub-balance Packet

Table 17–6 contains the new Discount Sub-Balance Packet EDR Container fields in BRM 7.3.1.

Table 17-6 *New Discount Sub-balance Packet EDR Container Fields in BRM 7.3.1*

Name	Format	Description
GRANT_VALID_ FROM	Date	Grant validity start time.
GRANT_VALID_TO	Date	Grant validity end time.

Notification Event Changes from Portal 7.3 to BRM 7.3.1

This chapter provides upgrade impacts information for Portal™ Release 7.3 to Oracle Communications Billing and Revenue Management (BRM) Release 7.3.1. It describes the notification event changes that affect your Portal system, and what you must consider when you upgrade from 7.3 to 7.3.1.

For information on planning your upgrade implementation, such as setting up your development and test environments, see ["About Upgrading BRM Releases"](#).

Changed Notification Events

[Table 18–1](#) lists all notification events that were modified between Portal 7.3 and BRM 7.3.1.

Table 18–1 Modified Notification Events between Portal 7.3 and BRM 7.3.1

Changed Notification Event	Description
<code>/event/notification/price/discounts/modify</code>	Several new fields were added so that additional discount details can be provided to external customer relationship management (CRM) systems. See "About the Data Synchronization Process" in <i>BRM Synchronization Queue Manager</i> .
<code>/event/notification/price/products/modify</code>	Several new arrays and fields were added so that additional product details can be provided to external customer relationship management (CRM) systems. See "About the Data Synchronization Process" in <i>BRM Synchronization Queue Manager</i> .

Part IV

Upgrade Procedures

This part contains information on the upgrade procedures for different categories of Oracle Communications Billing and Revenue Management (BRM) software.

Part IV contains the following chapters:

- [Upgrading BRM and Pipeline Manager](#)
- [Upgrading from BRM 7.3.1 to BRM 7.4](#)
- [Upgrading from Portal 7.3 to BRM 7.4](#)
- [Upgrading from Portal 7.3 to BRM 7.3.1](#)
- [Upgrading from GPRS Manager Release 2.0 to Release 3.0](#)

Upgrading BRM and Pipeline Manager

This chapter contains the procedures required to upgrade Oracle Communications Billing and Revenue Management (BRM) and Pipeline Manager from version 7.4 to version 7.5. It covers BRM on HP-UX IA64, Linux, Solaris, and AIX platforms.

Important: Before performing this upgrade, see "[About Upgrading BRM Releases](#)" for information on how to plan, prepare for, and test your upgrade.

About the Upgrade

This upgrade includes the changes that are necessary for upgrading BRM version 7.4 to BRM version 7.5.

Note: For AIX systems, this upgrade includes the changes that are necessary for upgrading BRM version 7.4 to BRM version 7.5 Patch Set 1.

Note: For HP-UX IA64 systems, this upgrade includes the changes that are necessary for upgrading BRM version 7.4 to BRM version 7.5 Patch Set 5.

It upgrades the following components:

- BRM
- BRM Software Development Kit (BRM SDK)
- Third-Party software
- Simple Network Management Protocol for BRM (BRM SNMP)
- Pipeline Manager
- Pipeline Portal Development Kit (Pipeline PDK)

System Configurations Supported by This Upgrade

This upgrade supports the system configurations listed under "BRM Compatibility Matrix" in *BRM Installation Guide*.

Oracle In-Memory Database (IMDB) Cache Manager

If IMDB Cache Manager was not installed in your BRM 7.4 environment and you plan to add this software to your BRM 7.5 environment, review "Installing IMDB Cache Manager" in *BRM System Administrator's Guide*.

Note: BRM 7.5 systems with IMDB Cache Data Manager version 2 require Oracle Clusterware for Oracle Database 11g.

For high-availability (HA) BRM 7.5 systems, IMDB Cache Data Manager version 2 requires Oracle Clusterware for Oracle Database 11g Release 2.

For information on installing or upgrading to IMDB Cache Data Manager version 2 software, see the installation or upgrade guide at the Oracle Database Documentation Library 11g R2 documentation website.

Online Charging Connectivity and BRM 7.5

AAA Manager and Diameter Manager are no longer supported in BRM 7.5. You must migrate all current configurations/customizations on AAA Gateway Manager and Diameter Manager for network connectivity to Oracle Communications Online Mediation Controller.

See the Oracle Communications Online Charging Solution documentation for details on the migration process. For more information on how BRM connects to the network for online charging, see *Oracle Communications Service Broker Online Mediation Controller Implementation Guide*.

Tasks Involved in the BRM 7.4-to-7.5 Upgrade Process

This section lists the tasks required to update BRM 7.4 to BRM 7.5. Some tasks are optional or apply only to certain platforms or system configurations.

Caution: When upgrading a *multischema* or multidatabase system, pay close attention to the system on which each task is performed.

The following tasks must be completed to upgrade your BRM system:

1. Shut down the current instance of BRM. See "[Shutting Down the Current Instance](#)."
2. Turn off service authentication and authorization. See "[Turning Off BRM Service Authentication and Authorization](#)."
3. If Oracle In-Memory Database (IMDB) Cache Manager version 1 was installed in your BRM 7.4 environment, prepare the IMDB Cache database for the upgrade. See "[Creating a Backup of the IMDB Cache Data](#)."
4. Create a complete backup of your BRM 7.4 data. See "[Backing Up Files](#)."
5. (HP-UX IA64 only) Install the optional components. See "[Installing Optional Components](#)."
6. Install BRM 7.5 without creating a schema. See "[Installing BRM 7.5](#)."
7. Set the environment variables. See "[Setting the Environment Variables](#)."

8. Install the database upgrade package. See ["Installing the BRM 7.5 Database Upgrade Package."](#)
9. Point your BRM 7.5 installation to the new database schema. See ["Pointing the BRM 7.5 Installation to the New Database Schema."](#)
10. Upgrade the BRM database schema to the BRM 7.5 schema. See ["Upgrading the BRM Database Schema to the BRM 7.5 Schema."](#)
11. Upgrade the Pipeline Manager database schema to the BRM 7.5 schema. See ["Upgrading the Pipeline Manager Database Schema to the BRM 7.5 Schema."](#)
12. Install BRM 7.5 client applications. See ["Installing the BRM 7.5 Client Applications."](#)
13. Install optional components. See ["Installing Optional Components."](#)
14. Check other database configurations. See ["Other Database Configurations."](#)
15. Restore customizations in BRM 7.5. See ["Restoring Customizations."](#)
16. Restore service authentication and authorization in BRM 7.5. See ["Restoring Service to Your Customers."](#)

Shutting Down the Current Instance

Important: On multidatabase systems, first perform this task on the primary system, and then on the secondary systems.

To shut down BRM 7.4:

1. Stop all BRM 7.4 processes. Only the database instance should be running during the upgrade.

For more information, see "Starting and Stopping the BRM System" in *BRM System Administrator's Guide* located in the *Oracle Communications Billing and Revenue Management (BRM) 7.4 Documentation*.

2. Ensure that no users are logged in.

Users include customers, client applications, customer service representatives (CSRs), and so on.

Turning Off BRM Service Authentication and Authorization

Important: On multidatabase systems, first perform this task on the primary system and then on the secondary systems.

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your BRM system and your customers.

For information on turning off service authentication/authorization provided by the RADIUS Manager and AAA Gateway Manager, see the *Oracle Communications Billing and Revenue Management 7.4 Documentation*.

Important: You cannot provide your customers access to your BRM system while the upgrade is in progress.

Creating a Backup of the IMDB Cache Data

Important: The steps in this section are not required if IMDB was not installed in your BRM 7.4 environment.

If you had Oracle IMDB Cache Manager version 1 installed in your BRM 7.4 environment, create a backup of the existing IMDB Cache data by doing the following:

1. Complete the steps described under "[Preparing for the Upgrade to IMDB Cache Manager Version 2](#)".

Important: Complete the steps described in that section only.

Backing Up Files

Important: If you are performing the upgrade on systems with distributed or HA architecture, back up the files on every node.

Back up the following files:

- All files customized for BRM, including any associated source code
- Registry files
- Policy files
- **pin.conf**
- **pin_setup.values**
- **Infranet.properties**

Important: Back up all the customized load utility files to a different location. The data in these files is used to transfer and restore your customizations after upgrading to BRM 7.5.

For more information, see "[Transferring Customizations to the New Release](#)".

Backing Up Pipeline Manager Files

Important: If you are performing the upgrade on systems with distributed or HA architecture, back up the files on every node.

To back up Pipeline Manager files:

1. Enter the following command to rename the **vpd.properties** file:

```
mv vpd.properties vpd.properties_74
```

2. Enter the following command to rename the **opt/ifw**.

```
mv opt/ifw opt/ifw_74
```

Backing Up Your BRM 7.4 Database

Important: On multidatabase systems, first perform this task on the primary system and then on the secondary systems.

Make a complete offline backup of your BRM 7.4 database. Ensure that the backup is completely valid and usable. See your database documentation for more information on performing full database backups.

In addition to the backup, use the Oracle export utility to export all BRM 7.4 tables. This helps to restore individual tables, if necessary. For more information on the **exp** utility, see the discussion on export and import utilities in the appropriate version of *Oracle Database Utilities*.

Important: Store this backup in a safe location. The data in these files will become necessary if you encounter any issues in the upgrade process.

Installing BRM 7.5

Note: For HP-UX IA64 systems, install the optional managers before Step 5.

When you run the updated **pin_setup** script, the database is not initialized, database tablespaces and default partitions are not created, and the tables are not dropped. See *BRM Installation Guide*.

To install BRM 7.5:

1. Go to (<http://edelivery.oracle.com/>) to a temporary directory (*temp_dir*) on your system.
2. Download the upgrade package to *temp_dir*.
3. In the *temp_dir*, enter the following command, which installs the Third-Party software package:
 - For Solaris and Linux systems:


```
7.5.0_ThirdParty_platform_32_opt.bin
```

where *platform* is **solaris** or **linux**.
 - For AIX systems:


```
7.5PS1_ThirdParty_aix_32_opt.bin
```
 - For HP-UX IA64 systems:

7.5PS5_ThirdParty_hpux_ia64_32_opt.bin

4. Enter the following command, which installs the Portal base package:

- For Solaris and Linux systems:

7.5.0_Portal_Base_platform_32_opt.bin

where *platform* is **solaris** or **linux**.

- For AIX systems:

7.5PS1_Portal_Base_aix_32_opt.bin

- For HP-UX IA64 systems:

7.5PS5_Portal_Base_hpux_ia64_32_opt.bin

Note: You can use the **-console** parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the DISPLAY environment variable *before* you install BRM 7.5.

5. Follow the instructions displayed during installation.
6. Enter the following command, which installs the Pipeline package:

- For Solaris and Linux systems:

7.5.0_Pipeline_platform_64_opt.bin

where *platform* is **solaris** or **linux**.

- For AIX systems:

7.5PS1_Pipeline_aix_64_opt.bin

- For HP-UX IA64 systems:

7.5PS5_Pipeline_hpux_ia64_64_opt.bin

7. Follow the instructions displayed during installation.

Restricting Schema Creation

Important: On multischema or multidatabase systems, first perform this task on the primary system and then on the secondary systems.

To restrict the schema creation:

1. Open the *BRM_home/setup/pin_setup.values* file in a text editor. where *BRM_home* is the directory in which BRM is installed.
2. Locate the following entries and set them as NO. The default values are shown here:

```
$SETUP_CREATE_PARTITIONS = "NO";  
$ENABLE_PARTITION = "YES";  
$SETUP_DROP_ALL_TABLES = "YES";  
$SETUP_INIT_DB = "YES";
```

```
$CREATE_DATABASE_TABLES = "YES";
```

3. Save and close the file.
4. Go to the *BRM_home/setup* directory.
5. Enter the following command:

```
./pin_setup
```

Check the **pin_setup.log** file for status and errors.

Note: After you run **pin_setup**:

- The **pin_setup.log** file erroneously contains the “Load pin_rerate fields failed” error message. You can ignore this message.
 - The **cm.pinlog** file erroneously contains several PIN_ERROC_FLIST and PIN_ERRCLASS_SYSTEM_DETERMINATE error messages. You can ignore these messages.
-

Setting the Environment Variables

To ensure that the environment variables are set correctly:

1. Go to the directory where you installed the BRM 7.5 Third-Party package and source the **source.me** file.
 - Bash Shell:


```
source source.me.sh
```
 - C shell:


```
source source.me.csh
```

Installing the BRM 7.5 Database Upgrade Package

To install the database upgrade package:

1. Go to *temp_dir*.
2. Enter the following command, which installs the BRM database upgrade package:
 - For Solaris and Linux systems:


```
7.5.0_PortalBase_Upgrade_74_75_platform_32_opt.bin
```

where *platform* is **solaris** or **linux**.
 - For AIX systems:


```
7.5PS1_PortalBase_Upgrade_74_75_aix_32_opt.bin
```
 - For HP-UX IA64 systems:


```
7.5PS5_PortalBase_Upgrade_74_75_hpux_ia64_32_opt.bin
```

Note: You can use the **-console** parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the DISPLAY environment variable *before* you install BRM 7.5.

3. Enter the following command, which installs the Pipeline database upgrade package:

- For Solaris and Linux systems:

7.5.0_Pipeline_Upgrade_74_75_platform_32_opt.bin

where *platform* is **solaris** or **linux**.

- For AIX systems:

7.5PS1_Pipeline_Upgrade_74_75_aix_32_opt.bin

- For HP-UX IA64 systems:

7.5PS5_Pipeline_Upgrade_74_75_hpux_ia64_32_opt.bin

Note: You can use the **-console** parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the DISPLAY environment variable *before* you install BRM 7.5.

Pointing the BRM 7.5 Installation to the New Database Schema

Before you run the BRM upgrade script, verify that Oracle Data Manager (DM) is configured correctly. The command that starts the DM is **ispin_ctl start dm_oracle**.

Important: On multidatabase systems, first perform this task on the primary system and then on the secondary systems.

Ensure that Oracle DM starts and stops correctly because upgrade scripts start and stop Oracle DM while making changes to the database schema.

Upgrading the BRM Database Schema to the BRM 7.5 Schema

To upgrade the BRM 7.4 Portalbase database schema to BRM 7.5 Portalbase database schema, complete the appropriate steps in this section.

Upgrading the Schema on Single Database Systems

To upgrade the schema on single database systems:

1. Open the *BRM_home/setup/pin_setup.values* file in a text editor.
2. (Optional). Set the values of the following parameters:
 - Set PIN_TEMP_DIR to the directory in which you want to create the temporary files. Ensure that the directory is set with full write permissions.

- Set `PIN_LOG_DIR` to the directory in which you want to create the BRM log files.
- 3. In the **Information about the databases** section, configure the database settings as required.
- 4. Set `SETUP_INIT_DB` to **YES**.
- 5. Save and close the file.
- 6. Do one of the following:
 - For UNIX systems, Go to `BRM_HOME/setup/scripts` directory and enter the command, `pin_74_75_upgrade.pl` script from the UNIX prompt:
 - For HP-UX IA64 systems, enter the command, `pin_75ps5_upgrade.pl`.

The `pin_74_75_upgrade.pl` script runs a series of scripts that upgrade BRM 7.4 to BRM 7.5. To upgrade the BRM 7.4 Portalbase database schema to BRM 7.5 Portalbase database schema, complete the appropriate steps in this section.

Upgrading the Schema on Multidatabase Systems

To upgrade the schema on multidatabase systems, you upgrade the primary database and then upgrade the secondary databases.

To upgrade the schema on the primary database for your BRM system, complete the following on your primary DM machine:

1. Open the `BRM_home/setup/pin_setup.values` file in a text editor.
2. (Optional). Set the values of the following parameters.
 - Set `PIN_TEMP_DIR` to the directory in which you want to create the temporary files.
 - Set `PIN_LOG_DIR` to the directory in which you want to create the BRM log files.
3. In the **Information about the databases** section, configure the following database settings as required for your primary database.


```
$MAIN_DB{'alias'} = ( $ENV{'ORACLE_SID_PIN'} or $ENV{'ORACLE_SID'} );
$MAIN_DB{'user'} = "USERNAME";
$MAIN_DB{'password'} = "PASSWORD";
$MAIN_DB{'Database'} = "DATABASE_NAME";
```
4. Set `SETUP_INIT_DB` to **YES**.
5. Save and close the file.
6. Do one of the following:
 - For UNIX systems, go to `BRM_home/setup/scripts` directory and enter the command, `pin_74_75_upgrade.pl` script on your primary DM machine:
 - For HP-UX IA64 systems, run the command, `pin_75ps5_upgrade.pl`.
7. The `DBMS_SNAPSHOT.refresh` command is required for multidatabase systems only.

Note: Do not perform this step for multischema systems running on Oracle 11g databases.

```
% sqlplus login/password@ORACLE_SID
SQL> execute DBMS_SNAPSHOT.refresh('CONFIG_BUSINESS_PARAMS_T','F')
SQL> exit
```

where *ORACLE_SID* is the BRM database alias.

Do the following on your secondary DM machine for *each* secondary database in your BRM system:

1. Open the *BRM_home/setup/pin_setup.values* file in a text editor.
2. Enter the number of the secondary database to upgrade:


```
$DM_ORACLE{ 'db_num' }
```
3. In the **Information about the databases** section, configure the database settings for your secondary database.
4. Set *SETUP_INIT_DB* to **YES**.
5. Save and close the file.
6. Do one of the following:
 - From the UNIX systems, go to *BRM_home/setup/scripts* and enter the command, **pin_74_75_upgrade.pl**.
 - For HP-UX IA64 systems, enter the command, **pin_75ps5_upgrade.pl**

Upgrading the Pipeline Manager Database Schema to the BRM 7.5 Schema

To upgrade the Pipeline Manager database schema:

Important: Run the database upgrade script on the secondary databases and then on the primary database.

1. Open the *Pipeline_Home/upgrade/pipeline_upgrade.cfg* file in a text editor, where *Pipeline_Home* is the directory in which Pipeline manager is installed.
2. Set the following values:


```
$PIN_HOME = "/opt/portal/7.5";
$PIN_LOG_DIR = "/var/portal/7.5";
$PIN_TEMP_DIR = "/tmp";
$PIN_SHARED_DIR = "/opt/portal/7.5";
$PIN_VERSION = "7.5";
```
3. Set *\$PIPELINE_TBLSPACE* to the tablespace where you want to create pipeline database objects.
4. In the **Information about the databases** section, configure the database settings as required.
5. Save and close the file.
6. Do one of the following:
 - From the UNIX systems, go to *BRM_home/setup/scripts* and enter the command, **pin_74_75_upgrade.pl**.

- For HP-UX IA64 systems, enter the command, **pin_75ps5_upgrade.pl**
- 7. Update the value for the **AccessLib** registry entry in the registry files for Pipeline Manager. To do so, if you are using Oracle 10g change the value from **oci10g63** to **oci10g72**, if you are using Oracle 11g change the value from **oci10g63** to **oci11g72** in the following modules.
 - **Login**
 - **LoginInfranet**
 - **LoginQueue**

The registry files containing these modules are located in *Pipeline_home/conf* directory. The files are **wireless.reg**, **wirelessRealtime.reg**, **rerating.reg**, **roaming.reg**, and so on.

Installing the BRM 7.5 Client Applications

When you install client applications, be sure to update the BRM 7.5 **Infranet.properties** and **INI** files with any 7.5 customizations.

Important: You must upgrade *all* client applications and optional components to BRM 7.5.

To upgrade *custom* client applications, recompile them with BRM 7.5 libraries. See "[Updating Custom Applications](#)" for more information.

Installing Optional Components

Install the optional components that you plan to use in BRM 7.5; for example, CSM Manager.

Completing the Upgrade from IMDB Cache Manager Version 1 to Version 2

If you had IMDB Cache Manager installed in BRM 7.4, you must update the Oracle schema for use with IMDB Cache Manager version 2.

To do so, complete the following steps:

1. Install IMDB Cache. See "[Installing IMDB Cache](#)".
2. Install IMDB Cache Manager version 2. See "[Installing IMDB Cache Manager Version 2](#)".
3. Re-create the data store in IMDB Cache Manager version 2. See "[Re-creating the Data Store in IMDB Cache Manager Version 2](#)".
4. Reestablish connections to your BRM system. See "[Reestablishing Connections to BRM](#)".

Installing Online Mediation Controller for Authentication/Authorization in BRM 7.5

AAA Gateway and Diameter Manager are no longer supported in BRM 7.5.

Install Oracle Communications Online Mediation Controller by completing the steps described in *Oracle Communications Service Broker Online Mediation Controller Implementation Guide* at the following location:

<https://docs.oracle.com/>

Other Database Configurations

Complete the steps in this section that are appropriate for your BRM 7.5 environment.

Update DM_IFW_SYNC Queue Database Configuration Setting

If you use Pipeline Manager in BRM 7.5:

1. Open *BRM_home/sys/dm_ifw_sync/pin.conf* file in a text editor.
2. Set the following values:

```
dm_ifw_sync sm_database DATABASE_NAME or DATABASE_SID
dm_ifw_sync sm_id USERNAME
dm_ifw_sync sm_pw PASSWORD
```

3. Save and close the file.

Verify IFW_SYNC_QUEUE Queue in the Database

To verify that the IFW_SYNC_QUEUE queue is created in the required (BRM or Pipeline) database:

1. Enter the following command to go to the required directory:

```
cd $PIN_HOME/sys/dm_ifw_sync/
```

2. Provide:

- the queue name for the **-q** parameter
- the table name for the **-t** parameter
- the login and password for ORACLE_SID, the Portalbase database

in the following command:

```
pin_ifw_sync_oracle.pl create -q queue_name -t <queue_table> -l
login/password@ORACLE_SID
```

Update the Default Settings for the pin_rel Utility

If you use the **pin_rel** utility:

1. Open the *BRM_home/apps/pin_rel/Infranet.properties* file in a text editor.
2. Set the following entries:

```
infranet.rel.dbname = DATABASE_NAME
infranet.rel.userid = USERNAME
infranet.rel.password = PASSWORD
```

3. Save and close the file.

Restoring Customizations

Important: You must first incorporate customizations on the secondary databases and then on the primary database.

Incorporate any customizations you made to your Release 7.4 policy source code, configuration files, invoicing, reports, and general ledger reporting. See "[Transferring Customizations to the New Release](#)" for more information.

BRM Production Systems and pin_virtual_time Configuration Entries

Ensure that you remove all entries for the **pin_virtual_time** utility from the configuration files associated with your BRM production system. For more information, see "pin_virtual_time" in *BRM Developer's Guide*.

Post-Upgrade Procedures

This section provides a list of post-upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

Perform these tasks after you upgrade your BRM system:

1. [Updating Pipeline Manager Configuration Data](#)
2. [Creating an Oracle AQ Database Queue](#)
3. [Loading the pin_notify File](#)

Updating Pipeline Manager Configuration Data

If there have been any changes to the configuration associated with the BRM 7.5 pipeline database (such as changes to user name or port), you must update the configuration settings to provide access to Pricing Center. To do so, you must update the **/config/pricing_admin** object by running the **pricing_admin.pl** script with the appropriate values.

For more information, see "Granting Administrative Privileges to Pricing Center Users" in *BRM Installation Guide*.

Creating an Oracle AQ Database Queue

Important: On multidatabase systems, first perform this task on the primary system and then on the secondary systems.

If your system includes the Synchronization Queue Data Manager, you must re-create your Oracle AQ database queue before you can begin synchronizing pricing data. For more information on how to create a database queue, see "Manually Creating a Database Queue on Oracle" in *BRM Synchronization Queue Manager*.

After you re-create the Oracle AQ database queue, perform these steps:

1. Update **BRM_home/sys/dm_aq/aq_queuenames** with the re-created Oracle AQ database queue name.
2. Restart DM_AQ services.

Loading the pin_notify File

Important: On multidatabase systems, first perform this task on the primary system and then on the secondary systems.

If your system includes Pipeline Manager, you must reload the event notification configuration file, **pin_notify**, in the BRM database. For more information, see "About the Event Notification List" in *BRM Developer's Guide*.

To load the **pin_notify** file:

1. Go to the *BRM_home/sys/data/config* directory.
2. Use the following command to run the **load_pin_notify** utility:

```
load_pin_notify pin_notify
```

If you do not run the utility from the directory in which the configuration file is located, include the complete path to the file.

3. Stop and restart the Connection Manager (CM).

Restoring Service to Your Customers

Oracle Communications Online Charging Solution contains the details on restoring the service to your customers. Complete the process that is appropriate for your BRM 7.5 installation.

Rolling Back an Upgrade

To roll back this upgrade:

1. If you had run the upgrade script, keep a copy of the data in your current BRM 7.5 environment.

Create a backup of the BRM 7.5 data: refer to ["Backing Up Files"](#).

Important: Keep these backups in a separate location. Do not overwrite the contents of the 7.4 data you backed up your BRM 7.4 data.

2. Stop all BRM daemons, processes, and managers.
3. Log in as user **pin**.
4. Go to the directory where you installed the Third-Party package and source the **source.me** file:
 - Bash shell:

```
source source.me.sh
```
 - C shell:

```
source source.me.csh
```
5. Run the *BRM_home/uninstaller/UpgradePackageName/uninstaller.bin* program, where *UpgradePackageName* is the name of the upgrade package you want to uninstall.

Note: You can use the **-console** parameter to run uninstall from a command line.

This starts a series of interactive prompts.

6. Follow the instructions on the screen.

7. If you did not run the upgrade script described in the section "[Installing the BRM 7.5 Database Upgrade Package](#)", you have completed the rollback for the upgrade. If you executed the upgrade script described in the section "[Installing the BRM 7.5 Database Upgrade Package](#)", restore the data from the backup of your BRM 7.4 data that you created in "[Backing Up Files](#)".

Upgrading from BRM 7.3.1 to BRM 7.4

This chapter contains procedures for upgrading from Oracle Communications Billing and Revenue Management (BRM) 7.3.1 to BRM 7.4. It covers BRM on HP-UX IA64, Linux, AIX, and Oracle Solaris.

Important: Before performing this upgrade, see "[About Upgrading BRM Releases](#)" for information on how to plan, prepare for, and test your upgrade.

Upgrade Patches

There is one overlay upgrade patch: 7594327. This overlay upgrade patch includes the changes that are necessary for upgrading BRM 7.3.1 to BRM 7.4. It upgrades the following components:

- 32-bit BRM
- BRM SDK
- 32-bit Third-Party software
- BRM SNMP
- Pipeline Manager
- Pipeline PDK
- TIMOS Data Manager

The upgrade identifies BRM components already installed in your environment and upgrades them to BRM 7.4.

Refer to the upgrade patch README for more information.

7.3.1-to-7.4 Upgrade

This section provides a list of upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

Caution: When upgrading a *multidatabase system*, perform each task on both the primary and secondary system.

Perform these tasks when upgrading your BRM system:

1. [Shutting Down the Current Instance](#)
2. [Backing Up Files](#)
3. [Turning Off BRM Service Authentication and Authorization](#)
4. [Backing Up Your BRM 7.3.1 Database](#)
5. [Setting the Environment Variables](#)
6. [Installing the Overlay Upgrade Patch](#)
7. [Upgrading the BRM Database Schema](#)
8. [Upgrading the Pipeline Manager Database Schema](#)
9. [Installing the Overlay Upgrade Patch on a Multidatabase System](#)
10. [Installing BRM 7.4 Client Applications](#)
11. [Adding Customizations](#)
12. [Restoring Service Authentication](#)

Shutting Down the Current Instance

To shut down BRM 7.3.1:

1. Stop all BRM 7.3.1 processes.
Only the database instance should be running during the upgrade. For more information, see “Starting and Stopping the BRM System” in *BRM System Administrator’s Guide*.
2. Ensure that no users are logged in.
Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Files

Back up your BRM 7.3.1 files. In particular, ensure that you back up all customized files, including source code, policy files, **pin.conf**, **pin_setup.values**, and **Infranet.properties** files. Copy your customizations from these files to the BRM 7.4 files after upgrading to BRM 7.4.

Important: Back up all the customized load utility files to a different location. After the upgrade is completed and services start running, restore the customized load utility files to their original location. Run the load utility applications to restore the customized entries in the database.

For more information, see ["Transferring Customizations to the New Release"](#).

Turning Off BRM Service Authentication and Authorization

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your BRM system and your customers.

For information on providing access to services while authentication is turned off, see ["About Maintaining Access to the BRM System during the Upgrade Process"](#).

For information on the BRM authentication module, see *BRM RADIUS Manager* in *Oracle Communications Billing and Revenue Management (BRM) Documentation*.

Backing Up Your BRM 7.3.1 Database

Make a complete offline backup of your BRM 7.3.1 database and ensure that the backup is completely valid and usable. See your database software documentation for more information on performing full database backups.

In addition to the backup, use the Oracle export utility to export all BRM 7.3.1 tables. This helps to restore individual tables, if necessary.

Setting the Environment Variables

Before installing the upgrade, ensure the environment variables are set correctly:

1. Go to the directory in which you installed the Third-Party package and source the `source.me` file:
 - Bash shell:


```
% source source.me.sh
```
 - C shell:


```
% source source.me.csh
```

Installing the Overlay Upgrade Patch

To install the overlay upgrade patch:

1. Go to the My Oracle Support Web site:

<https://support.oracle.com>

and download patch 7594327 to a temporary directory (*temp_dir*) on your system.
2. Go to *temp_dir* and run the following command, which installs the overlay upgrade patch software:

```
% PatchPackageName.bin
```

where *PatchPackageName* is:

- `7.4_7594327_Portal_Base_platform_32_opt` for upgrading BRM plus any BRM optional components installed on your system.
- `7.4_7594327_Portal_SDK_platform_32_opt` for upgrading the BRM SDK.
- `7.4_7594327_ThirdParty_Upgrade_platform_32_opt` for upgrading Third-Party software (this will install the RDA tool). For more information, see “Collecting Diagnostic Information by Using RDA” in *BRM System Administrator’s Guide*.
- `7.4_7594327_SNMP_3rd_party_tool_platform_64_opt` for upgrading BRM SNMP.
- `7.4_7594327_Pipeline_platform_64_opt` for upgrading Pipeline Manager.
- `7.4_7594327_Pipeline_PDK_platform_64_opt` for upgrading the Pipeline PDK.
- `7.4_7594327_Timos_platform_64_opt` for upgrading TIMOS Data Manager.

where *platform* is `hpux_ia64`, `solaris`, `linux`, or `aix`.

Note: You can use the **-console** parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the DISPLAY environment variable before you install BRM 7.4.

Upgrading the BRM Database Schema

Important: First run the database upgrade script on the secondary databases and then on the primary database.

Note: If your base system has TIMOS DM installed, before running the upgrade script, install the TIMOS DM upgrade package (`7.4_7594327_Timos_platform_64_opt`, where *platform* is **hpux_ia64**, **solaris**, **linux**, or **aix**.)

The `pin_731_74_upgrade.pl` script runs a series of scripts that upgrade BRM 7.3.1 to BRM 7.4.

To upgrade your BRM database schema:

1. Open the `BRM_Home/setup/pin_setup.values` file.
2. (Optional) Set the values of the following parameters:
 - PIN_TEMP_DIR to the directory in which you want to create the temporary files.
 - PIN_LOG_DIR to the directory in which you want to create the BRM log files.
3. In the **Information about the databases** section, configure the database settings as required.
4. Save and close the file.
5. Run the `pin_731_74_upgrade.pl` script from the UNIX prompt:

```
% cd BRM_Home/setup/scripts
% perl pin_731_74_upgrade.pl
```

Upgrading the Pipeline Manager Database Schema

Important: First run the database upgrade script on the secondary databases and then on the primary database.

To upgrade the Pipeline Manager database schema:

1. Open the `Pipeline_Home/upgrade/pin_setup.values` file.
2. Set the value of the PIN_TEMP_DIR parameter to the directory in which want to create the temporary files.
3. Point \$PIPELINE_TBLSPACE to the tablespace where you want to create pipeline database objects.

4. In the **Information about the databases** section, configure the database settings as required.
5. Save and close the file.
6. Run the `pin_731_74_pipeline_upgrade.pl` script from the UNIX prompt:


```
pin_731_74_pipeline_upgrade.pl
% cd Pipeline_Home/upgrade/731_74
% perl pin_731_74_pipeline_upgrade.pl
```
7. Update the **AccessLib** registry entry from `oci10g61` to `oci10g63` for **Login**, **LoginInfranet**, and **LoginQueue** modules. This includes files such as `wireless.reg`, `rerating.reg`, `roaming.reg`, and other registry files located in `Pipeline_Home/conf` directory.

Installing the Overlay Upgrade Patch on a Multidatabase System

Important: First install the overlay upgrade patch on the secondary database and then on the primary database.

1. Go to `BRM_Home/setup/pin_setup.values` file.
2. Change the `$DM_ORACLE{db_num}` entry, where `db_num` is the number of the secondary database to upgrade.
3. Save and close the file.
4. Run the `pin_731_74_upgrade.pl` script from the UNIX prompt:


```
% cd BRM_Home/setup/scripts
% perl pin_731_74_upgrade.pl
```

Installing BRM 7.4 Client Applications

When you install client applications, be sure to update the BRM 7.4 `Infranet.properties` and `INI` files with any 7.3.1 customizations.

Important: You must upgrade *all* client applications and optional components to BRM 7.4.

To upgrade *custom* client applications, recompile them with BRM 7.4 libraries. See ["Updating Custom Applications"](#) for more information.

Adding Customizations

Important: First incorporate customizations on the secondary databases and then on the primary database.

Incorporate any customizations you made to your Release 7.3.1 policy source code, configuration files, invoicing, reports, and general ledger reporting. See ["Transferring Customizations to the New Release"](#) for more information.

(Production system only) Ensure that you remove all entries for the `pin_virtual_time` utility from the configuration files.

Restoring Service Authentication

See “Using the Authentication and Authorization Modules” in *BRM RADIUS Manager*.

Post-Upgrade Procedures

This section provides a list of post-upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

Perform these tasks after you upgrade your BRM system:

1. [Creating an Oracle AQ Database Queue](#)
2. [Loading pin_notify](#)
3. [Removing the Unused Procedures and Packages from the BRM Database](#)
4. [Removing the xml.jar File \(AIX Only\)](#)

Creating an Oracle AQ Database Queue

If your system includes the Synchronization Queue Data Manager, you must re-create your Oracle AQ database queue before you can begin synchronizing pricing data. For more information on how to create a database queue, see “Manually Creating a Database Queue on Oracle” in *BRM Synchronization Queue Manager*.

After you re-create the Oracle AQ database queue, perform these steps:

1. Update `BRM_Home/sys/dm_aq/queue_names` with the re-created Oracle AQ database queue name.
2. Restart DM_AQ services.

Loading pin_notify

If your system includes Pipeline Manager, you must reload the event notification configuration file, `pin_notify`, in the BRM database. For more information, see “About the Event Notification List” in *BRM Developer’s Guide*.

To load the `pin_notify` file:

1. Go to the `BRM_Home/sys/data/config` directory.
2. Run the following command:

```
load_pin_notify pin_notify
```

If you do not run the utility from the directory in which the configuration file is located, include the complete path to the file.

3. Stop and restart the Connection Manager (CM).

Removing the Unused Procedures and Packages from the BRM Database

Remove the unused procedures and packages from the BRM database.

To remove the unused procedures and packages from the BRM database:

1. Enter the following command, which opens SQL*Plus:

```
sqlplus login/password@ORACLE_SID
```

where:

- *login* is the user name for the database schema you are updating.
 - *password* is the password for the specified user name.
 - *ORACLE_SID* is the BRM database alias of the schema you are updating.
2. Enter the following commands in the given order:


```
SQL>drop procedure DROP_PROCEDURES;
SQL>drop package EVENT_PARTITION;
```

The unused procedures and packages are removed.
 3. Enter the following command, which exits SQL*Plus:


```
SQL>exit
```

Removing the xml.jar File (AIX Only)

For AIX only, you must remove or rename the **xml.jar** file from the JRE bundle to avoid a conflict with a Third-Party package.

To remove or rename the **xml.jar** file:

1. Go to the *BRM_Home/opt/portal/7.4/ThirdPartyApps/jre/1.5.0/lib* directory.
2. Remove or rename the **xml.jar** file.

Uninstalling an Upgrade Package

To uninstall any upgrade package:

1. Back up the BRM database.
2. Back up all the BRM files.
3. Stop all BRM daemons, processes, and managers.
4. Log in as user **pin**.
5. Go to the directory in which you installed the Third-Party package and source the **source.me** file:
 - Bash shell:


```
% source source.me.sh
```
 - C shell:


```
% source source.me.csh
```
6. Run the *BRM_Home/uninstaller/PatchPackageName/uninstaller.bin* program, where *PatchPackageName* is the name of the upgrade package you want to uninstall.

Note: You can use the **-console** parameter to run **uninstall** from a command line.

This starts a series of interactive prompts.

7. Follow the instructions on the screen.

Upgrading from Portal 7.3 to BRM 7.4

This chapter contains procedures for upgrading from Portal release 7.3 to Oracle Communications Billing and Revenue Management (BRM) 7.4. It covers BRM on HP-UX IA64 and Oracle Solaris.

Important: Before performing this upgrade see "[About Upgrading BRM Releases](#)" for information on how to plan, prepare for, and test your upgrade.

Upgrade Patches

There is one overlay upgrade patch: 7594320. This overlay upgrade patch includes the changes that are necessary for upgrading Portal 7.3 to BRM 7.4. It upgrades the following components:

- 32-bit Portal Base
- Portal SDK
- 32-bit Third-Party software
- SNMP
- Pipeline Manager
- Pipeline PDK
- TIMOS Data Manager

The upgrade identifies Portal components already installed in your environment and upgrades them to BRM 7.4.

Refer to the upgrade patch README for more information.

7.3-to-7.4 Upgrade

This section lists the upgrade tasks.

Caution: When upgrading a *multidatabase system*, perform each task on both the primary and secondary system.

Perform these tasks when upgrading your BRM system:

1. [Shutting Down the Current Instance](#)

2. [Backing Up Files](#)
3. [Turning Off Portal Service Authentication and Authorization](#)
4. [Backing Up Your Portal 7.3 Database](#)
5. [Installing Portal 7.3 Patches](#)
6. [Setting the Environment Variables](#)
7. [Installing the Overlay Upgrade Patch](#)
8. [Upgrading the Portal Database Schema](#)
9. [Upgrading the Pipeline Manager Database Schema](#)
10. [Installing the Overlay Upgrade Patch on a Multidatabase System](#)
11. [Installing BRM 7.4 Client Applications](#)
12. [Adding Customizations](#)
13. [Restoring Service Authentication](#)

Shutting Down the Current Instance

To shut down Portal 7.3:

1. Stop all Portal 7.3 processes.
Only the database instance should be running during the upgrade. For more information, see “Starting and Stopping the BRM System” in *BRM System Administrator’s Guide*.
2. Ensure that no users are logged in.
Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Files

Back up your Portal 7.3 files. In particular, ensure that you back up all customized files, including source code, policy files, **pin.conf**, **pin_setup.values**, and **Infranet.properties** files. Copy your customizations from these files to the BRM 7.4 files after upgrading to BRM 7.4.

Important: Back up all the customized load utility files to a different location. After the upgrade is completed and services start running, restore the customized load utility files to their original location. Run the load utility applications to restore the customized entries in the database.

For more information, see ["Transferring Customizations to the New Release"](#).

Turning Off Portal Service Authentication and Authorization

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your Portal system and your customers.

For information on providing access to services while authentication is turned off, see ["About Maintaining Access to the BRM System during the Upgrade Process"](#).

For information on the BRM authentication module, see *BRM RADIUS Manager* in *Oracle Communications Billing and Revenue Management (BRM) Documentation*.

Backing Up Your Portal 7.3 Database

Make a complete offline backup of your Portal 7.3 database and ensure that the backup is completely valid and usable. See your database software documentation for more information on performing full database backups.

In addition to the backup, use the Oracle export utility to export all Portal 7.3 tables. This helps to restore individual tables, if necessary.

Installing Portal 7.3 Patches

Go to the Oracle My Support Web site:

<https://support.oracle.com>

and download and install the mandatory Portal 7.3 patches 5835756 (04489), 5903622, and 6787882 for your platform. Follow the installation instructions in the README downloaded with the patches.

Setting the Environment Variables

Before installing the overlay upgrade patch, ensure the environment variables are set correctly:

1. Go to the directory in which you installed the Third-Party package and source the **source.me** file:
 - Bash shell:


```
% source source.me.sh
```
 - C shell:


```
% source source.me.csh
```

Installing the Overlay Upgrade Patch

To install the overlay upgrade patch:

1. Go to the My Oracle Support Web site:

<https://support.oracle.com>

 and download patch 7594320 to a temporary directory (*temp_dir*) on your system.
2. Go to *temp_dir* and run the following command, which installs the overlay upgrade patch software:


```
% PatchPackageName.bin
```

where *PatchPackageName* is:

- **7.4_7594320_Portal_Base_platform_32_opt** for upgrading Portal plus any Portal optional components installed on your system.
- **7.4_7594320_Portal_SDK_platform_32_opt** for upgrading the Portal SDK.
- **7.4_7594320_ThirdParty_Upgrade_platform_32_opt** for upgrading the Third-Party software (this will install the RDA tool and upgrade JRE to 1.5.0_

09-b03). For more information, see “Collecting Diagnostic Information by Using RDA” in *BRM System Administrator’s Guide*.

- `7.4_7594320_SNMP_3rd_party_tool_platform_64_opt` for upgrading SNMP.
- `7.4_7594320_Pipeline_platform_64_opt` for upgrading Pipeline Manager.
- `7.4_7594320_Pipeline_PDK_platform_64_opt` for upgrading the Pipeline PDK.
- `7.4_7594320_Timos_platform_64_opt` for upgrading TIMOS Data Manager.

where *platform* is `hpux_ia64` or `solaris`.

Note: You can use the `-console` parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the `DISPLAY` environment variable before you install BRM 7.4.

Upgrading the Portal Database Schema

Important: First run the database upgrade script on the secondary databases and then on the primary database.

Note: If your base system has TIMOS DM installed, before running the upgrade script, install the TIMOS DM upgrade package (`7.4_7594320_Timos_platform_64_opt`, where *platform* is `hpux_ia64` or `solaris`.)

The `pin_73patch_74_upgrade.pl` script runs a series of scripts that upgrade Portal 7.3 to BRM 7.4.

To upgrade your Portal database schema:

1. Open the `BRM_Home/setup/pin_setup.values` file.
2. (Optional) Set the values of the following parameters:
 - `PIN_TEMP_DIR` to the directory in which you want to create the temporary files.
 - `PIN_LOG_DIR` to the directory in which you want to create the BRM log files.
3. In the **Information about the databases** section, configure the database settings as required.
4. Save and close the file.
5. Run the `pin_73patch_74_upgrade.pl` script from the UNIX prompt:

```
% cd BRM_Home/setup/scripts
% perl pin_73patch_74_upgrade.pl
```

Upgrading the Pipeline Manager Database Schema

Important: First run the database upgrade script on the secondary databases and then on the primary database.

To upgrade your Pipeline Manager database schema:

1. Open the *Pipeline_Home/upgrade/pin_setup.values* file.
2. Set the value of the PIN_TEMP_DIR parameter to the directory in which you want to create the temporary files.
3. Point \$PIPELINE_TBLSPACE to the tablespace where you want to create pipeline database objects.
4. In the **Information about the databases** section, configure the database settings as required.
5. Save and close the file.
6. Run the `pin_731_74_pipeline_upgrade.pl` script from the UNIX prompt:

```
pin_731_74_pipeline_upgrade.pl
%cd Pipeline_Home/upgrade/731_74
%perl pin_731_74_pipeline_upgrade.pl
```

7. Update the **AccessLib** registry entry from `oci10g61` to `oci10g63` for **Login**, **LoginInfranet**, and **LoginQueue** modules. This includes files such as `wireless.reg`, `rerating.reg`, `roaming.reg`, and other registry files located in the *Pipeline_Home/conf* directory.

Installing the Overlay Upgrade Patch on a Multidatabase System

Important: First install the overlay upgrade patch on the secondary database and then on the primary database.

1. Open the *BRM_Home/setup/pin_setup.values* file.
2. Change the `$DM_ORACLE {db_num}` entry, where *db_num* is the number of the secondary database to upgrade.
3. Save and close the file.
4. Run the `pin_73patch_74_upgrade.pl` script from the UNIX prompt:

```
% cd BRM_Home/setup/scripts
% perl pin_73patch_74_upgrade.pl
```

Installing BRM 7.4 Client Applications

When you install client applications, be sure to update the BRM 7.4 **Infranet.properties** and **INI** files with any 7.3 customizations.

Important: You must upgrade *all* client applications and optional components to BRM 7.4.

To upgrade *custom* client applications, recompile them with BRM 7.4 libraries. For more information, see "[Updating Custom Applications](#)".

Adding Customizations

Important: First incorporate customizations on the secondary databases and then on the primary database.

Incorporate any customizations you made to your Portal 7.3 policy source code, configuration files, invoicing, reports, and general ledger reporting. For more information, see "[Transferring Customizations to the New Release](#)".

(Production system only) Ensure that you remove all entries for the `pin_virtual_time` utility from the configuration files.

Restoring Service Authentication

See "Using the Authentication and Authorization Modules" in *BRM RADIUS Manager*.

Post-Upgrade Procedures

This section includes the post-upgrade tasks. Be sure to check whether these tasks are required for your system.

Loading `pin_notify`

If your system includes Pipeline Manager, reload the event notification configuration file, `pin_notify`, in the BRM database. For more information, see "About the Event Notification List" in *BRM Developer's Guide*.

To load the `pin_notify` file:

1. Go to the `BRM_Home/sys/data/config` directory.
2. Run the following command:

```
load_pin_notify pin_notify
```

If you do not run the utility from the directory in which the configuration file is located, include the complete path to the file.

3. Stop and restart the Connection Manager (CM).

Removing the Unused Procedures and Packages from the BRM Database

Remove the unused procedures and packages from the BRM database.

To remove the unused procedures and packages from the BRM database:

1. Enter the following command, which opens SQL*Plus:

```
sqlplus login/password@ORACLE_SID
```

where:

- `login` is the user name for the database schema you are updating.
 - `password` is the password for the specified user name.
 - `ORACLE_SID` is the BRM database alias of the schema you are updating.
2. Enter the following commands in the given order:

```
SQL>drop procedure DROP_PROCEDURES;
```

```
SQL>drop package EVENT_PARTITION;
```

The unused procedures and packages are removed.

3. Enter the following command, which exits SQL*Plus:

```
SQL>exit
```

Uninstalling an Upgrade Package

To uninstall any upgrade package:

1. Back up the BRM database.
2. Back up all the BRM files.
3. Stop all BRM daemons, processes, and managers.
4. Log in as user **pin**.
5. Go to the directory in which you installed the Third-Party package and source the **source.me** file:
 - Bash shell:

```
% source source.me.sh
```
 - C shell:

```
% source source.me.csh
```
6. Run the *BRM_Home/uninstaller/PatchPackageName/uninstaller.bin* program, where *PatchPackageName* is the name of the upgrade package you want to uninstall.

Note: You can use the **-console** parameter to run **uninstall** from a command line.

This starts a series of interactive prompts.

7. Follow the instructions on the screen.

Note: Uninstalling the Third-Party upgrade package does not uninstall JRE 1.5.0_09-b03, which is the latest version recommended for BRM 7.4.

Upgrading from Portal 7.3 to BRM 7.3.1

This chapter contains procedures for upgrading from Portal™ release 7.3 to Oracle Communications Billing and Revenue Management (BRM) 7.3.1. It covers BRM on UNIX (HP-UX and Solaris) and Windows platforms.

Important: *Before performing this upgrade see the BRM 7.3.1 upgrade documentation for information on how to plan, prepare for, and test your upgrade.*

If you are installing BRM for the first time, see the BRM 7.3.1 installation documentation.

For uninstall information, see "[Uninstalling Portal 7.3 Applications](#)".

Upgrade Patches

There are two prerequisite 7.3 patches, 5835756 and 5903622, and the 7.3.1 upgrade patch itself, 6498580. Download these patches from the Oracle MetaLink Web site to a temporary directory on your system.

The 7.3.1 upgrade patch, 6498580, installs five components: 32-bit_Portal_Base, Portal_SDK, Pipeline, Pipeline_TDK, and TIMOS. The installer identifies Portal components already installed in your environment and upgrades them to the BRM 7.3.1 release. During installation, you will be prompted to designate directories for the 32-bit_Portal_Base and Portal_SDK components.

See the patch README file for a list of affected files.

7.3-to-7.3.1 Upgrade

This section provides a list of upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

Unless otherwise noted, all steps apply to a single-database system.

Caution: When upgrading a *multidatabase system*, perform each task on both the primary and secondary system.

Perform these tasks when upgrading your BRM system:

1. [Shutting Down the Current Instance](#)

2. [Backing Up Files](#)
3. [Turning Off Portal Service Authentication and Authorization](#)
4. [Backing Up Your Portal 7.3 Database](#)
5. [Installing Portal 7.3 Patches 5835756 and 5903622](#)
6. [Installing the JDK](#)
7. [\(UNIX Only\) Setting the Environment Variables](#)
8. [Installing Upgrade Patch 6498580](#)
9. [Running the Database Upgrade Script](#)
10. [Installing the Upgrade Patch on a Multidatabase System](#)
11. [Installing BRM 7.3.1 Client Applications](#)
12. [Adding Customizations](#)
13. [Restoring Service Authentication](#)
14. [Testing the Upgraded System](#)

Shutting Down the Current Instance

To shut down Portal 7.3:

1. Stop all Portal 7.3 processes.

Only the database instance should be running during the upgrade. For more information, see "Starting and Stopping the BRM System" in *BRM System Administrator's Guide*.
2. Ensure that no users are logged on.

Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Files

Before installing the current patch package, back up your Portal 7.3 files. In particular, ensure that you back up all customized files, including source code, policy files, **pin.conf**, **pin_setup.values**, and **Infranet.properties** files. Copy your customizations from these files to the BRM 7.3.1 files after installing BRM 7.3.1.

For more information, see "[Transferring Customizations to the New Release](#)".

Turning Off Portal Service Authentication and Authorization

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your BRM system and your customers.

For information on providing access to services while authentication is turned off, see "[About Maintaining Access to the BRM System during the Upgrade Process](#)".

For information on the BRM authentication module, see *BRM RADIUS Manager in Oracle Communications Billing and Revenue Management (BRM) Documentation*.

Backing Up Your Portal 7.3 Database

Make a complete offline backup of your Portal 7.3 database and ensure that the backup is completely valid and usable. See your database software documentation for more information on performing full database backups.

In addition to the backup, use the Oracle export utility to export all Portal 7.3 tables. This helps to restore individual tables, if necessary.

Installing Portal 7.3 Patches 5835756 and 5903622

Download and install Portal 7.3 patches 5835756 and 5903622 for your platform, if you have not already done so. These patches are available from the Portal 7.3 patch page on the Oracle MetaLink Web site. Follow the installation instructions in the README file downloaded with the patches.

Installing the JDK

To install the JDK, perform these steps:

1. Rename the ThirdParty directory; for example, for UNIX:
`/opt/portal/7.3/ThirdPartyApps` to `/opt/portal/7.3/ThirdPartyAppsOld`.
 - Windows: The default installation path is:
`C:\Program Files\Common Files\Portal Software\ThirdParty`
 - UNIX: The default installation path is:
`/opt/portal/ThirdParty`
2. Install the BRM 7.3.1 Third-Party package in the default location.

(UNIX Only) Setting the Environment Variables

Before installing the upgrade patches, ensure the environment variables are set correctly:

1. Go to the directory where you installed the Third-Party package.
2. Initialize the `source.me` script:
 - Bash shell:

```
% source source.me.sh
```
 - C shell:

```
% source source.me.csh
```

Installing Upgrade Patch 6498580

Ensure that you install RPM packages in the correct numeric sequence.

Installing Patches in a Conventional (ISMP) Environment

To install the upgrade patch in an ISMP environment, perform these steps:

1. Download patch 6498580 from the Oracle MetaLink Web site to a temporary directory (`temp_dir`) on your system.
2. Go to `temp_dir` and install the patch package by entering the package name. Use this syntax:

```
% PatchPackageName.bin
```

where *PatchPackageName* is the following:

- **7.3.1_6498580_Portal_Base_platform_32_opt** for upgrading Portal base plus any Portal optional components installed on your system.
- **7.3.1_6498580_PCM_SDK_platform_32_dbg** for upgrading PCM SDK.
- **7.3.1_6498580_Portal_SDK_platform_32_dbg** for upgrading BRM SDK.
- **7.3.1_6498580_Pipeline_platform_64_opt** for upgrading Pipeline Manager.
- **7.3.1_6498580_Timos_platform_64_opt** for upgrading TIMOS Data Manager.

Note: You can use the **-console** parameter to run the installation from a command line. To install using a GUI, obtain a GUI application, such as X Windows, and set the DISPLAY environment variable before you install BRM 7.3.1.

3. If you upgraded both Portal base and Resource Reservation Manager from 7.3 to 7.3.1, you must reorganize the entries in your Connection Manager (CM) **pin.conf** file. You must move the **fm_reserve_pol** entry to just after the **fm_reserve** entry, as shown below:

```
- cm fm_module BRM_Home/lib/fm_reserve.so fm_utils_config fm_utils_init pin
- cm fm_module BRM_Home/lib/fm_reserve_pol.so fm_reserve_pol_config - pin
```

4. If you upgraded from Portal SDK 7.3 to BRM SDK 7.3.1, you must manually remove the *Portal_Home/source/sys/fm_gprs_pol* directory and its contents from your system. The files in this directory are for GPRS Manager 2.0, which was obsoleted in Portal 7.3. This directory was incorrectly created during the Portal SDK 7.3 installation and can cause compilation errors in BRM SDK 7.3.1.

Installing Patches in a Prepaid (RPM) Environment

To install the patches in a RPM environment, perform these steps:

1. Download patch 6498580 from the Oracle MetaLink Web site to a temporary directory (*temp_dir*) on your system.
2. Merge the patch RPM files with their corresponding Portal packages. Use this syntax for each merge:

```
% PSC_Home/tools/pin_repackage.sh AbsolutePath/PortalPackageName.rpm
AbsolutePath/PatchPackageName.rpm >>& pin_repackage.log
```

where *PortalPackageName* is the file name for the original 7.3 package, and *PatchPackageName* is the name of the 7.3.1 patch package.

- **Patch_Portal_Base-7.3-1.6498580.platform** for upgrading Portal base plus any Portal optional components installed on your system.
- **Patch_Pipeline-7.3-1.6498580.platform** for upgrading Pipeline Manager.
- **Patch_Timos-7.3-1.6498580.platform** for upgrading TIMOS Data Manager.

Each new merged package will have the same name as the Portal package, except for the version numbers. The first part of the new package version number is incremented by one, and the second part of the version number is taken from the patch package. For example, if you merge **Portal_Base-7.3-11.1234.sparc64.rpm** with **Patch_Portal_Base-7.3-1.6498580.sparc64.rpm**, the resulting merged package

name is `Portal_Base-7.3-12.6498580.sparc64.rpm`.

3. Move the merged packages to the `BRM_Home` repository:

```
% mv MergedRPMPackageFile BRM_Home/webapps/repository
```

4. Run the `createrepo` command:

```
% BRM_Home/webapps/repository/createrepo `pwd`
```

5. If you upgraded both Portal and Resource Reservation Manager from 7.3 to 7.3.1, you must reorder the entries in your Connection Manager (CM) `pin.conf` file. You must move the `fm_reserve_pol` entry to just after the `fm_reserve` entry, as shown below:

```
- cm fm_module BRM_Home/lib/fm_reserve.so fm_utils_config fm_utils_init pin
- cm fm_module BRM_Home/lib/fm_reserve_pol.so fm_reserve_pol_config - pin
```

Running the Database Upgrade Script

Important: First run the database upgrade script on the secondary databases and then on the primary database.

The `pin_73patch_731_upgrade.pl` script runs a series of scripts that upgrade the Release 7.3 database to BRM 7.3.1.

To upgrade your database schema:

- Run the `pin_73patch_731_upgrade.pl` script from the UNIX or DOS prompt:

```
% cd BRM_Home/setup/scripts
% perl pin_73patch_731_upgrade.pl
```

Installing the Upgrade Patch on a Multidatabase System

Update secondary databases using the same procedure as the primary database:

1. Go to `BRM_Home/setup`.
2. Open the `pin_setup.values` file.
3. Find the `$DM_ORACLE{'db_num'}` entry.
4. Change `db_num` to the number of the secondary database to upgrade.
5. Run the `pin_73patch_731_upgrade.pl` script from the UNIX or DOS prompt:

```
% cd BRM_Home/setup/scripts
% perl pin_73patch_731_upgrade.pl
```

Installing BRM 7.3.1 Client Applications

When you install client applications, be sure to update the BRM 7.3.1 `Infranet.properties` and `INI` files with any 7.3 customizations.

Important: You must upgrade *all* client applications and optional components to BRM 7.3.1.

Upgrading Custom Client Applications

To upgrade *custom* client applications, recompile them with BRM 7.3.1 libraries. For more information, see ["Updating Custom Applications"](#).

Adding Customizations

Important: You must first incorporate customizations on the secondary databases and then on the primary database.

Incorporate any customizations you made to your Release 7.3.1 policy source code, configuration files, invoicing, reports, and general ledger reporting. For more information, see ["Transferring Customizations to the New Release"](#).

(Production system only) Ensure that you remove all entries for the `pin_virtual_time` utility from the configuration files.

Restoring Service Authentication

See "Using the Authentication and Authorization Modules" in *BRM RADIUS Manager*.

Testing the Upgraded System

Test your upgraded system by running various daily operations on it. Tests include running the "after" version of the reports you ran before beginning the upgrade. For more information, see ["Testing Your Upgraded System"](#).

Uninstalling Portal 7.3 Applications

To uninstall any Portal 7.3 application:

1. Go to the uninstaller directory located in the default installation directory (*Portal_Home* or *IFW_Home*):
 - Windows: `C:\Portal`
 - UNIX: `/opt/portal/7.3` or `/opt/portal/ifw`
2. Run the uninstaller
 - (Windows) `uninstaller.exe`
 - (UNIX) `uninstaller.bin` with the following options:
`uninstaller.bin -is:javahome Renamed73ThirdPartyLocation/jre`

(UNIX) To set up the default JRE to run the uninstaller, use the following command:

- C shell:
`Portal_Home/ThirdPartyApps/source.me.csh`
- Bash shell:
`Portal_Home/ThirdPartyApps/source.me.sh`

Upgrading from GPRS Manager Release 2.0 to Release 3.0

This chapter contains procedures for upgrading your GPRS Manager system directly from Release 2.0 to Release 3.0. It covers Oracle on UNIX (HP-UX and Solaris) platform.

About Upgrading GPRS Manager

- Install new GPRS Manager software.
- Update the GPRS Manager database. The new GPRS Manager release includes an updated database schema with new tables and indexes. You use upgrade scripts to update your GPRS Manager database to the new schema.
- The GPRS Manager 3.0 API is not backward compatible. You must implement a wrapper opcode to parse the existing flist data to the new API format.

Important Information for System Administrators

- GPRS Manager 3.0 runs only on the Oracle 9i or 10g database.
- To upgrade any data stored in *custom* tables, you must create additional SQL scripts. To run these scripts with the default upgrade scripts, add appropriate SQL file entries to the upgrade configuration file, **upgrade.cfg**. For more information, see "[Configuring the Upgrade Parameters](#)".

Oracle Database Character Sets

Portal™ supports only the UTF8 character set on Oracle. If you haven't already done so, you should move your data to a new UTF8 database before you upgrade. For more information about exporting your existing data to a UTF8 database, see "Modifying your Oracle Database Installation" in *BRM Installation Guide*.

Preparing Your Environment for the Upgrade

After preparing your environment, prepare your database:

- [Reviewing the Default Database Schema](#)
- [Preparing an Oracle Database](#)

Reviewing the Default Database Schema

Before running the database upgrade scripts, review the *default* database schema changes between Release 2.0 and Release 3.0. Knowing the schema changes helps you plan your upgrade. For example, if 3.0 contains many new tables, you might need to increase the disk space for your 3.0 database. If your 2.0 custom applications refer to tables that have been modified or deleted in 3.0, you might need to update the applications for 3.0.

To review database schema changes, temporarily install the Release 3.0 database upgrade files on a supplementary server.

In addition, perform the database-specific tasks described in the section "[Preparing an Oracle Database](#)".

Preparing an Oracle Database

If you use an Oracle database, perform the following tasks before upgrading Portal:

- [Upgrading the Oracle Software and Database](#)
- [Changing the Database Character Set to UTF8](#)
- [Configuring Oracle to Run the Upgrade Scripts](#)

Upgrading the Oracle Software and Database

You can use GPRS Manager 3.0 only on Oracle 9i or 10g.

Caution: If you are using an earlier version of Oracle, you must upgrade it *before* you install GPRS Manager 3.0. For information on upgrading Oracle, see your Oracle documentation.

Changing the Database Character Set to UTF8

GPRS Manager 3.0 supports only the UTF8 character set. If your database character set is not UTF8, re-create your database with the UTF8 database character set.

For information on changing the database character set, see your Oracle documentation.

Configuring Oracle to Run the Upgrade Scripts

To run the database upgrade scripts, you must prepare your Oracle system as follows:

- [Setting Up Rollback Segments and Temporary Tablespaces](#)
- [Granting New Privileges to the Oracle Portal User](#)

Setting Up Rollback Segments and Temporary Tablespaces

The upgrade scripts modify and sort many Portal tables. Some tables, such as EVENT_T, can contain millions of rows. The recommended rollback segment configuration for normal operation is inadequate for running the upgrade scripts. Therefore, you must adjust the size of the rollback segments to support the upgrade transactions:

- Unless your database is very small, create two or three rollback segments that are half the size of your largest table (usually the EVENT_T table).
- Take the smaller rollback segments used during normal operation offline while you run the upgrade scripts.

Granting New Privileges to the Oracle Portal User

The upgrade scripts require you to grant CREATE TABLE and CREATE SEQUENCE privileges directly to the Portal user **pin**.

To grant those privileges, enter these commands:

```
SQL> connect system/manager@databaseAlias
SQL> grant create table to pin;
Grant succeeded.
SQL> grant create sequence to pin;
Grant succeeded.
SQL> quit
```

Upgrading GPRS Manager

This section provides a complete list of upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

To upgrade directly from GPRS Manager Release 2.0 to Release 3.0, perform some or all of these tasks, depending on your system:

1. [Backing Up GPRS Manager 2.0 Files](#)
2. [Turning Off Portal Service Authentication and Authorization](#)
3. [Shutting Down Portal](#)
4. [Backing Up Your Portal Database](#)
5. [Installing the Third-Party Software](#)
6. [Installing GPRS Manager Server 3.0](#)
7. [Installing the Upgrade Scripts](#)
8. [Configuring the Upgrade Parameters](#)
9. [Creating Required Database Objects and the Upgrade Log Directory](#)
10. [Performing Pre-upgrade Sanity Checks](#)
11. [Generating List of Tables and Indexes in 3.0 Schema](#)
12. [Running the Database Upgrade Scripts](#)
13. [Running pin_setup to Configure GPRS Manager](#)
14. [Restoring Service Authentication](#)
15. [Dropping Obsolete Database Objects from the Database \(Optional\)](#)
16. [Upgrading Events](#)

Backing Up GPRS Manager 2.0 Files

Before removing the old GPRS Manager Release 2.0 packages, back up your 2.0 files. In particular, ensure that you back up all customized files, including source code, **pin.conf**, and **pin_setup.values** files.

Turning Off Portal Service Authentication and Authorization

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your Portal system and your customers.

For information on the Portal authentication module, see *BRM RADIUS Manager* in *Oracle Communications Billing and Revenue Management (BRM) Documentation*.

Shutting Down Portal

1. Stop all Portal processes.
Only the database instance should be running during the upgrade. For more information, see “Starting and Stopping the BRM System” in *BRM System Administrator’s Guide*.
2. Ensure that the Connection Managers (CMs) and Data Managers (DMs) are not running.
3. Ensure that no users are logged on to Portal.
Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Your Portal Database

Make a complete offline backup of your Portal database, and ensure that the backup is completely valid and usable. For more information on performing full database backups, see your database software documentation.

In addition to the backup, use the Oracle export utility to export all Portal tables. This helps you restore individual tables if necessary.

Installing the Third-Party Software

Install the Third-Party software by following the instructions given in “Installing the Third-Party Software” in *BRM Installation Guide*.

Installing GPRS Manager Server 3.0

1. Install the GPRS Manager Server Release 3.0 package for your platform. Follow the instructions in “Installing GPRS Manager 3.0” in *BRM Telco Integration*.

Caution: Do not run the `pin_setup` script before upgrading your database. Running `pin_setup` before upgrading your database might corrupt your data.

Important:

- Pay particular attention to entries that specify your installation directory; CM and DM port numbers; and database host name, user name, and password.
 - Ensure that the `$SETUP_INIT_DB` entry is set to **YES**.
-
-

2. Make a backup copy of the `Portal_Home/setup/pin_setup.values` file and save it to another location.

Important: The upgrade scripts do not modify these files.

Installing the Upgrade Scripts

Install the upgrade package for your platform:

1. Download the software to a temporary directory (*temp_dir*).

Important:

- If you download to a Windows workstation, use **FTP** to copy the **.bin** file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. For information, see “Increasing heap size to avoid “Out of Memory” error messages” in *BRM Installation Guide*.
-
-

2. Go to the directory where you installed the Third-Party package and source the **source.me** file

Caution: You must source the **source.me** file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Go to the *temp_dir* directory and enter this command:

```
7.3_Patch_GPRS_20_30_OraUpg_platform_32_opt.bin
```

Note: You can use the **-console** parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the **DISPLAY** environment variable before you install the software.

4. Follow the instructions displayed during installation.

Configuring the Upgrade Parameters

The **upgrade.cfg** file contains your upgrade parameters, such as which scripts to execute and whether to upgrade only the most recent data. You should customize these parameters to meet your business requirements.

To edit the **upgrade.cfg** file:

1. Log in as user **pin**, go to *Portal_Home/upgrade/gprs/20_30*, and open the **upgrade.cfg** file in a text editor such as **vi**:

```
% su - pin
% cd Portal_Home/upgrade/gprs/20_30
% vi upgrade.cfg
```

2. Configure the file's parameters as necessary. For information on each parameter, see the comments in the **upgrade.cfg** file. Pay particular attention to the parameters described in [Table 23-1](#):

Table 23-1 *upgrade.cfg* File Parameters

Parameter	Description
SQLPLUS IMP EXP	Specify the location of the database utilities and executables. By default, they are set to sqlplus , imp , and exp , respectively.
OWNER	Specifies the Portal database user name. By default, this is set to pin .
PASSWD	Specifies the Portal database password. By default, this is set to pin .
DBNAME	Specifies the name of the Portal database you are upgrading. By default, this is set to pindb .
PIN_CONF_TBLSPACE n PIN_CONF_TBLSPACE Xn	Specify the tablespaces where your new tables and indexes will be created.
PIN_CONF_STORAGE_SMALL PIN_CONF_STORAGE_SMALL_INS PIN_CONF_STORAGE_MED PIN_CONF_STORAGE_MED_INS PIN_CONF_STORAGE_LARGE PIN_CONF_STORAGE_LARGE_INS	Specify the storage parameters to use when the tables and indexes are created. Note: Information on how your tablespace and storage parameters are configured in Release 2.0 is in your Release 3.0 <i>Portal_Home\setup\scripts\pin_tables.values</i> file. You can use this information to help you configure the parameters in your Release 3.0 upgrade.cfg file.
@ALL_SCRIPTS	Specifies which upgrade scripts are executed by the upgrade.pl script. By default, all upgrade scripts are executed.
\$UPGRADE_LOG_DIR	Specifies in which directory to create the log and pinlog files generated by the upgrade process.
\$UPG_DATA_START_TIME	Specifies the start date for upgrading only the most recent data. Only objects created during the time period defined by \$UPG_DATA_START_TIME and \$UPG_DATA_END_TIME are upgraded. An object's created time is used to calculate the age of its data. Note: <ul style="list-style-type: none"> ■ This parameter applies only to event, item, bill, and ledger_report objects. The remainder of the Portal database is fully upgraded. ■ If you specify only a date, the default time is 00:00:00 on the specified date. Therefore, the start date is inclusive. ■ To upgrade all the data in your database, specify a date range that covers all the data. To find the entire range, run the upg_mgr.pl script with the -t parameter.
\$UPG_DATA_END_TIME	Specifies the end date for upgrading only the most recent data. Important: You must change the default value of this parameter. Note: If you specify only a date, the default time is 00:00:00 on the specified date. Therefore, the end date is <i>exclusive</i> . For more information, see \$UPG_DATA_START_TIME .

3. Save and close the file.

Creating Required Database Objects and the Upgrade Log Directory

To create the database objects required for the upgrade and the upgrade log directory, run the `upg_mgr.pl` script with the `-o` parameter. For more information, see ["About the upg_mgr.pl Script"](#).

Performing Pre-upgrade Sanity Checks

Run the `upg_mgr.pl` script with the `-s` parameter to verify the following:

- The indexes required for upgrading have been created.
- Portal storable class objects required for upgrading exist.
- The following database preparations have been made:
 - The correct version of Oracle is installed. See ["Important Information for System Administrators"](#).
 - The database character set is correct. See ["Oracle Database Character Sets"](#).
 - The Portal user `pin` has CREATE TABLE and CREATE SEQUENCE privileges. See ["Granting New Privileges to the Oracle Portal User"](#).
 - The required rollback segments exist. See ["Setting Up Rollback Segments and Temporary Tablespaces"](#).

The `-s` parameter also reports how much disk space is required for event table partitioning.

Results are printed to the `Portal_Home/upgrade/gprs/20_30/sqllog/pre_upg_sanity_chk2.sql.log` file. For more information, see ["About the upg_mgr.pl Script"](#).

Note: To reduce system downtime, you can perform the sanity checks before stopping Portal (see ["Shutting Down Portal"](#)).

Generating List of Tables and Indexes in 3.0 Schema

To see what modifications you made to the default Release 2.0 database schema, compare the tables and indexes in your 2.0 database with those in the default 2.0 database. You need this information to interpret error messages that might be generated when you run the upgrade scripts (see ["Running the Database Upgrade Scripts"](#)) and when you add custom tables and indexes to the upgraded Release 3.0 database.

Generating Your 3.0 Tables List

The `schema_tbls.sql` script generates a list of your Release 3.0 database table columns and writes it to the `table_schema.out` file.

Run the `schema_tbls.sql` script from the UNIX prompt:

```
% cd Portal_Home/upgrade/gprs/20_30
% perl upg_mgr.pl -e schema_tbls.sql
```

Generating 3.0 Index List

The `schema_idxes.sql` script generates a list of your Release 3.0 database indexes and writes it to the `index_schema.out` file.

Run the `schema_idxes.sql` script from the UNIX prompt:

```
% cd Portal_Home/upgrade/gprs/20_30
```

```
% perl upg_mgr.pl -e schema_idx.sql
```

Running the Database Upgrade Scripts

The **upgrade.pl** script runs a series of scripts that upgrade the Release 2.0 database to Release 3.0. By default, the **upgrade.pl** script runs *all* the upgrade scripts.

To run only the offline scripts, you must first edit the **upgrade.cfg** file. See "[Configuring the Upgrade Parameters](#)".

For more information about the **upgrade.pl** script, see "[About the upgrade.pl Script](#)".

To upgrade your database schema:

1. Run the **upgrade.pl** script from the UNIX prompt:

```
% cd Portal_Home/upgrade/gprs/20_30
% perl upgrade.pl
```

2. Check each script's **log** and **pinlog** files in the directory specified by the **UPGRADE_LOG_DIR** parameter in your **upgrade.cfg** file (by default, *Portal_Home/upgrade/gprs/20_30/sqllog*). These log files show how long each script took to execute and list any errors that occurred.

Important: If any errors are reported, fix them, and then rerun the **upgrade.pl** script.

Running pin_setup to Configure GPRS Manager

The **pin_setup** script reads the **pin_setup.values** file and configures Portal by initializing the database, configuring various **pin.conf** files, and starting various servers, including the **dm_oracle** server, the Connection Manager (CM), and the Java server.

To run the **pin_setup** script:

1. Log in as user **pin**, go to the *Portal_Home/setup* directory, and run the **pin_setup** script:

```
% su - pin
% cd Portal_Home/setup
% ./pin_setup
```

2. Check the following files for errors:
 - *Portal_Home/setup/pin_setup.log*
 - *Portal_Home/sys/cm/CM.log*
 - *Portal_Home/var/cm/cm.pinlog*
 - *Portal_Home/sys/dm_database/DM.log*
 - *Portal_Home/var/dm_database/dm_database.pinlog*

Restoring Service Authentication

See "Using the Authentication and Authorization Modules" in *BRM RADIUS Manager*.

Dropping Obsolete Database Objects from the Database (Optional)

Perform it *after* you verify that the upgrade is successful. Dropping obsolete database objects from the database is optional.

To drop obsolete database tables and columns, run the **drop_tables.sql** script from the UNIX prompt:

```
% cd Portal_Home/upgrade/gprs/20_30
% perl upgrade.pl drop_tables.sql
```

Upgrading Events

After you upgrade GPRS Manager from Release 2.0 to Release 3.0, you must check for old duplicate event types. To perform a check on the old duplicate event types, do one of the following:

- Run GPRS Release 2.0 only to check for the old duplicate event types for the time specified by the network element. Next, run GPRS Release 2.0 and GPRS Release 3.0 in parallel to check the old and new duplicate event types respectively. Then, customize GPRS Release 3.0 to check both the old and new duplicate event types.

Note: This option enables you to stay online all the time, requires both GPRS Release 2.0 and GPRS Release 3.0, needs a custom setup to be developed, requires migrating GPRS Release 2.0 services to GPRS Release 3.0, and requires pricing for both managers.

- Run GPRS Release 3.0 to check for old duplicate event types. This can be done only if all open sessions can be closed.

Note: This option requires an interruption of service, needs a custom setup to be developed, requires migrating the GPRS Release 2.0 services to GPRS Release 3.0, and requires pricing for both managers. This option requires only GPRS 3.0 version.

- Pre-create **/active_session** objects in the database by maintaining information in TIMOS. If you do not use TIMOS, the active sessions can still be created. Then, perform a duplicate check on these **/active_session** objects. Performing a check on the active session objects serves the same purpose.

Note: This option provides better performance and TIMOS would be more leveraged initially.

Command-Line Scripts

The following command-line scripts automate routine upgrade tasks:

- [About the upg_mgr.pl Script](#)
- [About the upgrade.pl Script](#)

Run these scripts from the UNIX prompt.

About the upg_mgr.pl Script

This Perl script performs many of the upgrade tasks, such as creating database objects and running sanity checks.

Syntax

```
perl upg_mgr.pl -o | -s | -e sql_script_name.sql | -r step_name | -d step_name |
-t | -n | -h
```

Note:

- Specify only one parameter at a time.
 - Run **upg_mgr.pl** with the **-o** parameter *before* you run it with any other parameters.
 - If you omit *sql_script_name* after the **-e** parameter or *step_name* after the **-r** or **-d** parameter, the script does nothing.
-
-

Parameters

The **upg_mgr.pl** parameters are described in [Table 23–2](#):

Table 23–2 upg_mgr.pl Parameters

Parameter	Description
-o	Creates the database objects required for the upgrade. Important: Run upg_mgr.pl with the -o parameter <i>before</i> you run it with any other parameters. This parameter performs these operations: <ul style="list-style-type: none"> ▪ Creates the UPG_LOG_T table that logs all the information about the upgrade. ▪ Creates the pin_upg_common package that contains all the common routines for the upgrade.
-s	Runs the pre-upgrade sanity check. See " Performing Pre-upgrade Sanity Checks ". Note: This requires a database administrator (DBA) user name and password for the Portal database. See the upgrade.cfg file for details.
-e sql_script_name.sql	Executes the specified SQL script against the Portal schema. It replaces all the Perl variables before running the script. Important: You must include the .sql extension with the script name.
-r step_name	Prints a report of the status of the specified step and directs the report to the <i>Portal_Home/upgrade/gprs/20_30/sqllog/step_name.sql.pinlog</i> file. Important: Do not include the file extension with the script name.
-d step_name	Deletes all the information related to an upgrade script from the upgrade log tables. After a script is run, its completion is logged in the upgrade log tables. If a user tries to rerun the script, the upgrade software first checks those tables. When it finds the script has already run, it skips the script. Thus, you must run upg_mgr.pl -d to delete all information about a previously run script from the tables <i>before</i> rerunning the script. Important: Do not include the file extension with the script name.
-t	Displays the maximum and minimum CREATED_T for the EVENT_T, ITEM_T, and BILL_T tables.
-h	Displays these parameter descriptions.

About the upgrade.pl Script

This Perl script is the main upgrade script. It runs many other SQL scripts in the correct order.

To run *all* the scripts listed in the **upgrade.cfg** file's **@ALL_SCRIPTS** parameter, enter this command at the UNIX prompt:

```
% cd Portal_Home/upgrade/gprs/20_30
% perl upgrade.pl
```

Note: The scripts are run in the order they are listed in the parameter. For more information, see "[Configuring the Upgrade Parameters](#)".

To run a *single* script, enter this command:

```
% cd Portal_Home/upgrade/gprs/20_30
% perl upgrade.pl script_name.sql
```

Important: *script_name* must include the file extension.

About the Upgrade Scripts and Files

This section describes the scripts and files used to upgrade your Portal database.

Offline Scripts

The following scripts in [Table 23–3](#) are configuration files executed offline.

Table 23–3 Offline Scripts

Script	Description
pin_upg_common.sql	SQL script that creates the common routines needed for the upgrade.
add_new_tables_30.sql	SQL script that adds the new Release 3.0 tables.
add_new_indexes_30.sql	SQL script that adds the new Release 3.0 indexes.

Online Scripts

The following scripts in [Table 23–4](#) are configuration files executed online.

Table 23–4 Online Scripts

Script	Description
update_service_type.sql	SQL script that updates the service type from <code>/service/ip/gprs</code> to <code>/service/telco/gprs</code> and event type from <code>/event/session/gprs</code> to <code>/event/session/telco/gprs</code> .
drop_tables.sql	SQL script that drops the obsolete tables, which are not required in the new version.

Miscellaneous Scripts and Files

The following scripts in [Table 23–5](#) are configuration files executed by offline or online scripts.

Table 23–5 Miscellaneous Scripts and Files

Script or File	Description
<code>schema_idx.sql</code>	SQL script that produces the index schema listings.
<code>schema_tbls.sql</code>	SQL script that produces the table schema listings.
<code>delete_info.sql</code>	SQL script that deletes the UPG_LOG_T table entries related to a specific script.
<code>get_created_t.sql</code>	SQL script that retrieves the max and min CREATED_T from various tables.
<code>pre_upg_sanity_chk1.sql</code> <code>pre_upg_sanity_chk2.sql</code>	SQL scripts that perform sanity checks.
<code>crt_pinlog.sql</code>	SQL script that creates the pinlog files.
<code>pin_pre_cmp_tcframework.pl</code>	Perl script that configures the tcframework component.
<code>pin_pre_cmp_gprs_30.pl</code>	Perl script that configures the gprs_30 component.
<code>pin_pre_cmp_tcf_aaa.pl</code>	Perl script that configures the tcf_aaa component.
<code>pin_pre_cmp_gprs_aaa.pl</code>	Perl script that configures the gprs_aaa component.
<code>upgrade.cfg</code>	Configuration file in which you must enter details about the Oracle Server database configuration before you run the upgrade scripts. All the upgrade Perl scripts parse this file to get the database connection parameters.
<code>upg_oracle_functions.pl</code>	Perl script that performs many miscellaneous upgrade tasks related to the Oracle database.
<code>upg_mgr.pl</code>	Perl script that manages many miscellaneous upgrade tasks.
<code>upgrade.pl</code>	Master Perl script for the upgrade process. This Perl script calls other SQL scripts to perform the upgrade.
<code>crt_upg_indexes.sql</code>	SQL script that creates a unique index for BILL_T, EVENT_T, and ITEM_T tables.
<code>drop_procedures.sql</code>	SQL script that drops all the stored procedures from the Portal schema.

Part V

Upgrading Pipeline Manager

This part contains information about upgrading the Pipeline Manager.

Part V contains the following chapter:

- [Upgrading from Pipeline Manager 7.2 to Pipeline Manager 7.3](#)

Upgrading from Pipeline Manager 7.2 to Pipeline Manager 7.3

This chapter contains procedures for upgrading from Portal™ Pipeline Manager 7.2 to Pipeline Manager 7.3. It covers Oracle on both HP-UX and Solaris.

Important: Before performing the tasks in this document, see "[About Upgrading BRM Releases](#)" for information on how to plan, prepare for, and test your upgrade.

If you are installing Pipeline Manager for the first time, see "Installing Pipeline Manager" in *BRM Installation Guide* for installation and configuration instructions.

Important Information for System Administrators

- Pipeline Manager requires an Oracle 9i or 10g database.
- To upgrade any data stored in *custom* tables, you must create additional SQL scripts. To run these scripts with the default upgrade scripts, add appropriate SQL file entries to the upgrade configuration file, **upgrade.cfg**. For more information, see "[Updating Database Customizations](#)" and "[Configuring the Upgrade Parameters](#)".

Oracle Database Character Sets

Portal supports the UTF8 character set only. If you haven't already done so, you should move your data to a new UTF8 database before you upgrade. For more information about exporting your existing data to a UTF8 database, see "Modifying Your Oracle Database Installation" in *BRM Installation Guide*.

Verifying the Pipeline Manager Release Number

You must ensure that you are using Pipeline Manager 7.2. You can check the release number by issuing this command:

```
ifw -v
```

Upgrading the Oracle Software and Database

Caution: If you are using an earlier version of Oracle, you must upgrade it *before* you install Pipeline Manager. For information on upgrading Oracle, see your Oracle documentation.

You can use Pipeline Manager with **Oracle 9i** or **10g** only.

Granting New Privileges to the Portal Integrate User

The upgrade scripts require you to grant CREATE TABLE, CREATE PROCEDURE, CREATE SESSION, and RESOURCE privileges directly to the Portal user **integrate**.

To grant these privileges, enter these commands:

```
sqlplus connect system/manager@databaseAlias
SQL> grant create table to integrate;
Grant succeeded.
SQL> grant create procedure to integrate;
Grant succeeded.
SQL> grant create session to integrate;
Grant succeeded.
SQL> grant resource to integrate;
Grant succeeded.
SQL> quit
```

Upgrading Pipeline Manager

This section provides a complete list of upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

To upgrade directly from Pipeline Manager 7.2 to Pipeline Manager 7.3, perform some or all of these tasks, depending on your system:

1. [Shutting Down Pipeline Manager](#)
2. [Uninstalling Pipeline Manager 7.2](#)
3. [Installing the Third-Party software](#)
4. [Installing Pipeline Manager](#)
5. [Installing the Upgrade Scripts](#)
6. [Configuring the Upgrade Parameters](#)
7. [Creating Required Database Objects and the Upgrade Log Directory](#)
8. [Running the Database Upgrade Scripts](#)
9. [Re-creating Your Account Synchronization Queues](#)
10. [Enabling Auditable Fields](#)
11. [Testing the Upgraded Pipeline System](#)
12. [Loading the Tailor-Made Stored Procedure](#)

Shutting Down Pipeline Manager

To shut down Pipeline Manager, create a semaphore file with the following entry:

```
ifw.Active=False
```

For more information, see “Starting and stopping the BRM system” in *BRM System Administrator’s Guide*.

Uninstalling Pipeline Manager 7.2

Important: Before you uninstall Pipeline Manager 7.2, back up the wireless registry file.

To uninstall Pipeline Manager 7.2, run the *Pipeline_Home/uninstaller/Pipeline/uninstaller.bin* program.

Installing the Third-Party software

Install the Third-Party software by following the instructions given in “Installing the Third-Party software” in *BRM Installation Guide*.

Installing Pipeline Manager

Install Pipeline Manager by following the instructions given in “Installing Pipeline Manager” in *BRM Installation Guide*, but **DO NOT** set the Portal framework environment or configure the Pipeline Manager database.

After installation, edit the wireless registry file by referring to the backed-up wireless registry file.

Installing the Upgrade Scripts

To install the scripts to upgrade Pipeline Manager 7.2 to Pipeline Manager 7.3:

1. Download the software to a temporary directory (*temp_dir*).

Important:

- If you download to a Windows workstation, use **FTP** to copy the **.bin** file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. For information, see “Increasing heap size to avoid ‘Out of Memory’ error messages” in *BRM Installation Guide*.
-
-

2. Go to the directory where you installed the Third-Party package and source the **source.me** file.

Caution: You must source the **source.me** file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Log in as user **integrate**, go to the *temp_dir* directory, and enter this command:

```
7.3_Pipeline_Upgrade_72_73_platform_32_opt.bin
```

Note: You can use the **-console** parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the DISPLAY environment variable before you install the software.

4. Follow the instructions displayed during installation.

Configuring the Upgrade Parameters

The **upgrade.cfg** file contains your upgrade parameters. You should customize these parameters to meet your business requirements.

To edit the **upgrade.cfg** file:

1. Log in as user **pin**, go to *Pipeline_Home/upgrade/integrate/72_73*, and open the **upgrade.cfg** file in a text editor such as **vi**:

```
% su - pin
% cd Pipeline_Home/upgrade/integrate/72_73
% vi upgrade.cfg
```

2. Configure the file's parameters as necessary. For information on each parameter, see the comments in the **upgrade.cfg** file. Pay particular attention to the parameters described in [Table 24-1](#):

Table 24-1 *upgrade.cfg* Parameters of Note

Parameter	Description
OWNER	Specify the pipeline database user name. By default, this is set to integrate .
PASSWD	Specify the pipeline database password. By default, this is set to integrate .

Creating Required Database Objects and the Upgrade Log Directory

To create the database objects required for the upgrade and the upgrade log directory, run the *Pipeline_Home/upgrade/integrate/72_73/crt_upg_obj.pl* script:

```
% cd Pipeline_Home/upgrade/integrate/72_73
% perl crt_upg_obj.pl
```

Running the Database Upgrade Scripts

The **upgrade.pl** script runs a series of scripts that upgrade the Release 7.2 pipeline database to 7.3.

For more information about the **upgrade.pl** script, see "[About the Upgrade.pl Script](#)".

To upgrade your database schema:

1. Run the **upgrade.pl** script from the UNIX prompt:

```
% cd Pipeline_Home/upgrade/integrate/72_73
% perl upgrade.pl
```

2. Check each script's **log** and **pinlog** file in the directory specified by the **UPGRADE_LOG_DIR** parameter in your **upgrade.cfg** file. The default log file name and path is *Pipeline_Home/upgrade/integrate/72_73/sqllog*.

Important: If any errors are reported, fix them, and then rerun the **upgrade.pl** script.

Re-creating Your Account Synchronization Queues

Re-create the Account Synchronization queues in your system by using the **pin_ifw_sync_oracle** utility. This also loads updated versions of the Account Synchronization utilities and stored procedures. For more information, see "Creating additional Account Synchronization Queues" in *BRM Installation Guide*.

Enabling Auditable Fields

To enable auditable fields in the objects, go to the *Pipeline_Home/apps/integrate_sync* directory and run the **pin_history_on** script:

```
% cd Pipeline_Home/apps/integrate_sync
% perl pin_history_on -dv pin_history_on_input
```

Testing the Upgraded Pipeline System

Test your upgraded pipeline system by running various daily operations on it. For more information, see "[Testing Your Upgraded System](#)".

Loading the Tailor-Made Stored Procedure

Loading of the stored procedure is required for the Tailor-Made Plan feature.

After upgrading the pipeline from Release 7.2 to 7.3, you must load the stored procedure. For more information, see "Loading the tailor-made stored procedure" in *BRM Installation Guide*.

Command-Line Scripts

The following command-line scripts automate routine upgrade tasks:

- [About the crt_upg_obj.pl Script](#)
- [About the Upgrade.pl Script](#)
- [About the Upgrade Scripts and Files](#)

Run these scripts from the UNIX prompt.

About the crt_upg_obj.pl Script

The **crt_upg_obj.pl** Perl script (*Pipeline_Home/upgrade/integrate/72_73/crt_upg_obj.pl*) performs many of the upgrade tasks, such as creating database objects.

```
% cd Pipeline_Home/upgrade/integrate/72_73
% perl crt_upg_obj.pl
```

About the Upgrade.pl Script

The **upgrade.pl** Perl script is the main upgrade script. It runs many other SQL scripts in the order they are listed.

To run *all* the scripts listed in the **upgrade.cfg** file's **@ALL_SCRIPTS** parameter, enter this command at the UNIX prompt:

```
% cd Pipeline_Home/upgrade/integrate/72_73
% perl upgrade.pl
```

Note: The scripts are run in the order they are listed in the parameter. For more information, see "[Configuring the Upgrade Parameters](#)".

About the Upgrade Scripts and Files

[Table 24–2](#) describes the scripts and files used to upgrade your pipeline database to 7.3:

Table 24–2 Pipeline Database Upgrade Scripts and Files for 7.3

Script or File	Description
pin_upg_common.sql	SQL script that creates the common routines needed for the upgrade.
delete_info.sql	SQL script that deletes the UPG_LOG_T table entries related to a specific script.
crt_pinlog.sql	SQL script that creates the pinlog files.
upgrade.cfg	Configuration file in which you must enter details about the Oracle database configuration before you run the upgrade scripts. All the upgrade Perl scripts parse this file to get the database connection parameters.
upg_oracle_functions.pl	Perl script that performs many miscellaneous upgrade tasks related to the Oracle database.
crt_upg_obj.pl	Perl script that adds new objects.
upgrade.pl	Perl script that manages many miscellaneous upgrade tasks.
upg_mgr.pl	Master Perl script for the upgrade process. This Perl script calls other SQL scripts to perform the upgrade.
schema_idx.sql	SQL script that creates a list of indexes in the 7.3 pipeline schema.
schema_tbls.sql	SQL script that creates a list of tables in the 7.3 pipeline schema.
schema_idx.pl	Perl script that calls the schema_idx.sql file to produce the index schema listings.
schema_tbls.pl	Perl script that calls the schema_tbls.sql file to produce the table schema listings.
add_new_columns_pipeline_73.sql	SQL script that adds the 7.3 columns.

Table 24–2 (Cont.) Pipeline Database Upgrade Scripts and Files for 7.3

Script or File	Description
add_new_indexes_pipeline_73.sql	SQL script that adds the 7.3 indexes.

Part VI

Upgrading IMDB Cache Data Manager

This part contains information about upgrading the Oracle In-Memory Database (IMDB) Cache Data Manager.

Part VI contains the following chapter:

- [Upgrading IMDB Cache Manager from Version 1 to Version 2](#)

Upgrading IMDB Cache Manager from Version 1 to Version 2

This chapter describes how to upgrade an Oracle In-Memory Database (IMDB) Cache Manager from version 1 to version 2. It is recommended that you review the entire chapter before performing the steps detailed in it.

About IMDB Cache Manager

IMDB Cache Manager version 2 is certified with Oracle Communications Billing and Revenue Management (BRM) 7.5 and Oracle TimesTen In-Memory Database (TimesTen) version 11.2.2.1.0.

Prerequisites for this Upgrade

BRM 7.5 systems with IMDB Cache Data Manager version 2 require Oracle Clusterware for Oracle Database 11g.

Note: BRM 7.5 systems in High-Availability architecture with IMDB Cache Data Manager version 2 require Oracle Clusterware for Oracle Database 11g Release 2.

For information on installing or upgrading to this software, see the installation or upgrade guide at *Oracle Database Documentation Library 11g R2* documentation website.

Supported Scenarios for the Upgrade

The procedures in this chapter are designed for the following two scenarios:

- **Correcting IMDB Cache Manager Issues in BRM 7.5 Installations:** You have BRM 7.5 installed. You are attempting to correct issues in IMDB Cache Manager, version 2 environment only.

In this case, complete the steps in this chapter as they are listed.

- **Upgrading from BRM 7.4 to BRM 7.5:** You have BRM 7.4 (patch set 10 or above) installed. You are upgrading your IMDB Cache Manager as part of the general upgrade from BRM 7.4 to BRM 7.5.

In this case, you must start with and complete the procedure listed in "[Upgrading BRM and Pipeline Manager](#)". The procedure outlined in that chapter incorporates the procedures in this chapter at the appropriate points.

Complete the instructions as appropriate for your current requirement.

About Upgrading Complex BRM System Architectures

This chapter provides a list of upgrade tasks. Some tasks might need to be performed in a specific sequence (for example, first on the primary/secondary system and then on the secondary/primary system).

If your BRM installation is a high-availability system, multidatabase system, or multischema system, perform each task on the system as appropriate for your BRM environment.

Preparing for the Upgrade to IMDB Cache Manager Version 2

Before you upgrade an Oracle In-Memory Database (IMDB) Cache Manager from version 1 to version 2, you must do a graceful shutdown and an uninstall of all elements associated with IMDB Cache Manager, version 1.

Tasks Involved in Preparing for the Upgrade

The tasks involved in preparing for this upgrade are:

1. Store any customizations of cache groups that you require for use in IMDB Cache Manager, version 2. This is an optional step. See ["Storing Any Customizations of Cache Groups"](#).
2. Unload all cache groups. See ["Unloading All Cache Groups"](#).
3. Detach all IMDB nodes from the cache grid. See ["Detaching All IMDB Nodes from the Cache Grid"](#).
4. Stop the replication agent on each database. See ["Stopping the Replication Agent"](#).
5. Drop all cache groups. See ["Dropping All Cache Groups"](#).
6. Stop the TimesTen cache agent. See ["Stopping the TimesTen Cache Agent"](#).
7. Stop and restart the TimesTen main daemon and destroy the data store. See ["Destroying the Data Store"](#).
8. Stop all components associated with IMDB Cache Manager, version 1. See ["Stopping All Components Associated with IMDB Cache Manager Version 1"](#).
9. Uninstall IDMDB Cache Manager, version 1. See ["Uninstalling IMDB Cache Manager Version 1"](#).
10. Uninstall IMDB Cache. See ["Uninstalling IMDB Cache"](#).
11. Select the appropriate next step based on your current scenario. See ["What's Next?"](#).

Storing Any Customizations of Cache Groups

If you have created any customizations in the cache groups in your current BRM 7.4 environment, save the `pin_tt_schema_gen.values` file at a different location. Record this location and the name of this file (if you saved it under a different name).

Note: In a BRM system with multiple database schemas, save the `BRM_Home/bin/pin_tt_schema_gen.values` file for each schema.

Unloading All Cache Groups

Important: All cache groups must be unloaded before you attempt the upgrade.

To unload each cache group, enter the following command at the **ttIsql** command prompt:

```
Command> UNLOAD CACHE GROUP CacheGroupName
```

where *CacheGroupName* is the name of the cache group to be unloaded. When you issue this command, all cache instances from all cache tables in the *CacheGroupName* cache group will be deleted.

For example, the following command unloads a cache group called *Customer_Orders*:

```
UNLOAD CACHE GROUP Customer_Orders
```

For information on unloading a cache group, see the description for cache group operations in *Oracle In-Memory Database Cache User's Guide*.

Detaching All IMDB Nodes from the Cache Grid

To detach all IMDB nodes from the cache grid, use the method that fits your environment:

- High-Availability (HA) Systems: If the grid member is an active standby pair, the active master and standby master databases must both be detached.

Important: The active master and standby master databases must be detached separately.

Detach the node on the active standby pair from the grid in an HA environment with the use of the **stop** and **drop** parameters for the **ttCWAdmin** command.

To do so, issue the commands on any one node of the active-standby pair in the following order:

```
ttCWAdmin -stop -dsn <DataStoreName>
ttCWAdmin -drop -dsn <DataStoreName>
```

where *DataStoreName* is the name of the data store you created. (The terms "data store" and "database" are equivalent. Both terms refer to the TimesTen database, unless otherwise noted.)

For more information on detaching grid members in an HA environment, see *Oracle In-Memory Database Cache User's Guide*.

- Non-HA systems: Detach every IMDB node using the **ttGridDetach()** command. This command detaches the current node from the cache grid:

```
call ttGridDetach();
```

For information on the **ttGridDetach()** command, see the discussion on cleaning up the caching environment in *Oracle In-Memory Database Cache User's Guide*.

Stopping the Replication Agent

To stop the replication agent on each database, enter the following command at the **ttIsql** command prompt:

```
Command> CALL ttRepStop;
```

For more information on stopping the replication agent, see the discussion on managing the replication agent in *Oracle In-Memory Database Cache User's Guide*.

Dropping All Cache Groups

Drop all the default cache groups and any custom cache groups you may have created.

Dropping All Default Cache Groups

Use the **tt_drop.sql** script to drop all default cache groups. The **tt_drop.sql** script drops all the default cache groups that were created when you installed IMDB version 1. This file resides in the *BRM_Home/bin* directory.

To run the **tt_drop.sql** script and drop all the default cache groups, enter the following command at the **ttIsql** command prompt.

```
Command> BRM_Home/bin/tt_drop.sql
```

where *BRM_Home* is the path to the directory in which BRM is installed.

For information on **tt_drop.sql**, see *BRM System Administrator's Guide*.

Dropping All Custom Cache Groups

Use the DROP CACHE GROUP command to drop each custom cache group you created in IMDB version 1.

To drop a custom cache group, enter the following command at the **ttIsql** command prompt.

```
Command> DROP CACHE GROUP <CacheGroupName>
```

where *CacheGroupName* is the name of the cache group you created.

For information on dropping cache groups, see *Oracle In-Memory Database Cache User's Guide*.

Stopping the TimesTen Cache Agent

To stop the cache agent on the TimesTen database, enter the following command at the **ttIsql** command prompt:

```
Command> call ttCacheStop;
```

For information on stopping the TimesTen cache agent, see *Oracle In-Memory Database Cache User's Guide*.

Destroying the Data Store

Destroying the data store requires a shutdown and restart of the TimesTen main daemon process. To destroy the data store:

1. Stop the TimesTen main daemon process with the following command:

```
ttdaemonadmin -stop
```

Note: The TimesTen main daemon process manages all databases under the same TimesTen installation. Therefore, be sure to disconnect from all databases before running the above command.

For information on stopping the TimesTen main daemon process, see *Oracle In-Memory Database Operations Guide*.

- Restart the TimesTen main daemon process with the following command.

```
ttdaemonadmin -start
```

For information on starting the TimesTen main daemon process, see *Oracle In-Memory Database Operations Guide*.

- Destroy the data store by entering the **ttDestroy** command at the **ttIsql** command prompt:

```
Command> ttDestroy <DataStoreName>
```

where *DataStoreName* is the name of the data store you want to destroy.

For information on **ttDestroy**, see the discussion on cleaning up the caching environment in *Oracle In-Memory Database Cache User's Guide*.

Stopping All Components Associated with IMDB Cache Manager Version 1

Use the **pin_ctl** utility to stop all the components (such as Connection Manager (CM), IMDB Cache DM, and so on) associated with IMDB Cache Manager version 1.

For example, the following command stops the IMDB Cache DM component:

```
pin_ctl stop dm_tt
```

For more information, see "Stopping a BRM Component using the pin_ctl Utility" and "pin_ctl" in *BRM System Administrator's Guide*.

Uninstalling IMDB Cache Manager Version 1

To uninstall IMDB Cache Manager version 1, run **uninstaller.bin** from the *BRM_Home/uninstaller/TimesTen_Manager* directory, where *BRM_Home* is the directory in which BRM 7.4 is installed.

For information on IMDB Cache Manager version 1, see *BRM System Administrator's Guide*.

Uninstalling IMDB Cache

To uninstall Oracle IMDB Cache, complete the steps provided for uninstalling TimesTen in *Oracle TimesTen In-Memory Database Installation Guide*. Use the commands provided in that document to verify that all TimesTen processes have terminated and that TimesTen has been successfully uninstalled.

When you uninstall Oracle IMDB Cache, the Oracle IMDB Cache associated with BRM 7.4 has been destroyed.

What's Next?

Do one of the following based on your current scenario at this point.

- **Correcting IMDB Cache Manager Issues in BRM 7.5 Installations:** You have BRM 7.5 installed. You are attempting to correct issues in IMDB Cache Manager version 2 only.

In this case, proceed to ["Upgrading the Oracle Schema for IMDB Cache Manager Version 2"](#).

- **Upgrading from BRM 7.4 to BRM 7.5:** You do not have BRM 7.5 installed. You are upgrading IMDB Cache Manager as part of the general upgrade from BRM 7.4 to BRM 7.5.

In this case, return to ["Upgrading BRM and Pipeline Manager"](#) and proceed to the ["Backing Up Files"](#) step in that chapter.

Upgrading the Oracle Schema for IMDB Cache Manager Version 2

You now must update the Oracle schema for use with IMDB Cache Manager version 2.

Important: On multischema or multidatabase systems, first perform this task on the primary system and then on the secondary systems.

Tasks Involved in Completing the Upgrade

At this point you have BRM 7.5 installed on your system and are now completing the upgrade of IMDB to version 2. The tasks are:

1. Install IMDB Cache. See ["Installing IMDB Cache"](#).
2. Install IMDB Cache Manager version 2. See ["Installing IMDB Cache Manager Version 2"](#).
3. Re-create the data store in IMDB Cache Manager version 2. See ["Re-creating the Data Store in IMDB Cache Manager Version 2"](#).
4. Generate the scripts necessary set up the cache group schema. See ["Generating the BRM Cache Group Schema"](#).
5. Initialize your data store. See ["Initializing Your Data Store in Oracle IMDB Cache"](#).
6. Reestablish connections to BRM. See ["Reestablishing Connections to BRM"](#).
7. Configure Connection Manager (CM) connections to IMDB Cache Data Manager (DM). See ["Configuring the CM Connections to IMDB Cache DM"](#).

Installing IMDB Cache

For information on how to install Oracle IMDB Cache, see the description for installing TimesTen in *Oracle TimesTen In-Memory Database Installation Guide*.

Installing IMDB Cache Manager Version 2

Install the Oracle IMDB Cache Data Manager (DM). See ["Installing IMDB Cache Manager"](#) in *BRM System Administrator's Guide*.

Re-creating the Data Store in IMDB Cache Manager Version 2

Complete the steps as described in ["Creating the Data Store in Oracle IMDB Cache"](#) in *BRM System Administrator's Guide*.

Generating the BRM Cache Group Schema

In order to generate the required cache group schema, the `pin_tt_schema_gen.values` file needs to be configured appropriately. This is because the `pin_tt_schema_gen` utility uses the contents of the `pin_tt_schema_gen.values` file to generate your schema and load SQL scripts.

Complete the following steps:

Note: In a BRM system with multiple database schemas, complete these steps for each schema.

1. Configure the `pin_tt_schema_gen.values` file with the required values associated with the BRM database, the database number, and so on.

For information on configuring `pin_tt_schema_gen.values`, see "Configuring the `pin_tt_schema_gen.values` File" in *BRM System Administrator's Guide*.

2. (Optional) Complete this step only if you want to restore the customizations to the cache groups in your BRM 7.4 environment (saved in step1 in "[Preparing for the Upgrade to IMDB Cache Manager Version 2](#)"). To do so:
 - a. Edit the `pin_tt_schema_gen.values` file (`BRM_Home/bin/pin_tt_schema_gen.values`) and modify the existing cache group definitions as needed using the appropriate `pin_tt_schema_gen.values` file saved from your BRM 7.4 environment.

Note: Update the `pin_tt_schema_gen.values` file manually.

- b. Save the updated `pin_tt_schema_gen.values` file.
3. Generate your schema and load scripts by running the `pin_tt_schema_gen` utility. For more information, see "Generating Your Schema and Load SQL Scripts" in *BRM System Administrator's Guide*.

Initializing Your Data Store in Oracle IMDB Cache

The procedure to re-create the data stores is similar to the procedure to create the data stores. Complete the steps as described in "Initializing Your Data Stores in Oracle IMDB Cache" in *BRM System Administrator's Guide*.

Reestablishing Connections to BRM

To reestablish connections to your BRM system:

1. Connect your data stores to the BRM Database. See "Connecting Your Data Stores to the BRM Database" in *BRM System Administrator's Guide*.
2. Connect the IMDB Cache DM to your data stores. See "Connecting IMDB Cache DM to Your Data Stores" in *BRM System Administrator's Guide*.

Configuring the CM Connections to IMDB Cache DM

This step is required if you completed the above procedure to fix issues in IMDB Cache Manager version 2, and you already have BRM 7.5 installed.

Configure the Connection Manager (CM) to connect to IMDB Cache Data Manager (DM). To do so, complete the steps (appropriate to your installation) described in "Connecting the CM to IMDB Cache DM" in *BRM System Administrator's Guide*.

Part VII

Upgrading GSM Manager

This part contains information about upgrading your GSM Manager system directly from Release 1.0 to Release 2.0.

Part VII contains the following chapter:

- [Upgrading from GSM Manager Release 1.0 to Release 2.0](#)

Upgrading from GSM Manager Release 1.0 to Release 2.0

This chapter contains procedures for upgrading your GSM Manager system directly from Release 1.0 to Release 2.0. It covers Oracle on both HP-UX and Solaris platforms.

Note: If the slash character used in this document to separate elements in a path does not work in your operating system, replace that character with the appropriate one. For example, if you use UNIX, replace the backslashes in the following path with forward slashes: *Portal_Home\upgrade\gsm\10_20\upgrade.cfg*.

Note: You need to upgrade GSM Manager Release 1.0 to Release 2.0 only if you are upgrading from Infranet Release 6.5 to Portal™ 7.3.

About Upgrading GSM Manager

- Install new GSM Manager software.
- Update the GSM Manager database. The new GSM Manager release includes an updated database schema with new tables and indexes. You use upgrade scripts to update your GSM Manager database to the new schema.

Important Information for System Administrators

Note the following important information:

- GSM Manager 2.0 runs only on the Oracle 9i or 10g database.
- To upgrade any data stored in *custom* tables, you must create additional SQL scripts. To run these scripts with the default upgrade scripts, add appropriate SQL file entries to the upgrade configuration file, **upgrade.cfg**. For more information, see "[Configuring the Upgrade Parameters](#)".

Oracle Database Character Sets

Portal supports only the UTF8 character set on Oracle. If you haven't already done so, you should move your data to a new UTF8 database before you upgrade. For more information about exporting your existing data to a UTF8 database, see "Modifying Your Oracle Database Installation" in *BRM Installation Guide*.

Preparing Your Environment for the Upgrade

After preparing your environment, prepare your database:

- [Reviewing the Default Database Schema](#)
- [Preparing an Oracle Database](#)

Reviewing the Default Database Schema

Before running the database upgrade scripts, review the *default* database schema changes between Release 1.0 and Release 2.0. Knowing the schema changes helps you plan your upgrade. For example, if 2.0 contains many new tables, you might need to increase the disk space for your 2.0 database. If your 1.0 custom applications refer to tables that have been modified or deleted in 2.0, you might need to update the applications for 2.0.

To review database schema changes, temporarily install the Release 2.0 database upgrade files on a supplementary server.

In addition, perform the database-specific tasks described in the section "[Preparing an Oracle Database](#)".

Preparing an Oracle Database

If you use an Oracle database, perform the following tasks before upgrading Portal:

- [Upgrading the Oracle Software and Database](#)
- [Changing the Database Character Set to UTF8](#)
- [Configuring Oracle to Run the Upgrade Scripts](#)

Upgrading the Oracle Software and Database

You can use GSM Manager 2.0 only on Oracle 9i or 10g.

Caution: If you are using an earlier version of Oracle, you must upgrade it *before* you install GSM Manager 2.0. For information on upgrading Oracle, see your Oracle documentation.

Changing the Database Character Set to UTF8

GSM Manager 2.0 supports only the UTF8 character set. If your database character set is not UTF8, re-create your database with the UTF8 database character set.

For information on changing the database character set, see your Oracle documentation.

Configuring Oracle to Run the Upgrade Scripts

To run the database upgrade scripts, you must prepare your Oracle system as follows:

- [Setting Up Rollback Segments and Temporary Tablespaces](#)
- [Granting New Privileges to the Oracle Portal User](#)

Setting Up Rollback Segments and Temporary Tablespaces

The upgrade scripts modify and sort many Portal tables. Some tables, such as EVENT_T, can contain millions of rows. The recommended rollback segment configuration for normal operation is inadequate for running the upgrade scripts. Therefore, you must adjust the size of the rollback segments to support the upgrade transactions:

- Unless your database is very small, create two or three rollback segments that are half the size of your largest table (usually the EVENT_T table).
- Take the smaller rollback segments used during normal operation offline while you run the upgrade scripts.

Granting New Privileges to the Oracle Portal User

The upgrade scripts require you to grant CREATE TABLE and CREATE SEQUENCE privileges directly to the Portal user `pin`.

To grant these privileges, enter these commands:

```
SQL> connect system/manager@databaseAlias
SQL> grant create table to pin;
Grant succeeded.
SQL> grant create sequence to pin;
Grant succeeded.
SQL> quit
```

Upgrading GSM Manager

This section provides a complete list of upgrade tasks. Some tasks are optional or apply only to certain platforms or system configurations. Be sure to check whether a task is required for your system.

To upgrade directly from GSM Manager Release 1.0 to Release 2.0, perform some or all of these tasks, depending on your system:

1. [Backing Up GSM Manager 1.0 Files](#)
2. [Turning Off Portal Service Authentication and Authorization](#)
3. [Shutting Down Portal](#)
4. [Backing Up Your Portal Database](#)
5. [Installing the Third-Party Software](#)
6. [Installing GSM Manager Server 2.0](#)
7. [Installing the Upgrade Scripts](#)
8. [Configuring the Upgrade Parameters](#)
9. [Creating Required Database Objects and the Upgrade Log Directory](#)
10. [Performing Pre-upgrade Sanity Checks](#)
11. [Generating a List of Tables and Indexes in the 2.0 Schema](#)
12. [Running the Database Upgrade Scripts](#)
13. [Installing Patch 4489](#)
14. [Running pin_setup to Configure GSM Manager](#)
15. [Restoring Service Authentication](#)
16. [Dropping Obsolete Database Objects from the Database \(Optional\)](#)

Backing Up GSM Manager 1.0 Files

Before removing the old GSM Manager Release 1.0 packages, back up your 1.0 files. In particular, ensure that you back up all customized files, including source code, `pin.conf`, and `pin_setup.values` files.

Turning Off Portal Service Authentication and Authorization

To maintain a controlled environment for pre-upgrade testing, cut off interaction between your Portal system and your customers.

For information on the Portal authentication module, see *BRM RADIUS Manager* in *Oracle Communications Billing and Revenue Management (BRM) Documentation*.

Shutting Down Portal

1. Stop all Portal processes.
Only the database instance should be running during the upgrade. For more information, see “Starting and Stopping the BRM System” in *BRM System Administrator’s Guide*.
2. Ensure that the Connection Managers (CMs) and Data Managers (DMs) are not running.
3. Ensure that sure no users are logged on to Portal.
Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Your Portal Database

Make a complete offline backup of your Portal database, and ensure that the backup is completely valid and usable. For more information on performing full database backups, see your database software documentation.

In addition to the backup, use the Oracle export utility to export all Portal tables. This helps you restore individual tables if necessary.

Installing the Third-Party Software

Install the Third-Party software by following the instructions given in “Installing the Third-Party Software” in *BRM Installation Guide*.

Installing GSM Manager Server 2.0

Important: Before installing GSM Manager and the Wireless Provisioning Data Manager, you should be familiar with the overall wireless integration installation procedure. See the following documents: “About Integrating Wireless Services” and “Installing and Configuring GSM Manager and Provisioning Data Manager” in *BRM Telco Integration*.

To install GSM Manager Server Release 2.0:

1. Install the GSM Manager Server Release 2.0 package for your platform. Follow the instructions in “Installing and Configuring GSM Manager and Provisioning Data Manager” in *BRM Telco Integration*.

Caution: Do not run the `pin_setup` script before upgrading your database. Running `pin_setup` before upgrading your database might corrupt your data.

Important:

- Pay particular attention to entries that specify your installation directory; CM and DM port numbers; and database host name, user name, and password.
 - Ensure that the `$SETUP_INIT_DB` entry is set to **YES**.
-
-

2. Make a backup copy of the release `Portal_Home/setup/pin_setup.values` file, and save it to another location.
-
-

Important: The upgrade scripts do not modify these files.

Installing the Upgrade Scripts

To install the GSM Manager-Release-1.0-to-Release-2.0 upgrade scripts:

1. Download the software to a temporary directory (`temp_dir`).
-
-

Important:

- If you download to a Windows workstation, use **FTP** to copy the `.bin` file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. For information, see “Increasing heap size to avoid “Out of Memory” error messages” in *BRM Installation Guide*.
-
-

2. Go to the directory where you installed the Third-Party package and source the `source.me` file.
-
-

Caution: You must source the `source.me` file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Log in as user `integrate`, go to the `temp_dir` directory, and enter this command:

```
7.3_GSM_10_20_OraUpg_platform_32_opt.bin
```

Note: You can use the `-console` parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the `DISPLAY` environment variable before you install the software.

4. Follow the instructions displayed during installation.

Configuring the Upgrade Parameters

The **upgrade.cfg** file contains your upgrade parameters, such as which scripts to execute and whether to upgrade only the most recent data. You should customize these parameters to meet your business requirements.

To edit the **upgrade.cfg** file:

1. Log in as user **pin**, go to *Portal_Home/upgrade/gsm/10_20*, and open the **upgrade.cfg** file in a text editor such as **vi**:

```
% su - pin
% cd Portal_Home/upgrade/gsm/10_20
% vi upgrade.cfg
```

2. Configure the file's parameters as necessary. For information on each parameter, see the comments in the **upgrade.cfg** file. Pay particular attention to the parameters described in [Table 26-1](#):

Table 26-1 *upgrade.cfg* Parameters of Note

Parameter	Description
SQLPLUS IMP EXP	Specify the location of the database utilities and executables. By default, they are set to sqlplus , imp , and exp , respectively.
OWNER	Specifies the Portal database user name. By default, this is set to pin .
PASSWD	Specifies the Portal database password. By default, this is set to pin .
DBNAME	Specifies the name of the Portal database you are upgrading. By default, this is set to pin db.
PIN_CONF_TBLSPACE _n PIN_CONF_TBLSPACEX _n	Specify the tablespaces where your new tables and indexes will be created.
PIN_CONF_STORAGE_SMALL PIN_CONF_STORAGE_SMALL_INS PIN_CONF_STORAGE_MED PIN_CONF_STORAGE_MED_INS PIN_CONF_STORAGE_LARGE PIN_CONF_STORAGE_LARGE_INS	Specify the storage parameters to use when the tables and indexes are created. Information on how your tablespace and storage parameters are configured in Release 1.0 is in your Release 2.0 <i>Portal_Home\setup\scripts\pin_tables.values</i> file. You can use this information to help you configure the parameters in your Release 2.0 upgrade.cfg file.
@ALL_SCRIPTS	Specifies which upgrade scripts are executed by the upgrade.pl script. By default, all upgrade scripts are executed.

Table 26–1 (Cont.) upgrade.cfg Parameters of Note

Parameter	Description
\$UPGRADE_LOG_DIR	Specifies in which directory to create the log and pinlog files generated by the upgrade process.
\$UPG_DATA_START_TIME	Specifies the start date for upgrading only the most recent data. Only objects created during the time period defined by \$UPG_DATA_START_TIME and \$UPG_DATA_END_TIME are upgraded. An object's created time is used to calculate the age of its data. Note: <ul style="list-style-type: none"> ▪ This parameter applies only to event, item, bill, and ledger_report objects. The remainder of the Portal database is fully upgraded. ▪ If you specify only a date, the default time is 00:00:00 on the specified date. Therefore, the start date is inclusive. ▪ To upgrade all the data in your database, specify a date range that covers all the data. To find the entire range, run the upg_mgr.pl script with the -t parameter.
\$UPG_DATA_END_TIME	Specifies the end date for upgrading only the most recent data. Important: You must change the default value of this parameter. Note: If you specify only a date, the default time is 00:00:00 on the specified date. Therefore, the end date is <i>exclusive</i> . For more information, see \$UPG_DATA_START_TIME.

Creating Required Database Objects and the Upgrade Log Directory

To create the database objects required for the upgrade and the upgrade log directory, run the **upg_mgr.pl** script with the **-o** parameter. For more information, see ["About the upg_mgr.pl Script"](#).

Performing Pre-upgrade Sanity Checks

Run the **upg_mgr.pl** script with the **-s** parameter to verify the following:

- The indexes required for upgrading have been created.
- Portal storable class objects required for upgrading exist.
- The following database preparations have been made:
 - The correct version of Oracle is installed. See ["Important Information for System Administrators"](#).
 - The database character set is correct. See ["Oracle Database Character Sets"](#).
 - The Portal user **pin** has CREATE TABLE and CREATE SEQUENCE privileges. See ["Granting New Privileges to the Oracle Portal User"](#).
 - The required rollback segments exist. See ["Setting Up Rollback Segments and Temporary Tablespace"](#).

The **-s** parameter also reports how much disk space is required for event table partitioning.

Results are printed to the *Portal_Home/upgrade/gsm/10_20/sqllog/pre_upg_sanity_chk2.sql.log* file. For more information, see ["About the upg_mgr.pl Script"](#).

Note: To reduce system downtime, you can perform the sanity checks before stopping Portal (see "[Shutting Down Portal](#)").

Generating a List of Tables and Indexes in the 2.0 Schema

To see what modifications you made to the default Release 1.0 database schema, compare the tables and indexes in your 1.0 database with those in the default 1.0 database. You need this information to interpret error messages that might be generated when you run the upgrade scripts (see "[Running the Database Upgrade Scripts](#)") and when you add custom tables and indexes to the upgraded Release 2.0 database.

Generating Your 2.0 Tables List

The `schema_tbls.sql` script generates a list of your Release 2.0 database table columns and writes it to the `table_schema.out` file.

Run the `schema_tbls.sql` script from the UNIX or DOS command prompt:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upg_mgr.pl -e schema_tbls.sql
```

Generating 2.0 Index List

The `schema_idxes.sql` script generates a list of your Release 1.0 database indexes and writes it to the `index_schema.out` file.

Run the `schema_idxes.sql` script from the UNIX or DOS command prompt:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upg_mgr.pl -e schema_idxes.sql
```

Running the Database Upgrade Scripts

The `upgrade.pl` script runs a series of scripts that upgrade the Release 1.0 database to Release 2.0. By default, the `upgrade.pl` script runs *all* the upgrade scripts.

To run only the offline scripts, you must first edit the `upgrade.cfg` file. See "[Configuring the Upgrade Parameters](#)".

For more information about the `upgrade.pl` script, see "[About the Upgrade.pl Script](#)".

To upgrade your database schema:

1. Run the `upgrade.pl` script from the UNIX or DOS command prompt:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upgrade.pl
```

2. Check each script's `log` and `pinlog` file in the directory specified by the `UPGRADE_LOG_DIR` parameter in your `upgrade.cfg` file (by default, `Portal_Home/upgrade/gsm/10_20/sqllog`). These log files show how long each script took to execute and list any errors that occurred.

Important: If any errors are reported, fix them, and then rerun the `upgrade.pl` script.

Installing Patch 4489

You must install Patch 4489. This patch is critical to the proper performance of GSM Manager. For more information, see the patch README file.

Running `pin_setup` to Configure GSM Manager

The `pin_setup` script reads the `pin_setup.values` file and configures Portal by initializing the database, configuring various `pin.conf` files, and starting various servers, including the `dm_oracle` server, the Connection Manager (CM), and the Java server.

To run the `pin_setup` script:

1. Log in as user `pin`, go to the `Portal_Home/setup` directory, and run the `pin_setup` script:

```
% su - pin
% cd Portal_Home/setup
% ./pin_setup
```

2. Check the following files for errors:

- `Portal_Home/setup/pin_setup.log`
- `Portal_Home/sys/cm/CM.log`
- `Portal_Home/var/cm/cm.pinlog`
- `Portal_Home/sys/dm_database/DM.log`
- `Portal_Home/var/dm_database/dm_database.pinlog`

Restoring Service Authentication

See “Using the Authentication and Authorization Modules” in *BRM RADIUS Manager*.

Dropping Obsolete Database Objects from the Database (Optional)

Perform it *after* you verify that the upgrade is successful. Dropping obsolete database objects from the database is optional.

To drop obsolete database tables and columns, run the `drop_tables.sql` script from the UNIX or DOS command prompt:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upgrade.pl drop_tables.sql
```

Command-Line Scripts

The following command-line scripts automate routine upgrade tasks:

- [About the `upg_mgr.pl` Script](#)
- [About the `Upgrade.pl` Script](#)

Run these scripts from the UNIX or DOS prompt.

About the `upg_mgr.pl` Script

This Perl script performs many of the upgrade tasks, such as creating database objects and running sanity checks.

Syntax

```
perl upg_mgr.pl -o | -s | -e sql_script_name.sql | -r step_name | -d step_name |
-t | -n | -h
```

Note:

- Specify only one parameter at a time.
 - Run **upg_mgr.pl** with the **-o** parameter *before* you run it with any other parameters.
 - If you omit *sql_script_name* after the **-e** parameter or *step_name* after the **-r** or **-d** parameters, the script does nothing.
-
-

Parameters

The **upg_mgr.pl** parameters are described in [Table 26–2](#):

Table 26–2 *upg_mgr.pl* Parameters

Parameter	Description
-o	Creates the database objects required for the upgrade. Important: Run upg_mgr.pl with the -o parameter <i>before</i> you run it with any other parameters. This parameter performs these operations: <ul style="list-style-type: none"> ■ Creates the UPG_LOG_T table that logs all the information about the upgrade. ■ Creates the pin_upg_common package that contains all the common routines for the upgrade.
-s	Runs the pre-upgrade sanity check. See " Performing Pre-upgrade Sanity Checks ". Note: This requires a database administrator (DBA) user name and password for the Portal database. See the upgrade.cfg file for details.
-e <i>sql_script_name.sql</i>	Executes the specified SQL script against the Portal schema. It replaces all the Perl variables before running the script. Important: You must include the .sql extension with the script name.
-r <i>step_name</i>	Prints a report of the status of the specified step and directs the report to the <i>Portal_Home/upgrade/gsm/10_20/sqllog/step_name.sql.pinlog</i> file. Important: Do not include the file extension with the script name.
-d <i>step_name</i>	Deletes all the information related to an upgrade script from the upgrade log tables. After a script is run, its completion is logged in the upgrade log tables. If a user tries to rerun the script, the upgrade software first checks those tables. When it finds the script has already run, it skips the script. Thus, you must run upg_mgr.pl -d to delete all information about a previously run script from the tables <i>before</i> rerunning the script. Important: Do not include the file extension with the script name.
-t	Displays the maximum and minimum CREATED_T for the EVENT_T, ITEM_T, and BILL_T tables.
-h	Displays these parameter descriptions.

About the Upgrade.pl Script

The **upgrade.pl** Perl script is the main upgrade script. It runs many other SQL scripts in the correct order.

To run *all* the scripts listed in the `upgrade.cfg` file's `@ALL_SCRIPTS` parameter, enter this command at the UNIX or DOS prompt:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upgrade.pl
```

Note: The scripts are run in the order they are listed in the parameter. For more information, see "[Configuring the Upgrade Parameters](#)".

To run a *single* script, enter this command:

```
% cd Portal_Home/upgrade/gsm/10_20
% perl upgrade.pl script_name
```

Important: `script_name` must include the file extension.

About the Upgrade Scripts and Files

This section describes the scripts and files used to upgrade your Portal database.

Offline Scripts

[Table 26–3](#) lists the offline scripts used to upgrade the Portal database.

Table 26–3 Offline Database Upgrade Scripts

Script	Description
<code>pin_upg_common.sql</code>	SQL script that creates the common routines needed for the upgrade.
<code>add_new_tables_20.sql</code>	SQL script that adds the new Release 2.0 tables.

Online Scripts

[Table 26–4](#) lists the online scripts used to upgrade the Portal database.

Table 26–4 Online Database Upgrade Scripts

Script	Description
<code>update_event_service.sql</code>	SQL script that updates <code>EVENT_T</code> and <code>SERVICE_T</code> to reflect the TCF changes.
<code>drop_tables.sql</code>	SQL script that drops the obsolete tables, which are not required in the new version.

Miscellaneous Scripts and Files

The following scripts in [Table 26–5](#) are configuration files executed by offline or online scripts:

Table 26–5 Miscellaneous Scripts and Files

Script or File	Description
<code>schema_idx.sql</code>	SQL script that produces the index schema listings.

Table 26–5 (Cont.) Miscellaneous Scripts and Files

Script or File	Description
<code>schema_tbls.sql</code>	SQL script that produces the table schema listings.
<code>delete_info.sql</code>	SQL script that deletes the UPG_LOG_T table entries related to a specific script.
<code>get_created_t.sql</code>	SQL script that retrieves the max and min CREATED_T from various tables.
<code>pre_upg_sanity_chk1.sql</code> <code>pre_upg_sanity_chk2.sql</code>	SQL scripts that perform sanity checks.
<code>crt_pinlog.sql</code>	SQL script that creates the pinlog files.
<code>pin_pre_cmp_tcfamework.pl</code>	Perl script that configures the tcframework component.
<code>pin_pre_cmp_gsm.pl</code>	Perl script that configures the GSM component.
<code>upgrade.cfg</code>	Configuration file in which you must enter details about the Oracle Server database configuration before you run the upgrade scripts. All the upgrade Perl scripts parse this file to get the database connection parameters.
<code>upg_oracle_functions.pl</code>	Perl script that performs many miscellaneous upgrade tasks related to the Oracle database.
<code>upg_mgr.pl</code>	Perl script that manages many miscellaneous upgrade tasks.
<code>upgrade.pl</code>	Master Perl script for the upgrade process. This Perl script calls other SQL scripts to perform the upgrade.
<code>crt_upg_indexes.sql</code>	SQL script that creates a unique index for BILL_T, EVENT_T, and ITEM_T tables.
<code>drop_procedures.sql</code>	SQL script that drops all the stored procedures from the Portal schema.

Part VIII

Upgrading Revenue Assurance Manager

This part contains information on how to upgrade the Revenue Assurance Manager.

Part VIII contains the following chapter:

- [Upgrading from Revenue Assurance Manager Release 2.0 to Release 3.0](#)

Upgrading from Revenue Assurance Manager Release 2.0 to Release 3.0

This chapter contains procedures for upgrading your Portal™ Revenue Assurance Manager system directly from Release 2.0 to Release 3.0. It covers Oracle on both HP-UX and Solaris platforms.

Important: *Before performing the tasks in this document, verify that you have Revenue Assurance Manager 2.0 installed.*

For information on installing Revenue Assurance Manager, see “Installing Revenue Assurance Manager” in *BRM Collecting Revenue Assurance Data*.

Note: You need to upgrade Revenue Assurance Manager Release 2.0 to Release 3.0 only if you are upgrading from Infranet Release 6.5 to Portal 7.3.

Preparing Your Environment for the Upgrade

Before upgrading to Revenue Assurance Manager 3.0, prepare your database.

Upgrading the Oracle Software and Database

You can use Revenue Assurance Manager 3.0 only with Oracle 9i or 10g.

Caution: If you are using an earlier version of Oracle, you must upgrade it *before* you install Revenue Assurance Manager 3.0. For information on upgrading Oracle, see your Oracle documentation.

Upgrading the Portal Database for Revenue Assurance Manager 3.0

This section describes how to upgrade the Portal database to support Revenue Assurance Manager 3.0.

1. [Backing Up Revenue Assurance Manager 2.0 Files](#)
2. [Loading Release 2.0 Batch Rating Data](#)
3. [Shutting Down Portal](#)
4. [Backing Up Your Portal Database](#)

5. [Installing the Third-Party Software](#)
6. [Installing Revenue Assurance Manager Server 3.0](#)
7. [Installing the Upgrade Scripts](#)
8. [Configuring the Upgrade Parameters](#)
9. [Creating Required Database Objects and the Upgrade Log Directory](#)
10. [Performing Pre-upgrade Sanity Checks](#)
11. [Running the Database Upgrade Scripts](#)
12. [Running pin_setup to Configure Revenue Assurance Manager](#)
13. [Restoring Service Authentication](#)
14. [Dropping Obsolete Database Objects from the Database \(Optional\)](#)

Backing Up Revenue Assurance Manager 2.0 Files

Before removing the old Revenue Assurance Manager Release 2.0 software, back up your 2.0 files.

Important: In particular, ensure that you back up customized source code, `pin.conf`, and `pin_setup.values` files.

Loading Release 2.0 Batch Rating Data

Pipeline Rating Engine does not directly load revenue assurance data into the database, but rather creates data files that are loaded by using Universal Event (UE) Loader. Typically, this is triggered automatically by the Batch Controller. You must complete loading all the Release 2.0 data files *before* upgrading to Release 3.0. The UE Loader templates delivered with Release 3.0 will not work with data files created with Release 2.0.

To ensure that all the Release 2.0 data is loaded:

1. Stop the pipeline.
2. If UE Loader is automatically triggered, wait until all files are processed. If you run UE Loader manually, run it with all unprocessed data files.

Shutting Down Portal

Only the database instance should be running during the upgrade. For more information, see “Starting and Stopping the BRM System” in *BRM System Administrator’s Guide*.

1. Stop all Portal processes.
2. Ensure that the Connection Manager (CM) and Data Manager (DM) are not running.
3. Ensure that no users are logged on to Portal.

Users include customers, client applications, customer service representatives (CSRs), and so on.

Backing Up Your Portal Database

Make a complete offline backup of your Portal database, and ensure that the backup is completely valid and usable. For more information on performing full database backups, see your database software documentation.

In addition to the backup, use the Oracle export utility to export all Portal tables. This helps you restore individual tables if necessary.

Installing the Third-Party Software

Install the Third-Party software by following the instructions given in “Installing the Third-Party software” in *BRM Installation Guide*.

Installing Revenue Assurance Manager Server 3.0

The upgrade adds or replaces several libraries, UE Loader templates, and iScripts. It also updates the database schema and the Portal data dictionary.

1. Install the Revenue Assurance Manager server 3.0 package for your platform. Follow the instructions in “Installing Revenue Assurance Manager” in *BRM Collecting Revenue Assurance Data*.

Caution: Do not run the `pin_setup` script before upgrading your database. Running `pin_setup` before upgrading your database might corrupt your data.

Important:

- Pay particular attention to entries that specify your installation directory; CM and DM port numbers; and database host name, user name, and password.
 - Ensure that the `$SETUP_INIT_DB` entry is set to **YES**.
 - Ensure that the `$SETUP_DROP_ALL_TABLES` entry is set to **NO**.
 - Ensure that the `$SETUP_CONFIGURE` entry is set to **YES**.
 - Ensure that the `$CREATE_DATABASE_TABLES` entry is set to **NO**.
-
-

2. Make a backup copy of the `pin_setup.values` file (*Portal_Home/setup/pin_setup.values* file) and save it to another location.

Important: The upgrade scripts do not modify these files.

Installing the Upgrade Scripts

To install the Revenue Assurance Manager-Release-2.0-to-Release-3.0 upgrade scripts:

1. Download the software to a temporary directory (*temp_dir*).

Important:

- If you download to a Windows workstation, use **FTP** to copy the **.bin** file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. For information, see “Increasing heap size to avoid “Out of Memory” error messages” in *BRM Installation Guide*.
-
-

2. Go to the directory where you installed the Third-Party package and source the **source.me** file.

Caution: You must source the **source.me** file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Log in as user **integrate**, go to the *temp_dir* directory, and enter this command:
7.3.1_RevAssuranceMgr_20_30_OraUpg_platform_32_opt.bin

Note: You can use the **-console** parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the **DISPLAY** environment variable before you install the software.

4. Follow the instructions displayed during installation.

Configuring the Upgrade Parameters

The **upgrade.cfg** file contains your upgrade parameters, such as which scripts to execute and whether to upgrade only the most recent data. You should customize these parameters to meet your business requirements.

To edit the **upgrade.cfg** file:

1. Log in as user **pin**, go to *Portal_Home/upgrade/ara/20_30*, and open the **upgrade.cfg** file in a text editor such as **vi**:

```
% su - pin
% cd Portal_Home/upgrade/ara/20_30
% vi upgrade.cfg
```
2. Go to *Portal_Home/upgrade/ara/20_30*, and open the **upgrade.cfg** file.
3. Configure the file's parameters as necessary. For information on each parameter, see the comments in the **upgrade.cfg** file. Pay particular attention to the

parameters described in [Table 27-1](#):

Table 27-1 *upgrade.cfg* Parameters of Note

Parameter	Description
SQLPLUS IMP EXP	Specify the location of the database utilities and executables. By default, they are set to sqlplus , imp , and exp , respectively.
OWNER	Specifies the Portal database user name. By default, this is set to pin .
PASSWD	Specifies the Portal database password. By default, this is set to pin .
DBNAME	Specifies the name of the Portal database you are upgrading. By default, this is set to pinbdb .
PIN_CONF_TBLSPACE _n PIN_CONF_TBLSPACEX _n	Specify the tablespaces where your new tables and indexes will be created.
PIN_CONF_STORAGE_SMALL PIN_CONF_STORAGE_SMALL_INS PIN_CONF_STORAGE_MED PIN_CONF_STORAGE_MED_INS PIN_CONF_STORAGE_LARGE PIN_CONF_STORAGE_LARGE_INS	Specify the storage parameters to use when the tables and indexes are created. Note: Information on how your tablespace and storage parameters are configured in Release 2.0 is in your Release 3.0 <i>Portal_home/setup/scripts/pin_tables.values</i> file. You can use this information to help you configure the parameters in your Release 3.0 upgrade.cfg file.
@ALL_SCRIPTS	Specifies which upgrade scripts are executed by the upgrade.pl script.
UPGRADE_LOG_DIR	Specifies in which directory to create the log and pinlog files generated by the upgrade process.
DB_DBA_USER	Specifies the user name with DBA privileges. By default, the user name is system . The user name and password are required to perform the pre-upgrade sanity checks of the database.
DB_DBA_PASSWD	Specifies the password of the DB_DBA_USER. By default, the password is manager .

Creating Required Database Objects and the Upgrade Log Directory

To create the database objects required for the upgrade and the upgrade log directory, run the **upg_mgr.pl** script with the **-o** parameter. For more information, see "[About the upg_mgr.pl Script](#)".

Performing Pre-upgrade Sanity Checks

Run the **upg_mgr.pl** script with the **-s** parameter to verify the following:

- The indexes required for upgrading have been created.
- Portal storable class objects required for upgrading exist.
- The following database preparations have been made:
 - The correct version of Oracle is installed.
 - The database character set is correct.
 - The Portal user **pin** has CREATE TABLE and CREATE SEQUENCE privileges.

- The required rollback segments exist.

Results are printed to the `pre_upg_sanity_chk1.sql.log` and `pre_upg_sanity_chk2.sql.log` files in `Portal_Home/upgrade/ara/20_30/sqllog` directory. For more information, see "[About the upg_mgr.pl Script](#)".

Note: To reduce system downtime, you can perform the sanity checks before stopping Portal (see [Shutting Down Portal](#)).

Running the Database Upgrade Scripts

The `upgrade.pl` script runs a series of scripts that upgrade the Release 2.0 tables to Release 3.0. By default, the `upgrade.pl` script runs *all* the upgrade scripts.

To run only the offline scripts, you must first edit the `upgrade.cfg` file. See "[Configuring the Upgrade Parameters](#)".

For more information about the `upgrade.pl` script, see "[About the upgrade.pl Script](#)".

For information on offline scripts, see "[Offline Scripts](#)".

To upgrade your database schema:

1. Run the `upgrade.pl` script from the UNIX command prompt:

```
% cd Portal_Home/upgrade/ara/20_30
% perl upgrade.pl
```

2. Check each script's `log` and `pinlog` file in the directory specified by the `UPGRADE_LOG_DIR` parameter in your `upgrade.cfg` file (`Portal_Home/upgrade/ara/20_30/sqllog`).

Important: If any errors are reported, fix them, and then rerun the `upgrade.pl` script.

Running pin_setup to Configure Revenue Assurance Manager

The `pin_setup` script reads the `pin_setup.values` file and configures Portal by initializing the database, configuring various `pin.conf` files, and starting various servers, including the `dm_oracle` server, the Connection Manager (CM), and the Java server.

To run the `pin_setup` script:

1. Add customizations from your backed-up Revenue Assurance Manager 2.0 `pin_setup.values` file to the Revenue Assurance Manager `Portal_Home/setup/pin_setup.values` file.
2. Log in as user `pin`, go to the `Portal_Home/setup` directory, and run the `pin_setup` script:

```
% su - pin
% cd Portal_Home/setup
% ./pin_setup
```

3. Check the following files for errors:
 - `Portal_Home/setup/pin_setup.log`
 - `Portal_Home/var/cm/cm.pinlog`

- `Portal_Home/var/cm/cm.log`
- `Portal_Home/var/dm_database/dm_database.pinlog`
- `Portal_Home/var/dm_database/dm_database.log`

Restoring Service Authentication

See “Using the Authentication and Authorization Modules” in *BRM RADIUS Manager*.

Dropping Obsolete Database Objects from the Database (Optional)

Perform this step *after* you verify that the upgrade is successful. Dropping obsolete database objects from the database is optional.

To drop obsolete database tables and columns, run the `drop_old_tables.sql` script from the command prompt:

```
% cd Portal_Home/upgrade/ara/20_30
% perl upg_mgr.pl -e drop_old_tables.sql
```

Updating the Revenue Assurance Configuration

Follow these steps to update the Revenue Assurance configuration:

1. [Updating to Revenue Assurance Manager Release 3.0 Scenarios](#)
2. [Changing the Constraint on the IFW_AGGREGATION Table](#)
3. [Loading Release 3.0 Scenarios](#)
4. [Loading New UE Loader Templates into the Portal Database](#)
5. [Updating All the Control Points to Collect Batch Processing Timestamps](#)
6. [Changing the Date Format to Collect Call Processing Start and End Timestamps](#)
7. [Updating the Pipeline Registry to Track iScript File Name Changes](#)
8. [Updating the CollectProcessAuditForIREL Trigger with the New SQL Script](#)
9. (Optional) [Tracking Changes in /process_audit/billing Objects](#)
10. (Optional) [Changing Custom Revenue Assurance Aggregation Scenarios](#)

Updating to Revenue Assurance Manager Release 3.0 Scenarios

Revenue Assurance Manager Release 3.0 scenarios collect more data from the pipeline than was collected by Release 2.0. The existing scenarios of Revenue Assurance Manager Release 2.0 must be dropped from the pipeline database by using Pricing Center, and the new scenarios must be loaded by using the SQL scripts (`RevenueAssurance_Scenarios.sql`).

To drop the Release 2.0 scenarios:

1. Start Pricing Center.
2. Choose **View - Pipeline ToolBox - Aggregation - Scenarios**.

There will be Revenue Assurance Manager Release 2.0 sample scenarios from RA_01 to RA_14 and maybe some custom scenarios also.

3. Select all the scenarios and delete them.
4. Choose **View - Pipeline Setup ToolBox - EDR - EDR container Description**.

5. Select **RA_SAMPLE**.
6. Click **Edit**.
7. Click the **EDR Container Field** tab.
8. Select all the field details and delete them.
9. Choose **View - Pipeline Setup ToolBox - EDR - EDR container Description**.
10. Select **RA_SAMPLE** and delete it.
11. Exit Pricing Center.

Changing the Constraint on the IFW_AGGREGATION Table

You must change the **CKC_AGG_FUNCTION** constraint before running the SQL script to load the new scenarios. To disable the constraint, run the SQL script **update_v6.7.4_v6.7.5.sql** on the pipeline database.

Loading Release 3.0 Scenarios

To use the sample scenarios, you must load them into the pipeline database.

To load the sample scenarios into a pipeline database, run the following commands against the pipeline database from the

IFW_Home/database/Oracle/Scripts directory:

```
sqlplus user/password@database RevenueAssurance_scenario.sql
```

where *user* is the pipeline user ID, *password* is the pipeline user password, and *database* is the pipeline database alias.

Loading New UE Loader Templates into the Portal Database

Upgrading copies the new UE Loader Template XML files into the installation directory, but you manually have to load them into the Portal database by using **pin_uei_deploy** utility. Before loading the new UE Loader templates, you must delete the old templates.

To delete the old UE Loader templates:

1. Go to the *Portal_Home/apps/uel/Revenue_Assurance* directory.
2. Run the following commands to delete the old templates:

```
pin_uei_deploy -t RA01 -d  
pin_uei_deploy -t RA02 -d  
pin_uei_deploy -t RA03 -d  
pin_uei_deploy -t RA04 -d  
pin_uei_deploy -t RA05 -d  
pin_uei_deploy -t RA06 -d  
pin_uei_deploy -t RA07 -d  
pin_uei_deploy -t RA08 -d  
pin_uei_deploy -t RA09 -d  
pin_uei_deploy -t RA10 -d  
pin_uei_deploy -t RA11 -d  
pin_uei_deploy -t RA12 -d  
pin_uei_deploy -t RA13 -d
```

3. Load the new UE Loader templates by running following commands:

```
pin_uei_deploy -c -t RA01 -i BRM_Home/apps/uel/Revenue_Assurance/RA01.xml
```

```

pin_uei_deploy -c -t RA02 -i BRM_Home/apps/uel/Revenue_Assurance/RA02.xml
pin_uei_deploy -c -t RA03 -i BRM_Home/apps/uel/Revenue_Assurance/RA03.xml
pin_uei_deploy -c -t RA04 -i BRM_Home/apps/uel/Revenue_Assurance/RA04.xml
pin_uei_deploy -c -t RA05 -i BRM_Home/apps/uel/Revenue_Assurance/RA05.xml
pin_uei_deploy -c -t RA06 -i BRM_Home/apps/uel/Revenue_Assurance/RA06.xml
pin_uei_deploy -c -t RA07 -i BRM_Home/apps/uel/Revenue_Assurance/RA07.xml
pin_uei_deploy -c -t RA08 -i BRM_Home/apps/uel/Revenue_Assurance/RA08.xml
pin_uei_deploy -c -t RA09 -i BRM_Home/apps/uel/Revenue_Assurance/RA09.xml
pin_uei_deploy -c -t RA10 -i BRM_Home/apps/uel/Revenue_Assurance/RA10.xml
pin_uei_deploy -c -t RA11 -i BRM_Home/apps/uel/Revenue_Assurance/RA11.xml
pin_uei_deploy -c -t RA12 -i BRM_Home/apps/uel/Revenue_Assurance/RA12.xml
pin_uei_deploy -c -t RA13 -i BRM_Home/apps/uel/Revenue_Assurance/RA13.xml
pin_uei_deploy -c -t RA14 -i BRM_Home/apps/uel/Revenue_Assurance/RA14.xml

```

Updating All the Control Points to Collect Batch Processing Timestamps

All the control points in Revenue Assurance Manager Release 3.0 must include the following registry entry:

```
IncludeProcessingTimestamps = TRUE
```

The following is a sample registry section for a control point in Revenue Assurance Manager Release 3.0:

```

{
  ModuleName = FCT_AggreGate
  Module
  {
    Active = TRUE
    ScenarioReaderDataModule = ifw.DataPool.ScenarioReader
    Scenarios
    {
      BatchStat
      {
        TempDir = result/temp
        DoneDir      = result/done
        CtlDir       = result/ctl
        FieldDelimiter = ;
        FlushMode    = 0
        ControlPointId = CP_PreRatingBatchStat
        IncludeProcessingTimestamps = TRUE
      }
    }
  }
  ResultFile
  {
    TempSuffix      = .tmp
    DoneSuffix      = .dat
    WriteEmptyFile = FALSE
  }
  ControlFile
  {
    Suffix = .ctl
    DataFilePath = TRUE
  }
}

```

Changing the Date Format to Collect Call Processing Start and End Timestamps

You must change the date format field in the UE Loader **Infranet.properties** file to collect call processing and start and end timestamps.

To change the date format:

1. Open the *Portal_Home/apps/uel/Infranet.properties* file.

The **infranet.uel.date_pattern** field has the following date/time format:

```
infranet.uel.date_pattern=dd/MMM/yyyy:hh:mm:ss a zzzz
```

2. Change the date/time format to:

```
infranet.uel.date_pattern=yyyyMMddHHmmss
```

Updating the Pipeline Registry to Track iScript File Name Changes

The iScript file named **ISC_SetDiscountValue.isc** in Release 2.0 has been renamed to **ISC_SetRevenueFigures.isc** in Release 3.0.

To update the pipeline registry, in the pipeline registry sections for modules that use this iScript file, change the **FileName** entry to the new iScript name.

Note: In Release 2.0, if you have set control point to collect revenue assurance data only on Retail charged amount, the iScript **ISC_PostRating.isc** was used to collect charging amount (there was no dependency on the iScript **ISC_SetDiscountValue.isc**). In Release 3.0, the iScript **ISC_SetRevenueFigures.isc** collects both Retail charged amount and discount and uses the iScript **ISC_FCTBillingRecord.isc**. So the control point that you have set to collect only charged amount must be moved after the iScript **ISC_SetRevenueFigures.isc** below the iScript **ISC_FCT_BillingRecord.isc** to collect only charged amount.

Updating the CollectProcessAuditForIREL Trigger with the New SQL Script

The updated trigger provided with Revenue Assurance Manager Release 3.0 is more refined and differentiates between rerating and recycling batches.

To update the trigger:

1. Go to the *Portal_Home/sys/data/config* directory.
2. Run the following command:

```
sqlplus login/password@${ORACLE_SID} @CollectProcessAuditForIREL.sql
```

where *ORACLE_SID* is the Portal database alias.

(Optional) Tracking Changes in /process_audit/billing Objects

Note: It is unlikely that any action is required, but this step is included for completeness.

All changes to Portal objects for revenue assurance between Release 2.0 and Release 3.0 are additive changes except for one of the changes to the object **/process_**

audit/billing. In Release 2.0, this object has a single PIN_FLD_FAILED_ACCOUNTS array. In Release 3.0, this is a nested array within the PIN_FLD_BILLING_SEGMENTS array. Database reports that read this array do not need to be changed. The name of the table for this array has not changed, and the report will work as it did in Release 2.0. However, any custom applications that read a **/process_audit/billing** record through the PCM (or Java PCM) interface must be modified because the array has been moved. Also, the PIN_FIELD_BILL_SUPPRESSION and PIN_FIELD_REVENUE arrays are added in Release 3.0.

(Optional) Changing Custom Revenue Assurance Aggregation Scenarios

Note: This step applies only if you have added custom aggregation scenarios for Release 2.0.

If you have custom aggregation scenarios for revenue assurance, following this step ensures that all Release 3.0 features will work correctly on the data produced by these scenarios. All Release 2.0 features will continue working with the data produced by custom scenarios, even if this step is not followed.

Release 3.0 contains new support for auditing the rerating process in the pipeline. In Release 3.0, distinct batch types are recorded for recycling and rerating. Also, when CDRs are suspended and recycled during rerating, Release 3.0 can record more relationships among the batches. It records relationships between the recycling batch and the rerating batches from which they were suspended, and also the relationships between the recycling batches and the batches in which the CDRs were first processed.

To record this information, aggregation scenarios must read an additional field from EDR container, and the UE Loader templates for loading the data must pass this additional field to the Portal opcode that creates the **/process_audit** objects. The scenarios and their corresponding UE Loader templates have been updated. Similar changes must be made in any custom scenarios to enable these Release 3.0 features. The changes are:

- In the aggregation scenarios, the EDR container fields that group data must include `DETAIL.ASS_SUSPENSE_EXT.SUSPENDED_FROM_BATCH_ID` and the order for these grouping fields must be `DETAIL.BATCH_ID, DETAIL.ORIGINAL_BATCH_ID, DETAIL.ASS_SUSPENSE_EXT.SUSPENDED_FROM_BATCH_ID`.
- The corresponding UE Loader templates load this additional fields, by including it on the input flist to `PCM_OP_PROCESS_AUDIT_CREATE_AND_LINK` (or `PCM_OP_PROCESS_AUDIT_CREATE`). The field on the input flist for this value is `PIN_FLD_GROUP_DETAILS.PIN_FLD_SUSPENDED_FROM_BATCH_ID`.

Command-Line Scripts

The following command-line scripts automate routine upgrade tasks:

- [About the upg_mgr.pl Script](#)
- [About the upgrade.pl Script](#)

Run these scripts from the UNIX prompt.

About the upg_mgr.pl Script

This Perl script performs many of the upgrade tasks, such as creating database objects and running sanity checks.

Syntax

```
perl upg_mgr.pl -o | -s
```

Note:

- Specify only one parameter at a time.
 - Run **upg_mgr.pl** with the **-o** parameter *before* you run it with **-s** parameter.
-
-

Parameters

The **upg_mgr.pl** parameters are described in [Table 27-2](#):

Table 27-2 upg_mgr.pl Parameters

Parameter	Description
-o	Creates the database objects required for the upgrade. Important: Run upg_mgr.pl with the -o parameter <i>before</i> you run it with any other parameter. This parameter performs these operations: <ul style="list-style-type: none"> ▪ Creates the UPG_LOG_T table that logs all the information about the upgrade. ▪ Creates the pin_upg_common package that contains all the common routines for the upgrade.
-s	Runs the pre-upgrade sanity check. See " Performing Pre-upgrade Sanity Checks ". Note: This requires a database administrator (DBA) user name and password for the Portal database. See the upgrade.cfg file for details.

About the upgrade.pl Script

The **upgrade.pl** Perl script is the main upgrade script. It runs many other SQL scripts in the correct order.

To run *all* the scripts listed in the **upgrade.cfg** file's **@ALL_SCRIPTS** parameter, enter this command at the UNIX prompt:

```
% cd Portal_Home/upgrade/ara/20_30
% perl upgrade.pl
```

Note: The scripts are run in the order they are listed in the parameter. For more information, see "[Configuring the Upgrade Parameters](#)".

About the Upgrade Scripts and Files

This section describes the scripts and files used to upgrade your Revenue Assurance Manager Release 2.0 database to Release 3.0.

Offline Scripts

The following scripts and files in [Table 27-3](#) must run offline (while Portal is shut down) and finish running before Portal is restarted.

Table 27-3 Offline Scripts

Script	Description
<code>pin_upg_common.sql</code>	SQL script that creates the common routines needed for the upgrade.
<code>create_tmp_proc_aud.sql</code>	SQL script that creates temporary audit PROC_AUD_BILL_ERR_ACCT tables.

Miscellaneous Scripts and Files

The following scripts in [Table 27-4](#) are configuration files executed by offline scripts.

Table 27-4 Miscellaneous Scripts and Files

Script or File	Description
<code>drop_old_tables.sql</code>	SQL script that drops obsolete database tables and columns.
<code>pre_upg_sanity_chk1.sql</code> <code>pre_upg_sanity_chk2.sql</code>	SQL scripts that perform sanity checks before the upgrade starts.
<code>crt_pinlog.sql</code>	SQL script that creates the pinlog files.
<code>pin_pre_cmp_araframework.pl</code>	Perl script that configures the araframework component.
<code>upgrade.cfg</code>	Configuration file in which you must enter details about the Oracle database configuration before you run the upgrade scripts. All the upgrade Perl scripts parse this file to get the database connection parameters.
<code>upg_oracle_functions.pl</code>	Perl script that performs many miscellaneous upgrade tasks related to the Oracle database.
<code>upg_mgr.pl</code>	Perl script that manages many miscellaneous upgrade tasks.
<code>upgrade.pl</code>	Master Perl script for the upgrade process. This Perl script calls other SQL scripts to perform the upgrade.
<code>20_30_upg_araframework.source</code>	Flist that loads the new tables and columns.
<code>20_30_default_values.sql</code>	SQL script that loads the default values.

Part IX

Migrating Discount Data

This part contains information on how to upgrade and migrate your discount data.

Part IX contains the following chapter:

- [Understanding and Migrating Discount Data](#)

That chapter includes reference information for Oracle Communications Billing and Revenue Management (BRM) Discount Data Migration utilities.

Understanding and Migrating Discount Data

This chapter provides an overview of Portal™ Discount Data Migration. It describes the process of migrating and upgrading discount and rollover data from the Pipeline Rating Engine 6.5 database to the Portal 7.3 database. In addition, this document provides reference information on Discount Data Migration utilities.

Note: You need to migrate discount data only if you are upgrading from Infranet Release 6.5 to Portal 7.3.

Before you read this document, you should be familiar with the following topics:

- Portal pricing and discounting. See “About Creating a Price List” in *BRM Setting Up Pricing and Rating*.
- Portal opcodes and flists. See “Understanding Flists and Storable Classes” in *BRM Developer’s Guide*.

You should also have detailed knowledge of the following areas:

- A thorough understanding of the Portal database and the Pipeline Manager database.
- Sufficient programming skills to use Portal utilities and opcodes.
- XML and XSLT formats.

About Discount Data Migration

When you upgrade from Infranet Release 6.5 to Portal 7.3, you must migrate discount data to the Portal 7.3 database to use the new discounting features. Discount data migration is required because of changes to the discount architecture, pricing model, balance structure, and discount data storage location in Portal 7.3.

In Infranet Release 6.5, discount information is stored as a part of your rate plans in the Pipeline Rating Engine database. In Portal 7.3, discount data is stored as separate discount objects in the Portal database. You then associate discounts with deals that your customers can purchase.

For more information on the differences between the 6.5 and 7.3 discounting architecture, see ["Discounting Differences between Infranet 6.5 and Portal 7.3"](#).

Discount Data Migration provides a set of utilities to migrate discount data to the Portal 7.3 database based on the configuration settings you specify.

You must migrate the following types of discount data:

- **Discount configuration data:** Data used to configure a discount model, such as discount model codes, discount masters, discount triggers, discount rules, discount steps, discount conditions, discount balance impacts, resources, and rollover data.
- **Subscription mapping data:** Data used to manage customer discounts, such as rate plan names, deal names (for deals containing discount and rollover products), and the service types linked to the rate plans and discount model codes.
- **Discount balance data:** Data used to update the customer's discount balance information, such as discount balances, rollover resources, and aggregation counters.

Discounting Differences between Infranet 6.5 and Portal 7.3

Table 28–1 describes the differences between discounting in Infranet 6.5 and Portal 7.3:

Table 28–1 Discounting Differences between Infranet 6.5 and Portal 7.3

6.5 Discounting	7.3 Discounting
Discounts are part of Pipeline Rating Engine rate plans. They can be purchased only by purchasing rate plans.	Discounts are defined in separate objects called <i>discount objects</i> , which are stored in the Portal database.
Discount configurations are stored only in the Pipeline Rating Engine database in the form of discount models, discount rules, discount triggers, and discount masters.	The discount model code of the discount object is stored in the Portal database. All other discount information such as discount configuration data (discount master, discount rules, discount triggers, and so on) are stored in the Pipeline Manager database.
Supports discount processing by the batch pipeline only.	Supports discount processing by both real-time and batch pipelines.
Discount balance information is maintained by the DAT_Discount module.	Discount balance information is maintained by the DAT_BalanceBatch or DAT_BalanceRealtime modules.
Discount balance information is stored in the discount work files in the Pipeline Manager database in the location specified in the Pipeline Manager registry file.	Discount balance information is stored in the Portal database and updated using Rated Event (RE) Loader.
Discount balance is read from files when Pipeline Manager starts. Pipeline Manager processes all events queued in the Portal database.	Discount balance is read from the Portal database when Pipeline Manager starts and then processes the events.
Does not support discount balance impact.	Supports discount balance impact (including currency and non-currency impacts), a new pricing component.
Supports discount rollovers only for balances.	Supports systemwide rollovers and Pipeline Manager rollovers.
Events are mapped to discount models through discount bundles and discount owner ERAs.	Events are mapped to discount models through discount objects.
Supports Discount Bundle, Discount Owner, Discount Account, and Discount Model ERAs.	Supports only Discount Bundle and Discount Owner ERAs. Note: Discount Bundle and Discount Owner ERAs are supported for backward compatibility only and should not be used in new implementations.

Table 28–1 (Cont.) Discounting Differences between Infranet 6.5 and Portal 7.3

6.5 Discounting	7.3 Discounting
Discount triggers and discount rules contain discount masters.	Only discount rules contain discount masters.
Aggregation counters are not configurable and are automatically created when Pipeline Manager rating starts. Aggregation counters are stored in the discount work files.	Aggregation counters are configurable and stored in the Portal database.
Does not support discount sharing and sponsored accounts. Sponsored accounts cannot share discount resources.	Supports discount sharing where accounts that sponsor other accounts can share discount resources (for example, snowball discounting).
Supports only billing-time discounts.	Supports item, subscription, and systemwide discounts.
Supports complex discounting only for data usage.	Supports complex discounting for both voice and data usage.
Supports cascading and parallel mode discounting.	Supports cascading, parallel, and sequential mode discounting.
Does not support reverse discounts through billing time discount.	Supports reverse discounts through billing time discount.
Discount rules and discount trigger conditions are used to determine the balance impacts.	Expression tokens, which represent charge and quantity values in the charge packet, are used to define discount rules, conditions, and balance impacts in the new discount model.
Ratable Usage Metrics (RUMs) are used to measure events for discounting.	Discounting Ratable Usage Metrics (DRUMs) are used to measure events for discounting.
Discounting Ratable Usage Metrics (DRUMs) are not supported.	Discount rules contain three new fields-DRUM_EXPRESSION, DRUM_TYPE, and RULE_TYPE.
Discounting can be applied to delayed events.	Discounting can be applied to both real-time and delayed events.
Supports only one-time discounts and billing-time discounts.	Supports one-time, billing-time, threshold, and tier discounts.

Migrating Discount Data

The following section explains how to set up and use Portal utilities to migrate discount data, subscription mapping data, and balance data from the Pipeline Rating Engine 6.5 database to the Portal 7.3 database.

Before you read this document, you should be familiar with the following Portal concepts and architecture. See

- "Introducing BRM" in *BRM Concepts*
- "BRM System Architecture" in *BRM Concepts*
- [About Discount Data Migration](#)
- "About Creating a Price List" in *BRM Setting Up Pricing and Rating*

Overview of the Discount Data Migration Process

The discount data migration process consists of the following steps:

1. Upgrading your Portal database from Release 6.5 to Portal 7.3. See "[Upgrading Your System to Portal 7.3](#)".
2. Migrating data from your Pipeline 6.5 database to your upgraded Portal 7.3 database. See "[Migrating Discount Data from the Pipeline 6.5 Database to the Portal 7.3 Database](#)".
3. Upgrading your Pipeline database from Release 6.5 to Pipeline Manager 7.3. See "[Upgrading Your System to Pipeline Manager 7.3](#)".
4. Performing post-migration updates, such as updating cross-product discounts and creating system discounts. See "[Performing Post-migration Updates](#)".

Upgrading Your System to Portal 7.3

If you have not already done so, upgrade your Portal database from Infranet Release 6.5 to Portal 7.3.

Migrating Discount Data from the Pipeline 6.5 Database to the Portal 7.3 Database

Important: You must upgrade your Portal database to Portal 7.3 before migrating your discount data.

You migrate discount data by extracting your data from the Pipeline Rating Engine Release 6.5 database and then loading it into your upgraded Portal 7.3 database.

To migrate your discount data, perform these steps:

1. Re-create your custom resource IDs on the Portal 7.3 database. See "[Re-creating Your Custom Resource IDs on the Portal 7.3 Database](#)".
2. Retrieve the discount migration utility. See "[Retrieving the Discount Migration Utility](#)".
3. If your release 6.5 system includes multiple Pipeline Rating Engine service codes mapped to a single Infranet service type, modify the `discount.sql` file. See "[Modifying Service Code Mappings](#)".
4. Extract your discounting data from the Pipeline 6.5 database. See "[Extracting Discount Data from the Pipeline 6.5 Database](#)".
5. Load your *discount configuration data* into the Portal 7.3 database. See "[Loading Discount Configuration Data into the Portal 7.3 Database](#)".
6. Retain your discount model ERAs from the Portal 6.5 database. See "[Retaining Discount Model ERAs from Portal Release 6.5](#)".
7. Load your *subscription mapping data* into the Portal 7.3 database. See "[Loading Subscription Mapping Data into the Portal 7.3 Database](#)".
8. Load your *discount balance data* into the Portal 7.3 database. See "[Loading Discount Balance Data into the Portal 7.3 Database](#)".

Re-creating Your Custom Resource IDs on the Portal 7.3 Database

The discount data migration scripts do not migrate custom resource IDs from your Pipeline 6.5 database to your Portal 7.3 database. If your system uses any custom resource IDs, you must manually re-create them in your upgraded Portal 7.3 database.

To re-create your custom resource IDs in the Portal 7.3 database:

1. Look up your existing resource IDs in your Pipeline Rating Engine 6.5 database:
Use Pricing Center to connect to your Pipeline 6.5 database. In Pricing Center, launch Resource Editor and write down all custom resource IDs that you see.

Tip: Custom resources use ID numbers 1000001 through 4000000000.

2. Manually re-create your custom resource IDs in your Portal 7.3 database:
Use Pricing Center to connect to your Portal 7.3 database. In Pricing Center, launch Resource Editor and manually enter all of your custom resource IDs.

Retrieving the Discount Migration Utility

The utility that extracts discount data from your Pipeline 6.5 database is packaged with Pipeline Manager 7.3. Therefore, to retrieve the extraction utility, **DMTDscntMig**, you must install Pipeline Manager 7.3 on your pipeline system.

Caution: When you install Pipeline Manager 7.3, **DO NOT** set the Portal framework environment or configure the Pipeline database. Otherwise, you will overwrite your 6.5 discount data.

To retrieve the utility, perform the following on your Pipeline system:

1. Shut down Pipeline Rating Engine. See “Starting and Stopping the BRM system” in *BRM System Administrator’s Guide*.
2. Make a complete backup of your Pipeline Rating Engine 6.5 system.
3. Uninstall Pipeline Rating Engine 6.5.
4. Install Pipeline Manager 7.3 by following the instructions in “Installing Pipeline Manager” in *BRM Installation Guide*, but **DO NOT** set the Portal framework environment or configure the Pipeline database.

If installation completes successfully, the **DMTDscntMig** utility is installed in *Pipeline_Home/bin*, the library files are installed in *Pipeline_Home/lib*, and the application files are installed in *Pipeline_Home/tools/DMTDscntMig*.

Modifying Service Code Mappings

If your release 6.5 system includes multiple Pipeline Rating Engine service codes mapped to a single Infranet service type, the **DMTDscntMig** utility generates multiple discount objects for each product. For example, if the TEL, SMS, and DATA Pipeline Rating Engine service codes are mapped to the */service/telco/gsm* Portal service type, **DMTDscntMig** generates the following three discount objects:

```
DECU2 | Deal-dmDECU2-TEL | /service/telco/gsm | dmDECU2
DECU2 | Deal-dmDECU2-SMS | /service/telco/gsm | dmDECU2
DECU2 | Deal-dmDECU2-DATA | /service/telco/gsm | dmDECU2
```

For more information about service code mapping, see “Mapping Service Codes and Service Classes” in *BRM Setting Up Pricing and Rating*.

To generate only one discount object for each product, you must modify the **discount.sql** file before you extract data from your Pipeline 6.5 database. Modify the file to map a service type to only one service code.

To modify your service code mappings:

1. Open the *Pipeline_Home/tools/DMTDscntMig/discount.sql* file in a text editor.
2. Search for the following line:

```
select unique TO_CHAR(h.VALID_FROM, 'YYYYMMDDHH24MISS') VALID_FROM, g.REF_
PARAM, f.PIN_SERVICETYPE, f.SERVICECODE, e.RATEPLAN, (select CODE from ifw_
rateplan where rateplan = e.rateplan)
```

3. Between **f.PIN_SERVICETYPE** and **f.SERVICECODE**, add the following DECODE statement:

Note: The DECODE statement must be extended for all service types specified in the IFW_SERVICE table.

```
f.PIN_SERVICETYPE, DECODE(f.PIN_SERVICETYPE, 'ServiceType', 'ServiceCode')
f.SERVICECODE
```

where:

- *ServiceType* is the Portal service type, such as **/service/telco/gsm**.
- *ServiceCode* is the one Pipeline Rating Engine service code that *ServiceType* now maps to, such as **TEL**.

For example, if the TEL, SMS, and DATA service codes are mapped to the **/service/telco/gsm** service type and the **GPR**, **GPR2**, and **GPR3** service codes are mapped to the **/service/ip/gprs** service type, modify the file to map **/service/telco/gsm** to only **TEL** and to map **/service/ip/gprs** to only **GPR**. For this example, enter the DECODE statement shown in bold below:

```
...
select unique TO_CHAR(h.VALID_FROM, 'YYYYMMDDHH24MISS') VALID_FROM, g.REF_
PARAM, f.PIN_SERVICETYPE, DECODE(f.PIN_SERVICETYPE, '/service/telco/gsm', 'TEL',
'/service/ip/gprs', 'GPR') f.SERVICECODE, e.RATEPLAN,
...
```

4. Save and close the file.

Extracting Discount Data from the Pipeline 6.5 Database

You extract data from your Pipeline database by using the **DMTDscntMig** utility. You configure how the utility connects to the Pipeline database and the name and location of the output files by using a registry file.

To extract the discounting data from your Pipeline Rating Engine 6.5 database, perform these steps on your Pipeline system:

1. Go to the *Pipeline_Home/tools/DMTDscntMig* directory and open the **sample.reg** file in a text editor.
2. Enter your configuration settings in the **sample.reg** registry file. Pay particular attention to these registry entries:
 - Use **LogFileName** to specify the name and location of the log file.
 - Use **UserName** to specify the user name for the Pipeline database.
 - Use **PassWord** to specify the password for the Pipeline database.
 - Use **DatabaseName** to specify the name of the Pipeline database.
 - Use **AccessLib** to specify the name of the database library files.
 - Use **RootNode** to specify the root node name to write in the XML output file.

- Use **Name** to specify the name of the parent node for storing the SQL query output.
- Use **Query** to specify the file name of the SQL Query. Portal provides a **rollover.sql** file and a **discount.sql** file. To create custom queries, see ["Using Custom Queries"](#).
- Use **OutputFile** to specify the name and location of the XML and DAT output files.

For more information, see ["Registry Entries"](#) in ["DMTDscntMig"](#).

3. Save and close the file.

4. Load the registry configuration file by using this command:

```
DMTDscntMig -r registry_config_file_name
```

where *registry_config_file_name* is the name and location of the **sample.reg** file.

If the utility runs successfully, it creates two output files in the location specified in the **OutputFile** registry entry:

- An XML file, which contains your 6.5 discount configuration data. You will load this file into your Portal 7.3 database by using the **loadpricelist** utility. See ["Loading Discount Configuration Data into the Portal 7.3 Database"](#).
- A DAT file, which contains your 6.5 discount subscription mapping data. You will load this file into your Portal 7.3 database by using the **pin_smt** utility. See ["Loading Subscription Mapping Data into the Portal 7.3 Database"](#).

Using Custom Queries

In rare cases, you might need to enhance performance by creating custom SQL queries in addition to the standard queries provided with Discount Data Migration. A typical scenario is when you must migrate a million records. You can create custom queries to migrate smaller sets of data until the job is complete. For example, the custom queries can migrate records 1 to 20,000 first and the rest later.

In this case, you must also modify the **OpenRootNode** and **CloseRootNode** entries in the discount configuration registry file to include more entries for the custom queries. For more information, see ["Registry Entries"](#) in ["DMTDscntMig"](#).

By default, the registry file includes entries for two queries (**rollover.sql** and **discount.sql**).

The first entry uses:

OpenRootNode = True

CloseRootNode = False

The second entry uses:

OpenRootNode = False

CloseRootNode = True

This enables the resulting XML file to have only one root node element because creating multiple root node elements in the same XML file causes an error.

To suit your business requirements, you can also customize the XSL file that Discount Data Migration provides by changing some default values for fields such as price list, deals, products, and discounts.

Loading Discount Configuration Data into the Portal 7.3 Database

You load the discount configuration data that was extracted by the `DMTDscntMig` utility into the Portal 7.3 database by using the `loadpricelist` utility.

To load the discount configuration data, run `loadpricelist` on your Portal 7.3 system:

```
loadpricelist -cf XML_file_name
```

where `XML_file_name` is the name of the XML file that contains the discount configuration data. For more information, see "loadpricelist" and "Using the XML Pricing Interface to Create a Price List" in *BRM Setting Up Pricing and Rating*.

You can use Pricing Center to verify that the discounts loaded successfully.

Retaining Discount Model ERAs from Portal Release 6.5

By default, Portal deletes any `DISCOUNTMODEL` ERAs associated with accounts when migrating discount data from Release 6.5 to Portal 7.3. If you want accounts to retain the `DISCOUNTMODEL` ERAs from Release 6.5, modify the `delete_discount_era` entry in the `pin_sub_mig` configuration file (`Portal_Home/apps/pin_sub_mig/pin.conf`).

Important: If you migrate *shared* discounts instead of deleting them, you cannot retain `DISCOUNTMODEL` ERAs during migration; do not modify the `delete_discount_era` entry.

To retain discount ERAs from Release 6.5:

1. Open the `pin.conf` file in `Portal_Home/apps/pin_sub_mig`.
2. Change the value of the `delete_discount_era` entry to 0:

```
- pin_sub_mig delete_discount_era 0
```
3. Save and close the file.

Loading Subscription Mapping Data into the Portal 7.3 Database

You load the subscription mapping data that was extracted by the `DMTDscntMig` utility into your Portal database by using these scripts:

- `pin_smt_create_obj.pl`: Creates an `/smt_acct_mig` object for storing the subscription mapping data. It also creates temporary tables for storing the subscription mapping data before it is migrated.
- `pin_smt_create_procs.pl`: Creates the stored procedures, which collect the relevant accounts for subscription migration.
- `pin_smt`: Loads subscription mapping data into the Portal 7.3 database.

You configure these scripts by using the `smt.cfg` configuration file.

To migrate subscription mapping data, perform these steps on your Portal 7.3 system:

1. Install Patch 4489.
2. Open the `Portal_Home/apps/pin_sub_mig/smt.cfg` file in a text editor.
3. Edit the entries listed in [Table 28–2](#) so that the script can connect to your Portal 7.3 database:

Table 28–2 *smt.cfg* Entries to Edit

Entry	Description
DB_NUMBER	The Portal database number. By default, this is set to 0.0.0.1.
DB_USER	The database user name. By default, this is set to pin .
DB_PASSWD	The user password. By default, this is set to pin .
DB_NAME	The Oracle database name. By default, this is set to pin db.
DM_HOST	The server or host name where the Data Manager (DM) is running.
DM_PORT	The DM port number.
SOURCE_FILE	The name and location of the DD_OBJECTS_SMT source file. By default, this is set to <i>Portal_Home/sys/dd/data/dd_objects_smt.source</i> .
SQL_FILES	The location of the SQL files. By default, this is set to <i>Portal_Home/apps/pin_sub_mig/sql_files</i> .
CTL_FILES	The control file location. This file is required by SQL loader for loading the input file, *.dat, into the database. By default, this is set to <i>Portal_Home/apps/pin_sub_mig/ctl_files</i> .
DATA_FILES	The data file location. This is where the input.dat file is located. By default, this is set to <i>Portal_Home/apps/pin_sub_mig/data_files</i> .
LOG_FILES	The directory where the log files will be placed. By default, this is set to <i>Portal_Home/apps/pin_sub_mig/log_files</i> .
LOG_LEVEL	The log level. The values can be: 1 - Error 2 - Debug By default, this is set to 2.
LIB_FILES	The location of the libraries for the subscription migration utility. By default, this is set to <i>Portal_Home/apps/pin_sub_mig/lib</i> . Note: Verify that the PERL5LIB environment variable is a system variable and contains the path of the LIB_FILES.

4. Save and close the file.
5. Go to the *Portal_Home/apps/pin_sub_mig/scripts* directory and run the **pin_smt_create_obj.pl** script:

```
cd Portal_Home/apps/pin_sub_mig/scripts
perl pin_smt_create_obj.pl
```

To verify that the script executed successfully, check the **smt.pin** log file. This log file is created in the directory specified by the LOG_FILES configuration entry.

6. Go to the *Portal_Home/apps/pin_sub_mig/scripts* directory and run the **pin_smt_create_procs.pl** script:

```
cd Portal_Home/apps/pin_sub_mig/scripts
perl pin_smt_create_procs.pl
```

To verify that the script executed successfully, check the **smt.pin** log file.

7. Go to the *Portal_Home/apps/pin_sub_mig* directory and run the **pin_smt** utility:

```
cd Portal_Home/apps/pin_sub_mig
pin_smt -i input_file_name
```

where *input_file_name* is the DAT file generated by the **DMTDscntMig** utility. For more information, see "**DMTDscntMig**".

If the utility runs successfully, the subscription mapping data is loaded into the Portal 7.3 database. Results are printed to the log file in the location specified in the **smt.cfg** file.

8. Check the log file for errors. If there are errors, you must correct them manually and rerun the **pin_smt** utility. For more information, see "**pin_smt**".

Loading Discount Balance Data into the Portal 7.3 Database

Your Pipeline Rating Engine 6.5 discount balance data is stored in the discount data work file (**DscAccountsWork.acc**), which is maintained by the DAT_Discount module. You load this file into your Portal 7.3 database by using the **migrate_discount_balances** script.

To load discount balance data into your Portal 7.3 database, perform these steps on your Portal system:

1. Open the *Portal_Home/upgrade/65_73/upgrade.cfg* file in a text editor.
2. Edit the following entries listed in [Table 28–3](#) so that the script can connect to your Portal 7.3 database:

Table 28–3 *upgrade.cfg* Entries to Edit

Entry	Description
OWNER	Specifies the Portal database user name. By default, this is set to pin .
PASSWD	Specifies the Portal database password. By default, this is set to pin .
DBNAME	Specifies the name of the Portal database you are upgrading. By default, this is set to pinbdb .
DISCOUNT_BALANCES_FILE	Specifies the name and location of the discount data work file. By default, this is set to <i>Portal_Home/upgrade/65_73/DscAccountsWork.acc</i> .
CHARGE_RESOURCE_ID	Specifies the charge resource ID. By default, this is set to 1000997 .
QUANTITY_RESOURCE_ID	Specifies the quantity resource ID. By default, this is set to 1000998 .
EVENT_RESOURCE_ID	Specifies the event resource ID. By default, this is set to 1000999 .

3. Save and close the file.
4. Load the discount balance data into the Portal 7.3 database by running the **migrate_discount_balances.pl** script:

```
cd Portal_Home/upgrade/65_73
perl migrate_discount_balances.pl
```

For more information on this script, see "**migrate_discount_balances.pl**".

If the utility runs successfully, the discount balance data is loaded into the Portal 7.3 database. Results are printed to the log file in the SQL log directory.

5. Check the SQL log file for errors:
 - If no errors are listed, the balance data loaded successfully.

- If errors are listed, the script failed to load the balance data. The entire transaction was rolled back and all changes were undone in the Portal 7.3 database. You must fix the errors and then rerun the **migrate_discount_balances.pl** script.

Upgrading Your System to Pipeline Manager 7.3

After you migrate your 6.5 discounting data to the Portal 7.3 database and verify that the data loaded successfully, you can safely upgrade your Pipeline database.

Caution: You must ensure that your discount data loaded successfully into the Portal 7.3 database *before* you upgrade the Pipeline Manager database. If migration fails, you can try again to extract the data from the Pipeline Manager database. A second attempt would not be possible if you already upgraded the Pipeline Manager database.

Performing Post-migration Updates

After you have successfully migrated your discount data to Portal 7.3 and have upgraded to Pipeline Manager 7.3, you must perform the following tasks:

- [Updating Cross-Product Discounts after Migrating Discount Data](#)
- [Creating System Discounts after Migrating Discount Data](#)

Updating Cross-Product Discounts after Migrating Discount Data

When you migrate discount data from a release prior to Portal 7.3, you must modify how discounting updates aggregated usage counters for all cross-product usage discounts.

In releases prior to Portal 7.3, usage accumulated automatically, making it unnecessary to update an aggregation counter in the discount.

In Portal 7.3, you must impact the aggregation counter resource.

Use Pricing Center to update cross-product discounts.

To update cross-product discounts, modify the discount that aggregates service usage by changing the following components in the discount model configuration:

1. In the discount trigger, delete the condition. When there is no condition, the discount is automatically applied.
2. In the discount rule:
 - If the step has a limited threshold, change it to unlimited (**0 to infinity**).
 - Modify the balance impact configuration that applies no balance impact. Change it to increment the aggregation counter resource and apply the impact to the current cycle. For example, enter these values:

Impact/Consume = *Counter_resource_ID*

Amount = 1; **Beat** = 1

Base Expression = **TotalC** if the counter tracks charges or **TotalQ** if the counter tracks a non-currency quantity such as minutes.

Impact: Current cycle

Creating System Discounts after Migrating Discount Data

When you migrate discount data from a release prior to Portal 7.3, you must create system discounts to be applied to all the accounts in the system before discounting can be used.

Use Pricing Center to create system discounts.

To create system discounts:

1. Load the following resource IDs by using the **load_pin_beid** utility. See "load_pin_beid" in *BRM Setting Up Pricing and Rating*.
 - **\$CHARGE_RESOURCE_ID = 1000997**. Specifies the charge resource ID. The default is **1000997**.
 - **\$QUANTITY_RESOURCE_ID = 1000998**. Specifies the quantity resource ID. The default is **1000998**.
 - **\$EVENT_RESOURCE_ID = 1000999**. Specifies the event resource ID. The default is **1000999**.
2. Create the discount master. See Pricing Center Help.
3. Create the discount rule and three balance impacts, one for each resource ID. See Pricing Center Help.

Enter these values:

Drum Expression = 1.0

Rule Type = Tiered

Drum Type = Quantity

Threshold From = 0

Threshold To = Infinity

Impact/Consume = 1000997, Aggregation charge counter

Applied To = Event Owner

Percentage = 100%

Base Expression = TotalC

Impact/Consume = 1000998, Aggregation quantity counter

Applied To =Event Owner

Percentage =100%

Base Expression= TotalQ

Impact/Consume =1000999, Aggregation event counter

Applied To = Event Owner

Percentage =100%

Base Expression =1.0

4. Create a discount trigger. See Pricing Center Help.

Enter these values:

Condition Expression = 1.0

Condition Operator = Greater Than or Equal

Condition Value = 0

5. Create a discount model. See Pricing Center Help.

Enter these values:

Version = 1

Status = Active

Discount Trigger = Select the discount trigger created in step 4.

Discount Rule = Select the discount rule created in step 3.

Multiple Discount per event = Parallel

6. Create a discount object. See Pricing Center Help.

Enter these values:

Discount Type = System

Priority = 100

7. Associate the discount object with the discount model created in step 5.

8. Stop and restart the Portal processes. See "Starting and stopping the BRM system" in *BRM System Administrator's Guide*.

Using Discount Data Migration Utilities

This section provides reference information for Oracle Communications Billing and Revenue Management (BRM) Discount Data Migration utilities.

DMTDscntMig

Description

Extracts discount configuration data and subscription mapping data from your Pipeline database. See ["Extracting Discount Data from the Pipeline 6.5 Database"](#).

Note: This utility is packaged with Pipeline Manager 7.3.

Location

Pipeline_Home/bin

Syntax

```
DMTDscntMig -r registry_config_file_name
```

Parameters

-r registry_config_file_name

Specifies the path and file name for the registry file. This file specifies how to connect to the pipeline database and the location of your XML and XSL files.

Note: You can use the sample registry file (*Pipeline_Home/tools/DMTDscntMig/sample.reg*) as a starting place.

Registry Entries

Table 28–4 contains the registry entries for DMTDscntMig.

Table 28–4 Registry Entries for DMTDscntMig

Entry	Description	Mandatory
LogFileName	The application log file name that includes the path where the log file is stored.	Yes
UserName	The login name to use for connecting to Portal.	Yes
PassWord	The password for the specified user name. Note: The password is encrypted. Use the dbpassword utility supplied with Pipeline Manager to encrypt the password.	Yes
DatabaseName	The database alias name.	Yes
AccessLib	The database library. Specifies the name of the database access library, without the lib prefix and .so suffix: <ul style="list-style-type: none"> ■ Use oci61 for Oracle9i databases. ■ Use oci10g61 for Oracle10g databases. ■ Use oci10g63 for Linux operating systems. 	Yes
RootNode	The root node that must be written to the output XML file. By default, the sample script is named output . However, you can change the name.	Yes
DataModule	The database module that DBTransformation must connect to.	Yes

Table 28–4 (Cont.) Registry Entries for DMTDscntMig

Entry	Description	Mandatory
Name	The name of the parent node in which the output of the SQL query is stored.	Yes
Query	The input query file name. By default, rollover.sql , the sample query file, is displayed as the input query file name. However, if you write a query, ensure that it is a single line query that ends with a semicolon. See "Using Custom Queries" .	Yes
OutputFile	The output file name. This should include the path where it will be stored.	Yes
OpenRootNode	Specifies whether to use the <rootnode> start tag. If set to True (default), the start tag of the root node element is defined in the XML file. Note: Every XML file must contain only a single root node element. You can limit the number of root node elements in the XML file by setting the OpenRootNode tag to False . Results from the SQL files (rollover.sql and discount.sql) are contained within the root node element in the XML file.	No
CloseRootNode	Determines whether the end-tag of the root node element </rootnode> must be defined in the XML file. If set to True (default), the end-tag of the root node element is defined in the XML file.	No
inputXMLFile	The name of the input XML file.	Yes
inputXSLFile	The name of the XSL file that includes the rules to apply to the input XML file.	Yes
Output XML File	The name of the output XML file in which the results are stored.	Yes

Sample Registry File

```

XSL
{
  LogFileName = path/logfilename
  DataPool
  {
    Login
    {
      Module
      {
        UserName = DBUSERNAME
        PassWord = Encrypted_DB_password
        DatabaseName = DB_service
        AccessLib = oci61
      }
    }
  }
}# end of data pool
XMLTransform
{
  RootNode = output
  Transform1
  {
    DataModule = Login1
    Module
    {

```

```
        Name = rollover
        Query = rollover.sql
        OutputFile = DBData.xml
        OpenRootNode = True
        CloseRootNode = False
    }
}
Transform2
{
    DataModule = Login2
    Module
    {
        Name = discount
        Query = ./discount.sql
        OutputFile = ./DBData.xml
        OpenRootNode = False
        CloseRootNode = True
    }
}
}
XSLTransform
{
    XSLTTransform1
    {
        Module
        {
            inputXmlFile = ./DBData.xml
            inputXSLFile = ./Intermediate1.xsl
            outputFile = ./Intermediate1.xml
        }
    }
    XSLTTransform2
    {
        Module
        {
            inputXmlFile = Intermediate1.xml
            inputXSLFile = Intermediate2.xsl
            outputFile = Intermediate2.xml
        }
    }
    XSLTTransform3
    {
        Module
        {
            inputXmlFile = ./Intermediate2.xml
            inputXSLFile = ./SbscrpMigFile.xsl
            outputFile = ./SbscrpMigFile.dat
        }
    }
}
}#End of Registry
```

migrate_discount_balances.pl

Description

Use the **migrate_discount_balances.pl** script to load discount balance data into the Portal 7.3 database.

To load data, the script requires a discount balance work file in the directory specified in the **DISCOUNT_BALANCES_FILE** entry of the **upgrade.cfg** file. See "[Loading Discount Balance Data into the Portal 7.3 Database](#)".

Location

Portal_Home/upgrade/65_73

Syntax

```
perl migrate_discount_balances.pl
```

Results

If the **migrate_discount_balances.pl** script does not notify you that it was successful, see the log files in the SQL log directory to find any errors.

This script runs in a single transaction. If migration fails, the script rolls back the entire transaction and undoes all changes in the Portal 7.3 database. You can then fix any problems and rerun the script.

pin_smt

Description

Use the **pin_smt** utility to perform the following:

- Load subscription mapping data into the Portal database.
- Purchase required add-on deals for a customer account.

Discount ERAs are bundled with deals. The deal names that contain these extended rating attributes (ERAs) are provided by the discount configuration utility in a DAT file. When the deals are loaded into the Portal database, the ERAs that exist in the Pipeline Manager 6.5 database are loaded into the Portal 7.3 database. This may duplicate the deals that are already loaded; therefore, one of the deals in the database must be deleted to avoid redundancy. The **pin_smt** utility searches for redundant deals and deletes them.

Important: To connect to the Portal database, the **pin_smt** utility needs a configuration file in the same directory. See “Creating Configuration Files for BRM Utilities” in *BRM System Administrator’s Guide*.

Location

Portal_Home/apps/pin_sub_mig

Syntax

```
pin_smt [-i input_filename] [-r] [-h]
```

Parameters

-i *input_filename*

Populates the **/smt_account_mig** object with the account details specified in the **input.dat** file where *input_filename* is the **input.dat** file containing subscription mapping data for the subscription migration utility. If the utility runs successfully, the subscription mapping data is migrated to the Portal database. For all the accounts that are migrated successfully, it updates the status to **0** in the **/smt_account_mig** object. For the accounts that had errors, it updates the status to **1**.

-r

Processes only those accounts that are not migrated or have errors.

-h

Displays help information for **pin_smt**.

Results

If the **pin_smt** utility does not notify you that it was successful, look in the utility log file (**default.pinlog**) to find any errors. The log file is in a directory specified in the configuration file. If there are errors, you must correct them manually and rerun the utility using the following option:

```
pin_smt -r
```

