

# Oracle® Communications Billing and Revenue Management

## Release Notes



Release 15.0

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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

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Oracle Communications Billing and Revenue Management Release Notes, Release 15.0

F86226-03

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# Preface

This guide includes information about the features added to the Oracle Communications Billing and Revenue Management (BRM) 15.0 release.

## Audience

This document is intended for all BRM users.

## Documentation Accessibility

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# 1

## Support and Certification Changes

Learn about the support and certification changes in Oracle Communications Billing and Revenue Management (BRM) 15.0.

Topics in this document:

- [Support and Certification Changes in 15.0.1](#)
- [Support and Certification Changes in 15.0.0](#)

### Support and Certification Changes in 15.0.1

Starting in 15.0.1, the Billing and Revenue Management Suite now supports the following software:

- Oracle Database Server Enterprise Edition 19c version 19.21.0
- Oracle Database 19c client version 19.21.0
- Oracle Java Platform, Standard Edition (Java SE) 8 version 1.8.0\_401

See *BRM Compatibility Matrix* for information on other software support.

Release 15.0.1 also includes support for TLS 1.3, except for communication with the database.

### Support and Certification Changes in 15.0.0

Starting in 15.0.0, the Billing and Revenue Management Suite now supports the following software:

- Oracle Linux, x86-64 (64-bit) 8.7
- Oracle Database Server Enterprise Edition 19c version 19.20.0
- Oracle Database 19c client version 19.20.0
- gcc Compiler version 12.2.1
- Oracle Java Platform, Standard Edition (Java SE) 8 version 1.8.0\_381
- Vertex Communications Tax Q Series 3.02
- Vertex Sales Tax Q Series 10

See *BRM Compatibility Matrix* for information on other software support.

# 2

## Documentation Set Updates

Learn about the changes to the Oracle Communications Billing and Revenue Management (BRM) Suite documentation set in the 15.0 release.

The following changes were made to the documentation set in the 15.0.0 release:

- The contents of the *Upgrade Guide* were moved into the *Installation Guide*. See "About Upgrading from BRM 12.0 to BRM 15.0" and "Upgrading BRM and Pipeline Manager from BRM 12.0 to BRM 15.0" in *BRM Installation Guide* for this information.
- The contents of the *Patch Set Installation Guide* were moved into the *Installation Guide*. See "Upgrading BRM 15.0 to a Later Release of BRM 15.0" in *BRM Installation Guide* for this information.
- There will not be a *Patch Set Release Notes* document for 15.0. That information is included in this document.
- There will not be an *ECE Release Notes* document for 15.0. That information is included in this document.

# 3

## Summary of Customer-Reported Fixes

The Oracle Communications Billing and Revenue Management (BRM) 15.0 release includes customer-reported bug fixes.

Topics in this document:

- [Customer-Reported Fixes in BRM 15.0.1](#)
- [Customer-Reported Fixes in ECE 15.0.1](#)
- [Customer-Reported Fixes in PDC 15.0.1](#)
- [Customer-Reported Fixes in Business Operations Center 15.0.1](#)
- [Customer-Reported Fixes in Billing Care 15.0.1](#)
- [Customer-Reported Fixes in BRM Thick Clients 15.0.1](#)

### Customer-Reported Fixes in BRM 15.0.1

[Table 3-1](#) lists the customer-reported issues that were resolved in BRM 15.0.1.

**Table 3-1 Customer-Reported Fixes for BRM 15.0.1**

Bug Number	Description
35377607	When values in the <b>pin.conf</b> configuration file were set as environment variables, the BRM <b>pin.conf</b> reader would remove the last character from the variable value if the length of the environment variable key and value were equal. This has been fixed.
35904016	In the set of files provided to Rated Event Manager (REM) by ECE, ECE was returning the files in a different order, causing a NULL pointer exception. This has been fixed by sorting the temporary files in natural order and the done files in reverse order, to ensure that the header file is always processed last.
35937539	Memory leaks were detected when <b>pin_deploy</b> was run for very large batches. This has been fixed.
35949445	When the PCM_OP_BILL_ITEM_TRANSFER opcode was called, the transfer of the credit amount to a new bill was failing. This has been fixed. The PCM_OP_BILL_ITEM_TRANSFER opcode has been modified to make the credit transfer possible.
36008442	Rated Event Manager (REM) was unable to deserialize events due to the addition of the field PIN_FLD_GRANTED_BAL in the EVENT_ESSENTIALS_T table. This has been fixed.

**Table 3-1 (Cont.) Customer-Reported Fixes for BRM 15.0.1**

Bug Number	Description
36048820	<p>There was no policy hook available for modifying the input list of PCM_OP_SUBSCRIPTION_PURCHASE_DEAL.</p> <p>This has been fixed. A new policy hook has been added to the PCM_OP_SUBSCRIPTION_POL_PREP_OFFERRING policy opcode to customize the input list being sent to the PCM_OP_SUBSCRIPTION_PURCHASE_DEAL, PCM_OP_SUBSCRIPTION_PURCHASE_PRODUCT, and PCM_OP_SUBSCRIPTION_PURCHASE_DISCOUNT opcodes. Through this policy hook, the user can modify the list and add custom logic to override default pricing amounts for both / <b>purchased_product</b> and / <b>purchased_discount</b>.</p>
35863453	<p>While invoking the cancel discount opcode, if the PIN_FLD_END_T field was passed, it was not being set to the PIN_FLD_EFFECTIVE_T field, due to which wrong charges were applied.</p> <p>This has been fixed by setting the PIN_FLD_END_T field to PIN_FLD_EFFECTIVE_T.</p>
35884131	<p>When a product was configured with multiple events, one of the events failed due to a credit limit exceeded error with rating status 29 but the other events were successful. Additionally, cycle fee dates were not getting updated for successful events.</p> <p>This has been fixed.</p>
36032625	<p>When a charge offer with an annual subscription event was purchased, during the PCM_OP_BILL_MAKE_BILL opcode execution, unnecessary updates were made to the BILL_INFO_T and PURCHASED_PRODUCTS_T table, which was causing a billing performance issue.</p> <p>This has been fixed.</p>
36032623	<p>When a non-currency resource containing a <b>grantor_obj</b> as NULL was being canceled, the validity of the sub-balance of the non-currency resource was being updated to the current time.</p> <p>This has been fixed.</p>
36076651	<p>After upgrading from BRM 12.0 Patch Set 3 to Patch Set 7, charging dates were rounded to midnight. Due to this, any customization in FM_SUBSCRIPTION_POL_SPEC_CYCLE_FREE_INTERVAL.C updated the PIN_FLD_CHARGED_TO_T based on customer-specific time zones. Due to the rounding issue, customization to PIN_FLD_CHARGED_TO_T was being overridden in FM_SUBSCRIPTION_CYCLE_UTILS.C and rounded off to midnight.</p> <p>This has been fixed.</p>
36041326	<p>Memory leaks were detected when the PCM_OP_SUBSCRIPTION_CRUD_OFFER_OVERRIDE opcode was invoked with the offering_override_values POID.</p> <p>This has been fixed.</p>
36047468	<p>The <b>partition_utils</b> utility was not logging the SQL statements to the <b>partition_utils.log</b> file when invoked with the purge option.</p> <p>This has been fixed.</p>

**Table 3-1 (Cont.) Customer-Reported Fixes for BRM 15.0.1**

Bug Number	Description
35937536	When the PCM_OP_BILL_ITEM_TRANSFER opcode was invoked from a batch payment, the session object was missing for <b>credit_items</b> . This issue has been fixed by setting the PIN_FLD_SESSION_OBJ field, which is now sent as part of the input flist.
35937542	After upgrading from BRM 12.0 Patch Set 3 to 12.0 Patch Set 7, when the PCM_OP_PYMT_TOPUP opcode was invoked after a checkpoint, an incorrect error was getting logged. This has been fixed.
36066780	There was an issue with setting the font size of text in Customer Center. This issue is fixed by giving the Java option <b>-Dfontsize</b> .
35863980	When PCM_OP_SUBSCRIPTION_CANCEL_PRODUCT was called from <b>pin_cycle_fees -defer_cancel</b> , there was no option to pass the flag to retain the rollover bucket. Due to this, the rollover bucket from the previous month was ending. This issue has been fixed by changing the PCM_OP_SUBSCRIPTION_POL_SPEC_CANCEL policy opcode to accommodate the action flags used to retain the rollover bucket.
35979292	When billing was run, <b>cycle_forward</b> was called first with defer mode, then with normal mode. During defer mode, the product was being rated in <b>calc_mode</b> even though the product was not eligible to be rated. This issue has been fixed by making changes to avoid <b>calc_only</b> rating if the product is not eligible to be rated. The <b>get_purchased_offerings()</b> call has been optimized to return the results quickly.
35892698	When a product was purchased with multiple quantities and then canceled with partial quantity, the product status was shown as canceled. This caused a synchronization issue with ECE. This has been fixed.
35856189	When the 31-day billing feature was disabled, if a non-aligned monthly cycle-forward product was purchased on a date after the 28th, cycle alignment dates were incorrect. This has been fixed.
35863982	When an account-level product was canceled, a lock at the account level locked all balance groups in that account, causing issues with concurrent transactions. This is fixed now by passing LOCK_DEFAULT flags, which locks only account-level balance groups.
36450389	A CDR was getting suspended in a delayed billing period where the <b>current_bal</b> was 0 and the <b>next_bal</b> was negative. This has been fixed.
36215710	The PCM_OP_LOAN_GET_LOAN opcode has been enhanced to display profile details when a flag is passed. When this flag is passed, the <b>credit_limit</b> and <b>available_loan_limit</b> are retrieved from the profile.

**Table 3-1 (Cont.) Customer-Reported Fixes for BRM 15.0.1**

Bug Number	Description
35937533	Issues were reported with SEL while loading the suspended events. This has been fixed. Unique custom control files are dynamically generated for each suspense file during the pre-processing stage of Suspense Manager.
36272404	The PCM_OP_AR_GET_ACCT_BILLS opcode is enhanced to return PIN_FLD_TOTAL_DUE of the bill.
36272406	When PCM_OP_RATE_GET_PRODUCT was invoked, it was not reading from the CM cache during execution, even though the <b>rate_pre_cache_product_and_disc</b> business parameter was set to 10. This has been fixed.
36277112	Timeout errors on the CMT loader were resulting in errors. This has been fixed. The generation of POID logic was changed for multi-schema scenarios.
36314282	When Bill Now was run for two bill units having the same account at the same time, a deadlock would occur due to which Bill Now would fail. This has been fixed.
36317969	When the PCM_OP_BAL_TRANSFER_BALANCE opcode was invoked with FEE_FLAG set to 3, it returned multiple zeros for the PIN_FLD_TRANSFER_FEE field in the return list. This has been fixed. The PCM_OP_BAL_TRANSFER_BALANCE opcode has been changed to honor the <b>rating_max_scale pin.conf</b> entry instead of using the maximum scale for precision.
36357638	Compilation of FM_SUBSCRIPTION_POL was failing after upgrading to BRM 12.0 Patch Set 8. This has been fixed.
36359985	When the PCM_OP_AR_EVENT_ADJUSTMENT opcode was invoked, it returned a generic error description for all errors. This has been fixed. The PCM_OP_AR_EVENT_ADJUSTMENT opcode returns the error message from the error buffer.
36378649	For an add-on purchase, the original balance got accumulated instead of being synchronized in the ECE cache. This has been fixed.
36430111	In a hierarchical setup, the child's due amount was getting added in an intermediate non-paying parent's due amount, because of which the exact amount of child's due was not calculated. This issue has been fixed by adding a new business parameter <b>add_child_due_in_intermediate_parent_bill</b> to add only the child's due value when the parameter is set.
36434781	THRESHOLD_FROM and THRESHOLD_TO of the pipeline IFW_PRICEMDL_STEP table supported up to 15-digit decimal only. This has been fixed. The fields are modified to support up to 28 digits when MAX28DIGIT_DECIMAL_SUPPORT=Y is enabled.

**Table 3-1 (Cont.) Customer-Reported Fixes for BRM 15.0.1**

Bug Number	Description
36196199	An enhancement is made to generate PRE_EXPIRY and POST_EXPIRY notifications at the granular level to enable or disable in-advance and post-expiry notifications.
36076657	Memory leaks were detected when invoking the PCM_OP_CREATE_OBJ opcode. This has been fixed.
36130454	The PCM_OP_PYMT_VALIDATE opcode has been modified to store tokens in case of an error from Paymentech.
36041556	The PCM_OP_ZONEMAP_POL_GET_LINEAGE opcode was taking a prolonged time to return results. This has been fixed.
36475412	Proration of a fixed discount was not correctly calculated, due to which an incorrect discount was calculated. This has been fixed.
36477707	Memory leaks were detected in <b>dm_oracle</b> . This has been fixed.

## Customer-Reported Fixes in ECE 15.0.1

Table 3-2 lists the customer-reported issues that were resolved in ECE 15.0.1.

**Table 3-2 Customer-Reported Fixes for ECE 15.0.1**

Bug Number	Description
36475576	The login ID information was populated twice in the ECE customer cache, leading to a discrepancy in reservations. This has been fixed.
36383434	In an active-active deployment of ECE, if site 1 had issues causing the SMF to route the request to site 2, HTTP Gateway instances on both site 1 and site 2 had a delayed response. This caused SMF to terminate the session without a proper error response. This has been fixed.
36531368	In an active-active deployment of ECE, the query execution was failing due to an ambiguous column error. This has been fixed.
35932874	When multiple custom notifications were generated for the same charging request, the latest notification was overwriting the previous one. This has been fixed.
36531355	The <b>customerLoader</b> utility was not working with the RAC database on a cloud native deployment. This has been fixed.
36531265	Kafka JMX metrics were not integrated with ECE metrics. This has been fixed.

**Table 3-2 (Cont.) Customer-Reported Fixes for ECE 15.0.1**

Bug Number	Description
36444027	ECE was not exposing the balance element name and description in the balance element cache to be used for post-rating and post-charging extensions. This has been fixed.
36100003	During the rating flow involving a discount sharing group for a nested child in the hierarchy, the balances were not getting impacted correctly. This has been fixed.
36420095	In an ECE active-active deployment, if one site went down, the state cache was federated, marking the other site's state as INITIAL, causing an outage in both sites. This has been fixed.
35655619	The validity time was incorrectly sent as zero with CCR-U being received exactly at the TTC time point. This has been fixed.
36226848 35886498	ECE was not generating a Final Unit Indicator (FUI), despite all allowances being consumed. This has been fixed.
36184594	If tax configurations were not done correctly in ECE, a NULL pointer exception was sent. This has been fixed. A detailed error message is shown.
35024526	With beat configuration in force for data usage, the GSU calculation was incorrect when the allowances were closer to depletion. This has been fixed.
35908570	With beat configuration in force for data usage, the quantity considered for rating was different from the unit credit offer purchased for the subscriber. This has been fixed.
29623177	When a discount sharing group was configured for roaming usage, ECE was not impacting the correct balances. This has been fixed.
36173763	Rated events from ECE were occasionally lost from the Rated Event Manager when aggregation of rating periods was done as an extension. This has been fixed.
36222061	In some cases, when a change bundle was triggered in BRM, incorrect offers were picked in the charging flow when processing the usage requests. This has been fixed.
35102930	With the beat rounding configured, the RUM and attribute names were not matching because the GSU was calculated incorrectly. This has been fixed.
33050423	When a log level was updated from JConsole, the ECS log was showing an error. This has been fixed.



**Table 3-2 (Cont.) Customer-Reported Fixes for ECE 15.0.1**

Bug Number	Description
30850916	When doing a rolling upgrade of the Diameter Gateway, some nodes were not restarted successfully. This has been fixed.
35839527	For the FUJ redirect scenario, the validity time in the CCA was incorrect. This has been fixed.
29415790 29520574	When percentage-based discounts were configured, the discounting calculations were incorrect. This has been fixed.
36118855	With TTC configured, it was not evaluated correctly during the charging flow in some cases, leading to positive balances. This has been fixed.
36032774	For CCRs with USUs less than the last GSU, the reservation done in ECE was incorrect. This has been fixed.
36357760	ECE components were not writing the ERROR log to STDOUT/ Console after enabling the subscriber tracing feature. This has been fixed.

## Customer-Reported Fixes in PDC 15.0.1

Table 3-3 lists the customer-reported issues that were resolved in PDC 15.0.1.

**Table 3-3 Customer-Reported Fixes for PDC 15.0.1**

Bug Number	Description
36178051	When searching for pricing objects in the PDC UI, an issue occurred when viewing columns in the search results. This has been fixed by removing the binding and visible properties from the search results columns.
36200892	The PDC UI was not allowing the user to create multiple Discount Rules that would use the same Discount Trigger. This has been fixed by clearing the UI cache to allow different Discount Rules to use the same Discount Trigger.
36236648	When creating a Discount Filter, if the GLID was set and then unset and the pricing name was set, an empty <code>&lt;glid&gt;&lt;/glid&gt;</code> tag was added in the export XML file, causing a null pointer exception in ECE. This has been fixed by adding NULL checks to ensure that the empty <code>&lt;glid&gt;&lt;/glid&gt;</code> tag is not NULL and its length is greater than 0.
36289593	When migrating pricing data to PDC, multiple NULL pointer errors were reported. This has been fixed.

**Table 3-3 (Cont.) Customer-Reported Fixes for PDC 15.0.1**

Bug Number	Description
36183071	Migration issues were reported for Batch Rating Engine wholesale configurations. This has been fixed.
36340782	When creating a charge offer with a tax exemption selector that doesn't have a service associated with it, a Null Pointer Exception was reported from the PDC UI. This has been fixed.

## Customer-Reported Fixes in Business Operations Center 15.0.1

No customer-reported issues were resolved in Business Operations Center 15.0.1.

## Customer-Reported Fixes in Billing Care 15.0.1

Table 3-4 lists the customer-reported issues that were resolved in Billing Care 15.0.1.

**Table 3-4 Customer-Reported Fixes in Billing Care 15.0.1**

Bug Number	Description
36493186	Memory leaks were detected during the Get Bill Unit Summary for an Account API call. This has been fixed.
36486781	After the deployment of a patch, the due amount was not being displayed properly in the Billing Care <b>Switch Bills</b> area. Additionally, when Bill Now was run for the first time, the bill did not contain the due amount. However, the bills generated after you ran Bill Now did contain the due amount. This has been fixed.
36441031	A parent account's past due of its intermediate bills displayed only its own due and did not include its children's due. This has been fixed.
36289159	In the Billing Care AR actions settlement dialog box, the note's comments link would get overshadowed by the <b>OK</b> and <b>Cancel</b> buttons, preventing the addition of further notes. This has been fixed. A vertical scroll bar has been added to the comment link to enable the addition of more notes.
36169195	The quantity field of the purchase API did not take decimal values. Due to this, the user was unable to purchase a partial quantity. This has been fixed.
36118752	The Billing Care REST API was failing to retrieve the asset details for services with newly added BRM fields with field numbers greater than 1,000,000. This has been fixed.
35964173	Event details in Billing Care UI did not appear properly upon clicking <b>Show More</b> . This has been fixed.

**Table 3-4 (Cont.) Customer-Reported Fixes in Billing Care 15.0.1**

Bug Number	Description
35953767	The correct event dispute settled date was not visible. This has been fixed.
36275014	Billing Care was storing the billingcare pod's IP address instead of the actual CSR machine's IP address in the PIN_FLD_NAP_IP_ADDRESS field of the <b>/user_activity</b> object. This has been fixed. Billing Care now uses the X-Forwarded-For header value for the actual CSR machine's IP address. In addition, you can use the Billing Care SDK to customize the behavior for setting values in the <b>/user_activity</b> object. See " <a href="#">Tracking CSR Activity for Audit Purposes</a> " for more information.
35937051	The PROGRAM_NAME field was not being sent to the BRM server from Billing Care. This has been fixed. The program name has now been set to <b>BillingCare</b> when accessed via Billing Care. The program name has been set to <b>BillingCareREST</b> when accessed via REST APIs.

## Customer-Reported Fixes in BRM Thick Clients 15.0.1

[Table 3-5](#) lists the customer-reported issues that were resolved in the 15.0.1 release of the BRM thick clients.

**Table 3-5 Customer-Reported Fixes in BRM Thick Clients 15.0.1**

Bug Number	Description
36343237	The user was unable to change the currency symbol in Payment Center. This has been fixed.
36293588	When events were sorted in Event Browser in Customer Center, if the user would navigate to the marked events screen and then to the event browser screen, the table would no longer be sorted as it was previously. This has been fixed.
36118751	In Customer Center, during the account creation flow, the cycle start relative flag in the product's plans tab screen was not active. This has been fixed.

# 4

## Cloud Native Enhancements

Learn about the new features in the Oracle Communications Billing and Revenue Management (BRM) 15.0 cloud native deployment option.

Topics in this document:

- [New Features in BRM 15.0.1](#)
- [Enhancements in Cloud Native 15.0.0](#)

### New Features in BRM 15.0.1

BRM cloud native 15.0.1 includes the following enhancements:

- [PDC Deployment Creates Default PDC Groups](#)
- [PCC Now Supports WebLogic Kubernetes Operator](#)
- [Cloud Native Documentation Contains New Instructions](#)

### PDC Deployment Creates Default PDC Groups

When you deploy the **oc-cn-op-job-helm-chart** Helm chart to create the PDC WebLogic domain, it now creates the following PDC groups:

- **PricingDesignAdmin:** This group's users have administrative privileges on PDC. They can perform operations on all PDC UI screens, pricing components, and setup components.
- **PricingAnalyst:** This group's users have administrative privileges for pricing components and view-only privileges for setup components.
- **PricingReviewer:** This group's users have view-only privileges for all pricing and setup components.

When you create PDC users, you add them to one of these groups to control their access to PDC operations. For example, to create a user that can perform all operations in PDC, you can configure these new **values.yaml** keys for the **oc-cn-op-job-helm-chart** Helm chart:

```
ocpdc:
  wop:
    users:
      name: JohnDoeAdmin
      description: New Pricing Administrator
      password: EncodedPassword
      groups: PricingDesignAdmin
```

For information, see "Creating PDC Users (Release 15.0.1 or later)" in *BRM Cloud Native System Administrator's Guide*.

### PCC Now Supports WebLogic Kubernetes Operator

PCC now supports WebLogic Kubernetes Operator for its cloud native deployment.

For more information on the configuration and testing of the PCC's integration with the WebLogic Operator for cloud-native environment (CNE) deployment, see "Configuring Pipeline Configuration Center" in the *BRM Cloud Native Deployment Guide*.

## Cloud Native Documentation Contains New Instructions

The BRM cloud native documentation has been updated to include instructions for doing the following:

- Optimizing the PDC system's CPU and memory usage for requests and limits during runtime. See "Using Resource Limits in PDC Domain Pods" in *BRM Cloud Native System Administrator's Guide*.
- Changing the language displayed in your PDC UI screens, XML import files, and XML export files. See "Managing Language Packs in PDC Pods" in *BRM Cloud Native System Administrator's Guide*.
- Migrating PDC from an on-premises release to a cloud native release. See "Migrating from PDC On Premises to PDC Cloud Native" in *BRM Cloud Native Deployment Guide*.
- Setting up ingress and egress flows for ECE cloud native deployments. See "Setting Up ECE Cloud Native Ingress and Egress Flows" in *BRM Cloud Native Deployment Guide*.



### Note:

These instructions apply to Release 15.0.0 or later.

## Enhancements in Cloud Native 15.0.0

BRM 15.0.0 includes the following enhancements:

- [Images Now Available on Oracle Container Registry](#)
- [BRM Cloud Native Enhancements](#)
- [Changing ECE Configuration During Runtime](#)
- [PDC Cloud Native Deployment Enhancements](#)

### Images Now Available on Oracle Container Registry

BRM cloud native images are now available on Oracle Container Registry (<https://container-registry.oracle.com>).

For more information, see "Pulling BRM Images from the Oracle Container Registry" in *BRM Cloud Native Deployment Guide*.

## BRM Cloud Native Enhancements

BRM cloud native includes the following enhancements:

- BRM cloud native now supports Podman for building container images.
- The real-time and batch rating engines now support SSL-enabled communication with BRM.

- BRM cloud native now supports the BRM SDK, which allows you to make and compile customizations for your BRM system.

For more information, see *BRM Cloud Native Deployment Guide*.

## Changing ECE Configuration During Runtime

You can now use Kubernetes jobs to do the following during ECE runtime without requiring you to restart ECE pods:

- Reload configuration information from the **charging-settings.xml** file into ECE cache
- Change grid-level logging options

For more information, see "Changing the ECE Configuration During Runtime" in *BRM Cloud Native System Administrator's Guide*.

## PDC Cloud Native Deployment Enhancements

PDC cloud native includes the following enhancements:

- Deploying and configuring Pricing Design Center cloud native services no longer requires manual post-installation tasks. These tasks are now automated in the PDC cloud native deployment process.
- PDC cloud native images have been decoupled from Fusion Middleware images, reducing the overall size of the PDC images. To use PDC cloud native, you now download the Fusion Middleware images and provide their location in your PDC **override-values.yaml** file.

For more information, see "Configuring Pricing Design Center" in *BRM Cloud Native Deployment Guide*.

# 5

## New Features in BRM

Learn about the new features in Oracle Communications Billing and Revenue Management (BRM) 15.0.

Topics in this document:

- [New Features in BRM 15.0.1](#)
- [New Features in BRM 15.0.0](#)

### New Features in BRM 15.0.1

BRM 15.0.1 includes the following enhancements:

- [Contract Management Now Independent of Deliverable-Based Revenue Recognition](#)
- [Contract Management Enhancements](#)
- [Flist Management Macros Now Include Compile-Time Flags](#)
- [Invoice Documents Can Now be Generated for Custom Criteria](#)
- [Itemized Tax Calculation for Disputes and Settlements](#)
- [Triggering Either In-Advance or Post-Expiration Notifications](#)
- [Trial Billing Support for Subset of Child and Parent Accounts in a Wholesale Hierarchy](#)

### Contract Management Now Independent of Deliverable-Based Revenue Recognition

You can now create contracts regardless of the revenue recognition scheme your BRM system uses. In previous releases, you could create contracts only if deliverable-based revenue recognition was enabled. Deliverable-based revenue recognition aligns with the ASC 606 and IFRS 15 accounting standards. For information, see "Managing Customer Contracts" in *BRM Managing Customers*.

In addition, contract management now supports the following operations:

- Performing backdated operations
- Using multiple G/L segments
- Using Conversion Manager
- Performing rerating
- Using the Web Services Manager opcodes
- Performing accounts receivable (A/R) operations, such as adjustments



**Note:**

Contract management does not support these operations when deliverable-based revenue recognition is enabled. See "Enabling Deliverable-Based Revenue Recognition" in *BRM Collecting General Ledger Data*.

## Contract Management Enhancements

BRM now supports the following contract management enhancements:

- **Specifying a minimum contract length:** You can now specify a minimum length for a contract with corresponding penalty charges for early cancellation. If customers cancel early, they must pay the remaining balance up to the minimum contract length. See "About Penalty Fees" in *PDC Creating Product Offerings* for more information.

For example, assume a subscription term has a 1-year commitment period, a minimum contract length of 4 months, and a \$50 monthly fee. Customers would be charged \$50 for each month remaining in the 4-month minimum contract length. A customer canceling after 1 month would pay \$150, and a customer canceling after 3 months would pay \$50. A customer canceling after 6 months would pay \$0 because they already paid the 4-month minimum.

- **Applying penalty fees:** The penalty fee can now consist of an early termination fee, the remaining contract balance, or both. See "About Penalty Fees" in *PDC Creating Product Offerings* for more information.

In previous releases, the penalty fee could be an early termination fee or the contract balance. You could not apply both.

- **Extending the /subscriber\_contract storable class:** You can now extend the `/subscriber_contract` storable class to store additional fields. To do so, see "Extending Subscriber Contracts (Release 15.0.1 or later)" in *BRM Opcode Guide*.
- **Customizing how penalty fees are applied during cancellation:** You can use the new `PCM_OP_CONTRACT_POL_CANCEL_CONTRACT` policy opcode to customize how penalty fees are calculated and applied during the contract cancellation process.

## Flist Management Macros Now Include Compile-Time Flags

When calling the PUT flist management macros, you can now set compile-time flags in your custom code's Makefile. The compile-time flags specify to automatically set source pointers to NULL during PUT operations and assign a NULL value to an flist or object after the macro call, preventing it from being destroyed in the future.

[Table 5-1](#) lists each flist management macro, its compile-time flag, and what happens after the macro is called with the flag.

**Table 5-1 New Compile-Time Flags for Flist Management Macros**

Flist Macro Name	Compile-Time Flag	After Macro Call
PIN_FLIST_FLD_PUT	- DASSIGN_NULL_AFTER_FLD_P UT	<b>valp</b> changed to NULL



**Table 5-1 (Cont.) New Compile-Time Flags for Flist Management Macros**

Flist Macro Name	Compile-Time Flag	After Macro Call
PIN_FLIST_ELEM_PUT	- DASSIGN_NULL_AFTER_ELEM_PUT	<b>elem_flistp</b> changed to NULL
PIN_FLIST_SUBSTR_PUT	- DASSIGN_NULL_AFTER_SUBSTR_PUT	<b>substr_flistp</b> changed to NULL

For information, see "Using Compile-Time Flags to Avoid Errors in Flists (Release 15.0.1 or later)" in *BRM Developer's Guide*.

## Invoice Documents Can Now be Generated for Custom Criteria

You can generate invoice documents for invoices that meet your custom criteria, such as only for Canadian customers with an invoice delivery type of email. You specify the criteria using a list of key-value pairs, which correspond to parameters you add to the data model defining the requirements for selecting invoices.

### Note:

With custom criteria, the selected invoices are split into batches, and one job is scheduled for each batch using the bursting mode.

For information, see "Generating Invoice Documents Based on Custom Criteria (Release 15.0.1 or later)" in *BRM Designing and Generating Invoices*.

## Itemized Tax Calculation for Disputes and Settlements

BRM can now calculate the tax settlement details when a dispute or settlement is performed for a bill, item, or event, allowing you to know how much tax is being settled per jurisdiction.

You can configure BRM to segregate the tax amount for each dispute and settlement based on the tax code and tax jurisdiction by setting the **TaxReturnJuris** business parameter to **itemize**. By default, the parameter is set to **summary**, which specifies to segregate the tax amount based on the tax code. For information, see "Configuring Itemized Taxation for A/R and Payments" in *BRM Calculating Taxes*.

In addition, the **PCM\_OP\_GET\_ITEM\_DETAILS** opcode has been enhanced to show the settled tax and settled taxed amounts based on the tax code and jurisdiction level for each item. For information, see "About the Item Data Retrieved" in *BRM Opcode Guide*.

## Triggering Either In-Advance or Post-Expiration Notifications

When setting up your system to send messages to customers through an external application, you can now configure BRM to trigger notifications before an event occurs, after an event occurs, or both. This applies to the following:

- **Balance elements:** You can configure any currency or noncurrency balance element to trigger notification events when its validity period is about to expire, when it has already expired without new funds being added, or for both.
- **Product expiration:** You can configure a subscription to trigger notification events before the subscription expires, after the subscription expires, or for both.
- **Subscription renewals:** You can configure a subscription to trigger notification events before it is due for renewal, after it is past due for renewal, or for both.

In previous releases, in-advance and post-expiration notifications were either both enabled or both disabled.

For information, see "Configuring BRM to Send Notifications to External Notification Applications" in *BRM Managing Customers*.

## Trial Billing Support for Subset of Child and Parent Accounts in a Wholesale Hierarchy

In wholesale bill unit hierarchies, you can now trigger trial billing for:

- All child accounts under a specific parent billing account and the parent billing account
- Specific child accounts alone under a parent billing account
- Specific parent billing account alone skipping the check on whether trial billing is performed for all child accounts under the parent billing account

Prior to this release, trial billing had to be performed for all child accounts and then for all parent accounts.

For information, see "Running Trial Billing" in *BRM Configuring and Running Billing*.

## New Features in BRM 15.0.0

This section lists the features introduced between BRM 12.0 Patch Set 8 and BRM 15.0.0.

For information about the features introduced between BRM 12.0 and BRM 12.0 Patch Set 8, see "[New Features in BRM](#)" in *BRM 12.0 Patch Set Release Notes*.

BRM 15.0.0 includes the following enhancements:

- [64-Bit Support for All BRM Components](#)
- [Supported Upgrades to Release 15.0](#)
- [Support for Purchasing Same Product or Discount Multiple Times with Separate Balances](#)
- [BRM REST Services Manager API Supports Order Bill Fulfillment](#)
- [Pipeline Rating Supports SSL Connection to BRM](#)
- [Support for Full-Day Discounts](#)
- [Improved Timeout Consistency](#)
- [Improved Synchronization Between BRM and External CRM Applications](#)
- [BRM CM Now Supports Authorization](#)
- [Improved POID Caching](#)
- [Simplified BRM Multischema Installation](#)

- [BRM Supports Validation for Dynamic Charging](#)
- [Conversion Manager Supports All New Functionality](#)

## 64-Bit Support for All BRM Components

All former BRM 32-bit components, such as the Connection Manager (CM), are now 64-bit components. In addition, you can now use all timestamps representing a date after January 19, 2038.



### Note:

Support extends to all BRM, Pricing Design Center, Business Operations Center, Billing Care, and Elastic Charging Engine components.

If you are upgrading to BRM 15.0, you need to recompile any BRM customizations, such as to policy opcodes, as 64-bit extensions. For more information, see "Migrating Custom Code to a 64-bit Environment" in *BRM Installation Guide*.

## Supported Upgrades to Release 15.0

The following upgrade paths to the 15.0 release are supported:

- BRM 12.0 to BRM 15.0
- Any BRM 12.0 Patch Set to BRM 15.0
- ECE 12.0 to ECE 15.0
- Any ECE 12.0 Patch Set to ECE 15.0

The upgrade paths support the following on-premise and cloud native versions:

- On-premise versions of BRM with an ECE charging engine to a 15.0 version
- On-premise versions of BRM with real-time and batch rating engines to a 15.0 version
- BRM cloud native with an ECE charging engine to a 15.0 version
- BRM cloud native with real-time and batch rating engines to a 15.0 version
- On-premise versions of BRM with real-time and batch rating engines to BRM cloud native 15.0 with real-time and batch rating engines

## Support for Purchasing Same Product or Discount Multiple Times with Separate Balances

Previously, customers could extend the validity of a balance by purchasing a product or discount again, and the new balance was added to the existing balance. Now, you can track the new and existing balances separately, with separate validity dates.

You can use two new options with the **loadpricelist** utility. When creating deals in your XML file, you set the value for the **<purchase\_mode>** element under the **<deal\_product>** or **<deal\_discount>** element. You can set the purchase mode to:

- **4:** Longest date. Extends the old subscription with a separate balance, setting the validity end date to whichever is later, the new or existing validity.

- **5: Cumulative validity.** Extends the old subscription with a separate balance, setting the validity end date by adding the new validity to what remains of the old validity.

For example, on June 1, a customer purchases a deal that grants 3GB of data, is valid for seven days, and has a grace period of 4 days. On June 3, after using 1GB, they purchased the deal again. With both options, the new 3GB balance is added to a new balance group, separate from the remaining 2GB in the old balance group.

With option 4, the new balance is valid starting on June 3, and BRM compares the validity periods of the old and new balances to set the validity end date for the new balance to the later of the two end dates, June 10. The old balance retains the original validity dates.

With option 5, the new balance is valid starting on June 8. BRM adds what remains of the validity period of the old balance to the new balance to set the validity end date for the new balance to June 15. The old balance retains the original validity dates.

For information, see "Purchasing the Same Product or Discount Multiple Times" in *BRM Configuring Pipeline Rating and Discounting*.

## BRM REST Services Manager API Supports Order Bill Fulfillment

The BRM REST Services Manager API now supports the following order bill fulfillment operations:

- Purchasing a product offering, such as a bundled offer, charge offer, or discount offer
- Suspending a purchased service
- Resuming a suspended service
- Terminating a purchased product offering

You can also specify to cancel a customer's service in the future.

If you support two-phase billing, you can specify whether to purchase an offer with the start date set to 365 days in the future or to the actual activation date.

You implement order bill fulfillment using the new Perform Billing Fulfillment operation in the BRM REST Services Manager API. For more information, see *REST Services Manager API for Billing and Revenue Management*.



### Note:

The order bill fulfillment operations are based on the TMF 622 Product Ordering API and cover the bill fulfillment-related tasks of the product ordering flow.

The order bill fulfillment operations also support extending the framework by adding attributes to the request payload.

## Pipeline Rating Supports SSL Connection to BRM

The BRM real-time and batch rating engines now support SSL communication with the BRM Connection Manager (CM), improving the security among all BRM components.

For information, see "Enabling SSL/TLS in Real-Time Pipeline" in *BRM System Administrator's Guide*.

## Support for Full-Day Discounts

Previously, when rounding to midnight was disabled, and a discount was purchased after midnight, the discount would not be applied to the entire day. For example, a discount purchased at 15:00 on June 1 would apply only from 15:00 through 24:00 on June 1. Now, you can specify to apply the discount to the entire day even when rounding to midnight is disabled. That is, a discount purchased at 15:00 would apply from 00:00 through 24:00 on June 1.

You can use the new option with the **loadpricelist** utility. When creating discounts in your XML file, you set the value for the **<discount\_validity\_rounding>** element under the **<discount>** element. You can set **<discount\_validity\_rounding>** to one of the following:

- **ON**: Sets the discount start time to the time of purchase.
- **OFF**: Sets the discount start time to midnight (00:00:00) of the day the discount is purchased.
- **NOT\_SET**: Uses the systemwide setting in the **/config/business\_profile** object. This is the default.

For information, see "Setting Discount Validity Rounding" in *BRM Configuring Pipeline Rating and Discounting*.

## Improved Timeout Consistency

Previously, timeouts in BRM terminated only the client side of the operation. The database operation was rolled back only after the transaction was completed.

BRM client applications contain a new parameter for setting the maximum timeout of BRM transactions. If a timeout occurs, the client side of the operation is terminated, and the transaction is not committed to the database. This guarantees that transactions are not committed when timeouts occur and writes to the database do not occur at any point during the transaction.

For information, see "Setting a Timeout Value for Requests Sent to the CM" in *BRM System Administrator's Guide*.

## Improved Synchronization Between BRM and External CRM Applications

Previously, BRM used the Synchronization Queue Data Manager to synchronize pricing data, such as charge offers, discount offers, and chargeshare offers, with external customer relationship management (CRM) applications. In the 15.0 release, Synchronization Queue Data Manager has been obsoleted.

To improve performance, BRM now uses the Oracle Data Manager (DM) to synchronize data between BRM and your external CRM. Oracle DM sends pricing data in business events to Oracle Advanced Queuing (AQ) database queues in the BRM database, where your external CRM can retrieve it. For information, see "Synchronizing Pricing Data between the BRM Database and External CRMs" in *BRM System Administrator's Guide*.

 **Note:**

Oracle DM rolls back the transaction in both the BRM database and the AQ database queue if the commit to either fails.

The BRM 15.0 installation includes scripts and configuration files to help you create and configure the AQ database queues.

## BRM CM Now Supports Authorization

Previously, BRM thick client applications, such as Customer Center and Pricing Center, handled all authorization with BRM. In addition, command-line utilities could not manage fine-grained authorization because they are part of the BRM server and have access to all opcodes and storable classes.

To improve security, the CM layer now also performs authorization. Authorization in the CM is based on opcodes the user is allowed to run and storable classes the user is allowed to read or update. The list of opcodes and storable classes users can access are defined in roles.

For more information, see "Managing Login Names and Passwords" in *BRM System Administrator's Guide*.

## Improved POID Caching

BRM 15.0 includes a new POID generation logic that limits the number of times data needs to be retrieved from the database, which improves performance.

## Simplified BRM Multischema Installation

In BRM 15.0, the multischema installation process has been simplified, reducing the overall time to set up your system.

Previously, the process for creating the database schemas was a two-step process. First, it made the primary and secondary schemas with all tables and snapshots. Second, it dropped the tables and snapshots from the secondary schemas and replaced them with views.

Now, the BRM multischema installation creates the database schemas in one step. It creates the primary schema with all tables and snapshots and the secondary schemas with views.

See "Installing a Multischema System" in *BRM Installation Guide* for more information.

## BRM Supports Validation for Dynamic Charging

Previously, you could dynamically override pricing at purchase time with no validation. Now, the overrides you can use at purchase time are restricted and validated by price tags created as setup components.

You configure price tags as setup components in PDC and publish them to BRM in changesets. The price tags are stored in the **/config/price\_tags** object.

The rules configured in the setup components determine which price tags are valid for a resource and which values can be used at purchase time. You can restrict price tags to certain resources, resource units, and services. You can restrict the values that can be used to a list or range of values.

For example, you could create the following price tag setup components:

- Applicable to the minute unit of free minutes resources of TelcoGSM and Telephony services, with permitted values of 10 and 20.
- Applicable to any unit of US Dollars resources of TelcoGSM services, with permitted values between 100 and 200.

- Applicable to the byte unit Euro resources of TelcoGSM services, with no restrictions on the value.

At purchase time, you retrieve the list of price tags and valid values for a specified resource, service, or product using the `PCM_OP_SUBSCRIPTION_GET_PRICE_TAGS` opcode. The opcode output includes the valid values you can use to override the price.

You can also see the details for price tags configured for products using the `PCM_OP_PRICE_GET_PRODUCT_INFO` opcode or the **Get Offer Details** endpoint of the Billing Care REST API.

For information, see "Configuring Dynamic Charging" in *PDC Creating Product Offerings*.

## Conversion Manager Supports All New Functionality

Conversion Manager supports all features added between the BRM 12.0 and BRM 15.0 releases, such as loan management and taxation exemptions.

# 6

## New Features in ECE

Learn about the new features in Oracle Communications Elastic Charging Engine (ECE) 15.0.

Topics in this document:

- [New Features in ECE 15.0.1](#)
- [New Features in ECE 15.0.0](#)

### New Features in ECE 15.0.1

ECE 15.0.1 includes the following enhancements:

- [ECE Uses Non-Linear Rating by Default](#)
- [Configuring External Modules for High Availability](#)
- [Setting the Order to Consume Allowances](#)
- [Active-Active Sy Session Re-Anchoring](#)
- [Creating Midsession-Rated Events for Product Changes](#)
- [Enhanced Rated Event Formatter Resiliency](#)

### ECE Uses Non-Linear Rating by Default

ECE now uses non-linear rating for all usage rating, but you can configure ECE to use linear rating for specified products or product-and-event combinations. In previous releases, the default was linear rating.

For information, see "About Linear and Non-Linear Rating" in *ECE Implementing Charging*.

### Configuring External Modules for High Availability

The External Manager (EM) Gateway now supports the same load-balanced and active-passive failure modes previously only available for Data Managers (DMs).

In the CM **pin.conf**, you can now define a single **em\_pointer** entry with multiple host and port pairs that will be tried in order when attempting to establish a connection (permitting active-passive semantics). This is in addition to the previous configuration with multiple **em\_pointer** entries which allowed only load-balanced connection attempts (permitting active-active semantics).

Note that only one type of configuration may be used for a given EM, but different EM components may use either configuration type. For example, connections to ECE's EM Gateway might use active-passive logic, while connections to the Pipeline Manager might use active-active logic.

In a cloud native environment, you configure a service and port pair, where a Kubernetes service acts as a logical target for multiple components. In this model, you can connect to a preferred Kubernetes service (on, say, site 1), which would load-balance across several EMs



configured on site 1. In this model, you can connect to a preferred Kubernetes service (on say, site 1) and that would load-balance across a number of EMs configured on site 1.

So, for cloud native, you can, in effect, mix HA and load-balanced configurations (although they are always configured as HA or load-balanced in the CM).

For more information on EM Gateway, see "Configuring ECE for High Availability" in *BRM System Administrator's Guide*.

## Setting the Order to Consume Allowances

You can now configure the order in which ECE consumes allowances from offers with the same priority. To do so, use the new **offerSelectionModeOnEquiPriorityOffers** entry in your **charging-settings.xml** file, **values.yaml** file, or ECE configuration MBeans. You can specify whether to consume allowances from offers based on the earliest validity start date or the earliest validity end date.

For information, see "Configuring the Consumption Order for Offers with the Same Priority (15.0.1 or later)" in *ECE Implementing Charging*.

## Active-Active Sy Session Re-Anchoring

In active-active disaster recovery systems, a prolonged Diameter Gateway outage on one site may cause Sy sessions to not re-anchor to the next available Diameter Gateway. This occurs because PCRF does not send update requests back to the available Diameter Gateway in the same deployment site or in another deployment site.

To fix this, ECE contains new JMX commands that instruct Diameter Gateway to:

- Start consuming from a specified partition ID
- Stop consuming from a specified partition ID

When one or more Diameter Gateway instances fail, you can use the JMX command to enable the active Diameter Gateway instance to start consuming from specific Kafka partitions for the failed Diameter Gateway instance.

## Creating Midsession-Rated Events for Product Changes

You can now configure ECE to generate midsession-rated events when rating moves from one product to another for the consumption of resources. For example, assume a session consists of the following:

- Total Used Service Units (USU): 800 MB
- First 220 MB is rated using Product 1
- Next 500 MB is rated using Product 2
- Remaining 80 MB is rated using Product 3

In this case, ECE would generate the two midsession-rated events:

- CDR 1 for 220 MB
- CDR 2 for 500 MB

The remaining 80 MB being rated using Product 3 stays in the active session.

**Note:**

This feature does not work if the product has a rate plan with multiple tiers.

## Enhanced Rated Event Formatter Resiliency

Rated Event (RE) Formatter has been enhanced to continue processing events when temporary database connectivity issues occur.

Sometimes, database issues can cause database writes to fail while database reads succeed. This causes rated events to remain in the Coherence cache and not persist in the database. After the database issue is resolved, rated events in the cache are written to the database. However, the RE Formatter checkpoint for formatting rated events has already advanced, causing the rated events to be lost. This causes a data resiliency issue.

To fix this, RE Formatter now monitors the rated event persistence activity by ECS nodes. If persistence stops, RE Formatter pauses the checkpoint. Checkpoint advancing restarts only after:

- The database write issue is resolved
- The persistence backlog by the ECS nodes is cleared

## New Features in ECE 15.0.0

This section lists the features introduced between ECE 12.0 Patch Set 8 and ECE 15.0.0.

For information about the features introduced between ECE 12.0 and ECE 12.0 Patch Set 8, see "[New Features in ECE](#)" in *BRM 12.0 Patch Set Release Notes*.

ECE 15.0.0 includes the following enhancements:

- [HTTP Gateway Now Supports Primary and Secondary NRFs](#)
- [Specifying to Consume Main Balance Before Loan Balance](#)
- [ECE Charging Refund Enhancements](#)
- [Rollover Information Now Synchronized with ECE](#)
- [Extension for Customizing Notification Payloads](#)
- [Extension for Unrated Quantity Information](#)
- [Extension for Custom Reason Codes](#)
- [Extension for Generating RARs for Sharing Group Members](#)
- [Extension for Retrieving Worst Cost Setting](#)
- [Diameter Gateway Balance Query Response Enhancement](#)
- [CDR Generator Can Mark CDRs as Incomplete](#)
- [CDR Generator Can Detect Duplicate CDRs and Stale Sessions](#)
- [Dynamic Quota Not Granted When No RSU in Request](#)
- [ECE Supports Immediately Consuming Debit Discounts](#)
- [Publish Notifications to Separate Kafka Topic](#)

- [ECE Now Supports Kafka JMX Metrics](#)
- [ECE Now Supports SSL Connections with Kafka Servers](#)
- [Improved Synchronization Between BRM and ECE](#)
- [ece\\_brs\\_current\\_latency\\_by\\_type\\_seconds Metric Generates Latency Data Per Service](#)

## HTTP Gateway Now Supports Primary and Secondary NRFs

You can now configure primary and secondary Network Repository Function (NRF) registration servers in HTTP Gateway. When a heartbeat to the primary NRF server fails, HTTP Gateway retries the heartbeat for a configurable number of times. If all retries fail, HTTP Gateway initiates a registration request on the secondary NRF server.

You configure one or more primary NRF servers using the existing **nrfRestEndPointUrl** MBean attribute, and you configure one or more secondary NRF servers using the new **nrfSecondarySiteRestEndPointUrls** MBean attribute.

To configure primary and secondary NRF registration servers:

1. Access the ECE configuration MBeans in a JMX editor, such as JConsole. See "Accessing ECE Configuration MBeans" in *ECE Implementing Charging*.
2. Expand the **ECE Configuration** node.
3. Expand **charging.nfProfileConfigurations**.
4. Expand **Attributes**.
5. Specify the value for the following attributes:
  - **nrfRestEndPointUrl**: Set this to the endpoint URL of one or more primary NRF servers. To configure multiple primary NRF servers, list the endpoint URLs, in order, separated by a comma (,).
  - **nrfSecondarySiteRestEndPointUrls**: Set this to the endpoint URL of one or more secondary NRF servers. To configure multiple secondary NRF servers for a primary, list the endpoint URLs, in order, separated by a semicolon (;). If you have multiple primary NRF servers and want to map each to a different secondary NRF server, separate the endpoint URLs by a comma (,).

For example, the following specifies that the **primaryNRF\_1** NRF server has two secondary NRF servers (**secondary\_NRF\_1** and **secondary\_NRF\_2**). The **primaryNRF\_2** NRF server has only one secondary NRF server (**secondary\_NRF\_3**):

```
nrfRestEndPointUrl="www.primaryNRF_1.com,www.primaryNRF_2.com"  
secondaryNrfEndpointUrl="www.secondary_NRF_1.com;www.secondary_NRF_2.com,www.seco  
ndary_NRF_3.com"
```

For information, see "Configuring Multiple Primary and Secondary NRF Registration Servers" in *ECE Implementing Charging*.

## Specifying to Consume Main Balance Before Loan Balance

By default, ECE consumes a customer's loan balance before consuming the customer's principal balance. You can now configure at the service level to consume the principal balance before consuming the loan balance. You might do this, for example, to prevent fraud by customers using their loan balance and leaving before paying it back.

For information, see "Customizing Consumption Order of Loan and Principal Balances" in *ECE Implementing Charging*.

## ECE Charging Refund Enhancements

By default, ECE temporarily stores information about direct debit requests in its cache to validate any refunds against one of the requests. However, some event types may not be eligible for refunds, so storing the direct debit request information in the cache is unnecessary. You can now configure ECE not to store direct debit requests in its cache for specific event types.

To prevent ECE from storing direct debit request information in its cache for specific event types:

1. Access the ECE configuration MBeans in a JMX editor, such as JConsole. See "Accessing ECE Configuration MBeans" in *ECE Implementing Charging*.
2. Expand the **ECE Configuration** node.
3. Expand **charging.server**.
4. Expand **Attributes**.
5. In the **excludedEventsForDebitRefundSessions** attribute, list the event types separated by commas.

For information, see "Managing Direct Debit Data in ECE Cache" in *ECE Implementing Charging*.

## Rollover Information Now Synchronized with ECE

Rollover data is now included in the balance data synchronized from BRM to ECE. This allows ECE to include the rollover data in:

- In-session notifications sent to your customers
- Responses to balance queries sent from the ECE Java API

For information, see "About Balance Query Requests" in *ECE Implementing Charging*.

## Extension for Customizing Notification Payloads

ECE now includes extensions for customizing the data contained in notification payloads. For example, add the subscriber ID and event time stamp to all notification payloads.

For information, see "Post-Update Extension - Enriching External Notifications" in *ECE Implementing Charging*.

## Extension for Unrated Quantity Information

ECE now includes extensions for writing any unrated quantity that occurs during offline charging to a CDR or notifications payload.

For information, see "Configuring ECE to Support Prepaid Usage Overage" in *ECE Implementing Charging*.

## Extension for Custom Reason Codes

When ECE generates a midsession-rated event, it automatically records why the event was split in the event's **midSessionCDRSplitReason** field. ECE sets the field to one of the preconfigured reason codes in [Table 6-1](#).

**Table 6-1 Midsession Rated Event Reason Codes**

Reason Code	Description	Value
CONFIGURED_VOLUME_REACHED	The event exceeded a configured volume, such as 100 MB.	1
CONFIGURED_DURATION_REACHED	The event exceeded a configured amount of time, such as 2 hours.	2
RATING_CONDITION_CHANGE	The trigger was caused by a change in tariffs.	3
CONFIGURED_TIME_OF_THE_DAY_CROSSED	The event crossed a configured time of day, such as midnight.	4
INTERNAL_TRIGGER	The trigger was caused by a context change.	5
EXTERNAL_TRIGGER	The midsession trigger condition was met.	6
MULTIPLE_USU	The event contained multiple Used Service Units (USUs). ECE generates a midsession-rated event for each USU.	7
MULTIPLE_USU_AND_EXTERNAL_TRIGGER_OR_INTERNAL_TRIGGER	The event was caused by any of the preceding triggers.	8
PRE_MIDSESSION_CONDITION	The event reached a custom trigger at the prerating extension point.	9
POST_MIDSESSION_CONDITION	The event reached a custom trigger at the post-rating extension point.	10
ZONE_CHANGE	The trigger was caused by a change in zone. <b>Note:</b> This reason code is new in BRM 15.0.	11
BALANCE_EXHAUST	The event was triggered after the complete exhaustion of an existing balance. <b>Note:</b> This reason code is new in BRM 15.0.	12

You can now extend ECE to add these preconfigured reason codes to midsession-rated events generated by custom criteria. To do so, you extend ECE at the pre-rating and post-rating extension points. For more information, see these ECE SDK sample programs:

**SamplePostRatingMidSessionExtension** and **SamplePreRatingMidSessionExtension**.

For information, see "Viewing Reason for Midsession-Rated Event" in *ECE Implementing Charging*.

## Extension for Generating RARs for Sharing Group Members

When changes in charging occur during an active session, ECE sends a reauthorization request (RAR) to the network. By default, ECE sends an RAR for all active sessions initiated by that subscriber.

You can now extend ECE to send RARs for all active sessions using a sharing group balance. For example, assume a sharing group includes accounts A, B, C, and D, and accounts A and C currently have active sessions using the sharing group balance. If an RAR is triggered for account C, ECE sends RARs for account A's and C's active sessions.

For more information about extending ECE to support RARs for sharing group members, see these ECE SDK sample programs: **SampleRarPostChargingExtension**, **SampleRarPostRatingExtension**, and **SampleRarPreRatingExtension**.

For information, see "Customizing Server-Initiated Reauthorization for Sharing Groups" in *ECE Implementing Charging*.

## Extension for Retrieving Worst Cost Setting

You can now extend ECE to retrieve the value of the **isAdjustedForWorstCost** parameter, which specifies whether to reserve the worst possible cost during the authorization process. To do so, you extend ECE at the post-rating and post-charging extension points.

For information, see "Customizing Worst-Case Rating Reservation" in *ECE Implementing Charging*.

## Diameter Gateway Balance Query Response Enhancement

By default, Diameter Gateway includes information about the main balance in balance query responses. You can now configure Diameter Gateway to include both the main and loan balance information in balance query responses.

To configure it to do so, in the ECE Balance Java API, set the **balancequerymode** to **TURBO**. For more information about **balancequerymode**, see the documentation for **oracle.communication.brm.charging.messages.query** in [ECE Java API Reference](#).

## CDR Generator Can Mark CDRs as Incomplete

When CDR generation is enabled, each site in an active-active system contains a CDR Generator, and each site can generate unrated CDRs for external systems. When one of the active sites goes down, the CDR database retains all in-progress CDR sessions, and subsequent 5G usage requests are diverted to another active site, which generates CDRs for those in-progress CDR sessions.

To prevent downstream mediation systems from processing the in-progress CDR sessions, you can now configure CDR Generator to mark them as incomplete.

To enable CDR Generator to detect and mark CDRs as incomplete:

1. Access the ECE configuration MBeans in a JMX editor, such as JConsole. See "Accessing ECE Configuration MBeans" in *ECE Implementing Charging*.
2. Expand the **ECE Configuration** node.
3. Expand **cdrFormatters**.
4. Expand **Attributes**.
5. Set the **enableIncompleteCdrDetection** attribute to **true**. The default value is **false**.

For information, see "Generating CDRs for External Systems" in *ECE Implementing Charging*.

## CDR Generator Can Detect Duplicate CDRs and Stale Sessions

CDR Gateway can now detect and mark the following:

- CDR sessions that fail because a production site went down in an active-active disaster recovery system. When this feature is enabled, CDR Generator adds the **causeForRecordClosing** field to each CDR file, indicating why the CDR was released.
- Duplicate usage updates when a CDR is split across two sites in an active-active disaster recovery system. In this case, CDR Gateway adds a custom field to the record's extensions.

To enable duplicate CDR detection and stale session detection:

1. Access the ECE configuration MBeans in a JMX editor, such as JConsole. See "Accessing ECE Configuration MBeans" in *ECE Implementing Charging*.
2. Expand the **ECE Configuration** node.
3. Expand **charging.cdrGatewayConfigurations**.
4. Expand **Attributes**.
5. Set **retransmissionDuplicateDetectionEnabled** to **true**.
6. Under **ECE Configuration Node**, expand **cdrFormatterPlugins**.
7. Expand **Attributes**.
8. Specify values for the following fields:
  - **staleSessionCauseForRecordClosingString**: Set this to **PARTIAL\_RECORD**.
  - **enableStaleSessionCleanupCustomField**: Set this to **true**.

For information, see "Generating CDRs for External Systems" in *ECE Implementing Charging*.

## Dynamic Quota Not Granted When No RSU in Request

When a usage request is missing the requested service unit (RSU) AVP, ECE no longer returns the dynamic quota in the usage response to the network.

For information, see "Managing Dynamic Quotas for Online Sessions" in *ECE Implementing Charging*.

## ECE Supports Immediately Consuming Debit Discounts

ECE, like PDC, has added support for immediately deducting currency-based discounts from customer account balances.

## Publish Notifications to Separate Kafka Topic

By default, ECE publishes asynchronous notifications for external applications to the ECE Notification topic. You can now configure ECE to publish one or more asynchronous notifications to multiple partitions in a separate Kafka topic (called the ECE External Notification topic). ECE routes notifications using the customer ID as a partition key, meaning each notification has a dedicated partition for a given customer. You can now configure ECE to publish all external notifications to one Kafka topic. In this case, the topic is named ECE.

For information, see "Publishing Asynchronous Notifications to a Separate Kafka Topic" in *ECE Implementing Charging*.

## ECE Now Supports Kafka JMX Metrics

ECE can now expose Kafka JMX standard metrics for monitoring notification messages. You can analyze and view these metrics using Prometheus and Grafana.

For information, see "Kafka JMX Metrics" in *BRM System Administrator's Guide*.

## ECE Now Supports SSL Connections with Kafka Servers

You can now create an SSL-enabled connection between ECE and the Kafka server. You enable SSL and specify the TrustStore location during the ECE installation process.

## Improved Synchronization Between BRM and ECE

When customer data is updated in the BRM database, the updates must be applied synchronously (in real-time) to ECE. For example, when a CSR adds, cancels, or modifies an account or when an adjustment such as a cycle fee is applied to an account balance, that information must be updated in ECE so that ECE can rate service usage events properly. Previously, BRM used the Account Synchronization Manager to synchronize data with ECE. In the 15.0 release, Account Synchronization Manager has been obsoleted.

To improve performance, BRM now uses the Oracle Data Manager (DM) to synchronize data between ECE and the BRM database. Oracle DM sends customer data in business events to Oracle Advanced Queuing (AQ) database queues in the BRM database. Then, the ECE Customer Updater retrieves the business events from the queues and updates the information in the ECE cache. For information, see "Synchronizing Account Data between BRM and ECE" in *BRM System Administrator's Guide*.

 **Note:**

Oracle DM rolls back the transaction in both the BRM database and the AQ database queue if the commit to either fails.

The BRM 15.0 installation includes scripts and configuration files to help you create and configure the AQ database queues.

## `ece_brs_current_latency_by_type_seconds` Metric Generates Latency Data Per Service

The `ece_brs_current_latency_by_type_seconds` metric now generates latency data per service type, such as by data, voice, and SMS. For information, see "BRS Metrics" in *BRM System Administrator's Guide*.



# 7

## New Features in PDC

Learn about the new features in Oracle Communications Pricing Design Center (PDC) 15.0.

Topics in this document:

- [New Features in PDC 15.0.1](#)
- [New Features in PDC 15.0.0](#)

### New Features in PDC 15.0.1

PDC 15.0.1 includes the following enhancements:

- [Subscription Term Enhancements](#)
- [Triggering Either In-Advance or Post-Expiration Notifications](#)
- [New Mappings for PDC TMF 620 API](#)
- [Updated Examples in PDC TMF 620 REST API](#)

### Subscription Term Enhancements

PDC now supports the following subscription term enhancements:

- **Minimum Contract Length:** You can now specify a minimum length for a contract with corresponding penalty charges for early cancellation. If customers cancel early, they must pay the remaining balance up to the minimum contract length.

For example, assume a subscription term has a 1-year commitment period, a minimum contract length of 4 months, and a \$50 monthly fee. Customers would be charged \$50 for each month remaining in the 4-month minimum contract length. A customer canceling after 1 month would pay \$150, and a customer canceling after 3 months would pay \$50. A customer canceling after 6 months would pay \$0 because they already paid the 4-month minimum.

- **Penalty Fees:** The penalty fee can now consist of an early termination fee, the remaining contract balance, or both.

In previous releases, the penalty fee could be an early termination fee or the contract balance. You could not apply both.

For more information, see "About Penalty Fees" in *PDC Creating Product Offerings*.

To implement these enhancements, use the following:

- The PDC UI. See "Configuring Early Termination Fees" in *PDC Online Help*.
- The following XML tags in your **ImportExportPricing** input file: **minimumContractLength**, **minimumContractUnit**, and **penaltyOptions**. See the *PDC\_home/apps/Samples/Examples/Sample\_SubscriptionTerms.xml* file and "Subscription Terms" in *PDC Creating Product Offerings*.

## Triggering Either In-Advance or Post-Expiration Notifications

PDC now allows you to configure the following to generate notifications in advance, after expiration, or both. In previous releases, in-advance and post-expiration notifications were either both enabled or both disabled.

- **Balance elements:** You can configure any currency or noncurrency balance element to trigger notification events when its validity period is about to expire, when it has already expired without new funds being added, or for both.
- **Product expiration:** You can configure a subscription to trigger notification events before the subscription expires, after the subscription expires, or for both.
- **Subscription renewals:** You can configure a subscription to trigger notification events before it is due for renewal, after it is past due for renewal, or for both.

For information, see "Configuring BRM to Send Notifications to External Notification Applications" in *BRM Managing Customers*.

## New Mappings for PDC TMF 620 API

The [REST API Reference for Pricing Design Center TMF 620 API](#) supports new mappings for the following:

- GET, POST, and PATCH of product offering with extensions (proration settings, billing cycle settings, discount rules, triggers).
- GET, POST, and PATCH of attribute-based alterations (discount selector).
- PATCH of product offerings with selectors using service, event, and account attributes for subscription or usage events.
- Account-level charge and discount offers.

To view the new mappings, see "Mapping Product Offerings" in *PDC REST Services Manager Integration Guide*.

## Updated Examples in PDC TMF 620 REST API

The product offering price endpoints in [REST API Reference for Pricing Design Center TMF 620 API](#) includes additional examples using charge selectors.

## New Features in PDC 15.0.0

This section lists the features introduced between PDC 12.0 Patch Set 8 and PDC 15.0.0.

For information about the features introduced between PDC 12.0 and PDC 12.0 Patch Set 8, see "[New Features in PDC](#)" in *BRM 12.0 Patch Set Release Notes*.

PDC 15.0.0 includes the following enhancements:

- [Support for Purchasing Same Offer Multiple Times with Separate Balances](#)
- [PDC Supports Debiting in Discounts Consumed Immediately](#)
- [New TMF-Based REST API for PDC](#)
- [Support for Full-Day Discounts](#)
- [New PDC REST API](#)

- [Validation for Dynamic Charging](#)

## Support for Purchasing Same Offer Multiple Times with Separate Balances

Previously, customers could extend the validity of a balance by purchasing an offer again, and BRM added the new balance to the existing balance. Now, you can choose to track the new and existing balances separately, with separate validity dates.

You can choose from two new options:

- **Longest date:** Extends the old subscription with a separate balance, setting the validity end date to whichever is later, the new or existing validity.
- **Cumulative validity:** Extends the old subscription with a separate balance, setting the validity end date by adding the new validity to what remains of the old validity.

For example, on June 1, a customer purchases an add-on bundle that grants 3GB of data, is valid for seven days, and has a grace period of four days. On June 3, after using 1GB, they purchase the bundle again. With both options, the new 3GB balance is added to a new balance group, separate from the remaining 2GB in the old balance group.

With the longest date option, the new balance is valid starting on June 3, and BRM compares the validity periods of the old and new balances to set the validity end date for the new balance to the later of the two end dates, June 10. The old balance retains the original validity dates.

With the cumulative validity option, the new balance is valid starting on June 8. BRM adds the validity period of the old balance to the new balance to set the validity end date for the new balance to June 15. The old balance retains the original validity dates.

You can choose the new options using:

- The PDC UI. When customizing offers in bundles, select the new options from the **Behavior** menu in the Purchase area.
- The **ImportExportPricing** utility. When creating bundles in XML, set the value `<purchaseMode>` element under the `<bundledProductOfferingItem>` element to either `LONGEST_DATE_NEW_SUB_BAL` or `EXTEND_NEW_SUB_BAL`.

For information, see "About Purchasing the Same Offer Multiple Times" in *PDC Creating Product Offerings*.

## PDC Supports Debiting in Discounts Consumed Immediately

You can now create currency-based discounts in PDC that are deducted from the customer's account balance immediately. To do so, you add the new **Instant Debit** balance impact type to your discount.

### Note:

The **Instant Debit** balance impact type is supported if all of the following are true:

- ECE is enabled in the system
- It is included in a standard discount or a standard chargesharing pricing profile for ECE charging
- It uses currency balance elements
- It is included in fixed or percentage discounts

For information, see "About Discount Offers and Discounts" in *PDC Creating Product Offerings*.

## New TMF-Based REST API for PDC

PDC contains a new TMF-based REST API, allowing you to manage a BRM system's product offerings. The PDC TMF REST API can perform the following operations:

- Retrieves one or more product offerings, product offering prices, or product specifications
- Updates product offerings, product offering prices, or product specifications
- Creates product offerings, product offering prices, or product specifications
- Deletes product offerings, product offering prices, or product specifications
- Manages event notifications

For information, see [REST API Reference for Pricing Design Center TMF 620 API](#).

## Support for Full-Day Discounts

Previously, when rounding to midnight was disabled, and a discount was purchased after midnight, the discount would not be applied to the entire day. For example, a discount purchased at 15:00 on June 1 would apply only from 15:00 through 24:00 on June 1. Now, you can specify to apply the discount to the entire day even when rounding to midnight is disabled. That is, a discount purchased at 15:00 would apply from 00:00 through 24:00 on June 1.

You can configure this option using the PDC UI or the **ImportExportPricing** utility.

When creating discounts in an XML file, you set the value in the **<validityRounding>** element under the **<alterationOffering>** element. You can set **<validityRounding>** to one of the following:

- **OFF**: Sets the discount start time to the time of purchase.
- **ON**: Sets the discount start time to midnight (00:00:00) of the day the discount is purchased.
- **NOT\_SET**: Uses the systemwide setting. This is the default.

For information, see "Configuring Discount Validity Rounding" in *PDC Creating Product Offerings*.

## New PDC REST API

PDC contains a new REST API that allows you to do the following:

- Manage pricing components in your BRM system. For example, you can create, modify, and delete charge offers, discount offers, and selectors.
- Manage setup components in your BRM system. For example, you can create, modify, and delete setup components that PDC manages, such as balance elements, custom rules, deliverables, and tax codes.

For information, see [REST API Reference for Pricing Design Center](#).

## Validation for Dynamic Charging

Previously, you could dynamically override pricing at purchase time with no validation. Now, you create price tags as setup components with validation rules to determine valid overrides for charge offers and discount offers at purchase time.

You configure price tags as setup components, add them to balance impacts when creating charge offers and discount offers, and set their values at purchase time.

You use the **ImportExportPricing** utility or the PDC UI to create the price tag setup components and add them to balance impacts. The rules configured in the setup components determine which price tags are valid for a given balance impact and which values can be used at purchase time. You can restrict price tags to certain balance elements, resource units, and services. You can restrict the values that can be used to a list or range of values.

For example, you could create the following price tag setup components:

- Applicable to the minute unit of free minutes resources of TelcoGSM and Telephony services, and the only permitted values are 10 and 20.
- Applicable to any unit of US Dollars resources of TelcoGSM services, and permitted values are between 100 and 200.
- Applicable to the byte unit Euro resources of TelcoGSM services, with no restrictions on the value.

You cannot use price tags with charge shares or temporary balance elements in discount offers.

For information, see "Configuring Price Tags" in *PDC Creating Product Offerings*.

# 8

## New Features in Billing Care

Learn about the new features in Oracle Communications Billing Care 15.0 releases.

Topics in this document:

- [New Features in Billing Care 15.0.1](#)
- [Enhancements in Billing Care 15.0.0](#)

### New Features in Billing Care 15.0.1

Billing Care 15.0.1 includes the following enhancements:

- [Billing Care Now Supports Contracts for All Revenue Recognition Types](#)
- [Authorization for Billing Care Contracts View](#)
- [Authorization for Billing Care Batch Payment Process and Batch Template Views](#)
- [Itemized Tax Calculation for Disputes and Settlements](#)
- [Standardized Date and Time Formats](#)
- [Enhancements for Batch Payments, Refunds, and Reversals](#)
- [Tracking CSR Activity for Audit Purposes](#)

### Billing Care Now Supports Contracts for All Revenue Recognition Types

Billing Care now supports contracts when deliverable-based recognition is disabled. A contract is a subscription with terms your customers agree to when purchasing it. The terms define the commitment period and options for canceling and renewing the subscription. See "Managing Customer Contracts" in *BRM Managing Customers* for more information.

In previous releases, Billing Care supported contracts only when deliverable-based revenue recognition was enabled.

To support contracts, Billing Care includes the following enhancements:

- The Account Creation wizard now displays the **Terms** stop, regardless of whether deliverable-based revenue recognition is enabled.

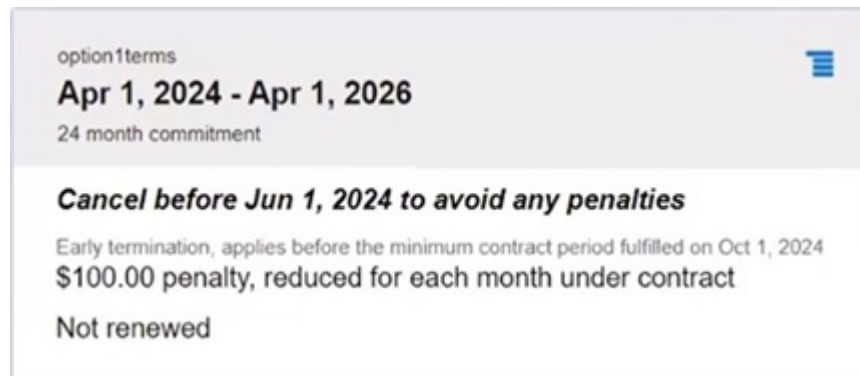
#### **Note:**

The Account Creation wizard grays out the **Terms** stop and skips the **Terms** page when a package does not contain terms.

- The **Subscriptions** area on the **Bills** tab has been obsoleted. To view all subscriptions, packages, and contracts a customer owns, you now click the **Assets** area on the **Bills** tab.
- The new Filtered Services dialog box allows you to filter services-focused asset cards by service type, service status, or service ID.

- On the **Assets** page in the **Services** and **Offers** view, assets cards now display a **View Contract** button when a package contains terms.
- The **Assets** page includes a new **Contracts** view, which allows you to view details about the contract's terms, such as the commitment period, the grace period, the penalty for canceling early, and the auto-renewal options. [Figure 8-1](#) shows a sample asset card in the **Contracts** view.

**Figure 8-1 Example Asset Card in Contracts View**



For more information, see the following in *Billing Care Online Help*:

- [Assets](#)
- [Purchase](#)

You can also customize the information displayed on the contract term's asset card.

There are also two new endpoints in the Billing Care REST API to support this feature:

- `GET /bcws/webresources/v1.0/subscriptions/account/{id}/purchasedcontracts` ([Get Purchased Contracts for an Account](#))
- `GET /bcws/webresources/v1.0/subscriptions/contracts/{id}/services` ([Get Services for a Contract](#))

For more information about these endpoints, see [REST API Reference for Billing Care](#).

## Authorization for Billing Care Contracts View

Billing Care supports authorization for the new Billing Care Contracts view. The authorization Subscription resource includes the following new actions:

- **ContractRenew:** Allows the user to enable or disable a contract's auto-renewal options in Billing Care or through the Billing Care REST API.
- **ContractTerminate:** Allows the user to cancel a customer's contract in Billing Care or through the Billing Care REST API.

When a user does not have these resource grants:

- The Billing Care UI hides the auto-renewal and termination actions on all contract asset cards.
- The Billing Care REST API generates these error messages when users attempt to perform the auto-renewal or termination actions:
  - You do not have permission to enable or disable auto-renew facility for contracts.

- You do not have permission to terminate a contract.

For more information, see "About Billing Care Authorization Resources" in *BRM Security Guide*.

## Authorization for Billing Care Batch Payment Process and Batch Template Views

Billing Care supports authorization for the new Billing Care Batch Payment Process and Batch Template views. The authorization Payment resource includes the following new actions:

- **BatchTemplateCreate**: Allows the user to create batch templates in Billing Care or through the Billing Care REST API.
- **BatchTemplateDelete**: Allows the user to delete batch templates in Billing Care or through the Billing Care REST API.
- **BatchTemplateModify**: Allows the user to modify batch templates in Billing Care or through the Billing Care REST API.
- **BatchProcess**: Allows the user to validate and submit batch payments, batch reversals, and batch refunds in Billing Care or through the Billing Care REST API.
- **noManualAllocationMandatory**: When the user runs validation, it allows validation to pass when a payment amount is less than the total due for the account.

For more information, see "About Billing Care Authorization Resources" in *BRM Security Guide*.

## Itemized Tax Calculation for Disputes and Settlements

You can now view details about the taxes applied or reversed during accounts receivable operations and payments at the following level:

- **Itemize**: BRM segregates tax details based on the tax code and tax jurisdiction.
- **Summarize**: BRM segregates tax details based on the tax code only.

If the **TaxReturnJuris** business parameter is enabled (set to **itemize**), you can see information based on the tax code and jurisdiction level for each item. The settled tax amount, settled taxed amount, and settled non-taxed amount will be shown as a consolidated amount for each item if it is set to **summarize** (default).

For more information, see "Working with Disputes" in *Billing Care Online Help*.

## Standardized Date and Time Formats

Date and time formats have been standardized across the Billing Care user interface. Earlier, the date used the standard dd/mm/yyyy format for displaying and inputting dates across all locales. It now uses a locale-specific date standard. The time format has been standardized to the 24-hour format regardless of the locale.

For more information, see "About Date and Time Formats (Release 15.0.1 or later)" in *Billing Care Online Help*.

## Enhancements for Batch Payments, Refunds, and Reversals

The Billing Care UI now supports creating and editing batches and editing imported batches. You can create, edit, import, and validate batch payment files (**.pmt**) directly in the Billing Care



UI, with batch templates stored in the database for efficiency. Key functionality includes validating batch files and processing them based on standard or custom templates, managing individual records within a batch, and handling errors by editing failed records and creating new batches. You can also manually suspend payments requiring special handling and allocate payments to bills or items.

To support the Batch Payments feature, Billing Care includes the following enhancements:

- **Batch Creation and Editing:** You can create or import and edit batches directly with the Billing Care UI. See "Creating or Importing and Editing Batches (Release 15.0.1 or later)" in *BRM Configuring and Collecting Payments* for more information.
- **Record Management:** Enhanced table interface allows you to add, edit, suspend, remove suspension, allocate, and delete individual records within batches. See "Working with Individual Records in Batches (Release 15.0.1 or later)" in *BRM Configuring and Collecting Payments* for more information.
- **Validation and Submission:** You can see the results of validation in the GUI and fix incorrect batch entries before submitting them. See "Validating and Submitting Batches (Release 15.0.1 or later)" in *BRM Configuring and Collecting Payments* for more information.
- **Template Management:** You can create, edit, or duplicate batch templates directly within the UI, simplifying batch processing setup. See "Working with Batch Templates (Release 15.0.1 or later)" in *Billing Care Online Help* for more information.
- **Error Handling:** Manual suspension of payments and management of failed records facilitate error resolution and batch resubmission. See "Suspending a Payment in a Batch" and "Removing Suspension of a Payment in a Batch" in *Billing Care Online Help* for more instructions.

For detailed instructions, see "Batch Payments, Refunds, and Reversals" in *Billing Care Online Help* and "Processing Payment Batches in Billing Care" in *BRM Configuring and Collecting Payments*.

There are also new endpoints in the Billing Care REST API to support this feature:

- POST /bcws/webresources/v1.0/batchpayments/validate (Validate a Payment Batch)
- POST /bcws/webresources/v1.0/batchpayments/submit (Submit a Payment Batch)
- POST /bcws/webresources/v1.0/batchrefund/validate (Validate a Refund Batch)
- POST /bcws/webresources/v1.0/batchrefund/submit (Submit a Refund Batch)
- POST /bcws/webresources/v1.0/batchreversal/validate (Validate a Reversal Batch)
- POST /bcws/webresources/v1.0/batchreversal/submit (Submit a Reversal Batch)
- POST /bcws/webresources/v1.0/batchpayments/batchtemplates (Create a Batch Template)
- PUT /bcws/webresources/v1.0/batchpayments/batchtemplates/{id} (Update a Batch Template)
- DELETE /bcws/webresources/v1.0/batchpayments/batchtemplates/{id} (Delete a Batch Template)
- GET /bcws/webresources/v1.0/batchpayments/batchtemplates (Get Batch Templates)
- GET /bcws/webresources/v1.0/batchpayments/batchtemplates/{id} (Get a Batch Template by Template ID)

For more information about these endpoints, see [REST API Reference for Billing Care](#).

## Tracking CSR Activity for Audit Purposes

When CSRs perform activity in Billing Care, it can now store user context information, such as the CSR's client machine IP address, in the following fields of the **user\_activity** database object:

- **PIN\_FLD\_API\_USER**: Contains the Web Services Manager user. By default, it is set to NULL, but you can override this behavior using the Billing Care SDK.
- **PIN\_FLD\_EXTERNAL\_USER**: Contains the external CSR's login or ID. By default, it is set to the external login ID, but you can override this behavior using the Billing Care SDK.
- **PIN\_FLD\_NAP\_IP\_ADDRESS**: Contains the client machine's IP address. By default, Billing Care attempts to set it to the client machine's IP address by looking up the X-Forwarded-For header value. If it is not found, it is set to the Billing Care service's IP address. However, you can override this behavior using the Billing Care SDK.
- **PIN\_FLD\_CORRELATION\_ID**: Contains an ID to tag for collating an operation. By default, it is set to NULL, but you can override this behavior using the Billing Care SDK.

 **Note:**

The Web server must pass this information so Billing Care can persist it in the BRM database.

## Enhancements in Billing Care 15.0.0

This section lists the features introduced between Billing Care 12.0 Patch Set 8 and Billing Care 15.0.0.

For information about the features introduced between Billing Care 12.0 and Billing Care 12.0 Patch Set 8, see "[New Features in Billing Care](#)" in *BRM 12.0 Patch Set Release Notes*.

Billing Care 15.0.0 includes the following enhancements:

- Billing Care screens and dialog boxes now use an upgraded Oracle JavaScript Extension Toolkit (JET) version. The screens were also migrated to a new style and syntax to improve the client tool's overall look and feel.

 **Note:**

You must update any Billing Care customizations that use ojComponent knockout binding (`data-bind="ojComponent:{...}"`) to use custom element equivalents. This is because the Oracle JET 12.0.0 release has removed support for ojComponent knockout binding.

- A few Billing Care screens that still used LUX grids in previous releases were changed to use Oracle JET instead.

For more information, see *Billing Care Online Help*.

# 9

## New Features in Business Operations Center

Learn about the new features in Oracle Communications Business Operations Center 15.0.

Topics in this document:

- [New Features in Business Operations Center 15.0.1](#)
- [New Features in Business Operations Center 15.0.0](#)

### New Features in Business Operations Center 15.0.1

Business Operations Center 15.0.1 includes the following enhancements:

- [Standardized Date and Time Formats](#)

#### Standardized Date and Time Formats

Date and time formats have been standardized across the Business Operation Center user interface. Earlier, the date used the standard dd/mm/yyyy format for displaying and inputting dates across all locales. It now uses a locale-specific date standard. The time format has been standardized to the 24-hour format regardless of the locale.

For more information, see "About Date and Time Formats (Release 15.0.1 or later)" in *Business Operations Center Online Help*.

### New Features in Business Operations Center 15.0.0

This section lists the features introduced between Business Operations Center 12.0 Patch Set 8 and Business Operations Center 15.0.0. For information about the features introduced between Business Operations Center 12.0 and Business Operations Center 12.0 Patch Set 8, see "[New Features in Business Operations Center](#)" in *BRM 12.0 Patch Set Release Notes*.

Business Operations Center now allows you to assign one or more roles to each custom job category. This will enable you to control which users have permission to access each custom job category. For example, you could restrict access to Custom Job Category 1 to users with the Junior CSR role and access to Custom Job Category 2 to users with the Manager role.

Previously, you assigned all custom job categories to the same role.

For information, see "Configuring Business Operations Center to Run Custom Applications" in *BRM System Administrator's Guide*.

# 10

## Opcode Changes

Learn about new and modified opcodes in Oracle Communications Billing and Revenue Management (BRM) 15.0.

Topics in this document:

- [New Standard Opcodes](#)
- [New Policy Opcodes](#)
- [Changed Standard Opcodes](#)
- [Changed Policy Opcodes](#)

For more information about the opcodes, see "Opcode Descriptions" in *BRM Opcode Guide*.

### New Standard Opcodes

[Table 10-1](#) lists the standard opcodes that have been introduced in BRM 15.0.

**Table 10-1 New FM Standard Opcodes**

New Standard Opcode	Description
PCM_OP_CUST_ASSOCIATE_ROLE	(15.0.0) Associates the <b>/config/role</b> object to the respective service.
PCM_OP_CUST_CREATE_ROLE	(15.0.0) Creates a new <b>/config/role</b> object.
PCM_OP_CUST_DELETE_ROLE	(15.0.0) Deletes the <b>/config/role</b> object.
PCM_OP_CUST_UPDATE_ROLE	(15.0.0) Updates the <b>/config/role</b> object.
PCM_OP_INSTALLMENT_PROPOSAL	(15.0.0) Based on the input parameters, such as the installment amount, the installment term, and the start date, the opcode divides the installment amount into an equal number of installments. If the installment amount cannot be divided into equal installments, the opcode rounds it off to the nearest amount and adds the remaining amount to the last installment.
PCM_OP_JOB_PROCESS_DEFINITION	(15.0.0) Creates, modifies, and deletes a job definition created through Business Operations Center.

### New Policy Opcodes

[Table 10-2](#) lists the policy opcodes that have been introduced in BRM 15.0.

**Table 10-2 New FM Policy Opcodes**

New Policy Opcode	Description
PCM_OP_AR_POL_FILL_TAXINFO	(15.0.1) Allows you to change the tax code associated with the item adjustment. The item adjustment opcode only uses the tax code and tax supplier from the output list of this policy opcode.

**Table 10-2 (Cont.) New FM Policy Opcodes**

New Policy Opcode	Description
PCM_OP_CONTRACT_POL_CANCEL_CONTRACT	(15.0.1) Allows you to customize how penalty charges are applied during contract cancellation.
PCM_OP_SUBSCRIPTION_POL_PREP_OFFERING	(15.0.1) Allows you to customize the purchase offering's input flist.
PCM_OP_JOB_POL_POST_PROCESS_DEFINITION	(15.0.0) Allows for post processing validation.
PCM_OP_JOB_POL_VALIDATE_DEFINITION	(15.0.0) Validates the job definition object when it is being created.

## Changed Standard Opcodes

Table 10-3 lists the standard opcodes that have been modified in BRM 15.0 releases.

**Table 10-3 Changed Standard Opcodes**

Changed Standard Opcode	Description
PCM_OP_AR_GET_ACCT_BILLS PCM_OP_AR_GET_BILLS	(15.0.1) Modified the PIN_FLD_RESULTS output flist array to include this new field: <ul style="list-style-type: none"> <li>PIN_FLD_TOTAL_DUE: The total due for the bill.</li> </ul>
PCM_OP_BAL_TRANSFER_BALANCE	(15.0.1) Modified the PIN_FLD_TRANSFERS_INTO output flist array to include this new substruct: <ul style="list-style-type: none"> <li>PIN_FLD_LOAN_INFO: Substruct for passing information about the subscriber's loan.</li> </ul>
PCM_OP_CONTRACT_CANCEL_CONTRACT PCM_OP_PRICE_COMMIT_SUBSCRIPTION_TERM PCM_OP_SUBSCRIPTION_CALC_QUOTE	(15.0.1) Modified the PIN_FLD_PENALTY_OPTIONS output flist field to include these additional values: <ul style="list-style-type: none"> <li><b>3:</b> The penalty fee is calculated based on the remaining contract balance plus a flat termination fee.</li> <li><b>4:</b> The penalty fee is calculated based on the remaining contract balance plus a prorated termination fee.</li> </ul>
PCM_OP_CONTRACT_CREATE_CONTRACT	(15.0.1) Modified to include the following new input flist field: <ul style="list-style-type: none"> <li>PIN_FLD_POID: Contains the type-only POID of the extended / <b>subscriber_contract</b> object.</li> </ul>
PCM_OP_CUST_COMMIT_CUSTOMER PCM_OP_CUST_MODIFY_CUSTOMER PCM_OP_SUBSCRIPTION_PURCHASE_DEAL	(15.0.1) Modified the PIN_FLD_CONTRACT_INFO substruct to include the following new input flist fields: <ul style="list-style-type: none"> <li>PIN_FLD_POID: Contains the partial POID of the subscriber contract (/ <b>subscriber_contract</b> object) to create. The type and database sub-fields are used during creation, and all other sub-fields are ignored.</li> <li>PIN_FLD_INHERITED_INFO: Contains inherited information for the / <b>subscriber_contract</b> object.</li> </ul>
PCM_OP_EXEC_SPROC	(15.0.1) Modified to include the following new input flist fields: <ul style="list-style-type: none"> <li>PIN_FLD_ARGS.PIN_FLD_ARG: The name of the argument.</li> <li>PIN_FLD_ARG: The name of the argument for the ref-cursor type.</li> </ul>
PCM_OP_LOAN_GET_LOAN	(15.0.1) Modified to include the following new input flist field: <ul style="list-style-type: none"> <li>PIN_FLD_FLAGS: The flag. The default is 0, which specifies to get the total loan amount and total service fee. A value of <b>0x01</b> (PIN_LOAN_FLG_GET_LOAN_LIMIT) specifies to return only the loan limit details.</li> </ul>

**Table 10-3 (Cont.) Changed Standard Opcodes**

Changed Standard Opcode	Description
PCM_OP_PRICE_GET_PRICE_LIST PCM_OP_PRICE_SET_PRICE_LIST	(15.0.1) Modified the PIN_FLD_PENALTY_OPTIONS output flist field to include these additional values: <ul style="list-style-type: none"> <li>• <b>3:</b> The penalty fee is calculated based on the remaining contract balance plus a flat termination fee.</li> <li>• <b>4:</b> The penalty fee is calculated based on the remaining contract balance plus a prorated termination fee.</li> </ul>
PCM_OP_PYMT_TOPUP	(15.0.1) Modified the PIN_FLD_LOAN_INFO substruct to include these new output flist fields: <ul style="list-style-type: none"> <li>• PIN_FLD_AMOUNT: The amount consumed from the top-up against the subscriber's loans.</li> <li>• PIN_FLD_AVAILABLE_LOAN_LIMIT: The available loan amount that can be granted to the subscriber.</li> <li>• PIN_FLD_CREDIT_LIMIT: The maximum loan amount that can be granted to the subscriber.</li> <li>• PIN_FLD_OUTSTANDING_AMOUNT: The outstanding loan amount that needs to be paid back by the subscriber.</li> </ul>
PCM_OP_AR_GET_ITEM_DETAIL	(15.0.0) Modified the PIN_FLD_RESULTS array to include new output flist fields: <ul style="list-style-type: none"> <li>• PIN_FLD_TAXES.SETTLED_TAX: Contains the tax amount settled as part of the payment or adjustment.</li> <li>• PIN_FLD_SETTLED_TAXED_AMOUNT: Contains the taxable charge settled as part of the payment or adjustment.</li> </ul>
PCM_OP_BILL_DEBIT	(15.0.0) Modified to include this new input flist field: <ul style="list-style-type: none"> <li>• PIN_FLD_FLAGS: The flag. Possible values are reserved, PIN_BILL_FLG_BILL_DEBIT_NC_ADJUSTMENT (1) or used for noncurrency account adjustments (2).</li> </ul>
PCM_OP_CUST_COMMIT_CUSTOMER	(15.0.0) Modified the PIN_FLD_PRICE_TAGS array to include this new input flist field: <ul style="list-style-type: none"> <li>• PIN_FLD_RESOURCE_ID: Contains the resource ID with the tag name to be overridden.</li> </ul>
PCM_OP_CUST_MODIFY_CUSTOMER	(15.0.0) Modified to include new input flist fields: <ul style="list-style-type: none"> <li>• PIN_FLD_PRICE_TAGS.PIN_FLD_RESOURCE_ID: Contains the resource ID with the tag name to be overridden.</li> <li>• PIN_FLD_RESOURCE_ID: Contains the resource ID.</li> </ul>
PCM_OP_INV_VIEW_INVOICE	(15.0.0) This output flist field is removed: <ul style="list-style-type: none"> <li>• PIN_FLD_HEADER_NUM</li> </ul> (15.0.0) This output flist field under the PIN_FLD_FORMATS array is removed: <ul style="list-style-type: none"> <li>• PIN_FLD_HEADER_NUM</li> </ul>
PCM_OP_JOB_PROCESS_TEMPLATE	(15.0.0) Modified to include new output flist fields: <ul style="list-style-type: none"> <li>• PIN_FLD_DELETED_FLAG: Indicates whether the <b>job template</b> was deleted or marked as closed. It is used for the delete PIN_FLD_ACTION.</li> </ul>

**Table 10-3 (Cont.) Changed Standard Opcodes**

Changed Standard Opcode	Description
PCM_OP_PRICE_GET_PRICE_LIST	<p>(15.0.0) Modified to include new output flist fields under the PIN_FLD_PRODUCTS array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_OFFER_VALIDITY_ROUNDING: Determines validity rounding at the offer level. Its value can be <b>0 (NOT_SET)</b>, <b>1 (ON)</b>, or <b>2 (OFF)</b>. The default value is <b>0 (NOT_SET)</b>.</li> <li>• PIN_FLD_SCALE_ROUNDING: Determines whether scale rounding is enabled. Its value can be <b>0 (OFF)</b> or <b>1 (ON)</b>. The default value is <b>0 (OFF)</b>.</li> </ul> <p>(15.0.0) Modified to include new output flist fields under the PIN_FLD_DISCOUNTS array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_DISCOUNT_VALIDITY_ROUNDING: Determines whether discount rounding is enabled. Its value can be <b>0 (NOT_SET)</b>, <b>1 (ON)</b>, or <b>2 (OFF)</b>. The default value is <b>0 (NOT_SET)</b>.</li> </ul> <p>(15.0.0) These output flist fields under the PIN_FLD_RATE_PLANS array is removed:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_OFFER_VALIDITY_ROUNDING</li> <li>• PIN_FLD_SCALE_ROUNDING</li> </ul>
PCM_OP_PRICE_SET_PRICE_LIST	<p>(15.0.0) Modified to include new input flist fields under the PIN_FLD_PRODUCTS array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_OFFER_VALIDITY_ROUNDING: Determines validity rounding at the offer level. Its value can be <b>0 (NOT_SET)</b>, <b>1 (ON)</b>, or <b>2 (OFF)</b>. The default value is <b>0 (NOT_SET)</b>.</li> <li>• PIN_FLD_SCALE_ROUNDING: Determines whether scale rounding is enabled. Its value can be <b>0 (OFF)</b> or <b>1 (ON)</b>. The default value is <b>0 (OFF)</b>.</li> </ul> <p>(15.0.0) Modified to include new input flist fields under the PIN_FLD_DISCOUNTS array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_DISCOUNT_VALIDITY_ROUNDING: Determines whether discount rounding is enabled. Its value can be <b>0 (NOT_SET)</b>, <b>1 (ON)</b>, or <b>2 (OFF)</b>. The default value is <b>0 (NOT_SET)</b>.</li> </ul> <p>(15.0.0) This input flist field under the PIN_FLD_RATE_PLANS array is removed:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_OFFER_VALIDITY_ROUNDING</li> <li>• PIN_FLD_SCALE_ROUNDING</li> </ul>
PCM_OP_PYMT_COLLECT	<p>(15.0.0) Modified to include new input flist fields under the PIN_FLD_CHARGES array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_INCLUDE_CHILDREN: Indicates whether to pick only the bill's items or all items for the entire hierarchy. It is used with <b>bill_object</b>. If it is set to <b>0</b>, it picks items only from that bill. If it is set to <b>1</b>, it includes items from the AR bill.</li> <li>• PIN_FLD_BILL_OBJ: Contains the bill object from an <b>/event/billing/charge</b> event that is being recovered. It is applicable only when PIN_FLD_COMMMAND is set to PIN_CHARGE_CMD_RECOVER_PAYMENT.</li> </ul> <p>(15.0.0) Modified to include new output flist fields under the PIN_FLD_ITEMS array:</p> <ul style="list-style-type: none"> <li>• PIN_FLD_TAXES: Contains the settled payment information per tax code per jurisdiction level.</li> </ul>

**Table 10-3 (Cont.) Changed Standard Opcodes**

Changed Standard Opcode	Description
PCM_OP_RATE_EVENT	(15.0.0) Modified to include new output flist entities: <ul style="list-style-type: none"> <li>PIN_FLD_RATE_PLAN_SELECTOR_OBJ field: Contains the POID for the rate plan selector object.</li> <li>PIN_FLD_RATE_PLAN_SELECTORS array: Contains the first non-matching column of the rate plan selector rows when the rating status is 21.</li> </ul>
PCM_OP_SUBSCRIPTION_PURCHASE_PRODUCT	(15.0.0) Modified to include this new input flist field under the PIN_FLD_PRICE_TAGS array: <ul style="list-style-type: none"> <li>PIN_FLD_RESOURCE_ID: Contains the resource ID.</li> </ul>
PCM_OP_SUBSCRIPTION_SET_PRODINFO	(15.0.0) Modified to include this new input flist field under the PIN_FLD_PRICE_TAGS array: <ul style="list-style-type: none"> <li>PIN_FLD_RESOURCE_ID: Contains the resource ID.</li> </ul>

## Changed Policy Opcodes

Table 10-4 lists the policy opcodes that have been modified in BRM 15.0 releases.

**Table 10-4 Changed Policy Opcodes**

Changed Policy Opcode	Description
PCM_OP_CONTRACT_POL_PREP_CONTRACT	(15.0.1) Modified to include this new input flist substruct: <ul style="list-style-type: none"> <li>PIN_FLD_INHERITED_INFO: Substruct for passing contract-related fields.</li> </ul>
PCM_OP_SUBSCRIPTION_POL_SPEC_CANCEL	(15.0.1) Modified to include this new input flist array: <ul style="list-style-type: none"> <li>PIN_FLD_FLAGS: Array for action flags, aligning the end date of rollover buckets.</li> </ul>
PCM_OP_INV_POL_FORMAT_INVOICE	(15.0.0) This input flist field under the PIN_FLD_INHERITED_INFO substruct is removed: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM</li> </ul>
PCM_OP_INV_POL_FORMAT_VIEW_INVOICE	(15.0.0) This input flist field is removed: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM</li> </ul> (15.0.0) This output flist field under the PIN_FLD_FORMATS array is removed: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM</li> </ul>
PCM_OP_INV_POL_PREP_INVOICE	(15.0.0) This input flist field under the PIN_FLD_INHERITED_INFO substruct is removed: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM</li> </ul>



# 11

## Storable Class Changes

Learn about new and modified storable classes in Oracle Communications Billing and Revenue Management (BRM) 15.0.

Topics in this document:

- [New Storable Classes](#)
- [Changed Storable Classes](#)

### New Storable Classes

[Table 11-1](#) lists the storable classes that have been introduced in BRM 15.0.

**Table 11-1 New Storable Classes**

New Storable Class	Description
<b>/config/batch_templates</b>	(15.0.1) Stores batch processing-related template data.
<b>/config/batch_templates/payment</b>	(15.0.1) Stores payment-related batch template data.
<b>/config/batch_templates/refund</b>	(15.0.1) Stores refund-related batch template data.
<b>/config/batch_templates/reversal</b>	(15.0.1) Stores reversal-related batch template data.
<b>/config/maxlength_validate</b>	(15.0.0) Stores business logic configuration parameters.
<b>/config/price_tags</b>	(15.0.0) Stores information of all the permitted <b>price_tags</b> that can be configured in offer.
<b>/config/role</b>	(15.0.0) Defines the permissions of a user.
<b>/event/job_definition/create</b>	(15.0.0) Records information about created <b>/job_definition</b> objects.
<b>/event/job_definition/delete</b>	(15.0.0) Records information about deleted <b>/job_definition</b> objects.
<b>/event/job_definition</b>	(15.0.0) Records information about <b>/job_definition</b> objects.
<b>/event/job_definition/modify</b>	(15.0.0) Records information about modified <b>/job_definition</b> objects.

### Changed Storable Classes

[Table 11-2](#) lists the storable classes that have been modified in the BRM 15.0 maintenance releases.

**Table 11-2 Changed Storable Classes**

Changed Storable Class	Description
<b>/history_subscriber_contract</b> <b>/subscriber_contract</b>	(15.0.1) Contains the following new field: <ul style="list-style-type: none"> <li>PIN_FLD_MINIMUM_CONTRACT_END_T specifies the timestamp when the contract's minimum length ends.</li> </ul> Also, the PIN_FLD_PENALTY_OPTIONS field includes these additional values: <ul style="list-style-type: none"> <li><b>3:</b> The penalty fee is calculated based on the remaining contract balance plus a flat termination fee.</li> <li><b>4:</b> The penalty fee is calculated based on the remaining contract balance plus a prorated termination fee.</li> </ul>
<b>/subscription_terms</b>	(15.0.1) Contains the following new fields: <ul style="list-style-type: none"> <li>PIN_FLD_MINIMUM_TERM_LENGTH specifies the minimum length that a customer must stay in the contract. If customers cancel early, they must pay the remaining balance up to the minimum contract length.</li> <li>PIN_FLD_MINIMUM_TERM_UNIT specifies the unit associated with the minimum term length, such as days, months, and years.</li> </ul> Also, the PIN_FLD_PENALTY_OPTIONS field includes these additional values: <ul style="list-style-type: none"> <li><b>3:</b> The penalty fee is calculated based on the remaining contract balance plus a flat termination fee.</li> <li><b>4:</b> The penalty fee is calculated based on the remaining contract balance plus a prorated termination fee.</li> </ul>
<b>/discount</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>PIN_FLD_DISCOUNT_VALIDITY_ROUNDING specifies validity rounding at the discount level. The default value is <b>0</b>.</li> </ul>
<b>/event/billing/discount/action</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>PIN_FLD_UNIQUE_ID is a unique ID that is used as an external ID.</li> </ul>
<b>/event/billing/product/action</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>PIN_FLD_UNIQUE_ID is a unique ID that is used as an external ID.</li> </ul>
<b>/event</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>PIN_FLD_GRANTED_BAL specifies the granted amount impacted for a sub_balance entry.</li> </ul>
<b>/invoice_detail</b>	(15.0.0) The following field has changed from an integer data type to a 64-bit integer type: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM (under PIN_FLD_FORMATS) is a generic user-definable header number field for each format.</li> </ul>
<b>/invoice</b>	(15.0.0) The following fields have changed from an integer data type to a 64-bit integer type: <ul style="list-style-type: none"> <li>PIN_FLD_HEADER_NUM is a generic user-definable header number field.</li> <li>PIN_FLD_HEADER_NUM (under PIN_FLD_FORMATS) is a generic user-definable header number field for each format.</li> </ul>

**Table 11-2 (Cont.) Changed Storable Classes**

Changed Storable Class	Description
<b>/job_definition</b>	(15.0.0) Contains the following new fields: <ul style="list-style-type: none"> <li>• PIN_FLD_RESOURCE_NAME is a unique job resource name.</li> <li>• PIN_FLD_CREATED_BY is a Business Operations Center user name that creates the job definition.</li> <li>• PIN_FLD_MODIFIED_BY is a Business Operations Center user name that modifies the job definition.</li> <li>• PIN_FLD_STATUS specifies the status of the job definition. The value can be active or expired.</li> </ul>
<b>/purchased_discount</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>• PIN_FLD_UNIQUE_ID is a unique ID that is used as an external ID.</li> </ul>
<b>/purchased_product</b>	(15.0.0) Contains the following new field: <ul style="list-style-type: none"> <li>• PIN_FLD_UNIQUE_ID is a unique ID that is used as an external ID.</li> </ul>
<b>/service/admin_client</b>	(15.0.0) Contains the following new fields: <ul style="list-style-type: none"> <li>• PIN_FLD_CONFIG_ROLE is a substruct containing configuration profile objects.</li> <li>• PIN_FLD_CONFIG_PROFILE_OBJ specifies the link to configuration profile objects for which the object was created.</li> </ul>
<b>/service/pcm_client</b>	(15.0.0) Contains the following new fields: <ul style="list-style-type: none"> <li>• PIN_FLD_CONFIG_ROLE specifies the configuration profile object.</li> <li>• PIN_FLD_CONFIG_PROFILE_OBJ specifies a link to the configuration profile object for which the object was created.</li> </ul>

# 12

## Event Notification Changes

Learn about new and modified event notifications in Oracle Communications Billing and Revenue Management (BRM) Suite 15.0.

Topics in this document:

- [New Event Notifications](#)
- [Changed Event Notifications](#)

### New Event Notifications

[Table 12-1](#) lists the event notifications that have been introduced in BRM 15.0.

**Table 12-1 New Event Notifications**

New Event Notification	Description
<code>/event/notification/service/aac/modify</code>	(15.0.1) Generated when a service's AAC fields are modified.

### Changed Event Notifications

No event notifications have been modified in BRM 15.0.

# 13

## Business Parameter Changes

Learn about new business parameters in Oracle Communications Billing and Revenue Management (BRM) 15.0.

Topics in this document:

- [New Accounts Receivable Business Parameter Entries](#)
- [New Billing Business Parameter Entries](#)
- [New Billing Flow Business Parameter Entries](#)
- [New Rating Business Parameter Entries](#)
- [New Subscription Business Parameter Entries](#)
- [New System Business Parameter Entries](#)

### New Accounts Receivable Business Parameter Entries

[Table 13-1](#) lists the accounts receivable business parameter entries introduced in BRM 15.0.

**Table 13-1** New Entries in `bus_params_AR.xml`

Business Parameter	Description
<b>EventAdjustmentUnallocation</b>	(15.0.1) Controls the transferable amount in event adjustments so that the sign of an item due will not change. The default is <b>disabled</b> . See "Enabling Accurate Handling of Event level Adjustment Amount" in <i>BRM Managing Accounts Receivable</i> .
<b>UseEventRoundingRulesForAdjustment</b>	(15.0.1) Controls the rounding rules for event adjustments. The default is <b>disabled</b> . See "Enabling Event Rounding Rules for Adjustment" in <i>BRM Managing Accounts Receivable</i> .

### New Billing Business Parameter Entries

[Table 13-2](#) lists the billing business parameter entries introduced in BRM 15.0.

**Table 13-2** New Entries in `bus_params_billing.xml`

Business Parameter	Description
<b>AddChildDueInIntermediateParentBill</b>	(15.0.1) Enables a child's due, adjusted, dispute, write-off, transferred, and received balance impacts to be added to the intermediate parent's balances. The default is disabled ( <b>0</b> ). See "Adding Child Due Amount in Intermediate Parent Account" in <i>BRM Managing Customers</i> .

## New Billing Flow Business Parameter Entries

Table 13-3 lists the billing flow business parameter entries introduced in BRM 15.0.

Table 13-3 New Entries in bus\_params\_billing\_flow.xml

Business Parameter	Description
BillingFlowSkipCheckForCyclicDSG	(15.0.0) Controls whether to skip the discount sharing group cyclic relationship check during trial billing. The default is <b>disabled</b> .

## New Rating Business Parameter Entries

Table 13-4 lists the rating business parameter entries introduced in BRM 15.0.

Table 13-4 New Entries in bus\_params\_rating.xml

Business Parameter	Description
TaxReturnJuris	(15.0.0) Controls whether taxes should be summarized by jurisdiction level: <ul style="list-style-type: none"> <li><b>summarize:</b> BRM reports the consolidated settled tax amount, settled taxed amount, and settled non-taxed amount for each item. This is the default.</li> <li><b>itemize:</b> BRM reports the settled tax and settled taxed amount at the tax code and jurisdiction level.</li> </ul> For more information, see "Configuring Itemized Taxation for A/R and Payments" in <i>BRM Calculating Taxes</i> .

## New Subscription Business Parameter Entries

Table 13-5 lists the subscription business parameter entries introduced in BRM 15.0.

Table 13-5 New Entries in bus\_params\_subscription.xml

Business Parameter	Description
DeleteSharingGroupDuringTermination	(15.0.0) Controls whether to delete the sharing group and sharing group members during account or service cancellation. The default is <b>disabled</b> .

## New System Business Parameter Entries

Table 13-6 lists the system business parameter entries introduced in BRM 15.0.

Table 13-6 New Entries in bus\_params\_system.xml

Business Parameter	Description
CMAuthorization	(15.0.0) Controls whether to perform fine-grained authorization for pcm_client and thick client applications. The default is <b>enabled</b> . For information, see "Managing Login Names and Passwords for BRM Access" in <i>BRM System Administrator's Guide</i> .

# 14

## Schema and Index Changes

Learn about new and changed schemas and indexes in Oracle Communications Billing and Revenue Management (BRM) Suite 15.0.

- [Schema and Index Changes in 15.0.1](#)
- [Schema and Index Changes in 15.0.0](#)

### Schema and Index Changes in 15.0.1

BRM 15.0.1 includes the following schema and index changes:

- The following tables are added:
  - CONFIG\_BATCH\_TEMPLATES\_FLDS\_T
  - CONFIG\_BATCH\_TEMPLATES\_T
- The following indexes are added:
  - I\_TOPUP\_BAL\_GRP\_\_ID
  - I\_CONFIG\_BATCH\_TEMPLATES\_\_ID
- The columns in [Table 14-1](#) are added:

**Table 14-1 Columns Added**

Table	Column Added
AU_SUBSCRIBER_CONTRACT_T	MINIMUM_CONTRACT_END_T
HISTORY_SUBSCRIBER_CONTRACT_T	MINIMUM_CONTRACT_END_T
REVENUE_DISTRIBUTION_T	MINIMUM_CONTRACT_AMOUNT
SUBSCRIBER_CONTRACT_T	MINIMUM_CONTRACT_END_T
SUBSCRIPTION_TERMS_T	MINIMUM_TERM_LENGTH MINIMUM_TERM_UNIT

### Schema and Index Changes in 15.0.0

For information about the schema and index changes between BRM 12.0 and BRM 15.0.0, see [BRM Schema and Index Changes](#).

# 15

## Known Problems

Learn about known problems in Oracle Communications Billing and Revenue Management (BRM) Suite 15.0 and the appropriate workarounds.

BRM Suite 15.0 contains no known problems.



# 16

## Deprecated Features

Learn about features that have been deprecated in Oracle Communications Billing and Revenue Management (BRM) Suite 15.0.

Topics in this document:

- [Deprecated Features in 15.0.0](#)

### Deprecated Features in 15.0.0

[Table 16-1](#) lists the features that have been deprecated in BRM Suite 15.0.0.

**Table 16-1** Deprecated Features in BRM Suite 15.0.0

Component	Description
Account Synchronization Manager	BRM and ECE no longer support Account Synchronization Manager (dm_ifw_sync). You now use Oracle Data Manager (DM) to synchronize data between ECE and the BRM database.
Business Configuration Center	BRM no longer supports Business Configuration Center (BCC).
Collections Center	BRM no longer supports the Collections Center client application. You must now use Billing Care instead for collections or debt management tasks. For more information, see "Collections" in <i>Billing Care Online Help</i> .
Payment Tool	BRM no longer supports the Payment Tool client application. You must now use Billing Care instead for processing payments. For more information, see "Payments" in <i>Billing Care Online Help</i> .
Synchronization Queue Manager	BRM no longer supports Synchronization Queue Manager (dm_aq). You now use Oracle DM to synchronize pricing data between BRM and external customer relationship management (CRM) applications.