

Oracle Financial Services Revenue Management and Billing

OR

Oracle Insurance Revenue Management and Billing

Version 26.1.0.0.0

Release Overview Guide

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Oracle Financial Services Revenue Management and Billing/Oracle Insurance Revenue Management and Billing Version 26.1.0.0.0 Release Overview Guide

Note: To improve the content readability, the above two products are collectively referred to as Oracle Revenue Management and Billing throughout this document.

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Preface

About this Document

This document describes the new features, enhancements, user interface level changes, and database level changes made in this release. The new features and enhancements are classified under three categories – Generic (which is intended for both domains), Financial Services, and Insurance. It lists and describes enhancements made in the framework. It also encloses the ORMB and OUAF deprecation notices and enables you to access the product documentation.

Intended Audience

This document is intended for the following audience:

- End-Users
- System Administrators
- Consulting Team
- Implementation Team

Organization of the Document

The information in this document is organized into the following sections:

Section No.	Section Name	Description
Section 1	Prerequisites	Lists some prerequisites for the existing customers while upgrading to the ORMB Version 26.1.0.0.0.
Section 2	New Features (Generic)	Lists and describes the new features introduced in this release that can be used in both financial services and health insurance domains.
Section 3	New Features (Specific to Financial Services)	Lists and describes the new features introduced in this release that can be used in the financial services domain.
Section 4	New Features (Specific to Insurance)	Lists and describes the new features introduced in this release which can be used in the health insurance domain.
Section 5	Enhancements (Generic)	Lists and describes the enhancements made to the features that are used in both financial services and health insurance domains.
Section 6	Enhancements (Specific to Financial Services)	Lists and describes the enhancements made to the features that are used in the financial services domain.

Section No.	Section Name	Description
Section 7	Enhancements (Specific to Insurance)	Lists and describes the enhancements made to the features that are used in the health insurance domain.
Section 8	User Interface (UI) Level Changes	Lists the changes made to the existing screens in ORMB.
Section 9	Database Level Changes	States the documents that you can refer for different database level changes.
Section 10	Technical Recommendations	Provides recommendations to improve the overall batch performance on the Windows and Linux platforms.
Section 11	Oracle Utilities Application Framework Version 25.4 Enhancements	Lists and describes the new features and enhancements made in OUAF Version 25.4.
Section 12	Deprecation Notices for OUAF Version 25.4	Lists the features and system data that are deprecated in this release or planned for deprecation in the future release of OUAF.
Section 13	Deprecation Notices for ORMB Version 26.1.0.0.0	Lists the features and system data that are deprecated in this release or planned for deprecation in the future release of ORMB.
Section 14	Product Documentation	Provides information on how to access the ORMB documentation.
Section 15	Technical Support	Provides instructions on how to avail the technical support for ORMB.

Conventions

The following conventions are used across the document:

Convention	Meaning
boldface	Boldface indicates graphical user interface elements associated with an action, or terms defined in the text.
<i>italic</i>	Italic indicates a document or book title.
<code>monospace</code>	Monospace indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or information that an end-user needs to enter in the application.

Related Documents

You can see the following documents for more information:

Document Name	Description
<i>Oracle Revenue Management and Billing Version 26.1.0.0.0 Release Notes</i>	Lists the new features and enhancements made in this release. It contains high-level information about the supported platforms, framework upgrade, supported upgrades, unsupported integrations, and media pack downloads. It also lists the discontinued features, bug fixes, and known issues in this release.
<i>Oracle Revenue Management and Billing Licensing Guide</i>	Lists different features which you can use when you acquire a license for the following products: • Oracle Financial Services Revenue Management and Billing • Oracle Insurance Revenue Management and Billing It also provides the licensing information about the third-party JARs and components which are included in the above-mentioned products.
<i>Oracle Revenue Management and Billing Quick Installation Guide</i>	Provides information about the media packs which are available for the current release. It contains information about the supported platforms, space requirements, and release-specific documentation library. In addition, it contains high-level information on how to install ORMB and selected additional software.
<i>Oracle Revenue Management and Billing Installation Guide</i>	Provides an overview about the application architecture. It contains detailed information about the software and hardware requirements, supported platforms, application server and database space requirements, and application server pre-requisites for supported platforms. It explains the installation and configuration menu options which are available during installation and advanced menu options which are available post installation. It also explains how to install OUAF, OUAF rollup packs, ORMB, and ORMB patches or rollup packs. It contains appendices which lists ORMB rollup packs and notices about third-party JAR and other components.

Document Name	Description
<i>Oracle Revenue Management and Billing Database Administrator's Guide</i>	Provides information about the supported database platforms and explains how to install database with or without demo data. It contains the standards and conventions that should be followed while working with ORMB database. In addition, it lists various configurations and implementation guidelines with respect to tablespace, encryption, storage, compression, indexes, initialization parameters, listener, table partitioning, performance monitoring, memory resource management, optimizer statistics and segment advisors, etc. It contains various appendices which lists the new objects added in ORMB, application services configured for default user groups, new objects added in OUAF, information about OUAF system tables and ORMB rollup packs, notices about third-party JAR and other components.
<i>Oracle Revenue Management and Billing Security Guide</i>	Highlights what's new in security! Describes all the security features available in ORMB for authentication, authorization, user access, database access, LDAP and SSO integration, audit, encryption, web services, and JNDI access. It also describes how to provide support for data masking, Oracle cloud object storage, groovy, HTTP proxy, keystore, truststore, whitelist, federated architecture, and object erasure. In addition, it explains how to garble the customer information.
<i>Oracle Revenue Management and Billing Server Administration Guide</i>	Provides detailed information about the product architecture, native support, directory structures, environment variables, logs, etc. It explains various concepts related to the batch server and lists and describes the scripts required for installing and configuring ORMB. It explains how to monitor the system and configure Web browser, Web application server, business application server, inbound web services, and batch server. It explains how to provide Oracle Cloud Support and how to integrate and monitor Oracle Scheduler. It contains various appendices which lists and describes the parameters available in the ENVIRON.INI, Web.xml, spl.properties, hibernate.properties, submitbatch.properties, threadpoolworker, coherence-cache.config.xml, and tangosol-coherence-override.xml files.

Document Name	Description
<i>Oracle Utilities Application Framework Business Process Guide</i>	Explains how to get acquainted with the user interface. It explains the different types of pages or portals that you may come across in the application. It explains how to set the user preferences and how to create, manage, assign, and complete a To Do in the application. It also explains how to submit reports and view historic reports in the application.
<i>Oracle Utilities Application Framework Administrative Guide</i>	Explains the general, security, user, designing, developing, and scripting options available in Oracle Utilities Application Framework (OUAF). It describes the user interface, database, configuration, and reporting tools available in OUAF. In addition, it provides information on how to configure incoming and outgoing messages and how to integrate Lightweight Directory Access Protocol (LDAP), Oracle Identity Manager (OIM), and Batch Scheduler with Oracle Revenue Management and Billing (ORMB).
<i>Oracle Revenue Management and Billing Business Process Guide</i>	Explains how to maintain the demographic, geographic, and financial objects (i.e. accounts) of a customer. It explains how to manage a customer's bills, payments, adjustments, credits, collections processing, statements and deposits in Oracle Revenue Management and Billing (ORMB). It also describes the financial transactions, case management, sales and marketing functions, rates engine, quotations, loans, how to monitor and execute job streams, and how to manage workflows, notifications, and overdue processing. In addition, it explains how to extract the data from the system using an extract template. The features listed and described in this document can be used in both financial services and health insurance domains.
<i>Oracle Revenue Management and Billing Administrative Guide</i>	Explains how to configure various features and functionalities in Oracle Revenue Management and Billing (ORMB). For example, billing, payments, adjustments, financial transactions, credits, collections processing, loans, service credits, background processes, quotations, case management, security, overdue processing, batch scheduler, workflow, and notifications, etc. The information available in this document can be used in both financial services and health insurance domains.

Document Name	Description
<i>Oracle Revenue Management and Billing Banking User Guide</i>	Describes various features which are available for the financial services business. For example, customer registration, customer 360° view, invoicing group, pricing management, multi-currency accounts, currency conversion, construct based billing and settlement, trial billing, product lifecycle management, subscription billing, mass pricing update, accrual, foreign exchange gain loss, transaction feed management, upload validated payment and adjustment data, freeze payments on notification, payment request, offset request, funding request, hold request, refund/write off request, dispute request, upload request, earnings credit rate, payment agreement request, invoice request, deal management, etc. It describes all screens related to these features and explains how to perform various tasks related to the feature in the application.
<i>Oracle Revenue Management and Billing Insurance User Guide</i>	Describes various features which are available for the following three lines of health insurance business – fully-insured group, self-funded, and individual. For example, customer registration, customer 360° view, pricing management, trial billing, transaction feed management, upload validated payment and adjustment data, freeze payments on notification, payment request, offset request, funding request, hold request, refund/write off request, upload request, payment agreement request, invoice request, inbound message processing, reconciliation, entity audit, premium repricing, etc. It describes all screens related to these features and explains how to perform various tasks related to the feature in the application.
<i>Oracle Revenue Management and Billing Upgrade Path Guide</i>	Explains the path and pre-requisites for upgrading Oracle Revenue Management and Billing from one version to another.

Document Name	Description
<i>Oracle Revenue Management and Billing Upgrade Guide</i>	Explains how to upgrade the ORMB application server and database from one version to another. It also explains how to migrate the ORMB data from one version to another and describes the additional tasks that you need to perform after upgrading from one version to another. It includes various appendices that contain information about new tables introduced in the current release, existing tables which are modified in the current release, dropped algorithms and algorithm types, dropped characteristic types, dropped algorithm parameters, dropped option types in feature configurations, ORMB rollup packs, and SQL statements used for data migration.
<i>Oracle Revenue Management and Billing Direct Database Upgrade Guide</i>	Explains how to directly upgrade the ORMB database from 2.5.0.1.0 or any later version to the current release. It also highlights any known issues during direct database upgrade and how to handle these issues in the database.
<i>Oracle Revenue Management and Billing Transaction Feed Management - Batch Execution Guide</i>	Explains the sequence in which the batches should be executed while performing various tasks in the Transaction Feed Management (TFM) module. It provides detailed information about each TFM batch and its parameters. It also indicates the restart and multi-threading ability of each batch. In addition, it recommends values for various parameters which can be used for tuning batch performance as per the available hardware.
<i>Oracle Revenue Management and Billing Batch Guide</i>	Provides detailed information about various batches which are used in different modules, such as billing, payments, financial transaction, pricing management, funding request, offset request, hold request, upload request, inbound message, payment agreement request, accruals, earnings credit rate, ILM, deferred revenue recognition, reconciliation, garbling, repricing, entity audit, statements, etc. It also contains information about the batch parameters and the batch restart and multi-threading abilities.
<i>Oracle Revenue Management and Billing Information Lifecycle Management (ILM) Implementation Guide</i>	Provides an overview of the Information Lifecycle Management (ILM) feature. It describes how to implement ILM for the Transaction Feed Management (TFM) and Billing modules. It also provides detailed information about the ILM batches and their parameters.
<i>Oracle Revenue Management and Billing FOP Reports Guide</i>	Explains how to extract data from the system using various FOP reports in Oracle Revenue Management and Billing.

Access to Oracle Support

Oracle customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

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Prerequisites

If a customer is already using the Transaction Feed Management feature and wants to upgrade to Oracle Revenue Management and Billing Version 26.1.0.0.0, then the customer needs to ensure the following (before upgrading):

- All bills generated in the system are in the **Complete** status. In other words, there should not be any bills in the **Pending** status. If there are any bills in the **Pending** status or if any billable charge (generated through TFM) is not yet billed, disaggregation and cancellation of transactions which are uploaded using any previous version will not happen successfully.
- Transactions which are uploaded using any previous version must not be in the **Initial Product Determined (INPD)** status. They can be in the **Uploaded (UPLD)**, **Invalid (INVL)**, **Error (EROR)**, **Completed (COMP)**, or **Cancelled (CNCL)** status.
- Equal to (=) or tilde (~) symbol is not used in any existing price item parameter code and value. Otherwise, erroneous results might occur.

New Features (Specific to Financial Services)

This section describes the following new features added in this release that can be used in the financial services domain:

- [Deal Dashboard](#)
- [PEPPOL PINT e-invoice format](#)
- [File Request Type Dashboard](#)
- [Feed Health Monitoring in FRT Dashboard](#)
- [Bill Contributions and Billing Variations](#)

Deal Dashboard

In this release Oracle Revenue Management and Billing provides you with a new and enriched deal dashboard which gives the relationship managers and deal users a single redwood workspace for deal pipeline visibility, required actions, deal search, and deal version comparison while preserving the existing business validations unless explicitly updated. Unlike the earlier dashboard where the entire workspace was clustered within a single screen, the new deal dashboard has been differentiated into three different tabs as given below with additional information as well as some behavioural changes:

Pipeline Conversion

The **Pipeline Conversion** tab provides a consolidated view of deal progress for the selected reporting period and dashboard scope. It also shows the summation of the number of deals pending for approval and the number of deals which are ready for finalization in the tab itself. The **Pipeline Conversion** tab contains the following zones:

Main Pipeline – The **Main Pipeline** zone showcases the number of deals in different statuses for the selected period displayed in a tile-based layout. It allows you to do the following tasks:

- Review pipeline progress across key deal statuses, including **Created**, **Pending for Approval**, **Return to Submitter**, **Ready for Finalization**, **Pending Client Acceptance**, **Pending for Review**, **Won**, and **Rejected**.
- Filter results by period, dashboard view, division, customer segment, and customer tier.
- Select a status to apply the associated status criteria in **Deal Search** tab, including multi-status results where applicable.

Points to Note:

Each tile in this zone represents the total number of deals in the corresponding status, segmented by deals created for customers, accounts, and prospects.

On clicking any tile, the **Deal Search** tab appears where you can view a list of deals for the respective status. You can then perform the required action on the deal or deal version.

Deal Count by Status - Used to view deal counts by deal status, segmented by customer, account, and prospect for the selected period.

Deal Revenue by Status - Review revenue by deal status through either a chart or table view for the selected period.

Points to Note:

If you hover over each record, you can see the revenue generated by each entity for the respective status. The currency in which the revenue is displayed for each entity is converted into an implementation currency which is configured in the installation table as there might be deals which are defined using multiple currencies.

The exchange rate of the currency while conversion into the implementation currency is based on the process effective date.

Required Actions

The **Required Actions** tab provides a current-user work queue to help users prioritize and complete deal-related tasks. It allows you to do the following tasks:

- View open work grouped into **Needs Attention** and **In Progress / Routed** buckets.
- Review completed and historical actions in the **Completed** bucket.
- Filter actions by period, division, customer segment, customer tier, dashboard view, queue bucket, deal entity, priority, category, and due-date range.
- Review action details such as category, priority, aging in days, and open to-do information.
- Navigate from a required action to the related deal, customer, account, or to-do item where applicable.

Points to Note:

In the previous release the priority of deals were represented numerically from 10 to 90, 10 being the highest and 90 being the least priority. In this release, the priority of deals are categorised as high, medium, and low for representation purposes.

Each bucket has its own filter using which you can view the list in each bucket as per your requirements.

Deal Search

The **Deal Search** tab now supports both simple and advanced search experiences, with clearer filtering and results navigation. It allows you to do the following tasks:

- Search by deal ID, deal identifier, entity type, customer or prospect name, creator, and date range.
- Use advanced criteria for customer and account identifiers, relationship manager, deal type, effective dates, template and contracted-deal indicators, and proposed revenue ranges.
- Apply dashboard scope filters, including division, customer segment, customer tier, and dashboard view.
- See applied filters and remove or revise criteria as needed.

- Review paged results with deal, customer or account, entity, start and end dates, revenue, currency, created date, and version information.
- Expand a deal result to review its versions and navigate to a selected deal or model.

In addition to the above tasks, the **Deal Search** tab adds comparison support for eligible deal versions. You can now compare a maximum of five deals which was earlier restricted to two. Once you reach the maximum deal selection, you will not be able to select other eligible deals as the checkbox corresponding to those deals will be disabled. The checkbox corresponding to each deal will appear only when you click the **Compare** button available in the **Search Deal** zone. The checkbox corresponding to deals which are in the **Pending Simulation** status or lower will be disabled. You can filter the list by using the basic and advanced options available in the **Search Filters** screen.

PEPPOL PINT e-invoice format

Oracle Revenue Management and Billing now supports invoice extraction using PEPPOL PINT electronic format alongside the existing UBL, EN16931, and PEPPOL formats. PINT is a Peppol standard for representing electronic invoices and credit notes in a way that can be used consistently across different countries. It typically contains structured information such as seller/buyer identifiers, invoice number and date, line items, quantities and prices, tax categories/rates, tax totals, invoice totals, payment information, currency, and references such as purchase-order numbers. PINT defines a common, relatively compact invoice data model based on international e-invoicing standards such as EN 16931 and uses structured syntaxes such as UBL 2.1. Countries can then create jurisdiction-specific PINT specifications-for example, adding or constraining fields needed for local tax and regulatory requirements. The change introduces format-specific validation and expanded invoice data mappings, enabling more configurable and standards-compliant extract templates.

The **C1-UBLBILEX** algorithm type remains unchanged. A new algorithm **C1-PINBILEX** is introduced in this release. If you want to extract the invoice in the **PINT** format, you need to attach the **C1-PINBILEX** algorithm to the **Bill Extract Method** algorithm spot of the required bill route type. In this algorithm, you need to specify the extract template using which you want to extract the invoice data in the **PINT** format. An out-of-box invoice extract template named **C1-INV_EXT_PEP_PINT** is shipped with the product. You can specify either the out-of-box invoice extract template or a custom invoice extract template in the algorithm parameter. The **C1-PINBILEX** algorithm will accordingly extract the invoice data using the **C1-InvoiceChargeExtract** business service and present it as per the field mapping defined in the invoice extract template.

On executing the **POSTROUT** batch, the system will invoke the **C1-PINBILEX** algorithm and extract the invoice data in the **PINT** format.

File Request Type Dashboard

In this release, the file request type (FRT) process is enhanced to provide more information about the uploaded files as they move through file detection, validation, and transformation stages. A new file request type (FRT) dashboard is introduced to present the processing results at the file, batch, and record levels. Also, a new option type named **Summarizer Agent** is introduced in the **C1-FLUPLD** feature configuration which generates narrative summaries and emails to help file owners understand the processing outcomes. To enable this, you need to set the **Summarizer Agent** option type to **Y** in the **C1-FLUPLD** feature configuration. The stages involved in processing the outcome by the file request type agents are described below:

File detection and processing summaries

The file watcher monitors files submitted through SFTP or the file upload interface during the configured observation period. For each file found, it evaluates the applicable FRT rules and passes files that meet those rules to the next processing stage. Its summary identifies the files found and the outcome of the rule checks. If no file is found, or the required rules are unavailable, processing for that file does not continue.

File validation and transformation produce separate summaries. This distinction helps users determine whether a file failed an integrity check or encountered a problem while its records were being transformed. Summaries include processing counts and the results relevant to each stage, such as the number of files that passed or failed validation and the number of records in each transformation status.

File validation

The validation stage applies the checks enabled in the FRT configuration. Depending on that configuration, these checks can include:

- Decryption of an encrypted file.
- Comparison of a file's checksum with a companion **<filename>.checksum** file in the same location.
- Header and footer validation.
- Duplicate file detection.
- File size validation.

The validation summary identifies the FRT, process date, files processed, files that passed or failed, and duplicate count. For each file, it can report the file name, location, size, record count, and the outcome of the applicable checks. For example, if checksum validation is enabled and the checksum file is missing or does not match, the file is recorded with an error rather than proceeding as a successfully validated file.

File transformation

The transformation stage supports fixed-position, CSV, PSV, and TSV input files. It converts their contents to the XML format required by the configured ORMB Business Object or Business Service.

The transformation summary provides an overall processing outcome and counts records by status for each file. These statuses include processed, pending, skipped, error, retry, ignored, in progress, and retry limit exceeded. Users can use these counts to identify files that require further investigation.

The FRT process also supports XML and JSON input formats. The transformation described above applies specifically to fixed-position and delimited files.

Narrative summaries and email notifications

When the **Summarizer Agent** flag is enabled, the process uses the available logs and processing results to generate readable summaries. These summaries provide context for successful processing and for failures in the file watcher, validation, or transformation stage.

The email agent uses the processing outcome and error details to send an email to the file owner. Failure emails identify the affected stage and summarize the reported issue, helping the owner locate the file or batch that needs attention. Summaries for validation and transformation are retained separately, including when both stages run as part of the same batch.

When the flag is disabled, the existing file processing flow continues without generating these summaries or invoking the email agent.

The new file request type dashboard brings together file arrival, processing, and record information in the following areas:

- **File Upload Summary:** Displays processing overview cards, file arrival health, recent processing activity, FRT summaries, and trends for file counts, record counts, success and error rates, and total processing time. Its file receipt and service level trend can be viewed over 14 or 30 days.
- **File Upload Details:** Displays a paged list of files, including upload and business dates, batch number, processing message, record counts, and counts by status.
- **Record Level Details:** Displays records for a selected file, its file size, and a link to the related batch run. The record table supports selection of individual or all displayed records and the actions available for selected records.
- **Narrative panel:** Displays a calculated processing summary, status counts, FRTs with the most failures, and leading error or rejection reasons when narrative information is requested.

The dashboard opens on **File Upload Summary** tab. Users can select a file to inspect its record details or select a batch number to review the available validation and transformation summaries. If a batch has been rerun, the summaries are grouped by rerun number.

The filter option enables users to narrow results by date range, division, file request type, file status, or file ID or name. When a requested filter value does not exist, the dashboard displays a message explaining that no matching data was found.

Points to Note:

An FRT must be configured before its files can be processed. Validation behaviour depends on the checks enabled for that FRT.

To enable narrative summaries and related emails, the **Summarizer Agent** flag in the **C1-FLUPLD** feature configuration must be set to **Y**. Narrative generation depends on OCI Generative AI.

The file watcher runs through the **C1-FPOLR** batch. Validation and transformation run through **C1-FTRAN**. These identifiers can help administrators locate the relevant batch results.

The size of a file that can be processed depends on the JVM memory available in the environment. The design guidance cites approximately 2 GB for a plain file and 1 GB for an encrypted file; these figures should not be treated as universal upload limits.

Transaction anomaly integration is outside the scope of this enhancement.

Feed Health Monitoring in FRT Dashboard

While configuring the file request type, the following two fields are introduced in this release to provide information used in the file request type dashboard's **File Arrival Health** and **File Receipt & SLA Trend** widgets:

Expected File Frequency: Used to indicate the duration for which you are expecting the number of files to be processed as mentioned in the **Expected File Count** field.

Expected File Count: Used to indicate the number of files which you are expecting to be processed for the duration selected in the **Expected File Frequency** field.

Note: You should maintain these values for file request types whose expected file arrivals need to be monitored.

Bill Contributions and Billing Variations

The billing dashboard is now enhanced to view two read-only dashboard areas and/or tabs for analyzing billed revenue: **Bill Contributions**, which shows where revenue came from in a selected period, and **Billing Variation**, which compares that period with the preceding one. Both use the dashboard's bill creation month and optional bill cycle and division filters.

Bill Contributions

The **Bill Contributions** tab on the **Billing Dashboard** screen now shows the number of contributing price items. This metric helps you see how many price items contributed a nonzero billed amount for the period you are viewing. The count follows the dashboard filter options such as, Bill Creation Month, Division, and Bill Cycle. Price Items with a zero billed amount are excluded. The metric uses the same period, division, and access rules as the Price Item detailed view, so you can use that view to explore the contributions behind the count.

Note: Bill-cycle results use an eligible completed bill-cycle period. If there are no qualifying Price Items, the scorecard displays 0.

The **Bill Contributions** tab contains the following scorecards:

- **Top & Bottom Analysis:** This scorecard helps you to see which Product Groups, Parent Price Items, and Price Items contribute the most or least billed revenue for a selected period. You can also perform the following actions on this scorecard:
 - o Choose a hierarchy to view its top 10 or bottom 10 contributors.
 - o Switch between a chart for a quick comparison and a table for a closer look.

Note: The panel opens with Product Group, Top Performing, and chart view selected.

- o Click the **View All** link to see every matching contributor with a nonzero billed amount. The detailed view shows each contributor's bill count and billed amount and lets you sort the results from highest to lowest or lowest to highest.
- o For Price Items, turn on **Pricing Parameter View** to see separate results for each pricing parameter group. You can also select a Price Item code to open its existing detail page.

Note: Results use the selected bill creation month, or the latest eligible completed period when you select a bill cycle. Your division selection narrows the results, and amounts appear in the applicable currency. Only data you are authorized to view is included in the scorecard.

- **Customers by Revenue:** This scorecard helps you see which customers contributed the most or least billed revenue for the selected billing period.
 - o The panel opens in chart view with the top performing customers. Switch to least performing to see the lowest contributors or change between chart and table views. Each summary shows up to 10 customers.
 - o Click the **View All** link to open all customers' revenue analysis. This view includes every matching customer with a nonzero revenue total, rather than only the 10 shown in the summary. You can order the full list from highest to lowest or lowest to highest revenue. Click on the customer's name in the detailed view to open that customer's **Customer 360** page.

Points to Note:

Results follow the Billing Dashboard's selected Bill Creation Month and optional Bill Cycle and Division filters. With no Bill Cycle selected, the panel uses the selected month. With a Bill Cycle selected, it uses the latest eligible completed billing window.

Revenue is shown in the selected division's currency when a division filter is applied; otherwise, it uses the implementation currency. Customers with a zero-revenue total are excluded. Rankings use the signed revenue amount, so a customer with negative revenue may appear among the least performing customers.

The panel shows only customers and divisions to which you have access in the system.

Billing Variations

The **Billing Variation** tab on the **Billing Dashboard** screen displays the bill amount for the selected period. You can view the amount by month or by bill cycle, depending on the filters you apply. If no bill cycle is selected, the scorecard uses the selected month. If a bill cycle is selected, it uses the applicable bill-cycle period. The **Billing Variations** tab contains the following scorecards:

- **Performance by Revenue Variation:** This scorecard helps you see how revenue has changed between the current and previous billing periods. It highlights changes at the Product Group, Parent Price Item, and Price Item levels. You can also perform the following actions on this scorecard:
 - o Switch between Product Group, Parent Price Item, and Price Item to see revenue variation at the level you need.
 - o View up to 10 results with the highest absolute variation or up to 10 with the lowest absolute variation for the selected level.
 - o Compare amounts or percentages - Amount variation shows the difference in revenue between periods. Percentage variation shows the change relative to the previous period.
 - o Switch views without changing your selection.
 - o Using the filter option, set a minimum variation threshold to focus on changes that matter to you.

Note: The dashboard shows results whose absolute variation is greater than the threshold. You can keep separate amounts and percentage thresholds for each hierarchy level. Percentage thresholds must be between 0 and 100.

- o Click the **View All** link to open a detailed list of every result that meets the active criteria.

Note: In **Price Item** view, you can also separate results by pricing parameter group and open a price item's maintenance context from its entry.

- **Customers by Revenue Variation:** This scorecard helps you see which customers had the largest and smallest revenue changes between the selected billing period and the preceding period. It compares monthly periods or bill-cycle periods, depending on your dashboard selection. You can also perform the following actions on this scorecard:
 - o Switch between the monetary change and the percentage change for each customer.
 - o View up to 10 customers in each group for the selected measure.
 - o Switch views to examine the same summary data in the format that works best for you.
 - o Set a minimum amount or percentage threshold, or reset it to see results without that filter.
 - o Click the View All Customers link for a detailed list, then sort it by highest or lowest variation. Select an authorized customer to open that customer's record.

Points to Note:

Revenue variation is the current period's revenue minus the previous period's revenue. A positive value indicates an increase; a negative value indicates a decrease. Greatest and least rankings use the size of the change, so a large decrease can appear among the greatest variations.

A threshold includes changes greater than the value you enter. For example, a threshold of 100 excludes a change of exactly 100. Amounts appear in the division's currency when a division is selected; otherwise, they appear in the implementation currency.

The panel is read-only. It shows only customer data that your existing access permissions allow you to view.

New Features (Specific to Insurance)

This section describes the following new features added in this release that can be used in the health insurance domain:

- [Add or Edit Bill Level Characteristics from User Interface](#)
- [Pharmacy Benefit Managers](#)
- [Delinquency Requirements for Pharmacy Benefit Managers](#)
- [Late Payment Charges \(LPC\) Report Dataset Enablement](#)
- [Billing Dashboard for Healthcare](#)

Add or Edit Bill Level Characteristics from User Interface

Currently, a customer setup in ORMB is performed through the customized **File Request Type** object where the bill levels with characteristic types are uploaded through an existing **Bill Level Upload** feature; however, the **Health Care Inbound Message (C1-HCInboundMessage)** business object did not carry the bill-level characteristic. Hence, to overcome this concern, a new feature is introduced where the **Health Care Inbound Message (C1-HCInboundMessage)** business object is enriched with an ability where you can add or update the bill level characteristic using the **Health Care Inbound Message (C1-HCInboundMessage)** business object. You can also add, edit, and delete the characteristic types at bill level through the ORMB's user-interface by accessing the **Bill Group Derivation and Pricing Parameters** zone in the **Person** tab of the **Customer 360° Information** screen.

While adding the characteristic types, the system behaves in the following manner:

If...	Then...
You want to delete an existing characteristic and replace it with a new characteristic	The system simply replaces the old characteristic type and value with the new characteristic type and value.
You want to create a new characteristic with the same characteristic type and value as the existing characteristic, but with a different sequence number	The system creates a new characteristic with the same characteristic type and value for a different sequence number.
You want to create a new characteristic with the same sequence number, but with a different characteristic type and value	The system creates a new characteristic with the same sequence number for a different characteristic type and value.
You want to create a new characteristic with the same sequence number and characteristic type, but with a different characteristic value	The system simply does not create a characteristic for the given scenario.

Note: The system allows you to add more than one characteristic type at bill level.

Now, for each bill level, the system retrieves the bill level ID from the **C1_BILL_LVL** table, stores the sequence number, characteristic type, and characteristic value in **C1_Bill_LVL_CHAR**, and displays them in the **Bill Level Characteristics** zone.

Pharmacy Benefit Managers

The **Pharmacy Benefit Managers (PBMs)** are the most influential participants in the pharmacy ecosystem which oversee prescription drug programs for health plans, employers, government agencies, and other healthcare organizations. Oracle Revenue Management and Billing plays an essential role by managing the financial relationships, billing processes, and settlement activities that underpin PBM operations. The pharmacy benefit ecosystem contains the following payment and billing mechanisms:

- [Pharmacy Payment](#)
- [CAG Billing](#)

Pharmacy Payment

Oracle Revenue Management and Billing streamlines pharmacy payment processing by managing reimbursements, payments, remittances, claim holds, and pharmacy-payee relationships for pharmacies, PSAOs, payers, and members. ORMB provides a solution that uses a configurable **Payee-Pharmacy** hierarchy, represented through the ORMB **Person** Entity, to support both direct pharmacy reimbursements and PSAO-mediated payments. It centrally manages claim processing, payment extraction, ACH/check disbursements, remittance advice, and payment monitoring. To implement this feature, the following changes should be made in the system:

Payee and Pharmacy Hierarchy

The Payee and Pharmacy Hierarchy is represented using the **Person** entity of ORMB. The hierarchy majorly comprises of the following entities:

- **Parent Entity (Payee)** - The parent person represents entities that receive payment, including PSAOs, Independent Pharmacies, Members, Subrogation Entities, SPAP/ADAP Organizations, and Long-Term Care Facilities. In the parent entity, each parent person owns:
 - o Part-D Payee Account
 - o Non-Part-D Payee Account
- **Child Entity (Pharmacy)** – The child entity represents Pharmacies under PSAOs, Members, Subrogation Entities, SPAP/ADAP Entities, and Long-Term Care Facilities. In the child entity, each child person owns:
 - o Part-D Claim Account
 - o Non-Part-D Claim Account

Note: The **Parent** and **Child** entities are connected using effective-dated **Person-to-Person** relationships, allowing pharmacies to move between PSAOs over time maintaining historical payment associations.

Customer Onboarding and Data Integration

The Pharmacy and Payee information originates from the upstream source system. The **Person** entity is responsible to perform customer onboarding and maintain different payees and pharmacies in the system. The customer inbound process creates and maintains the following primary entities:

- **Person** – Represents the **Main Customer** or **PASO** entity.
- **Account** – Represents the **Billing** or **Payable** entity (i.e. levels at which bills or payments are generated).
- **Policy** – Represents the **Contract** with the **Person** entity.

The customer inbound message interface processes Payee Information, Pharmacy Information, Banking Details, Addresses, Contact Information, Policy Associations, and OPP (Other Pharmacy Payable) Data.

Note: This automated onboarding framework ensures synchronization between operational source systems and ORMB.

Payment Method Determination

The system automatically determines payment method using banking information received from upstream systems.

- **ACH Payments** – The **ACH** payment mode is selected when the routing number is a valid 9-digit number and bank account number is provided.
- **Check Payments** – The **Check** payment mode is selected when the routing number validation fails, banking details are missing, and invalid bank information is detected.

Note: When invalid routing numbers are received, the system sets the default payment method to Check, generates notifications, and prevents invalid banking data from being stored.

Payment and Hold Rules

A configurable business-rule engine governs payment eligibility.

- **Hold Rules** – The hold rules prevent payments from being processed, if any one parameter like NPI, NABP ID, Member ID, Carrier, Group, Account, Claim Status, Claim Number, and Line of Business is used in the hold rule.

Note: When a hold rule matches, the system executes the hold flags, excludes the claims from payment generation, and maintains the hold history.

- **Payment Rules** – The payment rules determine the Payment Due Dates, Payment Run Dates, Payment Cycles, and Eligibility Criteria

Note: Rules are bound to vary by Pharmacy, Member, Vendor, PSAO, State, and Source System.

Pharmacy Payment Processing Lifecycle

The pharmacy payment processing lifecycle includes several stages:

- **Claims Receipt** – The pharmacy claim transactions received from the upstream system are accumulated in the ORMB application.
- **Hold Evaluation** – The **Transaction Hold Monitor Batch (C1TXNHLM)** evaluates the pharmacy claim transactions against the configured hold rules.
- **Payment Due Date Calculation and Billable Charge Creation** – The **Transaction Payment Date Calculation Batch (C1TXNPYD)** calculates the payment due date and payment run date, and stamps them on the respective pharmacy claim transactions. The eligible pharmacy claim transactions are further transformed into billable charges.
- **Re-evaluate Transactions** – The **Re-Evaluate Transactions Batch (C1REVTXN)** collects all the billable charges whose **Bill After Date** is less than **Processing Date** and evaluates its associated transactions against the configured hold rules.
- **Disaggregation Request Creation** – The **Billable Charge Disaggregation Request Creation Batch (C1BCDAGG)** generates disaggregation requests for all the billable charges that are linked to any claim transaction which is currently on hold.
- **Updating Transaction Status based on Hold Flag** – The **Hold Transaction Status Update Batch (C1HTSTUP)** examines all the uploaded transactions and redirects them back to staging through disaggregation process, to identify if any disaggregated transaction should be put on hold or not.
- **Bill Generation** – The pharmacy claims are aggregated and billed according to the Daily Cycles, Weekly Cycles, Part-D Rules, and Non-Part-D Rules.
- **Refund or Payment Request Creation** – The payment obligations are further converted into refund or payment request.
- **Payment Extraction** – The extract batches generate files for ACH Payments, Check Payments, and ERP Integration.
- **Payment Acknowledgment** – The acknowledgement files received from either SAP or ERP update the Check Status, ACH Status, and Payment Status.

ACH and Check Payment Processing

The ACH and Check Payment Processing involves various processes:

- **ACH Payment Processing** – Includes Banking Validation, Payment Extraction, ERP Transmission, and ACH Acknowledgment updates.
- **Check Payment Processing** – Contains Check Number Assignment, Check Extraction, CheckMate Integration, Stop-payment Handling, and Void Processing.

Remittance Advice and 835 Processing

The Remittance Advice files provide details about Claim Payment, Check References, Adjustment Information, and Payment Summaries. On the other hand, the 835 Processing contains the extract functionality which supports, Electronic Remittance Reporting, Healthcare Payment Reconciliation, and Claim-level Payment Tracking.

Pharmacy 360° View

The Pharmacy 360° View portal provides a consolidated operational dashboard. It is through this dashboard, you can search a payee or child entity and get more visibility into sections like:

- Payee Information
- Child Entities
- Payee Accounts
- Payee Address
- Payment/Write-off Information
- Open Payables and Open Payable Details
- Payment History
- Claims on Hold
- Unpaid Claim Summary
- Unpaid Adhoc Credits
- Child Entity Payee Association History
- Other Pharmacy Payable Information

Through this dashboard you get a complete operational view of payment activity.

Refund and Reissue Management

The Pharmacy Payment feature supports Automatic Refund Creation, Refund Request Approval, Refund Extraction, Refund Reissue, and Void Processing. This feature also contains additional controls that prevent, Voiding Cleared Payments, Duplicate Refund Creation, and Improper Reissue Scenarios. The refund request goes through Processed, Extracted, and Deferred Void statuses, ensuring auditability throughout the refund lifecycle.

CAG Billing

Oracle Revenue Management and Billing establishes client-billing platform driven by daily, incremental Carrier, Account, and Group data from the upstream system and conduct business-managed uploads. The system creates parent customers and billing groups, bills **Commercial** and **Medicare** lines of business at the account level, and keeps **Claims** and **Admin** accounts separate.

This separation enables independent billing and accounting treatment for the two charge categories. The design also accommodates **Medical Pharmacy** clients, which are not associated with **CAG**. These clients use one bill group per client; with the invoice level used as **MPH** denoting the billing arrangement as **Medical Pharmacy**.

Customer Setup

The upstream system transmits an inbound message which contains all the necessary information required to setup a customer as a **Parent Person** entity in the ORMB application. Once the ORMB application receives an inbound message, system triggers the process of creating or updating a parent customer. The system performs basic validation on the inbound message by invoking the **Parent Customer Upload Request Validation Algorithm (C1-PCUPLDVAL)** algorithm, and informs the upstream system if any errors occur while processing the inbound message. The process also updates existing information, such as, addresses whenever it is necessary.

Note: A **Parent Customer** setup is the first step in establishing client billing, where a **Parent Customer** is represented using the **Person** entity in ORMB.

The details related to a **Parent Customer** are stored in the **C1_CAG_REF_DATA** table which stores information like, Carrier, Account, Group, Client Address, Account Address, Group Address, Address Effective Start Date, Address Effective End Date, Market Segment, Legal Name, Product Type, ERISA Flag, Funding Type, Line of Business, Medicare Type Code, Plan Type, Client Type, Group Size, Special Needs Flag and Source.

Bill Groups and Accounts

Authorized users are eligible to create bill groups through a separate **CSV Upload Request** once the parent customer is created. The upload links CAG records to a billing group, determines which invoice account types are created, and supports different billing levels for **Claims** and **Ancillary** billing.

If any updates are conducted after the initial setup then those must be made manually. All the records must pass the validation scenario(s) before the file can be processed.

Note: Bill groups for **Medical Pharmacy Clients** can also be created through this upload process.

Client 360° View

The Client 360° View provides searchable client maintenance and three important tabs,

- **Client 360 Information – Main (Parent Person Information)** – The **Main (Parent Person Information)** tab includes Client Attributes, Addresses, and Bill-group Derivation and Pricing Parameters sections.
- **Client 360 Information – Billing Entity** – The **Billing Entity** tab includes Billing Entity CAG, Billing Entity Attributes, Account List, Account Attribute, Open Bills, Billing and Adjustment Summary, and Trial/Pending Bills section.
- **Client 360 Information – Pricing Information** – The **Pricing Information** tab includes Client Pricing Rules and Bill Group for Override Pricing section.

Claims and Ancillary Transaction Processing

Following operations are provided for claim and ancillary transaction processing:

Accrual Eligibility

For **Client Billing Division** accounts, ancillary accounts are eligible for accruals and use the configured ancillary accrual cycle, whereas claim billing accounts are excluded from accruals. The distinction is driven by the **Invoice Type Char** algorithm parameter.

Claim Reversal

The design adds client-specific treatment for reversed claims received outside the billing cycle. The **Pricing Rule Type - Account and Price Item Derivation** logic checks the claim status whether the original claim was billed. If a customer-level characteristic **CM-RVORD** is set to **Y**, or if the market-level default for the customer segment is **Y**, the reversal transaction volume (**TXN_VOL**) is set to zero in both detail and price-item tables. Otherwise, standard reversal behavior resumes.

File Processing and Pricing

The file processing and pricing includes following points,

- Ancillary file processing includes preprocessing validation and bill-group derivation algorithms.
- Claims FRT processing applies customer specific validations and transformations before processing the transaction.
- Product and price-item setup is supported through manual uploads and automated FRT-based pricing uploads.
- Price-item derivation can use transaction price-item codes, including pharmacy-payment bill-group derivation.
- A custom accrual-adjustment batch identifies eligible inbound transactions not already accrued.

Refunds, Write Offs, and Payment Controls

The **Client Refund Request** and **Client Write Off Request** business objects define lifecycle handling, properties, options, schemas, and approval-related statuses. Refund processing distinguish **ACH** and **CHECK** requests, derive banking and address data, and apply defaults for country, currency, source, business unit, payment method, and fusion attributes. The design also includes refund account autopay validation, client payment request support, and GL accounting for refunds and write-offs.

Delinquency Requirements for Pharmacy Benefit Managers

The **Delinquency** feature for **Pharmacy Benefit Managers** is amplified through the following two enhancements:

- [Configurable Delinquency Event Trigger Evaluation](#)
- [Credit Bill Configuration in OS Amount Calculation](#)

Configurable Delinquency Event Trigger Evaluation

Through this enhancement a provision is granted where a delinquency event can carry an additional condition or criterion that is evaluated together with its trigger date. The additional condition is clubbed with the existing trigger date using either **AND** or **OR** operator, such as,

- If an **AND** operator is used, the system makes a delinquency event eligible when the trigger date has been reached, and the account's outstanding amount exceeds the configured threshold.
- If an **OR** operator is used, the system makes a delinquency event eligible when either the trigger date has been reached, or the account's outstanding amount exceeds the configured threshold.

The enhancement also introduces a controlled configuration mechanism for evaluating additional trigger conditions on the delinquency events. Events that require conditional execution are appropriately identified through a newly created system event named **Evaluate Trigger Condition** which appears in the **System Event** list while creating or editing a delinquency event type. An inclusion of two new algorithms is made while creating conditional execution for delinquency events,

Algorithm	Parameters
Evaluate trigger date AND outstanding amount greater than threshold condition (C1-DETRGEVL)	• Conditional Operator • Outstanding Threshold Amount
Evaluate trigger date OR outstanding amount greater than threshold condition (C1-DETRGEVLO)	• Conditional Operator • Outstanding Threshold Amount

Based on the above algorithms, you can perform the following actions:

- When you want to execute delinquency events using the conditional **AND** operator, you have to configure the **Evaluate Trigger Date AND Outstanding Amount Greater than Threshold Condition (C1-DETRGEVL)** algorithm using **Evaluate Trigger Condition** option from the **System Event** list.
- When you want to execute delinquency events using the conditional **OR** operator, you have to configure the **Evaluate trigger date OR outstanding amount greater than threshold condition (C1-DETRGEVLO)** algorithm using **Evaluate Trigger Condition** option from the **System Event** list.

The above actions are executed through the **Delinquency Process Monitor Batch (C1-DPMON)** which processes active delinquency processes and their respective events in a sequential order. So, for normal events, the **C1-DPMON** batch retains the existing trigger-date functionality, whereas for events that are marked for conditional evaluation, the batch invokes **C1-DETRGEVL** algorithm even before the trigger date, because an **OR** condition can make the event eligible early.

Note: The sequencing rule is especially important in relation to the logic designed for the conditional **OR** operator; an early satisfied amount condition must not allow an event to bypass an earlier uncompleted event.

The algorithm validates the configured operator and threshold amount, calculates the current outstanding balance, and determines whether the amount condition is met or not. The algorithm then returns the condition result, operator, and a message to the **C1-DPMON** batch. The **C1-DPMON** batch combines the date and amount results, and triggers the event only when no earlier event in the same delinquency process is in the pending state.

Points to Note:

You must define **Evaluate Trigger Condition** field value in the **Delinquency Event Type System Event (DELIN_EVT_TYPE_SEVT_FLG)** lookup.

You must define **Delinquency Event Type - Evaluate Trigger Condition** field value in the **Algorithm Entity** lookup.

Each event trigger is logged with the applicable additional condition, if configured, and the detailed information is displayed in the **Delinquency Process Log** section.

A pending event must not execute until all earlier events in the same delinquency process are completed. With an **OR** condition, an event may become eligible before its calculated trigger date. Even in this case, the event must execute only after all the preceding events are completed.

No restrictions are imposed on configuring multiple **Evaluate Trigger Condition** algorithms for an event. However, using more than one can create inconsistencies in the configured condition operator. For instance, if one algorithm uses the **AND** operator, all the other algorithms for the same event must also use the **AND** operator.

Credit Bill Configuration in OS Amount Calculation

The ability to exclude credit bills while calculating an account's outstanding amount determines whether delinquency should be triggered for the account or not, becomes the main focus of this enhancement. Hence, the system now controls the behavior (of excluding the credit bills) at **Delinquency Control** level under the respective collection class.

A new field (check box) named **Include Credit Bills** is introduced in the **Delinquency Control** screen to determine whether credit bills participate in the open-bill set used for delinquency threshold evaluation. The valid values are:

- **Y** – The system must **include** the credit bills while calculating the outstanding amount.
- **N** – The system must **exclude** the credit bills while calculating the outstanding amount.

Points to Note:

The system preserves the current behavior where the **Include Credit Bills** option is selected by default, an indication that by default credit bills are included in the list of open bills for delinquency process.

An exclusion of credit bill applies only when calculating the outstanding amount and thresholds during the **Delinquency Process** creation.

The **Delinquency Monitor Rule Algorithm Account level (C1-DLNQMNRA)** algorithm retrieves the applicable delinquency control for the account collection class, obtains open bills using the existing logic, identifies the credit bills, and applies the value of the **Include Credit Bills** check box before threshold evaluation takes place. The system then behaves in the following manner,

- If the value of **Include Credit Bills** check box is set to **N**, open bills classified as credit bills are filtered out before deriving the outstanding amount, current revenue period amount, past bill unpaid amount, grace month amount, and denominator amounts that are used for threshold percentage purpose.
- For all-unpaid-bill thresholds,
 - o When the credit bills are excluded, only unpaid debit bills are included in the numerator. Credit bills are also excluded from the denominator used for current revenue-period checks.
 - o If the current bill happens to be a credit bill, or if the denominator is either zero or negative, the current revenue period validation is skipped for that particular bill and the system proceeds to the next eligible debit bill according to the existing date and ordering rules.
- For individual-bill thresholds,
 - o When the credit bills are excluded, they are not considered as current, past, or grace-month candidates; existing debit-bill buckets continue to be evaluated normally.
 - o When the credit bills are included, current behavior remains unchanged: credit bill amounts may reduce the outstanding amount and clear a delinquency, if the threshold conditions are no longer satisfied.

Late Payment Charges (LPC) Report Dataset Enablement

A new feature named Late Payment Charges (LPC) Report Dataset Enablement provides report-ready datasets that showcase specific reports displaying the LPC levied to the customers, including mapped fields such as, LPC Identifiers, Invoice References, Delinquent Bill Amounts, Unpaid Amounts, Current LPC Charges, Prior LPC Amounts, and Total LPC Amounts, so that LPC data can be utilized consistently for reporting purposes.

Note: The dataset exposes report fields with **source-to-target traceability** while preserving the source system as the financial system of record. It does not recalculate current LPC charges.

To generate a report, use the **Extract Templates for Dataset** feature where you can map the following fields:

- To populate the **Late Payment Charges** dataset, you need to execute the **Generic Extract for Data Load Batch Control Program (C1-GENLD)** batch with the following batch parameters:
 - **Dataset Name** - LPC
- Once the **C1-GENLD** batch is executed, you can create a template through the **Extract Template for Datasets** screen.
- Select the newly introduced option **Late Payment Charges** from the **Dataset Name** list in the **Main** section. Once the dataset name is selected, the **Source Dataset Name** field in the **Field Mapping for Datasets** gets populated.
- Select **Late Payment Charges** option from the **Source Dataset Name** list in the **Field Mapping for Dataset** zone.
- Once you select the **Late Payment Charges** option from the **Source Dataset Name** list, the corresponding **Field Name** list populates the options(fields) related to the late payment charges.
 - The Bill Due Amount, Unpaid Amount, and Current Late Payment Charge Amount are direct amounts whereas Previous LPC Amount is the sum of all the Previous LPC Amounts, and Total LPC Amount is the sum of Current LPC Amount plus the Previous LPC Amount.

Points to Note:

In addition to the **Late Payment Charges**, the integrated functionality can generate dataset reports for **Accounts, Bills, Bill Segments, Customers, and Financial Transactions**.

By mapping the relevant fields to a dataset, you can extract details such as payments or adjustments conducted till date, or can even generate an outstanding balance for an original bill ID belonging to the bill and not for the LPC bill ID.

The **Bill ID** option from the **Field Name** list denotes that late payment charges are calculated for a bill and are included in the next generated bill, whereas the **LPC Bill ID** option denotes the calculated late payment billable charges that are billed to the customer.

Billing Dashboard for Healthcare

The **Billing Dashboard for Healthcare** provides the users and managers of **Billing Operations**, a centralized and interactive view of billing performance and day-to-day operational status. Through this platform they can easily track important billing metrics, identify exceptions and trends, and can also drill down to inspect detailed billing information when needed.

The billing dashboard covers important areas such as, **Bill Completion and Processing Status, Billing Errors and Anomalies, Billing Trends, Adjustments and Corrections, Refunds and Write-offs, Outstanding or Unpaid Bills, Payment Status, and Billing Contributions**.

Users can refine the information using relevant filters, allowing the dashboard to unleash a focused view of the selected business context. Adding more, the dashboard also exhibits key metrics through summary indicators and trend visuals. Where applicable, users can examine detailed records for further investigation.

Note: Access is controlled by the user's assigned access group, so users can see only the billing information they are authorized to access.

To setup the billing dashboard, you need to meet the following preconditions:

- Configure the **Billing Dashboard Portal (C1_BLDDBH)** application service for the respective user group.

Note: The **Billing Dashboard Portal (C1_BLDDBH)** application service is shipped with the product.

- Configure the following option types in the **Billing Dashboard for Healthcare (C1-BILLDSHB)** feature configuration:
 - o **Number of Rows Per Page** – The number of rows should be displayed per page in the detailed view of bills displayed in the billing statistics dashboard.
 - o **Thread Count** – The default thread count allowed for billing statistics dashboard. The default thread count value should be set to 10.
- Execute the **Generic Extract for Data Load Batch Control Program (C1-GENLD)** batch on regular intervals to stamp the data in the **FACT** tables, as the billing dashboard displays information which is close to real time.
- The **Print By Default** option must be selected when an adjustment type is used for refund and write off purposes.
- Filters such as, **Division**, **Customer Class**, **Bill Cycle**, **Bill Cycle Run**, and **Collection Class** must be defined in the application.

Overall, the **Billing Dashboard** serves as a single point of visibility into billing operations, helping users monitor billing health, investigate issues, analyze trends, and take timely operational actions. This billing dashboard is well equipped with capabilities to implement various specialized operations, through the medium of following interfaces:

- [Filter Criteria](#)
- [Bill Production](#)
- [Adjustments and Corrections](#)
- [Payment Status](#)
- [Open Items](#)
- [Bill Contributions](#)

Filter Criteria

The main purpose of the **Filter Criteria** or **Filter Drawer** is to control how the data displayed in **Billing Statistics Dashboard** screen. The **Filter Criteria** comprises of the following filters:

Filter Name	Mandatory (Yes or No)
Bill Creation Month	Yes
Division	Yes
Customer Class	No
	Note: The system allows you to select multiple customer classes.
Bill Cycle	No
Bill Cycle Run	Yes (Conditional) – This field is required: - When an option is selected from the Bill Cycle list. - Multiple bill cycles exist in the system for the same month.
Collection Class	No
Person Details	No
Primary Identifier Type	Yes (Conditional) – This field is required if you select the Person Details option.
Identifier Value	Yes (Conditional) – This field is required if you select the Person Details option.
Account Details	No
Characteristic Type	Yes (Conditional) – This field is required if you select the Account Details option.
Characteristic Value	Yes (Conditional) – This field is required if you select the Account Details option.
Skip	Yes (Conditional) – The system behaves in the following manner: - If you select the Person Details option and Skip option, the system skips those persons that match the selected person details. - If you select the Account Details option and Skip option, the system skips those accounts that match the selected account details.
	Note: The Skip option is selected when you want the system to exclude Person Details or Account Details , or both (Person and Account Details) from the selected filter.

Note: The **Bill Scorecard Metrics** contains information based on the selected filters, where bills are retrieved, and metric labels and values are displayed on each tab of the **Billing Statistics Dashboard** screen.

Bill Production

This tab contains percentage of bills that are successfully completed out of the total bills which are generated based on the selected filters.

Note: If the count of total bills is zero (0), the percentage is shown as **0%**.

It contains the following cards or sections:

- **Bill Run Metrics** – The purpose of this card is to display the total bill volume and current processing status of the bills for selected filters. This card contains the following sections:
 - o **Summary** – The **Summary** section contains the following information:
 - Total bills are displayed which contain total bill amount and total bill count.

Note: A bill must contain at least one valid bill segment that has not been cancelled.

- A new bill is the first bill generated for an account, with **PREV_BILL_ID** field is left blank in the integration data.
- The zero-dollar bills are those completed bills where the current bill's amount is zero.
- The card shows those bills that are **Completed, Ready for Completion, Bills in Error, Anomaly Bills**, and **Bills in Review**.
- o **Chart** – The **Chart** section contains the following information:
 - The **Donut** chart displays percentage **Completed, Ready for Completion, Bills in Error, Anomaly Bills**, and **Bills in Review**, based on amount and count distribution.
 - The **Total (Bill) Amount** appears at the center of the **Donut** chart in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- o **Drill-Down Details** – The drill-down mechanism contains the following information:
 - Displays the matching detail page on selecting a tile.
 - Users can drill down into errors to view **Bill Error Summary, Bill Error Details, Bill Segment Error Summary**, and **Bill Segment Error Details**.

Note: While viewing the drill-down details, system provides Sorting and Pagination with Previous and Next functionality.

- **Bill Cycle Distribution** – The purpose of this card is to display bills that are distributed across scheduled bill cycles and those which are not a part of regular bill cycle. This card contains the following sections:
 - o **Summary** – The **Summary** section contains the following information:
 - Displays all the bill cycles with total bill count and total bill amount.
 - Regular bill cycles are sorted by highest bill count, if the counts are equal, the system uses bill cycle code for sorting purposes.

- Bills that do not contain a bill cycle code are grouped as **NON-CYCLE**.
- o **Chart** – The **Chart** section contains the following information:
 - The system selects top three bill cycles from the entire list returned by the business service using the highest bill count.
 - The **Non-Cycle** bills are displayed separately.
 - The **Donut** chart displays bills that are **Completed, Ready for Completion, Bills in Error, Anomaly Bills**, and **Bills In Review** counts and percentages.
 - The **Total (Bill) Amount** appears at the center of the donut chart in a compact, rounded format (e.g., \$10,000 is shown as \$10K).

Note: A bill with a bill cycle code is shown as **Scheduled**, whereas bill without a bill cycle code is shown as **Manual/Other**.

- o **View All** – The **View All** link displays the following:
 - If you click the **View All Bill Cycles** link, the system displays the complete bill cycle list.
 - If you click the **View All Non-Cyclic Bills** link, the system displays the complete non-cyclic bill cycle list.

Note: The detailed bill cycle list shows **Bill Cycle** or **Billing Method**, **Total Bill Count**, **Completed, Ready for Completion, Bills in Error, Anomaly Bills**, and **Bills In Review** counts.

- **Billing Coverage** – The purpose of this card is to compare the accounts that are expected to be billed with those accounts that are already billed for the selected month. This card contains the following information:
 - o The **Billing Coverage** card displays information about **Billable Accounts**, **Accounts Not Billed**, and **Accounts on Hold**.
 - o Expected accounts are distinctly permitted accounts that are associated with an eligible **Bill Cycle** schedule window for the selected month.
 - o An expected account must contain at least one active billable charge for the scheduled **Bill Cycle** window.
 - o Accounts that are on hold are expected accounts with an active billing hold as of the calculation date.
 - o The billable accounts are calculated using the following formula:
Billable Accounts = Expected Accounts – Accounts on Hold
 - o The system calculates the accounts that are not billed using the following formula:
Accounts Not Billed = Billable Accounts – Billed Accounts
 - o The billed accounts are distinct invoice accounts containing bills in the selected month.

Points to Note:

The eligible schedule window's end date must fall within the selected **Bill Creation Month** filter option. When the **Bill Cycle Run** filter is selected, the system considers only those scheduled windows that are scheduled to run within the run start and end dates.

- **Contribution by Customer Class** – This card returns all the matching customer classes where each row displays **Customer Class Code**, **Customer Class Description**, **Bill Count**, and **Bill Amount** column. This card contains the following sections:
 - o **Summary** – The **Summary** section contains the following information:
 - The system derives all the matching customer classes using a business service.
 - Columns like **Customer Class Code**, **Customer Class Description**, **Bill Count**, and **Bill Amount** are displayed.

Note: The system displays zero (0) if the **Bill Amount** is blank.

- o **Chart** – The **Chart** section contains the following information:
 - Users can shuffle between **Amount Distribution** and **Count Distribution** view to have a detailed view of the **Donut** chart.

Points to Note:

In the **Donut** chart, the system represents the negative values by their absolute values, along with the corresponding percentages.

The **Chart** view uses same rows and totals like the **Summary** view.

- The **Total (Bill) Amount** appears at the center of the **Donut** chart in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- o **View All** – The **View All** link contains the following information:
 - A list of all the customer classes is displayed, where you can sort by **Customer Class**, **Bill Count**, **Bill Amount**, **Count Percentage**, and **Amount Percentage** columns.
 - The count percentage is derived using the following formula:

$$\text{Count Percentage} = \text{Customer Class Bill Count} / \text{Total Bill Count} \times 100$$
 - The amount percentage is derived using the following formula:

$$\text{Amount Percentage} = \text{Customer Class Bill Amount} / \text{Total Bill Amount} \times 100$$
- **Billing Trend Summary – Completed Bills** – This card displays completed bill trend for 13 calendar months or latest 13 bill cycle schedule windows, based on the bill cycle. This card contains the following information:
 - o Users can view the billing trend summary based on **Bill Count**, **Bill Amount**, or for **Both**.
 - o Displays average, highest, and lowest values for both count and amount.
 - o Highlights the month with the highest and lowest value. If several months share the highest value, they are all highlighted as highest and the same rule applies to months that share the lowest value.

Points to Note:

The system uses the selected **Bill Creation Month** filter as a reference point for **Billing Trend Summary-Completed Bills** card.

The trend summary values in the card are grouped by bill date, and not by bill creation date. Also, this card includes only those bills that are completed and have not been cancelled.

This card shows months when no bills were created; for those months, it displays a bill count of zero (0) and a bill amount of zero (0).

The **Summary** and **Chart** view must use data of 13 months to display the billing trend summary.

- **Bill Routing** – The purpose of this card is to display the distribution of completed bills by bill routing type where the completed bills are displayed based on the selected filters. This card contains the following sections:
 - o **Summary** – The **Summary** section contains the following information:
 - Displays the **Bill Route Type**, **Bill Count**, and **Bill Amount** columns.
 - o **Chart** – The **Chart** section contains the following information:
 - Users can shuffle between **Amount Distribution** and **Count Distribution** view to have a detailed view of the **Donut** chart.

Points to Note:

In the **Donut** chart, the system represents the negative values by their absolute values, along with the corresponding percentages.

The **Chart** view uses same rows and totals like the **Summary** view.

- o The **Total (Bill) Amount** appears at the center of the **Donut** chart in a compact, rounded format (e.g., \$10,000 is shown as \$10K).

Adjustments and Corrections

The information in this tab is based on selected filters where bills are retrieved along with adjustment, refund adjustment, write-off adjustment, and correction details. This tab contains the following cards:

- **Billing Adjustment Summary** – This card shows the total count of bills and total amount for various processes based on the selected filters. It contains the following sections:
 - o **Write-Off Bills** – Displays total adjustment amount and total bill count on which write off adjustments are created. The write off bills detailed summary page displays the following information:
 - Customer Name
 - Customer Identifier
 - Account Identifier
 - Account ID
 - Bill ID
 - Bill Date

- Bill Amount
- Write off Amount
- o **Refunded Bills** – Displays total adjustment amount and total bill count on which refund adjustments are created. The refunded bills detailed summary page displays the following information:
 - Customer Name
 - Customer Identifier
 - Account Identifier
 - Account ID
 - Bill ID
 - Bill Date
 - Bill Amount
 - Refund Amount
- o **Adjustment Bills** – Displays total adjustment amount and total bill count on which other adjustments are created. The adjustment detailed summary page displays the following information:
 - Customer Name
 - Customer Identifier
 - Account Identifier
 - Account ID
 - Bill ID
 - Bill Date
 - Bill Amount
 - Adjustment Amount
- o **Corrections** – Displays total corrected amount along with total corrected bill count. The corrections detail summary page displays the following information:
 - Customer Name
 - Customer Identifier
 - Account Identifier
 - Account ID
 - Original Bill ID
 - Corrected Bill ID
 - Bill Date
 - Original Bill Amount
 - Corrected Bill Amount

- **Billing Adjustment Summary (Chart)** – This **Chart** view of the **Billing Adjustment Summary** card contains the following information:
 - Displays a **Donut** chart containing information of **Write-Off Bills**, **Refunded Bills**, **Adjustments**, and **Corrections**.
 - The **Total (Bill) Amount** appears at the center of the **Donut** chart in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- **Trend Analysis** – This card works on the following conditions:
 - If the **Bill Cycle** filter is selected, the **Trend Analysis** card displays the amount and count for refunds, write-offs, adjustments, and corrections across the last 13 bill cycles.
 - If the **Bill Cycle** filter is not selected, the **Trend Analysis** card displays the amount and count for refunds, write-offs, adjustments, and corrections over the last 13 months.

Payment Status

This tab displays bills and payment details based on the selected filters. It contains the following sections:

- **Total Amount** – This section contains:
 - The overall billed amount obtained by combining both paid and unpaid amount.
 - A consolidated view of total bill value along with its payment-status distribution.
 - A **Donut** chart with breakdown of total amount into paid and unpaid amount, where the center of the **Donut** chart contains total amount in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- **Paid Amount** – This section contains:
 - The calculated total amount of all the successful payments and how much percentage of the total billed amount has been paid.
 - A **Donut** chart which bifurcates the paid amount into **Autopay** and **Other Channels**, unleashing the payment percentage obtained from each payment method, where the center of the **Donut** chart contains total paid amount in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- **Unpaid Amount** – This section contains:
 - The total unpaid amount where the system calculates how much percentage the outstanding amount represents of the total billed amount.
 - A **Donut** chart which bifurcates the unpaid amount into **Autopay Hold**, **Autopay Failed**, **Autopay Extracted**, and **Remaining Bills**, revealing the percentage contribution of each status, where the center of the **Donut** chart contains total unpaid amount in a compact, rounded format (e.g., \$10,000 is shown as \$10K).
- **Top Outstanding Bills** – This section displays the topmost 10 bills in descending sequence of the amount which is either unpaid or partially paid. It contains the following section:
 - **View All Outstanding** – The **View All Outstanding** link contains the summary information, where the following columns are displayed:

- Customer Name
- Customer Identifier
- Account Identifier
- Account ID
- Bill ID
- Bill Date
- Bill Amount
- Autopay Extract
- Extract Date
- Age in Days

Open Items

This tab contains the following cards:

- **Open Bills** – This card contains the following information:
 - o Displays those bills which are either in **Open** or **Pending** state.
 - o Bills are categorized based on bill creation date aging, such as:
 - 0 – 30 days
 - 31 – 60 days
 - 61 – 90 days
 - 91 – 180 days
 - Greater than 180 days
 - o The total bill count and total open amount for each aging bucket is calculated and displayed accordingly.
 - o The overall total bill count and total open amount is calculated and displayed against the row named as **All**.
- **Overdue Bills** – This card contains the following information:
 - o Displays those bills which have outstanding due amount.
 - o Overdue bills are categorized based on due-date aging, such as:
 - 1 – 30 days
 - 31 – 60 days
 - 61 – 90 days
 - 91 – 180 days
 - Greater than 180 days
 - o The total bill count and total outstanding due amount for each aging bucket is calculated and displayed accordingly.

- o The overall total bill count and total outstanding due amount is calculated and displayed against the row named as **All**.

Bill Contributions

This tab contains the following cards:

- **Top & Bottom Charge Types (Price Items)** – To display information in this card, the system retrieves either the charge type or price items that are associated with the selected bills, and calculates the total bill amount for each charge type. This card contains the following sections:
 - o **Top 10 Charge Types** – This section contains the following information:
 - Data appears only when the system sorts the charge types based on the bill amount in descending sequence.
 - The information can also be viewed through a **Chart** or **List** view.
 - Click the **View All** link at the bottom of the **Top 10 Charge Types** section to view the breakdown details by charge type.
 - o **Bottom 10 Charge Types** – This section contains the following information:
 - Data appears only when the system sorts the charge types based on the bill amount in ascending sequence.
 - The information can also be viewed through a **Chart** or **List** view.
 - Click the **View All** link at the bottom of the **Bottom 10 Charge Types** section to view the breakdown details by charge type.
- **Top & Bottom Customers** – To display information in this card, the system retrieves only those customers that are associated with the selected bills, and calculates the total bill amount contributed by each customer. This card contains the following sections:
 - o **Top 10 Customers** – This section contains the following information:
 - Data appears only when the system sorts the customers based on the bill amount in descending sequence.
 - The information can also be viewed through a **Chart** or **List** view.
 - Click the **View All** link at the bottom of the **Top 10 Customers** section to view the breakdown details by customer.
 - o **Bottom 10 Customers** – This section contains the following information:
 - Data appears only when the system sorts the customers based on the bill amount in ascending sequence.
 - The information can also be viewed through a **Chart** or **List** view.
 - Click the **View All** link at the bottom of the **Bottom 10 Customers** section to view the breakdown details by customer.

Enhancements (Specific to Financial Services)

This section lists the enhancements made to the following feature that is used in the financial services domain:

- [Mass Pricing and Commitments Update through Deal Creation IWS](#)
- [AI Insight in Billing Dashboard and Customer 360 Dashboard](#)

Mass Pricing and Commitments Update through Deal Creation IWS

This release expands the Deal APIs so users and associated applications can update pricing and commitments across a deal, apply a finalized deal to existing customers and accounts, and find and add price item pricing records more easily. The APIs also return more financial and hierarchy information.

Update pricing and commitments across a deal

- The Deal Pricing and Commitments API supports a mass update request. You can apply percentage changes to pricing, volume commitments, or both, without updating each price item separately.
- A request can cover all entities in a deal or only a selected person or account. For each entity, it can cover all price items in the deal model or selected price items. You can also provide different percentage changes for selected entities. If a percentage is supplied for the whole request, it takes precedence over the corresponding entity-specific percentage.
- The service validates the requested combination of entities and price items. It also prevents an item from being updated twice when parent and child entries overlap in the same request.

Apply a finalized deal to existing customers and accounts

- Associated applications can start **Deal Apply Back** through a deal update request. Apply Back transfers applicable proposed price assignments, price list assignments, and account product enrollments from the finalized deal model to mapped existing customers and accounts.
- The request can optionally close qualifying related deals before Apply Back begins. Depending on the number of assignments, processing may complete online or be deferred. The API returns the deal's resulting status in its success message, consistent with the existing UI flow.
- Apply Back requires a valid finalized model and the necessary mappings from prospective people and accounts to existing records.

Find price items with more precise filters

- Price item selection through the Deal Creation API now supports optional filters that mirror the selection criteria available in the Deal Information UI. You can filter by hierarchy entity, price item code, pricing parameter, or assignment level. You can also restrict results to price items with usage charges or those already selected for the deal.

- For text filters, you can supply multiple comma-separated values. A result may match any value within one filter, but it must satisfy every filter type you provide. Hierarchy entities and price items are matched by code, rather than by partial code or description. Requests without filters continue to return the existing price item selection response.

Select and add multiple pricing records

- The Deal Creation API supports a two-step process for adding multiple price item pricing records:
 - o Search eligible records using price list, person, or account criteria.
 - o Review the returned records, mark the ones to include, and submit them together.
- Search results contain selectable pricing records and their relevant hierarchy details. Records already selected for the deal model are skipped when submitted again. This operation is available while the deal model is modifiable at RM / level 0.

More deal information in API responses

- Deal Creation, Deal Extract, and Deal Pricing and Commitments responses expose additional information where applicable, including:
 - o Standard revenue, cost, profit, and profitability values at deal, division, product, and hierarchy levels.
 - o Financial variations and proposed or recommended deal win-bucket values.
 - o A customer hierarchy level indicator.
 - o Resolved price item hierarchy descriptions and additional price item details.

AI Insight in Billing Dashboard

Insight generation now uses a hybrid approach. The application calculates metrics and structures the results, then either uses an LLM to write the narrative from relevant data or fills a predefined template without calling an LLM. This makes template insights faster and more predictable, reduces data sent to the model in LLM mode, and improves consistency and metric accuracy. The **Insights** panel presents an overview, key metrics, correlations, and anomalies. To implement the hybrid approach, a new option type **LLM required/not required** in the **C1-AIMLFC** feature configuration is introduced in this release.

The **Billing Dashboard** now provides two AI-generated insights to help you understand billing activity and spot items that may need attention.

Billing Dashboard Summary Insights

The **Billing Dashboard** now brings key billing results and review activity together in a summary. You can use it to spot differences from past billing periods and identify billing cycles that may need attention.

The insight includes:

- **Bill count and amount comparisons:** Used to view how the latest bill run compares with historical averages for the number of bills and the total billed amount. The summary shows whether each result is above or below its average.

- **Bill review progress:** Used to view how many bills are in review, the average number of days they have been in review, and the longest time a bill has remained in review.
- **Billing cycle insights:** Used to view which billing cycles have bills in review or error, where billing anomalies have been detected, and which cycles show successful completion or progress. Overall indicators such as At Risk and Healthy help you assess cycle status quickly.

The summary uses the bill cycle and bill creation month selected on the dashboard, along with the billing data for that context.

Points to Note:

The averages come from the completed bills in the billing trend data. They use up to 12 preceding billing periods and exclude the most recent billing period.

The average billed amount is rounded to two decimal places whereas, the average bill count is rounded to a whole number.

Billing Trend Insights

Billing Trend Insights helps you to understand how the billing activity changes over time. It summarizes the bill count and billed amount shown in the **Billing Trend Summary** chart, making it easier to spot unusual periods and decide where to look more closely.

The insight includes:

- **Trend overview:** A summary of bill count and billed amount across the reporting period, including the highest, lowest, and ending values.
- **Bill count pattern:** The periods with the most and fewest bills and how bill volume changed over time.
- **Billed amount pattern:** The periods with the highest and lowest billed amounts and how billed revenue changed over time.
- **Key metrics:** Average bill count and billed amount, alongside the peak and low values and their corresponding periods.
- **Trend comparison:** Periods when bill count and billed amount rose or fell together, and periods when they moved in different directions.
- **Items to review:** Periods with no billing activity or a zero billed amount.

Performance Enhancements

This sections lists the batches which have been enhanced for better performance and to improve the user experience:

- **POSTROUT** – Improved the performance of Postal Bill Routing batch for **UBL Extract Generation** purposes. The following improvements were done:
 - o Caching of SQL Queries and Feature Configurations.
 - o Removal of hard parsing in SQL Queries.
 - o Reduction in the number of SQL Executions.

Enhancements (Specific to Insurance)

This section lists the enhancements made to the following features that are used in the health insurance domain:

- [Additional Filters for Pricing Rule Types](#)
- [Inbound Processing Discrepancy](#)
- [Bill Enquiry with Rate-to-Amount Traceability](#)
- [Coverage Specific Auto Maintenance](#)
- [Suppress To Do Creation for Successful PUPL Batch Records](#)
- [Delinquency Process End Status](#)
- [Requirements for Late Payment Charges](#)
- [Parent and Bill Group Date Effective Relationships](#)
- [Billing Dataset Refinements for Billing Dashboard](#)

Additional Filters for Pricing Rule Types

The **Pricing Rule Type** portal has been enhanced to make it easier to find and manage Pricing Rule Types. The Pricing Rule Type list can now be filtered by:

- Pricing Rule Type
- Description
- Category
- Status

The **Pricing Rule Type** and **Description** field support case-insensitive partial-match searches, while **Category** and **Status** field provide exact-match filtering. You can apply any combination of filters or leave all the fields blank to display the available pricing rule types. The search results display **Pricing Rule Type**, **Description**, and **Pricing Rule Type Category** columns along with **Edit** and **Delete** icons.

Inbound Processing Discrepancy

Healthcare Integrations (automated data exchanges between healthcare-related source systems and ORMB) routinely move many records through an inbound message queue. In such kind of setup, the time ORMB system receives an inbound message may differ from the time the source system created the original record.

When multiple messages reach the ORMB system at nearly the same time, relying only on ORMB creation timestamp may process those inbound messages based on the arrival timing instead of the order in which they were created in the source system.

To counter such scenario, the **Pricing Discrepancy** design resolves this issue by storing the source system transaction timestamp in the inbound message record. The goal is to process batch records in the most accurate available time sequence, while using a consistent fallback whenever timestamps are missing or identical.

Timing Distinctions - Driving the Design

The system design maintains two timestamps, each serving a distinct purpose. The **CRE_DTTM** column continues to store the system date, whereas the newly introduced **TXN_DTTM** column stores the exact timestamp when the inbound message is created in the source system. For instance, if **Person A** is created in the source system on **01 August 2026 at 09:00:00 A.M.** and **Person B** is created on the same day at **09:15:00 A.M.**, and the source system creates a single inbound message for both the persons on the same day at **09:30:00 A.M.**, where that inbound message arrives in the ORMB application at **09:45:00 A.M.** Now, in this scenario, the system does the following:

- Stores the date and time as **01 August 2026, 09:30:00 A.M.** in the **TXN_DTTM** field.
- Stores the date and time as **01 August 2026, 09:45:00 A.M.** in the **CRE_DTTM** field.

Capturing both values makes the difference explicit and preserves the existing system record.

Design Level Changes

The following design level changes are done in the ORMB application:

Column/Parameter	Action/Purpose
Table: C1_INBOUND_MESSAGE Column: TXN_DTTM Data type: TIMESTAMP(6)	The new TXN_DTTM column stores the precise point in time, combining both a calendar date and clock time. Note: If the TXN_DTTM contains NULL in the inbound message, system stamps the System Date in the TXN_DTTM column.
Batch: C1-HCEXS (HC Inbound Message Monitor Process) Batch Parameters: - externalSourceId - inboundMessageType	- The externalSourceId parameter filters the inbound messages based on the specified external source ID. Only inbound messages with a matching externalSourceId are selected for processing. The externalSourceId parameter is defined as a String. It filters the inbound messages on the C1_EXT_SOURCE_ID column of the C1_INBOUND_MESSAGE table. The behavior of externalSourceId parameter completely depends on the restrictNumberOfChars batch parameter, such as, - If the restrictNumberOfChars parameter is blank or set to zero, externalSourceId parameter is treated as an exact external source ID. The batch therefore creates a work unit only for that specific source and processes its eligible inbound messages.

Column/Parameter	Action/Purpose
	- o If the restrictNumberOfChars parameter is greater than zero, system uses the specified number of leading characters in the externalSourceId parameter as the matching pattern for external source. The system first finds external source IDs that start with the specified prefix and creates a separate work unit for each matching group. It then processes all eligible inbound messages from every source ID in that group. Now, for instance, if the externalSourceId is 9111 and restrictNumberOfChars is 3, batch selects the 911 group and may go ahead and process the eligible inbound messages where the source ID is 9111, 9112, and the ones that begin with 911 series. • The inboundMessageType batch parameter filters the inbound message based on the specified inbound message type. Only inbound messages with a matching inboundMessageType are selected for processing. The inboundMessageType parameter references the C1_INBOUND_MSG_TYPE_CD column of the C1_INBOUND_MESSAGE table. When the inboundMessageType parameter is populated, the batch adds the filter of the inboundMessageType to both job-work and execute work unit selection. By applying this restriction at both the stages: - o Work units are created only for external source groups which contain the respective inbound message type. - o If the inboundMessageType parameter is blank, the system processes the inbound messages regardless of their inbound message type. Points to Note: The externalSourceId and inboundMessageType are optional. These parameters narrow the set of inbound messages selected during both job-work and execute-work-unit processing. If neither parameter is specified, the batch continues to use its existing external-source partitioning behavior.

Column/Parameter	Action/Purpose
	When both the parameters are specified, system applies both the conditions. An inbound message is eligible for processing only if it matches the external source criteria and the specified inbound message type.

Bill Enquiry with Rate-to-Amount Traceability

Bill analysts often need to explain not only what was billed, but also how a charge was priced and which business change caused it. This enhancement turns bill information into a connected traceability experience. Starting from a bill segment, users can follow the calculation path through pricing timeline entries, pricing calculations, audit events, inbound messages, and audit reason that explains the premium change. This enhancement supports regular and retro-correction billable charges, including active and cancelled charges, while keeping the user in the existing **Bill Information** portal rather than introducing a separate inquiry page.

Configuration and Operating Prerequisites

The following configurations and prerequisites must be in place for this enhancement:

- The **Pricing Rule Type** must be configured with an **Audit Reason** when premium change reason derivation is expected.
- Plugin the **Bill Segment Post Processing For Req Ref Id (C1-BSEGREFID)** algorithm on the **Contract Type - Bill Segment Post Processing** spot to stamp the **Request Reference ID** on the **Bill Segment Calculation-line** characteristic so that bill segment can be connected to the pricing calculation chain.
- For **Fully-Insured Group**, in case of a benefit full snapshot, a new benefit record is created whenever the amount changes or end date is updated.

End-to-End Traceability Journey

The journey begins from the **Bill** screen where you search for a bill and navigate to the **Bill Information** screen to view the end-to-end traceability of the respective bill. In the **Bill Information** screen, if you click the **Broadcast** icon corresponding to the respective bill segment detail record in the **Bill Segment Details** zone, dependent zones like **SQ Details**, **Bill Segment Calculation Lines**, and **Pricing Timeline** appear. Now, when you broadcast a record from the **Pricing Timeline** zone, **Pricing Calculation Details** and **Audit Events Details** zones appear.

When you further broadcast a record from the **Audit Event Details** zone, the **Audit Reason** zone appears. Within the **Audit Event Details** zone, you can review the event status, action, effective date, entity, and inbound message information. Finally, on broadcasting an audit event detail record, the **Audit Reason** zone appears which displays the associated audit reason details, including the reason description, audited element, and the prior and updated values.

Points to Note:

The bill traceability design is applicable for **Fully-Insured Individual** and **Fully-Insured Group** line of business.

The **Audit Event Details** and **Audit Reason** is a shared zone between **Bill Information** and **Bill Drill Down** screen.

Audit Reason Derivation

Audit reasons are derived from audit event data. When several premium-impacting events contribute to an outcome, the values are concatenated in the order in which those events were triggered. In the audit reason, when an auditable attribute is modified within the same effective-dated record, both the prior and current values are captured. So, when a new effective-dated record is created, only the current value is captured in the audit reason.

Group Level Audit Coverage

For Fully-Insured Group line of business, this enhancement supports audit reason capture at person, billing account, membership, member-person, benefit, and bill levels. This enhancement also establishes guardrails so that routine enrollment activity does not create misleading audit records, such as,

- Enrolling a member person or an account does not generate an audit entry.
- An account enrollment that includes a bill-cycle update does not generate an audit entry.

The solution maintains a membership pricing audit mapping that connects the relevant audit event and repricing request to the affected membership.

Coverage Specific Auto Maintenance

Traditional offset processing matches credits and debits at the account level. However, this may be too general when amounts need to be applied within a specific coverage period. The new feature matches related credit and debit financial transactions before creating adjustments. This makes it clear which debit bill each credit is used to offset. This new enhancement also supports partial matching. If the credit and debit amounts differ, the system applies the smaller amount and leaves the remaining balance open. One credit can be used against several debits, and several credits can be applied to one debit.

Note: The **Coverage Specific Auto Maintenance** enhancement is applicable to both **Fully-Insured Individual** and **Fully-Insured Group** Line of Business.

Based on the offset request type configuration, it can create either transfer adjustments or non-transfer adjustments in match-mode. Existing offset request processing and FT retrieval remain available so the implementations that do not opt in retain their established behavior. The following table lists the required prerequisites for this new enhancement:

Prerequisite	Implication
Auto Maintenance enabled	The account must be eligible to perform auto maintenance processing.
C1-AUTOM Batch configured	The batch must include the optional coverageSpecificAutom parameter.
Credit Bill available	At least one credit bill must be open and eligible for coverage-specific offsetting.
Offset Request Type defined	It's the transfer adjustment option which determines whether the transfer or match-mode adjustments are created.

Processing Overview

The **Auto Maintenance - Offset Request Creation (C1-AUTOM)** batch first identifies the accounts that require auto maintenance. The batch then creates an offset request, validates the new batch parameter, and sets the coverage-specific value on the business object.

The system then invokes the **C1-OFST-DIST** offset distribution algorithm once the offset request resides in **Creating Adjustment** status. The offset distribution algorithm reads the offset request and loads open credit and debit FT rows. The algorithm separates credits from debits using unpaid amount, such as, negative unpaid amounts identify credits, while positive unpaid amounts identify debits.

Each list is sorted by the absolute remaining balance and the algorithm allocates minimum available amount for each match. Finally, the algorithm creates the offset adjustments and links them to the matched FT records.

New Control Flag and Decision Behavior

The core change of this enhancement is the optional **coverageSpecificAutom** batch parameter in the **Auto Maintenance - Offset Request Creation (C1-AUTOM)** batch. When the parameter is blank or set to **N**, the batch continues through the established offset generation flow. When the parameter is set to **Y**, the batch flags the offset request for coverage-period-aware matching. If configured, it also creates transfer adjustments for each matched credit/debit FT pair.

Note: While offsetting coverage-specific data, the process does not evaluate the **coverageSpecificAutom** batch parameter, since this functionality operates independently of it.

The system deploys the following parameter wise scenarios:

Skip Auto Maintenance	Coverage Specific Autom	Transfer Adjustment	Result
N	Blank or N	Y or N	For zero account or coverage balance, a coverage-specific offset is created when transfer adjustment is enabled.

Skip Auto Maintenance	Coverage Specific Autom	Transfer Adjustment	Result
Y	Blank or N	Y or N	Existing behavior applies where credit-to-debit offsets can be created for non-zero balances or coverage balance, with or without transfer adjustment.
Y or N	Y	Y or N	Coverage-specific offsets are created for zero or non-zero accounts or coverage balances. Internal bill offsets for the selected coverage are prioritized; remaining credit may be applied to other eligible bills.

Suppress To Do Creation for Successful PUPL Batch Records

Oracle Revenue Management and Billing allows you to control the **PUPL Record Statistics To Do** generation process which depends on the processing outcome of **Payment Upload (PUPL)** batch. The ORMB system does not create any To Dos when all the payment records in the batch are processed successfully, the To Dos are created only when the batch generates one or more error records. This behavior decreases unnecessary user notifications and volume of To Do items, while retaining visibility into batch executions that require attention.

This enhancement introduces a PUPL soft parameter, **TODO-ENTRY-FOR-ERROR**, to reduce unnecessary operational notifications. When the parameter is set to **Y**, the **Payment Upload (PUPL)** batch creates a **PUPL Record Statistics To Do** only if at least one payment upload record ends in error. The successful runs remain fully logged but do not generate a To Do.

Note: This enhancement is applicable across the entire healthcare lines of businesses and works consistently with both single-step and three-step PUPL batch processing and the processing mode does not affect the rule(s) which are applicable for To Do generation.

Prerequisites and Configuration

The following configuration is required for this enhancement:

- The existing **Payment Upload (PUPL)** batch configuration must be available.
- Before the PUPL batch is executed, payment upload data must be available in the existing staging flow.
- The existing configuration for PUPL Record Statistics To Do Type remains unchanged.

Functional Behavior

The system evaluates the processing results for each PUPL batch execution and applies the following rules:

- When the batch processes all the records successfully, PUPL Record Statistics To Do does not get created.
- When one or more records result in an error, PUPL “Record Statistics” To Do gets created, reflecting the run-level statistics including the **Success** and **Error** count.
- When a batch contains errors, the system creates no more than one PUPL “Record Statistics” To Do.
- Batch logs continue to record the relevant statistics even when no To Do is generated for a successful run.
- Empty file uploads are not permitted. If an empty file is uploaded, the system rejects it with the error: “File has no records to upload.”

Points to Note:

For each **PUPL** batch execution, the system determines whether to create a **PUPL Record Statistics To Do** based on the payment file processing outcome. This applies to both single-step and three-step processing where successful runs do not create a To Do, while runs with error records create one containing the relevant run-level statistics.

The payment upload processing itself is unchanged and the Payment Creation, Distribution, Freeze, Tender Settlement, Multi-threading, Restart Handling, and the existing To Do payload are not altered by this enhancement.

The existing To Do payload remains unchanged when a To Do is created.

Even when To Do creation is suppressed, batch statistics and logs continue to capture severe, non-severe, processed, and suspense counts.

Post-Execution Process

The following sequence describes the post-execution process where all existing PUPL record processing takes place before this evaluation:

- Payment upload staging data is available and the PUPL batch runs using the existing batch logic.
- PUPL processes the selected work units using its existing multi-threaded execution, commit strategy, and restart behavior.
- Once the processing is completed, the batch evaluates run-level record results.
- If **TODO-ENTRY-FOR-ERROR** soft parameter is set to **Y**, the PUPL batch creates one Record Statistics To Do only when the batch-run contains one or more errors.
- If the parameter is **N** or blank, PUPL creates the To Do regardless of the error outcome.
- Batch logs retain severe, non-severe, processed, and suspense statistics in all cases.

Note: To prevent To Do creation for successful runs, execute the PUPL with the soft parameter **TODO-ENTRY-FOR-ERROR = Y**

Delinquency Process End Status

The Oracle Revenue Management and Billing system introduce two coordinated enhancements for the delinquency process:

- [Automatic Completion of Delinquency Process End Status](#)
- [Deferred Grace Processing after Payment Cancellation](#)

Together, these changes enable controlled resolution of final delinquency states and provide more flexible management of payment-return timing. The solution is based on the standard product model. The standard product model normally resumes a cancelled delinquency process on an eligible payment cancellation through the payment cancellation algorithms. The new deferred behavior gets applied only when the introduced configuration enables it; otherwise, the standard behavior remains in force.

Note: This new enhancement is generic and not restricted for **Fully-Insured Individual** or **Fully-Insured Group** category line of businesses.

To implement these enhancements, the following changes are made to the system:

- A new business rule category named **Delinquency Process Auto Completion Business Rule** must be created in the **BUS_RULE_CAT_FLG** lookup.
 - o The business rule category maintains the final status and the configured period after which the system automatically transitions a delinquency process in **Customer Terminated**, **Customer Reinstated**, or **Cancelled** status to **Completed**.
 - o The automatic transition of a delinquency process takes place only when the **Derive Completion Period Details based on Business Rules (C1-DERCPBR)** algorithm is configured on the **Auto Completion Period Derivation** system event while defining a delinquency process type.
 - o An end status is allowed to be configured only once under a business rule criterion in the newly created business rule.
 - o Each configured end status must be a valid status in the **C1-DelinquencyProcess** business object lifecycle, and the system should transition to the **Completed** status from every selected status.
 - o Final statuses will be configured exclusively in the new business rule and will not be configured on the delinquency process type.
 - o The date counter for a selected status is based on the **STATUS_UPD_DTTM** column from the delinquency table.
- Two new columns **DLQ_STAT_TO_CLSD** and **FINAL_STAT_TRN_DAYS** must be created in the **Delinquency Business Rule (C1_BUS_RULE_DELIN)** table.
- A new column **ELIGIBILITY_CHECK** must be created in the **Delinquency Grace Period Defer Configuration (C1_DELIN_PROC_TYPE_GRC_PRD_DF)** table.

- Payment cancellation is supported as a payment-return event when the **Continue Delinquency Process due to Cancelled Payments (C1-CDPPAYCAN)** algorithm is configured on the **Payment Cancellation** system event of the Payments customer class.
 - The payment defer setup applies only when a delinquency cease to exists or is in the **Cancelled** status.
 - **Customer Terminated** and **Customer Reinstated** scenarios for payment-return are not addressed.
- For the Fully-Insured Individual Memberships that are billed to the same account, the derived state and region attributes used in business rules must be consistent across all memberships to prevent multiple conflicting criteria(s) from getting matched.
- For the Fully-Insured Individual line of business, state or region (jurisdiction) is captured in the health plan and membership attributes, whereas for Fully-Insured Group line of business, state or region (jurisdiction) is captured in the policy, policy plan, or membership attributes.

The system behaves in the following manner for the respective enhancement explained below:

Automatic Completion of Delinquency Process End Status

A delinquency process residing in **Customer Terminated**, **Customer Reinstated**, or **Cancelled** status can transition to the **Completed** status after a configured period. Once the delinquency process transitions into any of the above mentioned statuses, a counter begins till the configured period is reached.

The counter is effectively reset on each status transition because the design uses the existing delinquency **STATUS_UPD_DTTM** value, which is updated whenever the current status changes. The **Delinquency Process Monitor (C1-DPMON)** batch then monitors delinquency processes in **Cancelled**, **Customer Reinstated**, and **Customer Terminated** statuses. If auto-completion is enabled for the delinquency process type and current status, the batch uses **STATUS_UPD_DTTM** value to determine how long the process has remained in that status. Once the configured period has elapsed, the delinquency process is moved to **Completed** status.

Note: If a delinquency process is residing in **Customer Terminated** status, the existing reinstatement check is completed first.

Deferred Grace Processing after Payment Cancellation

For an eligible payment-cancellation event, the system must not resume the prior delinquency process immediately. Instead, the system should defer the grace-period start to the next coverage month. A new check box named **Eligibility Check Required** is introduced for this enhancement, which is selected by default. However, for payment-return defer configurations, the **Eligibility Check Required** check box can be cleared to disable the **Minimum Days for Eligibility** field and allow the defer decision without applying the minimum-days condition. The **Delinquency Process Events Creation (C1-DPEVTCR)** algorithm retrieves the grace-period defer configuration for payment reversal. When the relevant configuration is present and the trigger-date calculation mode is **LDGP**, it starts from the latest bill due date and evaluates the earliest pending-event trigger date.

For a next-month update action, the grace start date is advanced by coverage-month, increments until it is later than the earliest pending trigger date. The **Continue Delinquency Process due to Cancelled Payments (C1-CDPPAYCAN)** algorithm evaluates the **Eligibility Check Required** field value for payment reversals in order to determine whether to resume with the existing delinquency process or create a new one and defer the grace period to the following month without applying the minimum-days eligibility condition.

Requirements for Late Payment Charges

Oracle Revenue Management and Billing provides the following two requirements for late payment charges:

- [Account Level Bill Factor Override](#)
- [Late Payment Charge Generation Aligned with Bill Cycle](#)

Account Level Bill Factor Override

Currently, late payment charges for all eligible accounts are calculated using the **Global Bill Factor** value. This specific requirement grants support to configure the bill factor at account level for calculating the late payment charges.

During late payment charge processing, system determines the applicable bill factor by evaluating the account-level configuration. If the bill factor is not configured, system uses the existing bill factor resolution logic to proceed further.

A new characteristic type named **Account Level LPC Bill Factor (C1-LPCBF)** is defined where the characteristic entity is set to **Account**. This newly defined characteristic is of **Ad hoc** type where the valid value should be greater than zero.

An existing algorithm named **Calculate Late Payment Details (C1-LPCALC)** is modified to override the value of **Global Bill Factor** with the **Account Level LPC Bill Factor** characteristic value. This algorithm is configured on the **GENERATE** status of the **Late Payment Charge (C1-LatePaymentCharge)** business object.

Following are some important pointers for this functionality:

- The **Account Level LPC Bill Factor (C1-LPCBF)** characteristic type is shipped with the product.
- The **Account Level Bill Factor** configuration is optional. When an **Account Level Bill Factor** is configured, the system overrides the existing **Global Bill Factor**, where the numeric fields are constrained to a maximum precision of 36 with scale value of 18. On the other hand, if an **Account Level Bill Factor** is not configured, the system uses the existing bill factor logic without any change.
- To validate an **Account Level Bill Factor**, an existing algorithm type named **ADHV-NR** can be attached on the **C1-LPCBF** characteristic type, when the type of characteristic value is **Ad hoc**.
- The **Account Level Bill Factor** overrides the bill factor passed as the LPC batch parameter for **Policy Level LPC Calculations** where the **Late Payment Arrangement** is set as **DEFAULT**.
- The **Account Level Bill Factor** overrides the **Policy Level Bill Factor** for **Policy Level LPC Calculations** where the **Late Payment Arrangement** is set as **FLAT**.

- In a scenario where **Customer Class LPC Calculations** are performed, the system uses the **Account Level Bill Factor** instead of **Global Bill Factor**.

Late Payment Charge Generation Aligned with Bill Cycle

This enhancement optionally aligns **Late Payment Billable Charge Generation** with the applicable bill cycle. When configured, the **Billable Charge Start Date** is set to **Bill Cycle Schedule Window Start Date** and **Billable Charge End Date** is set to **Bill Cycle Schedule Window End Date**. This enhancement provides the required flexibility and does not change the existing late payment charge calculation functionality.

Note: The system follows the existing behavior of late payment charge generation, if this enhancement is not configured.

To implement this business requirement, the following changes are made to the system:

- The existing **Late Payment Charge (LPC)** setup is configured for the relevant Customer Class and/or Policy Level LPC calculation.
- An existing and a valid billable charge configuration is made available while creating the LPC billable charge.
- The bill cycle is configured for those accounts where LPC billable charges are aligned with the bill cycle. Further on, the bill cycle aligned LPC billable charge generation is controlled through optional configuration.
- A soft parameter named **Bill Cycle Code** is defined in the **Late Payment Charge Creation (C1-CRELP) Batch**, and the **C1-CRELP** batch driver query is updated to extract only those accounts that have **Bill Cycle Code** value configured in the soft parameter.

Note: A valid **Bill Cycle Code** must be provided as a soft parameter which the batch validates to ensure that the **Bill Cycle Code** is a valid one; in case the soft parameter is kept blank, the batch extracts all the accounts for calculating the late payment charges.

- An inclusion of a new option type named **Billable Charge Bill Cycle Alignment** is made in the **LPC Calculation Related Configurations (C1-LPCCALC)** feature configuration. If this option type is enabled, the LPC process generates billable charges for each bill cycle using that bill cycle's start and end dates.

Points to Note:

The **C1-CRELP** batch can be scheduled to execute on daily basis, as there is no specific restriction on the execution frequency of the batch.

The system supports existing LPC configurations such as **Exclusions**, **Grace Period Override**, **LPC Arrangement Override**, **Customer Class Level Calculation**, **Policy Level Calculation**, **Flat/Per Day Switch**, **Payment Cancellation**, **Partial Payment**, **Full Payment**, and **Overlapping Period Handling**.

Parent and Bill Group Date Effective Relationships

This specific enhancement enriches the healthcare inbound message processing capability for Pharmacy Line of Business. It enables date-effective parent group to bill group relationships so that a bill group can be associated with different parent groups across distinct business periods without losing historical context. The dates provided for inbound processing determine which **Parent Group**, **Bill Group Sort**, **Bill Level**, **Policy**, and **Policy Person** records apply for a given period.

The optional parent identifiers provided at bill group improves the outcome when the same billing group has more than one parent relationship over time. A bill group may have multiple parent group relationships, each with its own effective period. The relationship start date is part of the key used to determine the appropriate **Bill Group Sort**. The generated sort ID uses the **YYMMDDNNN** format, making the sort period aware instead of being equivalent to the parent identifier where:

- YYMMDD represents the relationship START_DT.
- NNN is the sequence number for that date.

Note: The **Bill Level records** are created, retained, updated, or inactivated according to the resolved parent group and the sort context for that relationship period.

The healthcare inbound message is the source of truth for **Parent Group** to **Bill Group** relationship dates. A replacement parent does not, by itself, close an existing relationship. The outgoing relationship should be explicitly end-dated before a new **Person-to-Person** relationship is defined for the same bill group and a different parent group. The following table lists various inbound conditions and the respective system behavior:

Inbound Condition	System Behavior
If same parent and same relationship start date exist	The system updates Person-to-Person Relation with the provided end date, and the related Bill Group Sort period is kept aligned with the same relationship period.
If a different parent exists for the same billing group with same relationship start date	The system allows new parent only when the existing relationship represents one-day correction history, otherwise system treats the setup as ambiguous.
If the matching relationship period does not exist	The system creates a new Person-to-Person relationship period, and then either creates or reuses the period-specific Bill Group Sort period and processes the related Bill Level, Policy, and Policy Person records for the provided period.

Note: The configured **Person-to-Person** relation type must already define the **Parent Group-to-Bill Group** relationship through the applicable configuration.

The **Bill Level** input supports two optional fields that help identify the intended parent group. If the optional fields are present, the inbound message processing mechanism uses them to resolve the parent context for bill level processing. If the optional fields are missing, system continues to rely on the relationship context provided in the inbound structure and the existing relationship period. Following are the optional parent identifier fields:

- **parentPersonIdentifierType** – Used to specify the parent person identifier type intended to identify the applicable parent group during bill level processing.
- **parentPersonIdentifier** – Used to specify the parent person identifier value intended to identify the applicable parent group during bill level processing.

This enhancement also supports the following business scenarios:

- **Same Day Correction** – Preserve the incorrect parent as one-day historical record, and then establish the corrected parent relationship.
- **Move a Bill Group to a Different Parent** – Explicitly end-date the outgoing parent group relationship, and then create a new relationship period.
- **Return a Bill Group to a Previous Parent** – Create a separate, later relationship period for the returning parent group containing separate **Bill Group Sort** and **Bill Level Context**.

The following existing artifacts are modified or continue to be used with the new period-aware parent and sort context:

Artifacts	Impact
Add/Edit Bill Level Details (C1-BillLevelAddEditAction) Business Service	The business service uses the existing Bill Level add and edit lifecycle processing mechanism.
	Note: Parent and Sort context passed to the Bill Level is enhanced for multiple parent periods.
Sort Search (C1-BGSRT) Zone	The system continues to show period-specific Bill Group Sort records.
	Note: Created or updated sort reflects the Bill Group, Parent Group, and Relationship Start Date.
Parent Customer Pricing Rules (C1-PRPCRULE) Zone	The Pricing Rule search is available with Bill Group and Sort context and now supports display for multiple parent groups.
Customer Registration - Person Common Data (C1-PersonDataCommonDA) Data Area	Continues to carry person relationship data used during inbound processing.
Healthcare Inbound Message Extension (C1-HCInboundMsgExtDA) Data Area	Continues to carry Healthcare-specific inbound data used during inbound processing.
PHARMACY Policy Type	Indicates the business object using which you want to create the pharmacy policy type.

Artifacts	Impact
Pharmacy Policy (C1-PharmaPolicy) Business Object	Carries different policy-related attributes like Policy Number, Policy Start Date, Policy End Date, Policy Persons, etc. It contains the following statuses: • Pending • Active • Cancel

Billing Dataset Refinements for Billing Dashboard

The following tables were refined as a part of billing dataset refinements for billing dashboard:

- **Fact Table for Adjustments (C1_ADJ_DTLS_INTG)** – It is a **Fact** table used for adjustments, which stores the details of all adjustments, including **Contract ID**, **Adjustment Type**, **Adjustment Status**, **Cancellation Reason** and measures such as **Base Amount**, **Exempt Amount**, and **Adjustment Amount**.
- **Dimension Table for Account (C1_DIM_ACCT_INTG)** – It is a **Dimension** table used for account, which stores all the business-related attributes, such as, **Division**, **Bill Cycle**, **Collection Class**, **Usage Type**, and **Customer Class Details** for all the accounts in the system.
- **Bill Fact Table for Generic Dataset Extract (C1_BILL_FACT_INTG)** – It is a **Fact** table used for Bill, which stores bill related details like **Bill ID**, **Invoice Account**, **Bill Cycle** and measures like **New Charges**, **Corrections**, **Current Bill Balance**, and **Payments received against the Bill** for all the invoices in the system.
- **Table for Bill and Autopay Details (C1_BILL_APAY_DTLS_INTG)** – This table stores the autopay related details, such as, **Autopay ID**, **Autopay Source Code**, **External Account**, **Autopay Type**, and **Routing Details**.
- **Integrated dataset for Bill Segments (C1_BSEG_DTLS_INTG)** – It is a **Fact** table for bill segments, which stores details of all the bill segments, such as, **Corresponding Bill ID**, **Calculation Lines**, **Cancellation Reason**, and **Exception Messages**.
- **Integrated dataset for FT & GL (C1_FT_GL_DTLS_INTG)** – It is a **Fact** table for financial transactions, which stores the entire details of all the FT Types (Bill Segments, Payments and Adjustments) and measures like Current Amount, Total Amount along with their corresponding **Bill ID** and **GL** related attributes.

User Interface (UI) Level Changes

The following table lists changes made to the existing screens in Oracle Revenue Management and Billing:

Screen Name	Changes
Business Rule (Used for Searching)	The following change is made to this screen: - A new option named Delinquency Process Auto Completion Business Rule is added in the Search By list. - A new column named Work day mode – Grace period is added in the Search Results section when you search using the Delinquency Grace Period Business Rule option in the Search Business Rule screen.
Business Rule (Used for Adding or Editing)	The following change is made to this screen: A new field named Work day mode – Grace period is added in the Delinquency Grace Period Business Rule screen. By default, this field is disabled. It is enabled only when you select an option from the Grace Period Type field.
Delinquency Process Type (Used for Adding or Editing)	The following changes are made to this screen: - A new field named Work Day Mode is added in the Main section. This field appears only when you select the Consider Work Days option. - Two new fields named Work day mode – Grace period and Work day mode – Start of Grace is added in the Grace Period Configuration section. - A new option named Eligibility Check Required is added in the Grace Period Defer Configuration section.
Audit Event (Used for Searching)	The following change is made to this screen: A new field named Inbound Message Information is added in the Search Result screen.
Audit Event (Used for Viewing)	The following change is made to this screen: A new field named Inbound Message Information is added in the Main section of the Audit Event zone.

Screen Name	Changes
Dashboard Screen (Sidebar)	The following change is made to this screen: A new section named Account Balance is added in the Dashboard Screen (Sidebar).
Statement Construct (Used for Searching)	The following change is made to this screen: A new screen named Statement Construct Search is introduced in this release.
Approve Price Assignment	The following changes are made to this screen: - The Product Group, Parent Price Item, Parameters, Rate Info (New Value), and Rate Info (Old Value) are added in the List of Price Assignments zone. - The Description column is removed from the List of Price Assignments zone. - In the Comparison:New Versus Existing zone, the changes made in the existing pricing information is highlighted in aqua and the newly added information is highlighted in yellow.
Modify Price Assignment	The following change is made to this screen: The Modify/Resolve Price Assignment screen is now in sync with the new price assignment UI.
Resolve Price Assignment	The following change is made to this screen: The Modify/Resolve Price Assignment screen is now in sync with the new price assignment UI.

Database Level Changes

This section highlights the documents that you can refer for the following database level changes:

- [New Objects in the ORMB V26.1.0.0.0 Database](#)
- [New Objects in the OUAF V25.4 Database](#)
- [New Tables in the ORMB V26.1.0.0.0 Database](#)
- [New Tables in the OUAF V25.4 Database](#)
- [Existing Tables Modified in ORMB V26.1.0.0.0](#)
- [Existing Tables Modified in OUAF V25.4](#)
- [Algorithms and Algorithm Types Dropped in ORMB V26.1.0.0.0](#)
- [Algorithms and Algorithm Types Dropped in OUAF V25.4](#)
- [Parameters Added or Removed from Algorithm Types in ORMB V26.1.0.0.0](#)
- [Option Types Added or Removed from Feature Configurations in ORMB V26.1.0.0.0](#)
- [Characteristic Types Dropped in ORMB V26.1.0.0.0](#)
- [Batch Controls Dropped in ORMB V26.1.0.0.0](#)
- [Parameters Added or Removed from Batch Controls in ORMB V26.1.0.0.0](#)
- [Parameters Added or Removed from Batch Controls in OUAF V25.4](#)
- [Default User Group Application Services](#)

New Objects in the ORMB V26.1.0.0.0 Database

To view the list of objects (such as tables, columns, algorithm types, business objects, and so on) which are newly introduced in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix A: New Objects in the Oracle Revenue Management and Billing V26.1.0.0.0 Database** in the *Oracle Revenue Management and Billing Database Administrator's Guide*.

New Objects in the OUAF V25.4 Database

To view the list of objects (such as tables, columns, algorithm types, business objects, and so on) which are newly introduced in Oracle Utilities Application Framework Version 25.4, see the **Appendix D: New Objects in the Oracle Utilities Application Framework V25.4 Database** in the *Oracle Revenue Management and Billing Database Administrator's Guide*.

New Tables in the ORMB V26.1.0.0.0 Database

To view detail information about the tables that are newly introduced in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix C: New Tables Added in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

New Tables in the OUAF V25.4 Database

To view detail information about the tables that are newly introduced in Oracle Utilities Application Framework Version 25.4, see the **Appendix M: New Tables Added in OUAF Version 25.4** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Existing Tables Modified in ORMB V26.1.0.0.0

To view the columns that are newly added, modified, or dropped from the existing tables in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix D: Existing Tables Modified in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Existing Tables Modified in OUAF V25.4

To view the columns that are newly added, modified, or dropped from the existing tables in Oracle Utilities Application Framework Version 25.4, see the **Appendix N: Existing Tables Modified in OUAF Version 25.4** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Algorithms and Algorithm Types Dropped in ORMB V26.1.0.0.0

To view the algorithms and algorithm types which are dropped in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix E: Algorithms and Algorithm Types Dropped in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Algorithms and Algorithm Types Dropped in OUAF V25.4

To view the algorithms and algorithm types which are dropped in Oracle Utilities Application Framework Version 25.4, see the **Appendix O: Algorithms and Algorithm Types Dropped in OUAF Version 25.4** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Parameters Added or Removed from Algorithm Types in ORMB V26.1.0.0.0

To view the parameters which are newly added or dropped from the existing algorithm types in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix F: Parameters Added or Removed from Algorithm Types in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Option Types Added or Removed from Feature Configurations in ORMB V26.1.0.0.0

To view the option types which are newly added or dropped from the existing feature configurations in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix G: Option Types Added or Removed from Feature Configurations in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Characteristic Types Dropped in ORMB V26.1.0.0.0

To view the characteristic types which are dropped in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix H: Characteristic Types Dropped in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Batch Controls Dropped in ORMB V26.1.0.0.0

To view the batch controls which are dropped in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix I: Batch Controls Dropped in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Parameters Added or Removed from Batch Controls in ORMB V26.1.0.0.0

To view the parameters which are newly added or dropped from the existing batch controls in Oracle Revenue Management and Billing Version 26.1.0.0.0, see the **Appendix J: Parameters Added or Removed from Batch Controls in ORMB Version 26.1.0.0.0** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Parameters Added or Removed from Batch Controls in OUAF V25.4

To view the parameters which are newly added or dropped from the existing batch controls in Oracle Utilities Application Framework Version 25.4, see the **Appendix P: Parameters Added or Removed from Batch Controls in OUAF Version 25.4** in the *Oracle Revenue Management and Billing Upgrade Guide*.

Default User Group Application Services

Oracle Revenue Management and Billing provides the following default user groups - ALL_SERVICES, C1_BSERVICES, HCADMIN, and INADMIN. To view the application services configured for the default user

groups, see the **Appendix B: Application Services Configured for Default User Group** in the *Oracle Revenue Management and Billing Database Administrator's Guide*.

Technical Recommendations

To improve the overall batch performance on the Windows and Linux platforms, we recommend you to make changes in the following files:

File Name	Change From	Change To
hibernate.properties	hibernate.c3p0.timeout = 300	hibernate.c3p0.timeout = 600
threadpoolworker.sh	MEM_ARGS="-Xms512m -Xmx1024m -XX:MaxPermSize=768m"	MEM_ARGS="-Xms512m -Xmx4096m -XX:MaxPermSize=768m"

Oracle Utilities Application Framework Version 25.4 Enhancements

The following enhancements are made in Oracle Utilities Application Framework (OUAF) Version 25.4:

- [Data Privacy and Security Enhancements](#)
- [Product Usability Enhancements](#)
- [To Do Management and Processing Enhancements](#)
- [Batch Processing Enhancements](#)
- [Implementation Tool Enhancements](#)
- [Integration Enhancements](#)
- [Content Migration Assistant \(CMA\) Enhancements](#)
- [Web Services Enhancements](#)
- [User Interface Experience Enhancements](#)
- [Miscellaneous Enhancements](#)

Note: The Steps to Enable, Tips and Considerations, Key Resources, and Role Information sections provide guidelines for enabling each feature, wherever applicable.

Data Privacy and Security Enhancements

This section describes the new and enhanced data privacy and security feature introduced in this release:

- [UI Masking for Numbers](#)

UI Masking for Numbers

The system is enhanced to support masking numeric values on the user interface. This is useful if your implementation has certain quantities or amounts that are sensitive and should only be available unmasked to certain users.

The system provides a new masking algorithm type (**F1-MASKNBR**) for number masking. The following functionality is provided by this algorithm type:

- It uses the number 9 as its masking character.
- Like the existing string masking algorithm type, this new algorithm type includes configuration for an application service, security type, and authorization level allowing you to configure security for users that are allowed to see the data unmasked.
- For users that do not have the security to see data unmasked, the algorithm type returns a static number of 9s to mask both the digits themselves and the number of digits. See the algorithm type description for more information.

Masking for alphanumeric data, such as credit card numbers, bank account numbers, and personal identification numbers (for example, social security number) was already supported.

This does not impact any existing extensions.

Steps To Enable

To enable this feature, see the **User Interface Masking** section in the *Oracle Utilities Application Framework Administrative Guide* for more information.

Tips and Considerations

The Data Masking plug-in spot was also enhanced to receive the **Field Name** as optional input to the algorithm.

Product Usability Enhancements

This section describes the new and enhanced product usability features introduced in this release:

- [Additional Inbound Web Service Query Options](#)
- [Batch Job Submission Query Portal](#)
- [Enter Menu Name in Search Without Slash](#)
- [Improvements to Batch Analytics Snapshot Update Processes](#)
- [New Batch Analytics Views](#)
- [Zone SQL and UI Map HTML Editor Improvements](#)
- [Ability to Override Labels in Business Object Configuration](#)
- [Terminology Change: "Sidebar" Replacing "Dashboard"](#)
- [Easier Access to Release Notes](#)
- [Master Configuration Improvements](#)
- [Override a Row Header Using UI Hints](#)

Additional Inbound Web Service Query Options

You can search for REST Inbound Web Services by operation information and help text details.

In addition, the Open API spec may also be launched from the **Inbound Web Service Operation** portal for your convenience.

This provides more flexible search options. There is no impact to existing extensions with this enhancement.

Steps To Enable

No steps are required to enable this feature.

Batch Job Submission Query Portal

The **Batch Job Submission** search page has been converted to a portal to provide you with a more flexible user experience. The portal includes additional filters to allow more granularity in the search. The search also supports pagination, providing the ability to navigate between sets of search results.

This provides you with more search criteria and additional information in the search results. There is no impact to existing extensions with this enhancement.

Steps To Enable

No steps are required to enable this feature.

Enter Menu Name in Search Without Slash

The search widget no longer requires a preceding slash to search for a menu item.

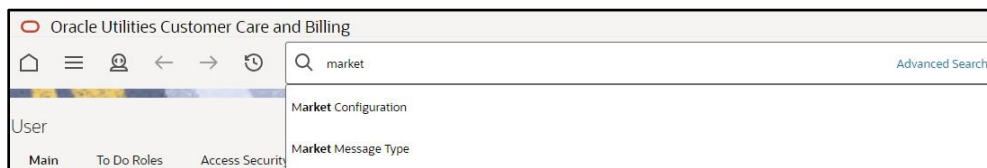


Figure 1: Search Widget

If the keyword for the menu name matches keywords in the unified search results, you will see results mixed in. In this example, the word "market" includes results with "market" in the menu name and "market" in a customer's name or address.



Figure 2: Searching with Keywords

When you enter a slash before the menu item text, it is a signal to the search to only search for the text in menu entries.

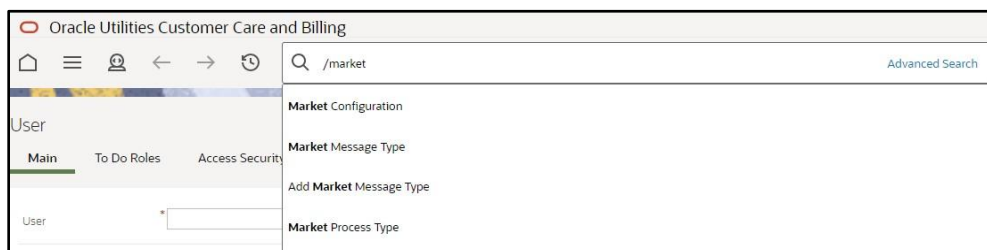


Figure 3: Searching for Menu Item

When using the Search widget, no longer requiring the slash improves usability and consistency.

Steps To Enable

No steps are required to enable this feature.

Improvements to Batch Analytics Snapshot Update Processes

Based on volume testing, the queries used to select records for the batch run and batch thread analytics snapshot tables have been optimized. Additional indexes have been added to the tables to support the amended queries. The batch processes now also support selecting records within a range of days, instead of months, to provide more flexibility in the initial population of the snapshot tables.

The processes used to populate the batch analytics table have been amended to improve performance.

Steps To Enable

No steps are required to enable this feature.

New Batch Analytics Views

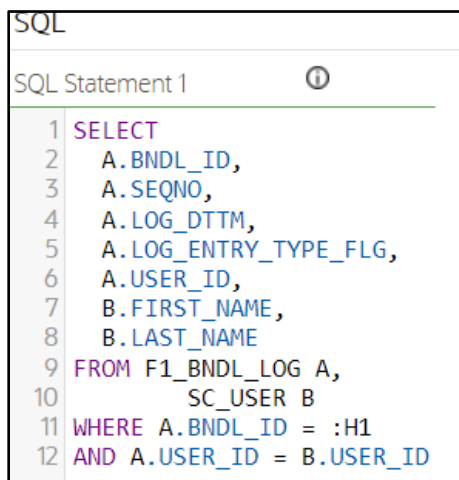
The batch analytics views no longer derive data directly from the various batch run related tables. Instead, the views now reference the snapshot tables, which have been designed to simplify the view SQL and to take advantage of specific indices that are not available in the source data.

Steps To Enable

No steps are required to enable this feature.

Zone SQL and UI Map HTML Editor Improvements

The CodeMirror library is now used to apply syntax highlighting logic to the SQL editor in data explorer Zones. Line sequence numbers were also added.

The image shows a screenshot of a web-based SQL editor. At the top, there's a header with the text "SQL" and "SQL Statement 1" followed by an information icon. Below this, the SQL code is displayed with line numbers from 1 to 12 on the left. The code is syntax-highlighted: keywords like SELECT, FROM, WHERE, and AND are in purple; table and column names are in blue. The code is as follows:

```
1 SELECT
2   A.BNDL_ID,
3   A.SEQNO,
4   A.LOG_DTTM,
5   A.LOG_ENTRY_TYPE_FLG,
6   A.USER_ID,
7   B.FIRST_NAME,
8   B.LAST_NAME
9 FROM F1_BNDL_LOG A,
10      SC_USER B
11 WHERE A.BNDL_ID = :H1
12 AND A.USER_ID = B.USER_ID
```

Figure 4: SQL Editor

The same improvements are visible in the HTML Editor for a UI map.

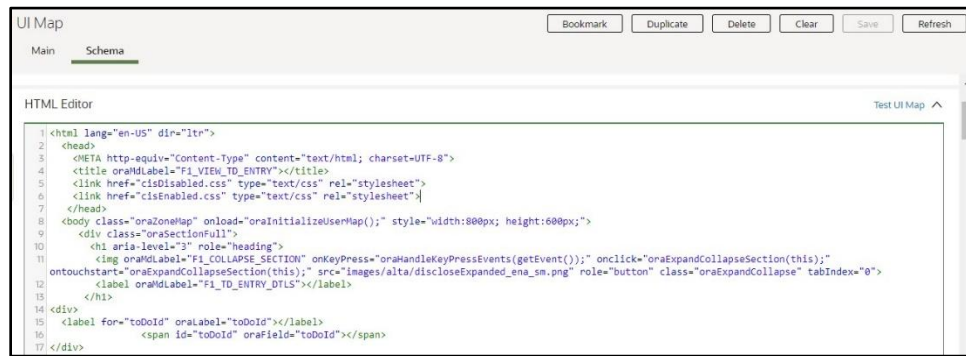


Figure 5: HTML Editor

When viewing or editing the SQL definition in zone maintenance and when viewing or editing the HTML for a UI map, readability is improved with syntax highlighting.

Steps To Enable

No steps are required to enable this feature.

Ability to Override Labels in Business Object Configuration

The following language related to a business object status may now be overridden by your implementation:

- Status description. This is the text visible when displaying the current status of a record that is governed by a business object.
- Next Status Action Label for the business object status' next status. This is the text visible on an action button that you may use to transition a record to the next status.

For example, you could change the status "Canceled" for a given business object to use the term "Discarded". You could do this by navigating to the lifecycle definition for that business object and providing an override description for the "Canceled" state. In addition, you can find the states that transition to Canceled and override the Action Label from "Cancel" to "Discard".

The description of any product-delivered business object Status Reason can now also be overridden by your implementation.

Note: There are places where a status or a status reason description is captured as an audit of a point in time, such as in a log record. If you change the description of a status on a business object or the description of a status reason, the change will not cascade to any place that has captured the description previously.

This does not impact any existing extensions. The user interface may change if you choose to override descriptions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The product delivers two new views:

- **F1_BUS_OBJ_STATUS_VW** - This view is built from the data in **F1_BUS_OBJ_STATUS_L**, but it sets the value of the **DESCR** field to the new override description if populated (otherwise to the description).
- **F1_BUS_OBJ_STATUS_RSN_VW** - This view is built from the data in **F1_BUS_OBJ_STATUS_RSN_L**, but it sets the value of the **DESCR** field to the new override description if populated (otherwise to the description).

If you have any custom zones that retrieve the **DESCR** field from **F1_BUS_OBJ_STATUS_L** or from **F1_BUS_OBJ_STATUS_RSN_L** and you plan to override any business object status description or a status reason description, you should update your custom zone to use the corresponding view instead.

Terminology Change: "Sidebar" Replacing "Dashboard"

The vertical area that stays anchored in the application as a user moves through the system is now referred to as a "Sidebar" instead of a "Dashboard." This change is reflected in documentation, metadata descriptions, and configuration on the User page related to the area (including the Sidebar Width, the Sidebar Location and the Sidebar State). This does not impact any extensions.

This allows the "Sidebar" to be distinguished from other "Dashboards" used to describe portals that display high-level views of a specific subject area. For example, the **Batch Day Dashboard** and the **To Do Dashboard**.

Steps To Enable

No steps are required to enable this feature.

Easier Access to Release Notes

The **Help** drop down menu was enhanced to include a Release Notes entry. For cloud implementations, the link brings you to the **Cloud Readiness/What's New** portal for the appropriate product and version. For an on-premise implementation, the link brings you to the **Release Notes** page for the appropriate product and version.

You now have a link to quickly access the information about the new features for the current version of the product.

This does not impact any existing extensions.

Steps To Enable

System administrators should set/grant users/grant access to the **F1-RELNOTE** application service, Inquire access mode.

Master Configuration Improvements

The master configuration functionality is enhanced to support multiple records for the same business object. You can use an optional new primary Part Name field to uniquely identify the record. Note that the master configuration business object needs to be designed to support multiple parts as indicated by a designated business object option. By default, the part name is not populated for the main record, which allows additional parts to have a unique value as needed.

Due to a growing number of master configuration records, the master configuration UI has become a standard maintenance portal with a separate query portal. This allows for a better user experience when searching for records and allows different business objects to have their own portals as needed.

Additionally, the master configuration maintenance object is enhanced to support the following new features:

- An optional configuration class that may be used at design time to highlight the broader purpose of certain configurations for reporting purposes.
- A Standard characteristics table for extension purposes.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Master Configuration Query Portal	F1MSTQRY	F1MSTCFG

Any business object that supports an **Edit** action should include a standard **Record Actions** section as part of its display map. Prior to this release, if a business object did not include such a section, it could still be edited via the old portal. The new standardized maintenance portal requires the section to exist. You should correct these custom business objects accordingly. Until these custom business objects are fixed, you may include the **Master Configuration Actions (F1MFGACT)** zone to the **Master Configuration** maintenance portal.

Override a Row Header Using UI Hints

A new Row Header attribute has been added to the schema definition to allow one or more elements to be explicitly marked as row headers. Previously, the system automatically assigned the attribute `scope="row"` to the PK field for a list or to the first non-suppressed element. This was not always the element that best identified the row. For example, a sequence number would have been less meaningful than the description of the next element in the list, such as a parameter name.

Note: This attribute is only applicable to elements in a list.

This improves the experience for users using a screen reader.

Steps To Enable

No steps are required to enable this feature.

To Do Management and Processing Enhancements

This section describes the following new and enhanced To Do features introduced in this release:

- [To Do Entry Lifecycle Improvements](#)
- [To Do Entry Supports Both Creation Process and Routing Process](#)
- [Duration Information Added to To Do Portal and Information String](#)
- [Related To Do Support Improvements](#)
- [Improved Display on Filters on To Do Dashboard Portal](#)
- [Standardize Providing Comments on Various To Do Dialogues](#)

To Do Entry Lifecycle Improvements

Several improvements were made to the To Do Entry lifecycle to more accurately reflect the status of a To Do Entry:

- The status **Being Worked On** was renamed to **Assigned** to reflect what actually happens in that status. Previously, you could have one or more To Do Entries in the **Being Worked On** state, but it did not mean that work was being performed yet. Now this status reflects only that the work has been assigned to someone.
- A new status value of **In Progress** was added. This allows you to explicitly mark which To Do Entry you are actually working on. You can only have one To Do Entry in the **In Progress** state at a time.
- A new status value of **On Hold** was added. This allows you to pause the progress of a To Do Entry if you need to wait for some event to occur before continuing to work on a To Do. Putting a To Do in the **On Hold** status allows for a more accurate accounting of how long it takes to work on a To Do Entry.

The two new status values of **In Progress** and **On Hold** are captured in a new Substatus field (TD_SUB_STATUS_FLG) on the To Do Entry. This new field can only be populated if the To Do Entry is in the **Assigned** status (the status formerly known as **Being Worked On**). This was done so that any implementation with the existing status field (ENTRY_STATUS_FLG) will continue to work as before.

An implementation needs to opt into using the substatus functionality by giving users that work on To Do Entries access to the new access modes. See the release readiness detail below for directions. Once an implementation has opted into the functionality, you will see these additional capabilities related to To Do Entries:

- When you perform any action that previously automatically assigned a To Do to you, it now also moves the To Do entry to **In Progress**. This happens if you click the **Work** action on To Do Entry, To Do Management, or on the **To Do Details** tab of the To Do Dashboard. Additionally, if you use To Do List and click the hyperlink in the **Message** column, this functionality applies.
- When you log into the system and have a To Do Entry that is **In Progress**, it is shown in the **Current To Do** dashboard zone.

- If you have an **In Progress** To Do and perform an action that causes a different To Do Entry to become In Progress, the previous To Do Entry is moved to the **On Hold** status.
- When you view an **Open** To Do Entry on the **To Do Entry Maintenance** page or **Current To Do** zone and you are allowed to work on the To Do, you see a button for **Start Progress**. This allows you to assign it to yourself and start work on in.
- When you view an **Assigned** To Do Entry on the **To Do Entry Maintenance** page or in the **Current To Do** zone, you also see a button for **Start Progress**.
- When you view an **In Progress** To Do Entry on the **To Do Entry Maintenance** page, you see buttons for **Hold Progress** and **Stop Work**. If you click **Stop Work**, it resets the **In Progress** state and the To Do will just be **Assigned**. These buttons are also available in the **Current To Do** zone. You can also perform any action that you can do in the **Assigned** state, including reopen, unassign, forward, and **Complete** the To Do.
- When you view an **On Hold** To Do Entry on the **To Do Entry Maintenance** page, you see buttons for **Start Progress** and **Stop Work**. You can also perform any action that you can do in the **Assigned** state, including reopen, unassign, forward, and **Complete** the To Do.

The To Do log has been enhanced to capture the status of the To Do Entry at the time the log is created as follows:

- A new log type **Status Updated** has been added and is used for any changes related to the new states of **In Progress** and **On Hold**. The existing log types of **Assigned**, **Forwarded** and **Sent Back** will continue to be used for those states for backward compatibility purposes.
- Going forward, log entries created will capture the status of the To Do at the time the log was created. Existing log values that predate the upgrade are not updated.
- A single status field is used and be populated with the substatus value of **In Progress** or **On Hold**, if applicable. Otherwise, it is populated with the status value of **Open**, **Assigned**, or **Completed**.

All the places where a To Do status is shown for an existing record, the system will show the substatus of **In Progress** or **On Hold**, if populated, otherwise it will show the **Status** (Open, Assigned or Complete).

The **To Do Dashboard > To Dos by Status** graph has been enhanced to also break out counts by substatus.

Steps To Enable

Provide the required access before using this feature.

Tips and Considerations

Regardless of whether an implementation has opted into the functionality, you will see that the additional status values are now available in the filter criteria for Status on the **To Do Management** and **To Do Dashboard > Details** pages. The filters for other pages, including **To Do Search**, **To Do List**, and **Supervisor To Do Assignment** have not changed to include the substatus values in the filter criteria. In addition, any page that shows a bar with counts of Assigned or Open To Do Entries have not changed to include counts by the substatus values.

Key Resources

See the [Improved To Do States](#) training.

Access Requirements

System administrators should set/grant users/grant access to the access modes **HDPR** (Hold Progress), **SPWK** (Stop Work) and **STPR** (Start Progress) for the **CILQTDEP** application service. If you choose to use this functionality, the recommendation is that this security is granted to all users that use To Do Entry (or none).

To Do Entry Supports Both Creation Process and Routing Process

If a To Do Type is configured with a creation process and a routing process, a To Do Entry based on that type now supports both processes. The creation process is stamped for audit purposes and the routing process is stamped so that the To Do Entry is processed the next time the routing process is run. Previously, although the To Do Type supported configuration for both types of processes, the To Do Entry table could only support a relationship to the creation batch process. The routing process functionality was not possible. To Do Entries created by a batch process may also be marked to be routed to an external system, increasing usability.

Steps To Enable

No steps are required to enable this feature.

Duration Information Added to To Do Portal and Information String

The system now includes the following calculated duration information on the **To Do Entry** page:

- For a non-complete To Do, the Total Duration from its creation until now.
- For a completed To Do Entry, the Total Duration from its creation until its completion.
- For a To Do Entry that had ever been in the In Progress state, the Time In Progress. If it is currently in the In Progress state, the end duration time is the current date/time.

In addition, the base delivered Information string for a To Do Entry has been updated to include the age for a non-complete To Do and the duration for a completed To Do.

If your implementation uses a To Do information algorithm to override the base delivered information, you will not see any change to your To Do information. This change does not impact any extensions.

When you see the calculated duration information, it helps you understand at a glance how long a To Do entry took to work on and how long before it was completed.

Steps To Enable

No steps are required to enable this feature.

Related To Do Support Improvements

The zone that displays related To Do entries on the **To Do Entry** maintenance portal has been enhanced to support actions on the related To Do entries. In addition, the current To Do being maintained is included in the results so that you can perform actions on all To Do entries.

The **Related To Do Entries** zone supports all the actions available on the **To Do Management** portal. You can do mass assignment, mass updates to priority, mass addition of a log entry, and mass completion. In addition, you have access to the **Work** button to push all the related To Do entries into your Worklist. The actions are only available if a user is allowed to work all the related To Do entries.

On the **To Do Management** zone and the **To Do Details** zone on the **To Do Dashboard** portal, the link for the Related To Dos message now brings you to the **To Do Entry** maintenance portal. Previously, you were brought to the **To Do Search** page where you could do actions only on the To Do entries related to the one in the results.

This does not impact any extensions.

The ability to action one or more related To Dos on the **To Do Entry** maintenance portal provides improved support for managing multiple records.

Steps To Enable

No steps are required to enable this feature.

Improved Display on Filters on To Do Dashboard Portal

Prior to this release, the same filters impacting all charts on the **To Do Dashboard** portal were displayed redundantly within each chart zone. As of this release the display of these filters, and the ability to reset them, has been moved to a central zone at the top of the portal.

Displaying filters in a central zone as opposed to being embedded in each chart zone adds clarity about the content being displayed and improves the usability of the portal.

Steps To Enable

No steps are required to enable this feature.

Standardize Providing Comments on Various To Do Dialogues

The following dialogues has been enhanced to be consistent with respect to prompting for comments and adding a user log entry when updating or completing one or more to do entries:

- To Do Entry
 - o The **Edit** action includes the ability to add a user log entry. That saves a user from having to click the Log tab and then click **Add User Log Entry**.
 - o If there are related To Dos, the **Complete** action on the related To Do entries zone is enhanced to prompt for a user log entry. If there is only one To Do included in the selection, the prompt also includes comments, showing the current value of the comments. The **Update** action on this zone already prompted for a user log entry and is enhanced to also include comments if only one To Do Entry was chosen.
- To Do Management
 - o The **Complete** action has been enhanced to prompt for a user log entry. If there is only one To Do included in the selection, the prompt also includes comments, showing the current value of the comments.
 - o The **Update** action already prompted for a user log entry and is enhanced to also include comments if only one To Do Entry was chosen.
- Current To Do sidebar zone
 - o The **Complete** action has been enhanced to prompt for comments and user log entry.
 - o The **Complete All** action (applicable when there are related To Do Entries) has been enhanced to prompt for a user log entry.

Steps To Enable

No steps are required to enable this feature.

Batch Processing Enhancements

This section describes the following new and enhanced batch processing features introduced in this release:

- [File Integration Type Writing Multiple Files and Flexibility in File Names](#)
- [Log Files for Batch Threads Renamed](#)
- [Support for Database Resource Management for Batch Processes](#)
- [Batch Job Submission Portal](#)
- [Batch Email Includes Environment Information](#)
- [Improved Batch Submission](#)
- [Batch Level of Service Web Service](#)
- [Parameter Validation Algorithm on Batch Control](#)
- [Batch Control Options](#)
- [Batch Control Portal](#)
- [Improved Display of Batch Thread Level Information](#)
- [Batch Level of Service API Includes Supporting Details](#)
- [Batch Submission by Batch Group](#)
- [Batch Thread Strategy by Actual Keys](#)
- [JSON Format Support for Plugin-driven Extract](#)
- [Large File Upload Improvements](#)

File Integration Type Writing Multiple Files and Flexibility in File Names

Previously, the plugin-driven extract process was enhanced to allow for the Process Records algorithm to return one or more file names to write the data to. In this release, the capability is extended to File Integration Types. The Extract Process algorithm plug-in spot on the file integration record now also supports returning a file name, allowing for records to be written to a file that differs based on business data, such as CIS Division or service provider. The plug-in spot supports indicating a file name for each schema instance if the use case requires some components of a work unit's information to be written to a separate file.

The ability to indicate that one or more open files should be closed is also supported by the Extract Process plug-in spot. This ensures that batch processes do not cause more than 10 files to be open at a given time for a given thread, which saves on memory allocation.

Steps To Enable

No steps are required to enable this feature.

Log Files for Batch Threads Renamed

The batch log files generated for batch threads, which you can download while viewing the results of a batch run on the batch run tree, are produced using the following format:

- (Batch control).(run number).(re-run number).THD(n).(datetime).stdout|stderr

The values of the batch control, run number, re-run number, n for thread number, and datetime are substituted at runtime. The new format aligns with the format for the logs generated at the batch run level ((Batch control).(run number).(re-run number).(datetime).stdout|stderr).

Previously, the format of these file names was the following:

- (Batch control).(datetime).(pid).THD(n).stdout|stderr

Steps To Enable

No steps are required to enable this feature.

Support for Database Resource Management for Batch Processes

DB Resource Manager tools may be used to prioritize resource allocation between various groups of batch processes. For example, processes like GDE, CMA, ILM etc., may be associated with a lower resource allocation priority relative to more critical batch processes. To support this capability, certain batch controls can be explicitly associated with a **Resource Group** of three pre-defined priority levels: 10 - High, 20 - Medium, 30 - Low. This definition is made using a new Batch Resource Configuration extendable lookup. The base product does not release values in this extendable lookup, allowing you to set up your own priority references.

When configured, the resource group of a batch control is added as part of the **MODULE** database session variable as follows: <batch control>,R=<resource group> and can be used as a correlation to a consumer group mapping in Oracle Resource Manager.

With this configuration enabled, DBAs can set up rules that parse the MODULE variable to identify the resource group for a batch process and apply prioritization rules accordingly. Since not all batch controls would be associated with a resource groups, default allocation rules should be considered.

Note: This enhancement does not include nor enforce the DB resource management configuration. It only allows for such tool to be leveraged by DBAs as needed. Refer to the Oracle Database Resource Manager documentation.

In addition, the batch control query portal is enhanced to filter by and display resource group information.

Steps To Enable

To enable this feature, complete these steps:

1. DBA configures DB Resource Manager allocation priority rules by resource group, including a default rule for batch controls not associated with a resource group.

2. Enable this functionality using the new Expose Batch Resource Group option in the General System Configuration feature configuration type.
3. Flush all caches.

Batch Job Submission Portal

The **Batch Job Submission** page has been converted to a portal, leveraging a more flexible user interface metaphor. The portal organizes information in a way that makes it easier to review and enter key details, such as batch job parameters.

In addition, the following user interactions were changed in the portal:

- The **Add** dialog now requires the batch control to be entered via a popup map.
- The **Duplicate and Queue** action is renamed to **Duplicate**.
- A new action of **Rerun** has been introduced. This action has the same behavior as **Duplicate** with the exception that it populates the batch rerun number with the batch number in context. This replaces the current dialog whereby a user must manually enter the batch number to be rerun in the batch rerun number field.
- The action buttons now only appear if the user has "execute" access for the batch control in context and has security access to the "queue" action for the batch job submission application service.
- New searches have been introduced for both the batch control entry, on the add popup, and the batch user on the add, duplicate, and rerun input pages. For batch controls, the results are restricted to batch controls to which the user has access. For users, results are restricted to users who have access to the batch control in context.
- The batch number is now displayed as a link to the batch run tree. This replaces the context menu.
- Several fields have been rearranged to increase the amount of space available for the batch parameters. This includes:
 - o Moving the submission method to the **Record Information** section.
 - o Moving the override and debugging parameters to a collapsed **Additional Run Details** section under **Record Information**. Note that this applies to input windows as well.
 - o Suppressing the submission user field if the batch user and submission user are the same.
 - o Removing the detailed description column from the batch parameters grid and replacing it with a widget that can be clicked to show the detailed description if needed.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object (BO) for Batch Job Submission and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and merge it into the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Batch Job Submission Portal	F1BCHJOB	CILZRBPP

Note that any existing bookmarks for this page will take you to the previous version of the page. You need to take the following actions to move the bookmark to the new page:

1. Click the bookmark. Take note of the Batch Job.
2. Navigate to the **Batch Job Submission** portal page via the menu.
3. Search for and select the Batch Job you noted from your bookmark. This takes you to the new page.
4. Delete the existing bookmark from the **Bookmark** dashboard zone.
5. Click the **Bookmark** page action button to add a bookmark for this record for the new page.

Batch Email Includes Environment Information

The email sent when a batch job is complete now includes the domain name, if configured for the environment, directly in the email subject.

For example:

Batch Job <ID> Ended <Status> - <Domain Name>

Batch Job F1-MGDIM Ended SUCCESSFULLY - Acceptance Test 1

In a previous release, support for the domain name was added and the batch email was updated to include the domain name in the body of the email. If you were running the same batch job in multiple environments, you needed to open each email to see which environment the message is referred to.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The domain name is defined in the **Messages** tab of the **Installation Options - Framework** page using the *Domain Name* message type.

Improved Batch Submission

The following improvements were made to the **Batch Job Submission** portal:

- Security for changes to the batch user:
 - o There are two users associated with submitting a batch process: the user who submits the request and the batch user who controls permissions and auditing during the actual execution of the job. It is not uncommon for implementations to set up generic users with the required batch execution permissions, in which case the batch user and submission user may differ. Before this release, users submitting jobs online had the ability to set the batch user ID to any user. Allowing the batch user to be overridden may cause auditing issues. A new User Override (F1UO) access mode is added to the Batch Job Submission application service (CILZRBPP). Only users who are granted this access mode can override the batch user ID when submitting a batch job.
- Preserving the original user details:
 - o If the submission user has override privileges, they have the ability to retain the original batch user details when duplicating or rerunning a batch job. If the Run as original user checkbox is selected, the batch user, language, and email address from the original batch run will be copied to the new batch job. If not, the user details are defaulted from the submission user.
- Simplified user dialog:
 - o The user interface for submitting a batch job has been simplified to a single form without the intermediate prompt for the batch control.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

Upgrade scripts ensure that users with Add access to the existing Batch Job Submission (CILZRBPP) application service will have access to the new User Override (F1UO) access mode.

You should review user groups that are not allowed to override the batch user at batch job submission and remove their access to the User Override (F1UO) access mode.

Batch Level of Service Web Service

After you configure Batch Level Of Service on the appropriate Batch Controls, you can use this API to track the Batch Level Of Service for monitoring purposes.

The API supports two operations:

- Returns the Batch Level of Service for a batch control. You can use this to return the full Batch Level of Service information for any batch control.
- Returns the overall Batch Level of Service for each batch control that is currently running that has a Batch Level Of Service configured. You can use this to monitor critical running processes using Batch Level Of Service.

This allows the monitoring tools to use Batch Level Of Service as a monitoring metric.

Steps To Enable

System administrators should set/grant users/grant access to the access mode F1EX for the CILTBTCP application service.

Tips and Considerations

This API is only applicable if the Batch Level Of Service is configured.

Parameter Validation Algorithm on Batch Control

Many plugin-driven batch processes include parameters specific to that process. This plugin spot now provides the ability to detect any parameter errors at the batch run level, before any further processing. Previously, there was no way to validate those parameters prior to invoking the select or process records algorithms.

This is a single algorithm plugin spot. For multiple algorithms, the one with the highest sequence is used. The assumption is that algorithms for this spot will use standard error message reporting.

Note: The plugin spot is only available to batch processes using the plugin-driven extract, generic, or upload process templates.

Batch Control Options

In this release users can define options on a Batch Control. These work like options on other objects such as business objects and portals. These options allow the product and your implementation to mark batch controls with additional information.

Options on Batch Control allow the product and implementations to link additional information to a batch control for special processing or for reporting purposes.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The product provides a business service (F1-RetrieveBatchOption) to retrieve the options for a given Batch Control and option type. When calling the business service you indicate whether you expect a single option value or if there can be multiple option values.

Batch Control Portal

The **Batch Control** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier to review the batch control's configuration and includes the following key features:

- Include key information in the Main section and move less important details to designated sections.
- Support description inheritance from an optional reference to a batch template.
- The display and maintenance of batch parameters is enhanced as follows:
 - o Follows the concise summary / details user experience introduced on the Batch Job Submission portal.
 - o Distinguish between general parameters supported by the batch framework and those implemented by the batch control program.
 - o Distinguish between general parameters that are applicable to all batch controls and those that may depend on certain functionality supported by the batch.
- The display and maintenance of Algorithms follow the user experience introduced on the Business Object portal.
- Level of service information is not always calculated when a record is displayed. Instead it is available on demand using a designated button.
- Display additional information
 - o Selection algorithm if any
 - o Process record algorithm if any
 - o Upload algorithm if any
- A more comprehensive list of references to the batch control.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object for Batch Control and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base business object includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Batch Control Portal	F1BTCTRL	CILBTCP

Improved Display of Batch Thread Level Information

The business service that returns the level of service information for a specific batch control (F1-BatchLevelOfService) is now aligned with the logic of the Health Check business service (F1-HealthCheck). When multiple Level of Service algorithms are plugged in on the batch control, the overall Level of Service code is populated as follows:

In addition, the **Threads** tab has been enhanced to support a Thread Summary action that summarizes instance information per thread.

Steps To Enable

No steps are required to enable this feature.

Batch Level of Service API Includes Supporting Details

The **Batch Run** portal has been enhanced to reflect the Accumulate All Instances indication set on the batch control when displaying information at the batch run thread level.

- If any algorithm returns Error, that value is returned.
- Otherwise, if any return a Warning, that value is returned.
- Otherwise, Normal is returned.

The **Reason** is set to "See Results for Details". In addition, the results returned by each algorithm is returned so that the caller can review the details.

This business service is called by the F1-BatchLevelOfService REST inbound web service. Users of this API will now see the additional details.

When calling the Batch Level of Service API, you now can see the supporting details when there are multiple level of service algorithms. In addition, the summarized level of detail output surfaces the most important information.

Steps To Enable

No steps are required to enable this feature.

Batch Submission by Batch Group

If multiple batch jobs are submitted for the same batch control, only one job runs at a time; the other jobs wait in the queue. There are some use cases where a batch is submitted from an online transaction to defer heavy processing to batch. If multiple users are performing the same action for different records, the jobs are queued up.

In this release, there is the concept of a **Batch Group** where multiple batch controls may get created for the same purpose and get associated, via an option, to a **Batch Group**. The existing F1SubmitJob "Submit Batch Job" script was enhanced to submit a job for the requested batch control or any of the batch controls associated with it using the **Batch Group** option. If the requested batch control is associated with a batch group, then the batch control with a low number of in progress batch jobs is submitted.

Note that associating a batch control with a batch group should be done with caution. You should ensure that all batch controls in the group can run concurrently without interfering each other.

As part of this enhancement, the **Additional Information** option of the **Batch Control Query** portal was also enhanced to support a search by batch control options.

When applicable, pool-based batch submission supports a more efficient way of delegating user-centric tasks to be performed via batch processes that can run in parallel.

Steps To Enable

You need to update the logic that submits the batch job to call F1SubmitJob passing the batch group.

Batch Thread Strategy by Actual Keys

Typically, system generated keys are assigned in such a way that they are evenly distributed across batch threads. This is known as the "Thread Iteration (THDS)" strategy where each thread is assigned a low to high key range that is based solely on the size of the primary key field. There are situations where keys do not evenly distribute across threads, resulting in uneven thread completion times. For example, conversion entities in the staging schema have legacy keys, which are typically not evenly assigned. This impacts the Object Validation and XML resolution batch processes that thread by legacy keys.

In this release, a new variation of the thread distribution strategy "KEYS" was introduced where the low and high IDs for the thread are calculated based on actual keys. The range is calculated based on the total number of records in the table divided by the requested number of threads, such that each thread processes approximately the same number of records.

The new strategy is available to plug-in driven and standard monitor batch processes. These batch programs support a new **Batch Strategy** batch parameter that can be used to override the default strategy. Note that the new strategy can only be used when processing is over a table with a single system generated prime key.

Steps To Enable

To enable this feature when submitting a monitor batch or a plug-in driven batch, populate the Batch Strategy parameter with the value KEYS.

JSON Format Support for Plugin-driven Extract

The plugin-driven extract batch job was enhanced to support output formats related to JSON:

In this release, a new variation of the thread distribution strategy 'KEYS' was introduced where the low and high IDs for the thread are calculated based on actual keys. The range is calculated based on the total number of records in the table divided by the requested number of threads, such that each thread processes approximately the same number of records.

- **JSON Document** - You can configure this format to produce either a JSON object, which contains an array of the output records, or simply an array of output records. Whether you extract an object or an array is determined by whether or not you suppress the object Grouping name.
- **JSON Lines** - You can configure this format to produce a series of JSON objects. In this format, each output record is a JSON object.

Steps To Enable

To enable this feature, see the **Extract Record Processing** topic in the **Background Processes** chapter of the *Oracle Utilities Application Framework Administrative Guide*. Several sections in that topic highlight considerations for using JSON and JSONL format.

Large File Upload Improvements

Previously, uploading a file using the plugin-driven upload batch process assumed that the content of the entire file was processed as a single unit of work. With this approach, an upload of a large file has often hit various resource limitations and timed out.

As of this release, the following features were introduced to better support large file uploads:

- A new batch control is provided for splitting a large file into multiple smaller files. Refer to batch control F1FSPLIT for more information.
- The existing **File Upload** batch algorithm entity was enhanced to support algorithms designed to process records in smaller units of work than the entire file. Note that the algorithm can still be designed to process all the records in a file as a single unit of work as before.

Steps To Enable

If you have large files to upload, choose one of the new features to better process the file.

To use the batch job that takes a large file and splits it to smaller files, complete these steps:

1. Create a batch control using the batch template File Split Template (F1FSPLIT).
2. Include this batch in the scheduler prior to the existing upload process you have for uploading the file. The file name parameter for this should be configured with an appropriate GLOB syntax to handle multiple files.

No coding changes are required for this option.

To use the feature where the algorithm can handle chunks of work, coding changes are needed. See the **The File Upload Algorithm** section in the **Uploading Records** topic of the **Background Processes** chapter in the *Oracle Utilities Application Framework Administrative Guide*. With this option the additional batch process to split the file is not needed.

Implementation Tool Enhancements

This section describes the following new and enhanced implementation features introduced in this release:

- [Business Object Portal](#)
- [Additional Terms Added to SQL Allowlist](#)
- [Business Object Portal Improvements](#)
- [Extended Tree Node Broadcasting Capabilities](#)
- [Extensions Dashboard Improvements](#)
- [Maintenance of Lookup Values Improvements](#)
- [Algorithm Entity Information Portal](#)
- [Client Folder Reorganization](#)
- [Generate API Specification Files for Publication](#)
- [Improved Open API Specification](#)
- [Improved Portal and Business Object Option Configuration](#)
- [Business Service Portal](#)
- [Improvements to the Generate API Specifications Batch](#)
- [Groovy Support for Custom Lookup Values](#)
- [Maintenance Object Portal](#)
- [Script Portal](#)
- [Support Changes to a Widely Referenced Schema in Batch](#)
- [Visibility Script for Zone Header Actions](#)
- [Ability to Restrict Behavior for the Live Production Environment](#)
- [Custom Cascading Style Sheet Support Managed Content Definition](#)
- [Email Sender Support Defining 'From' Address](#)
- [Personal Identifiable Information Redaction in Logs](#)
- [Products Use Metrics](#)
- [Use Export Filename as Worklist Description](#)
- [Data Area Portal](#)
- [Data Correction Self-Service - Support for Orphan Record Deletion](#)
- [Feature Configuration Portal](#)

- [UI Map Portal](#)
- [Allowlist for Sending Files as Email Attachments](#)

Business Object Portal

The **Business Object** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier to review and understand the configuration that controls business object related functionality.

In addition, the following implementation tasks were simplified by updates in this release:

- When adding a new business object, the schema is automatically generated, along with key UI configuration scripts as needed.
- If the new business object is a subclass of an existing business object, the schema is generated accordingly.
- Introducing a new business object algorithm: This action was available as a context sensitive zone and is now incorporated into the appropriate sections of the portal.
- Deactivating and activating a base product algorithm: This is now a simple action on the algorithms sections of the portal.
- Filtering for algorithms by system event.
- Filtering for options by option type.

Steps To Enable

No steps are required to enable this feature.

Additional Terms Added to SQL Allowlist

The following terms were added to the SQL Allowlist:

- CHR
- COALESCE
- LAG
- NEXT_DAY
- REGEXP_INSTR
- REGEXP_REPLACE
- REGEXP_SUBSTR
- REVERSE
- RPAD
- RTRIM
- TO_NUMBER
- XMLQUERY

Note that the terms were also added to the allowlist in previous releases via patches. This does not impact any extensions.

Additional terms included in SQL allowlist provides implementations with more capabilities when writing SQL statements in data explorers.

Steps To Enable

No steps are required to enable this feature.

Business Object Portal Improvements

Business object option types and algorithms system events are now documented in designated extendable lookups, **Option Configuration** for option types and **Algorithm Entity Type** for system events. It is noted whether they support single or multiple values. This configuration is for documentation purposes only. Previously, there was no indication as to whether a business object's option type or algorithm system event implemented a single value or supported multiple values.

Using this information, the **Business Object** portal uses an icon to highlight whether a single value option type or algorithm system event record has been overridden by a higher sequence record. The situation may occur when the business object's option or system event configuration is extended by other products or customers. In the same way, an icon is used to highlight that a business object algorithm has been inactivated. The use of these icons makes it easier to focus on configuration records that are in effect and active.

The detailed description of the option types is presented in a more user friendly and searchable way. Also, as of this release, you can maintain reasons for a specific status directly on the **Lifecycle** tab where you review and maintain all other status-related configurations.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

If you have introduced custom business object-related option types, it is recommended that you also define them in the Option Configuration extendable lookup to indicate whether the option type assumes a single value or multiple values. By default, the **Business Object** portal displays an option type that is not defined in the extendable as if it supports a single value.

In the same way, if you have introduced custom business object related system events, it is recommended that you also define them in the Algorithm Entity Type extendable lookup to indicate whether the system event assumes a single algorithm or multiple algorithms. By default, the **Business Object** portal displays a system event that is not defined in the extendable as if it supports multiple algorithms.

Extended Tree Node Broadcasting Capabilities

The Populate Node and Override Information tree node algorithms can now optionally set the broadcast fields to use. When this information is not provided, the default primary key field names are used. Previously, when a user clicked on the broadcast icon on a tree node, the broadcasted field names were hardcoded to the node entity's primary key field names. While this was appropriate for most entities, there were use cases where the broadcasted field names should have differed from key names.

In addition, these tree node algorithms can now also determine that for a specific node the broadcast icon is not applicable and therefore should not be displayed. The tree node definition must explicitly allow broadcasting for the icon to appear and the algorithm can only set it to not appear as needed for a specific node.

This does not impact any extensions.

This allows for better support of complex tree node broadcasting requirements and provides more flexible interaction with trees.

Steps To Enable

No steps are required to enable this feature.

Extensions Dashboard Improvements

The **Extensions Dashboard** portal was enhanced to show all revisions made to an extension entity in descending order in a new **Revision Control** zone. A **Configuration Migration** zone was also added to also list all Content Migration Assistant migration objects that applied changes to an extension entity. These zones appear only when an extension entity is selected.

A new **Review** tab was added to the **Extensions Dashboard** portal to highlight rare duplicate configuration issues that may arise after an upgrade. Utilities can use this information to adjust their configuration.

This does not impact any extensions.

The new user experience allows utilities and partners to improve the way they track and manage their extensions, which helps to reduce implementation costs.

Steps To Enable

No steps are required to enable this feature.

Maintenance of Lookup Values Improvements

Lookup values can be easily filtered by various criteria and a smaller set of records can be selected for update. This helps handle lookup fields, like algorithm entity, that have too many values to manage as a single list. This does not impact any extensions.

This improved user experience helps to reduce implementation costs.

Steps To Enable

No steps are required to enable this feature.

Algorithm Entity Information Portal

A new **Algorithm Entity** query and display portal is available. You can use the query portal to look for a specific algorithm entity (also referred to as a plug-in spot). In case you want to research more than one plug-in spot, the results include a worklist icon to put results in a worklist.

Once you select an entry, you are brought to a display portal where you can review information about the algorithm entity. You can use the View Plug-in Spot API link to see the hard parameters passed into algorithms for this plug-in spot. You can read the detailed description, if provided, to understand more information about how or when algorithms are called and their responsibility.

If there are any algorithm types for the plug-in spot, they are listed in a separate zone. If applicable, you can drill into the algorithm type or its script. It includes the parameters and the number of algorithms for the algorithm type.

This does not impact any extensions.

Steps To Enable

System administrators should set/grant users/grant access to the following application services:

- **F1ALGENQ** - Algorithm Entity Query Portal
- **F1ALGENT** - Algorithm Entity Portal

Client Folder Reorganization

The new folder structure does the following:

- The JavaScript files are being located in more "functional" folders, so they are easier to find, fix, and test.
- These "functional" folders are easier to bundle. Oracle Utilities Application Framework bundles JavaScript files to help performance.
- Oracle Utilities Application Framework includes some external "library" JavaScript, for example, OJet and JQuery. The library files have been relocated to make it easier to identify they are library files.

Reorganizing the folder structure makes it easier for you to locate folders, which results in faster development and bug fixes. In the future, this structure will make it easier to adopt other common development tools.

Note: This enhancement only impact extensions using custom UI Maps or old style custom JSP based pages that hardcode library locations. These pages must refer to the new locations to operate as before.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

All the Oracle Utilities Application Framework references have been updated as necessary. If a UI Map has been developed that manually references a library file, it will need to be updated.

- Use the Oracle Utilities Application Framework-provided UI Map include - F1- OJETLIBS or F1- OJETLIBSR (Recommended).
- Update your UI Map to refer to the new library location. Since the library folder structure still contains the version number, you need to update it for each release.

Generate API Specification Files for Publication

Prior to this release, the publication process of product APIs involved a manual online step of downloading the OpenAPI Specification file for each web service and adjusting its content for external publication.

A new batch process, **F1-APIEX**, is now provided to simplify this task and generate a publication-ready specification file for each web service included in a web service category. This batch process is only applicable to anyone responsible for extracting API documentation.

This does not impact any extensions.

Steps To Enable

System administrators should set/grant users/grant access to the **F1-APIEX** application service.

Improved Open API Specification

The following details are included in the Open API specification for a web service:

- Request and response examples. These were available as options for a web service operation, but they are only incorporated into the open API specification as part of this release.
- Help text description for URL and query parameters.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Improved Portal and Business Object Option Configuration

It is simpler for you to set up **Portal and Business Object** options where an option's value is restricted to a set of valid values. A user can choose from a drop-down list of valid values.

The **Option Configuration** extendable lookup is enhanced to support a reference to a lookup field that represents the valid values for the lookup. When specified, the corresponding options maintenance UI provides a drop-down list with the corresponding lookup values and the display UI shows the corresponding lookup value description.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Business Service Portal

The **Business Service** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organization makes it easier to review the business service's configuration and includes the following key features:

- The schema is generated upon creation of the business service. If the service is based on a data explorer zone, the schema is generated based on the zone configuration, thus streamlining and making it easier to introduce a new data explorer service.
- Navigation to the related zone for data explorer services.
- A more comprehensive list of references to the business service and its schema.
- A less cluttered sidebar by moving all business service tips and schema generation functionality to the new portal.
- Ability to test the service.

Note: This requires security access to application service Test a Service (**F1SCRTEST**) in addition to the ability to add a script which is the existing alternative way for testing any service.

There is no impact to existing extensions with this enhancement.

Steps To Enable

To enable implementers that already have security rights to create scripts to also test their scripts using the new Test action, provide them with access to application service Test a Service (**F1SCRTEST**).

Tips and Considerations

A new business object (BO) for Business Service and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Business Service Portal	F1BUSSVC	FWLTBSVP

Improvements to the Generate API Specifications Batch

The **F1-APIEX** batch process no longer requires a web service category. This makes it easier to generate a complete list of specification files for all web services that are ready for publication. When a web service category is specified, the batch processing is restricted as before to those web services included in the specified category.

In addition, the definition of being ready for publication is extended to also include custom web services that are active.

Steps To Enable

No steps are required to enable this feature.

Groovy Support for Custom Lookup Values

A new `LookupHelper.getLookupInstance` Java method is provided, which allows programmers to instantiate a lookup object for use in subsequent Groovy code. For example:

```
Lookup customLookup = LookupHelper.getLookupInstance("ALG_ENTITY_FLG", "CMAL");
```

Previously, the product did not support a good method for instantiating a lookup object in a Groovy script when there was no Java class generated for the lookup.

You can instantiate a lookup object in Groovy when referring to a custom lookup value rather than using a variable.

Steps To Enable

No steps are required to enable this feature.

Maintenance Object Portal

The **Maintenance Object** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organization makes it easier to review the maintenance object's configuration and includes the following key features:

- The maintenance object's hierarchical table structure is visualized as a tree. Table information is also provided as a list with worklist capability.
- The display and maintenance of Options and Algorithms follow the user experience introduced on the **Business Object** portal.
- The **Relationship** tab describes the data model relationship between this maintenance object and others.

- Additional details like the maintenance object's application service, its primary table's classification, and related portals are displayed.
- A comprehensive list of references to the maintenance object is provided.
- A less cluttered sidebar by removing the zone that shows business object information to a designated tab on the new portal.

There is no impact to existing extensions with this enhancement.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object (BO) for Maintenance Object and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Maintenance Object Portal	F1MO	CILEMOBP

Script Portal

The **Script** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organization makes it easier to review the script's configuration and includes the following key features:

- Navigation to the algorithm entity portal for plug-in scripts.
- A more comprehensive list of references to the script and its schema.
- A less cluttered sidebar by moving all script tips to the new portal.
- Ability to view the script as text for a BPA script.
- Ability to view the display and input UI for a script that includes UI hints. This is similar to the actions available for a business object.
- Ability to test a BPA or a Service Script.

Note: This requires security access to application service "Test a Service (**F1SCRTEST**)" in addition to the ability to add a script (which is the existing alternative way for testing any service). This should typically be enabled in development and testing environments.

In addition, the script query portal is enhanced with a new **Additional Information** option that supports searching for scripts by schema information. There is no impact to existing extensions with this enhancement.

Steps To Enable

To enable implementers that already have security rights to create scripts to also test their scripts using the new Test action, provide them with access to application service Test a Service (**F1SCRTEST**).

Tips and Considerations

A new business object (BO) for Script and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Script Portal	F1SCRIPT	CILZSCRP

Support Changes to a Widely Referenced Schema in Batch

Making changes to a schema requires the application to ensure the changes do not violate any schema that references it. The validation process is complex and may time out when the number of references is high. A new batch utility, Update Object Schema (F1-SCMUP), is provided to perform this type of change as a batch process, which allows for higher time limits. The user submitting the change in batch should have the same security permissions needed to perform it online. In addition, submitting the batch requires access to the Update Object Schema (F1-SCHEMAUPD) batch application service.

Supporting a batch utility to make a change to a highly referenced schema assists rare implementation tasks that cannot be completed online.

Steps To Enable

System administrators should set/grant users/grant access to the Update Object Schema (**F1-SCHEMAUP**) application service.

Visibility Script for Zone Header Actions

New mnemonics have been added to the Zone Action parameters in base delivered zone types. The mnemonics allow you to reference a visibility script that can check a condition and return an indication of whether or not to show the action. The mnemonics are:

- `vss='scriptName'`
- `vinput=[...]` (values to be passed to the script)
- `voutput=booleanValue`

The following is an example of the zone configuration for a base delivered zone that shows links to view a service script's schema. The visibility script checks the type of script being displayed and returns an output Boolean of 'true' only if the script is a service script.

```
type=LINK action=SCRIPT bpa='F1ScrStepAct' label=SVC_SCR_DA_LBL  
context=[mode='VIEW_SCR_SCHEMA' scriptcd=SCR_CD] vss='F1ScrActVis'  
vinput=[scriptcd=SCR_CD scriptAction='VIEW_SCR_SCHEMA'] voutput=showAction
```

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

In a future release, the product will introduce mnemonics to check a user's security access before displaying a zone header action. This information would get cached as a user's security access does not change during their session. It is recommended to wait for that feature and not to create visibility scripts for checking security. You should use the visibility script to check for conditions that could change based on the data being displayed.

Ability to Restrict Behavior for the Live Production

Environment

In this release a property is introduced (isLiveProduction) to indicate that the environment is the live production environment. By default this value is set to "false".

An example of functionality that uses this property to determine behavior is [Extensions Dashboard Improvements](#).

This property enables the base product and implementations to implement tighter restrictions or different default behavior for a live production environment as compared to other environments.

Steps To Enable

To enable this feature, contact your Customer Success Manager to confirm your live production environment to ensure that the property value will be set correctly.

Custom Cascading Style Sheet Support Managed Content

Definition

The product allows implementations to define a custom style sheet using a Feature Configuration option. In previous releases, the system only supported defining a *.CSS file and referring to the file location in the option. In this release, the feature option now also allows you to see a Managed Content entry.

Implementing a custom style sheet using managed content allows for implementations to override the cascading style sheet (CSS) using metadata rather than using a CSS file.

Steps To Enable

To enable this feature, complete these steps:

1. Create a Managed Content entry using the **CSS Definitions** managed content type and use this entry to define your custom style sheet definition.
2. Go to the Feature Configuration for the **Custom Look and Feel** feature type. You may need to create one if it does not exist. Use the Style Sheet option to reference the managed content entry.

Email Sender Support Defining 'From' Address

When an email is initiated from within the system using the business service F1- EmailService, the 'from' email address is a parameter that may be populated by the calling program. In this release, the Message Sender has been enhanced to support defining the "from" email address when defining an Email sender using the context type "SMTP From Address". If the call to the business service refers to a sender directly or relies on the default sender (defined on the Message Option) and the 'from' context type is populated, this value is used. Otherwise the value passed into the business service is used.

Note that your specific application may already have some configuration for determining the "From" email address of a given email use case, for example in Feature Configuration. If those values satisfy your implementation's use cases, then no changes are needed.

Steps To Enable

To enable this feature, complete these steps:

1. Navigate to **Message Sender** and find your email sender.
2. In the **Context** tab, add a Context Type for SMTP From Address and populate the desired value.

Personal Identifiable Information Redaction in Logs

In a previous release, the system introduced redaction rules. Implementations use these rules to identify fields that may contain Personal Identifiable Information for their customer data. In this release, the redaction rules are now used to apply to data being written to debug log files.

By default, the redaction rules are applied. In a production environment, this setting cannot be turned off. However, in a non-production environment, the setting can be turned off using a Feature Configuration.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The system uses a property to identify whether an environment is a live production environment or not. For cloud customers, this is set by the development operations team when a customer indicates they are live. For on-premises clients, you should set this property when you are live. See the *Oracle Utilities Application Framework Administrative Guide* for more information.

If you are in a non-production environment and the data getting written to the logs is not real customer information and you would like to turn off the log redaction, you may turn it off by adding a feature option:

1. Go to **Admin Menu > General > Feature Configuration**.
2. Look for an existing Feature Configuration record for the feature type 'General System Configuration'. If one exists, select it. If one does not exist, use the **Add** button in the page action area to add an entry for this feature type.

3. Add an entry in the option type collection for the Option Type "Turn Off Log Redaction" and enter a value of "Y".

Note that only users with the Administrator access mode (F1SU) for the Feature Configuration application service (CILTWSDP) may add this entry.

Products Use Metrics

In this release, the product delivers two maintenance objects: Product Metric Type and Product Metric Snapshot. The product uses algorithms related to these objects to calculate and capture product use metrics.

In previous releases, the product used entries in the Statistics Control and Statistics Snapshot objects to capture product use metrics, causing these tables to include a mixture of statistics related to your implementation's business processes as well as product use metrics.

Implementations do not need to manage or review the information in the new objects. The **Product Use Metrics** dashboard zones have been updated to display information captured in the Product Metric Snapshot table per the new functionality.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

If your implementation has statistic control entries related to product metrics, they will remain. The **Product Use Metric** dashboard will no longer use this information with the introduction of the Product Metric Snapshot. Consider marking the records as inactive.

Standard user interface components with associated security are provided for the new objects, but implementations do not need to manage or review the information.

Use Export Filename as Worklist Description

The **Migration Data Set Export Query** portal has been enhanced to use the data set's file name as the worklist description.

Using the export file name as a more meaningful worklist description makes it easier to work with CMA export data sets.

Steps To Enable

No steps are required to enable this feature.

Data Area Portal

The Data Area page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier to review the data area's configuration and includes the following key features:

- Better use of the Main tab space to display information concisely. For example, showing the schema in text format for a quick review similar to the business object portal.

- The list of data areas that extend this data area are readily available on the **Main** tab instead of hidden in the **Schema** tab.
- More comprehensive list of references to the data area and its schema.
- View the display and input UI for a data area that includes UI hints. This is similar to the actions available for a script.
- Uncluttering of the sidebar by moving data area tips to the new portal.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object (BO) for Data Area and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Data Area Portal	F1DTAR	FWLTDARP

Note that any existing bookmarks for this page will take you to the previous version of the page. You need to take the following actions to move the bookmark to the new page:

1. Click the bookmark. Take note of the Data Area.
2. Navigate to the **Data Area** portal via the menu.
3. Search for and select the **Data Area** you noted from your bookmark.
4. Delete the existing bookmark from the **Bookmark** dashboard zone.
5. Click the **Bookmark** page action button to add a bookmark for this record for the new page.

Data Correction Self-Service - Support for Orphan Record Deletion

The new Data Correction Request Root, Orphan Record Deletion, and Orphan Record Deletion Type business objects can be used together to create a request to process orphan records. In addition, there are new Backup Table Cleanup and Backup Table Cleanup Type business objects to deal with the backup tables created by the deletion request. The following points highlight features supported by these new objects:

- The Orphan Record Deletion Type defines the parameters for the deletion request, including whether to verify record counts before performing deletion and whether a backup cleanup request should be created.

- The Data Correction Request Root and Orphan Record Deletion business objects define the steps in the deletion process, including:
 - o Capturing the table with orphan records, and the number of records affected.
 - o Generating the SQL to perform deletion directly in the database.
 - o Sending the data correction request to another user for approval.
 - o Submitting a batch process to perform the deletion in background.
 - o Trapping errors and allowing for the request to be cancelled or restarted if the errors are fixed.
 - o Creating a new request to clean up backup tables added during the deletion processing.

Steps To Enable

Provide the required access before using the feature.

Tips and Considerations

To enable users to create requests for orphan record deletion, you must give them add access to the application service for the new Data Correction Request Root business object (F1-DATACORRECTIONRBO).

Upgrade scripts ensure that users with Read access to the existing request type all-in-one portal will have access to the new application service associated with the new query portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Request Type Portal	F1REQTYQ	F1REQTYP

Access Requirements

System administrators should grant access to the F1-DATACORRECTIONRBO application service for any user that is going to create requests for orphan data correction.

Feature Configuration Portal

The **Feature Configuration** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier to review the UI map's configuration and includes the following key features:

- Better use of the **Main** tab space to display information concisely.
- A standard approach for maintaining options, as used by similar entities like business object.
- External message configuration may be relevant to very few feature types. As such, the new portal includes this information only when applicable.
- Ability to enforce a single configuration record for a feature type in a configurable way that does not require Java code changes.

A new **Feature Type Configuration** extendable lookup was introduced to control whether one or more configurations are allowed for a feature type. It also controls whether external messages configuration is applicable for the feature type. By default, if an extendable lookup record does not exist for a feature type, it is assumed to allow a single configuration and not support external messages configuration.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object (BO) for UI Map and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Feature Configuration Portal	F1FCFG	CILTWDSP

Note that any existing bookmarks for this page will take you to the previous version of the page. You need to take the following actions to move the bookmark to the new page:

1. Click the bookmark. Take note of the Feature Configuration.
2. Navigate to the **Feature Configuration** portal via the menu.
3. Search for and select the **Feature Configuration** you noted from your bookmark.
4. Delete the existing bookmark from the **Bookmark** dashboard zone.
5. Click the **Bookmark** page action button to add a bookmark for this record for the new page.

UI Map Portal

The **UI Map** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier to review the UI map's configuration and includes the following key features:

- Better use of the **Main** tab space to display information concisely. For example, have the HTML editor more easily accessible.
- A more comprehensive list of references to the UI Map and its schema.
- Uncluttering of the sidebar by moving UI Map tips to the new portal.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

A new business object (BO) for UI Map and a new Determine BO algorithm linked to the Maintenance Object were introduced. The base BO includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and align it with the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
UI Map Portal	F1UIMAP	FWLTUIMP

Note that any existing bookmarks for this page will take you to the previous version of the page. You need to take the following actions to move the bookmark to the new page:

1. Click the bookmark. Take note of the UI Map.
2. Navigate to the **UI Map** portal via the menu.
3. Search for and select the **UI Map** you noted from your bookmark.
4. Delete the existing bookmark from the **Bookmark** dashboard zone.
5. Click the **Bookmark** page action button to add a bookmark for this record for the new page.

Allowlist for Sending Files as Email Attachments

The F1-EmailService business service supports the ability to indicate information to be sent in the email as an attachment. The service supports referencing a record in the Attachment object. In addition, for on premises clients only, it supports referencing a file path and file name directly. In this release, the file paths referenced in this direct method must be 'registered' in the File Storage extendable lookup.

Note that the validation to check against the file storage extendable lookup is delivered in this release. If your implementation uses the technique of referencing a file path and file name when calling F1-EmailService, you will need to configure appropriate entries before proceeding. The system supports defining a "parent" directory in the file storage extendable lookup. When invoking F1-EmailService, providing a directory within the registered "parent" directory is supported. For example, if you register the path D:\systemFiles\, at runtime when invoking F1-EmailService, you can provide a file in the path D:\systemFiles\CMA.

The allowlist for file paths ensures that the files included in an email are stored in an approved location.

Steps To Enable

To continue using the technique of sending emails with files from a specified file path, complete these steps:

1. Navigate to **Extendable Lookup**.
2. Search and select the **F1-FileStorage** business object.
3. Use the **Add** button to add an entry for a given file path.
4. Define an appropriate **Value** and **Description**.
5. In the **File Adapter** drop-down, choose Native File Storage.

6. In the **File Path**, define a valid file path that may be referenced when sending an attachment. Parent directories may be defined here. At run time, references to child directories within the directory listed here are considered supported.
7. Repeat the step for any unique parent directory that your implementation uses for indicating files to attach when calling F1-EmailService.

Integration Enhancements

This section describes the following new and enhanced integration tools introduced in this release:

- [Support for Application Variables in Outbound Message Payload](#)
- [Object Storage Region Configuration Improvements](#)
- [URL Navigation to a Portal Using Its Navigation Option](#)

Support for Application Variables in Outbound Message Payload

Some products require that "Application ID" and "Tenant ID" values are included with certain API calls, typically as a way to identify the calling application for reporting purposes. These values are provided to the utility at onboarding time and need to be captured in the application in relation to these API configurations.

As of this release, the Message Sender context information was enhanced to also capture the following application details:

- Application ID
- Tenant ID

The new details are not involved in the process of orchestrating and routing the call. They need to be incorporated into the payload by the application logic that composes the message using the new "Get Application Variables (F1MsgVars)" service script.

Steps To Enable

No steps are required to enable this feature.

Object Storage Region Configuration Improvements

The definition of valid cloud object storage regions are now configured using an extendable lookup rather than a lookup. Defining the regions in an extendable lookup allows us to support defining both the region key and the region identifier. Previously, using a lookup to define the region supported only defining the region key. Product code was required to map the region identifier, requiring code change any time a new region was defined.

The product provides base delivered values for all the regions that are provisioned for cloud services. You can define a region for cloud object storage that is not provided by the base produce using the region value in the extendable lookup.

For backward compatibility for upgrading implementations, all regions previously provided in the lookup that are not in the list of those that the product is supplying are provided in the extendable lookup with a "CM" (customer modification) owner.

This does not impact any extensions.

As Oracle Cloud expands the regions it offers, this change allows the services to react to these new regions quickly without changes to the product code.

Steps To Enable

No steps are required to enable this feature.

URL Navigation to a Portal Using Its Navigation Option

Previously, the application supported a URL navigation to portal only via the portal's internal navigation key as the **Location URL** parameter. While a page's internal navigation key could change due to internal design implementations, its navigation option remained unchanged. As a result, it was better to share a page's navigation option with an external system than the internal navigation key.

In this release, a new URL parameter **LocationNavOpt** was introduced to support URL navigation to a portal using its navigation option.

Supporting URL navigation to a portal using its navigation option makes such UI integration flows more resilient to portal internal navigation key changes.

Steps To Enable

To enable this feature, integrations must be updated to use the new **LocationNavOpt** URL parameter with the desired navigation option code when launching the application.

Content Migration Assistant (CMA) Enhancements

This section describes the following new and enhanced CMA features introduced in this release:

- [Content Migration Assistant Export by Entity Tag](#)
- [Improved Support for Large Numbers of SQLs in Migration Object](#)
- [Improved Base Product Content Migration Assistant Requests](#)
- [Configuration Deletion Portal](#)
- [Improved Migration Related Searches](#)
- [Content Migration Assistant Web Service](#)
- [Correction Allowed for Pending Import Data Set Record](#)
- [Import Data Set Cancellation](#)
- [Improved Handling of Environment Specific Entities Imported by CMA](#)
- [Migration Data Export - New Status When No Records Selected](#)

Content Migration Assistant Export by Entity Tag

You can now use entity tags to identify entities to export using Content Migration Assistant (CMA). The criteria based migration request functionality is enhanced to support a tag based export instruction as a way of exporting all entities associated with an entity tag.

This allows developers to collate their extensions in a similar way to bundling, but it harnesses the power of the Content Migration Assistant engine.

Steps To Enable

No steps are required to enable this feature.

Improved Support for Large Numbers of SQLs in Migration Object

When importing an object into an environment using Content Migration Assistant (CMA), the product supports selecting one or more SQLs associated with the object and suppressing them. At the apply stage, these SQLs are not included. This is useful when your object has one or more child rows that you prefer not to include in the target environment. In this release, the steps for selecting and marking records to suppress or unsuppress have been enhanced to support objects that have a large number of child records, and therefore a large number of SQLs. Now, instead of clicking **Edit** in the **Migration Object** main display zone, the **List of SQL Statements** zone now has **Suppress** and **Unsuppress** actions. You can use the filters on this zone to narrow down the results, select the appropriate records, and click the desired action.

Additional changes were made to the **List of SQL Statements** zone to better support a large number of records:

- The zone is now configured for Pagination, showing 500 records for a page.
- Additional filter values have been added. You can now do a likable search on the SQL statement text. In addition, you can limit to the results to excluded suppressed rows or to only show the suppressed rows.

Steps To Enable

No steps are required to enable this feature.

Improved Base Product Content Migration Assistant Requests

Previously, some base product migration requests were inefficiently exporting all records of an entity, including many base owned records where the maintenance object did not include fields that could possibly contain customized content. Exporting so many of these entities placed a performance burden on the import step to load, compare, and eventually not apply them. The following migration requests were enhanced to be more efficient and only export custom-owned entities for maintenance objects that do not contain custom fields:

- F1-SystemConfig

- F1-SecurityConfig
- F1-SecurityConfigWithoutUsers
- F1-Tags
- F1-MigrationAdmin
- F1-IntegrationConfig

Steps To Enable

No steps are required to enable this feature.

Configuration Deletion Portal

You can identify and delete configuration entities that were previously imported via Content Migration Assistant (CMA) and are no longer needed using the new **Configuration Deletion** portal.

The new portal assists a system administrator in reviewing and deleting configuration data as follows:

- The administrator selects a set of CMA import data sets that represents a complete imported configuration. This can be done via an external reference name and up to five data set IDs.
- A summary list of maintenance objects included in the reference set is presented along with the number of applied or unchanged entities for each.
- Selecting a maintenance object presents all entities for that type that exist in the current environment but are not included in the reference set. These are the entities the administrator may select for deletion.

This does not impact any extensions.

Steps To Enable

System administrators should set/grant users/grant access to the F1CFGDEL - Configuration Deletion Portal application service.

Improved Migration Related Searches

A new query option, **Included Entities**, is available in the **Migration Plan Query** portal. You can use this option to find migration plans that include other entities. In addition, you can now search for import data sets based on their bulk mode option, which is also presented in the query results.

The ability to search for migration related entities by various criteria helps you review the CMA migration configuration.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Content Migration Assistant Web Service

A new API is available, via a REST Service, to allow tools to create and monitor export and import requests for the Content Migration Assistant. The API supports several operations:

- Create a Migration Data Export Request by specifying the key elements in the JSON payload. This returns the Migration Set Identifier created.
- Return the state of a Migration Data Export Request using the Migration Set Identifier as the key.
- Create a Migration Data Import Request by specifying the key elements in the JSON payload. This returns the Migration Set Identifier created.
- Return the state of a Migration Data Import Request using the Migration Set Identifier as the key.

Steps To Enable

System administrators should set/grant users/grant access to the access mode F1EX for the application service F1MIGRDS.

Correction Allowed for Pending Import Data Set Record

An **Edit** action is now supported for minor corrections. The action is available while the record is still in pending status and the monitor batch process has not begun. Previously, an import data set that was added incorrectly had to be canceled.

Supporting an edit action on pending import data set records makes it easy to handle minor corrections and improves the user experience.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The action requires standard change access rights to the migration data set import business object's application service (F1MIGRDIMP).

Import Data Set Cancellation

Previously, the canceled import data set status represented a request to cancel the dataset and a final status where all objects and transactions were already canceled. This caused a performance issue for the migration object apply batches as they needed to cancel (instead of apply), objects that belonged to a canceled dataset. This included the many data sets that were already fully canceled.

This release supports a distinction between a data set "pending cancel" status, that is a requested to be canceled, and the final "cancelled" status to which the data set transitions to when all its transactions and objects are canceled. With this new approach, you initially set the data set to pending cancel status and the data set is finally cancelled the next time the import data set monitor batch process runs after all the transactions and objects are canceled.

In addition, the import data set lifecycle now allows cancellation from any non-finalized status.

A new **Non-Final Data Sets** query option was added to the **Migration Dataset Import Query**, which considers only non-finalized records and allows for the cancellation of multiple data sets.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

The first batch run of the Migration Data Set Import Monitor (**F1-MGDIM**) batch process may take longer as it transitions all cancelled data sets to the final cancelled status.

Improved Handling of Environment Specific Entities Imported by CMA

The File Storage extendable lookup captures environment-specific information, which makes it easy to surpass file storage settings using CMA. The same issue exists with specific master configuration entities that may contain environment-specific values.

These records may be initially imported from another environment, but they are typically adjusted manually to reflect current environment settings and should not be updated again by an import. In this release, a mechanism is introduced to prevent an unintentional update of such records by a CMA import. The mechanism allows for these records to be added by an import without being updated.

The mechanism works as follows:

- A new Environment Specific Business Object option may be used to mark records as containing environment specific information. The option type is available for Extendable Lookup and Master Configuration business objects, but you can configure it to be valid for other maintenance objects.
- A new migration plan pre-compare algorithm is provided that prevents an update of an entity if its business object is configured with this option. The algorithm is added to the Extendable Lookup and Master Configuration default migration plans, and you can add it to other migration plans as needed.

The File Storage extendable lookup business object is marked as containing environment-specific information using the new option. It should not be updated even if imported unintentionally from another environment.

In addition, the following changes were made to keep such entities in environment specific related migration requests:

- The wholesale **General System Options** migration request excludes extendable lookup and master configuration records if their business object indicates they contain environment-specific information.
- The wholesale **Framework Integration Configuration** migration request includes only extendable lookup and master configuration records if their business object indicate they contain environment-specific information.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

- If your implementation has other extendable lookup or master configuration business objects that must not be updated by CMA you may associate them with the new option.

- If this functionality is needed for other maintenance objects, add the new option type as valid for these maintenance objects and adjust their default migration plan accordingly.
- You may also want to review your custom migration requests to exclude these business objects as needed.

Migration Data Export - New Status When No Records Selected

In this release, a new "No Records" status value has been introduced for the Migration Data Set Export to handle the condition where no records were found by the migration request instructions. This allows you to quickly distinguish between a data set that has an error that needs to be investigated and situations where there were simply no records that satisfied the selection criteria.

The condition of no records found by the migration request instructions when exporting now uses a special status, allowing you to distinguish this condition from errors that need to be investigated.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

If your implementation has any downstream steps that are looking at the status of the Migration Data Set Export to do subsequent steps, you may need to review that logic and confirm whether any steps need to be adjusted based on this new status value.

Web Services Enhancements

This section describes the following new and enhanced web services features introduced in this release:

- [Define Default Template User for User Provisioning](#)
- [Improved Handling of Null Values in REST APIs](#)
- [Improved Message Sender Context Customization](#)
- [Support Language in REST Request](#)
- [User Provisioning Using the SCIM Open Standard](#)
- [User Import with Content Migration Assistant](#)

Define Default Template User for User Provisioning

The F1-OIMUSR (Populate User Data from a "Template" User) algorithm was enhanced to allow a Template User to be provided as a parameter. The algorithm is used by the User business object F1-IDMUser, which is used to create users from an external source. For example, the LDAP batch process uses this business object to create a user. The algorithm to copy information from a template user allows application configuration, such as user groups, user preferences, To Do roles, and other information not supplied by the external system, to be populated on the new user. Previously, this algorithm relied on the value of the template user to be provided as part of the payload for adding the user, using a characteristic.

In this release, the algorithm first checks for a template user provided as a characteristic. If it is not found, it uses the template user provided as a parameter to the algorithm, if populated.

Steps To Enable

To enable this feature, complete these steps:

1. Go to **Admin > Security > User** in add mode and define the template user whose application configuration should be copied onto any new user.
2. Go to **Admin > System > Algorithm**.
3. Search for and select the algorithm **F1-OIMUSR**.
4. Click **Edit**, and then click the + in the Algorithm Parameter collection.
5. Enter an appropriate effective date and the Template User created above.

Improved Handling of Null Values in REST APIs

Date and time elements in requests and response messages require special handling when they contain no value. Unlike a string value, no value for date, time, and date/time elements has to be represented as null and not an empty string. In the same way, a numeric or Boolean element with "no value" should be represented as a null, not an empty string. Previously, the application did not properly accept null values for date and time elements in a JSON request. The application incorrectly represented such values in a JSON response as empty strings. The application correctly handled null values for numeric and Boolean elements except for a few outlier situations that were also fixed as part of this enhancement.

In this release, the Inbound Web Service REST engine v2 is enhanced to properly accept and process null values for elements of all data types.

The following clarifies some differences around request and response processing:

- As part of a request document, any element of any data type can be sent in with a null value, whether via the nil attribute in XML or the null value in JSON.
- As part of a JSON response document, empty node elements would be removed from the response or assigned either a null or empty string based on their data type:
 - o A string element would always be assigned "" an empty string. This includes all types of string data types like lookup, etc. This already works this way, no change in this release.
 - o A date, date/time, time element would have a null value.
 - o A number, money element is consistently removed from the response. Previously, this was not the same for some outlying scenarios.
 - o A Boolean element is consistently removed from the response. Previously, this was not the same for some outlying scenarios.

Steps To Enable

No steps are required to enable this feature.

Improved Message Sender Context Customization

For most integrations supported by the base product, the end point URL and other details may only be provided by the utility at provisioning time. Previously, the entire message sender definition for such integration point had to be defined by the utility along with the configuration of the external system record that references the message sender.

As of this release, partially defined message senders may be released with the base product, allowing utilities to complete the definition with the necessary context information. This also allows the base product to include a more comprehensive configuration that includes the external system record that references the message sender.

Steps To Enable

No steps are required to enable this feature.

Support Language in REST Request

The REST engine considers the information populated in the Accept-Language header attribute. If a single value is provided, the system checks if the application has that language as a supported language in the application. If so, it returns translatable text in that language. The system looks for an entry in the Language table where the Locale field matches the value passed in Accept-Language.

If multiple entries are provided in the Accept-Language, the system uses HTTP content negotiation to select one of the provided values. If no supported language is found for the Accept-Language content, the system returns information in the language of the system user used to make the REST call.

Steps To Enable

No steps are required to enable this feature.

User Provisioning Using the SCIM Open Standard

A new REST service, SCIM User Provisioning (F1-SCIMUser), is provided to support adding, changing, or viewing the details of a user where the API follows the SCIM standard.

The following highlights some of the mapping between the SCIM API and the application's user record:

- The user record in the application supports only first name and last name. The SCIM standard supports additional detail such as middle name, suffix, and prefix. These elements are ignored when adding or updating a user.
- The SCIM standard supports a collection of email addresses. The application only supports one email address. As such, only the first email address is used when adding or updating a user.
- A user in the application requires several application specific settings in order to be added properly. When adding a user record via the Create User operation in this new REST service, the integration supports supplying a Template User reference (in the user type element in the API). The system copies application settings from that user to the new user being provisioned.

Steps To Enable

Provide the required access before using the feature.

Tips and Considerations

The inbound REST web service provided is F1-SCIMUser. Refer to its description along with the help text on the various elements for more information on using the REST service.

You need to define a template user in order to successfully add a User record via this REST service. The template user can be provided in the userType element. Alternatively, you can define the Template User as a parameter to the algorithm F1-OIMUSR (Populate User Data from a "Template" User). Refer to the separate feature "Define Default Template User for User Provisioning" for more information.

Access Requirements

System administrators should set/grant users/grant access to the Execute access mode on the CILTUSEP application service for the web service user that calls the new REST web service.

User Import with Content Migration Assistant

The user record includes a user hash for security reasons. This hash value is calculated using a cryptography key in a given environment. When using Content Migration Assistant to import users from another environment, the process now includes a step to recalculate the user hash value using the target environment's cryptography key.

This update means implementations can import users from one environment to another without getting an error related to the user hash.

Steps To Enable

No steps are required to enable this feature.

User Interface Experience Enhancements

This section describes the following new and enhanced user interface experience features introduced in this release:

- [Batch Run Portal](#)
- [Focused User Access Checks for Business Object Maintenance Flows](#)
- [Standardize Bundle Portals](#)
- [Access Zone Tips via Zone Portal](#)
- [Batch Jobs Summary Zone Sorted by Start Date/Time](#)
- [Conditional Expansion of a Tree Node](#)
- [Improved Display of Overridden Labels](#)
- [Improved Process Flow Cancellation Experience](#)
- [Improved Process Flow Query](#)
- [Non-applicable Zone Header Actions Hidden on Batch Run Portal](#)
- [Process Flow Characteristics](#)

- [Sidebar Reorganization](#)
- [Worklist Sidebar Zone Hidden When Empty](#)
- [Application Toolbar Consolidation](#)
- [Determine Insight Group by Action Method](#)
- [Improved Sort Order of Insights](#)
- [New Base Display Icon Images](#)
- [Schema Time Zone Support for Date/Time Elements Stored in Legal Time](#)
- [Switch Language Zone Only Visible When Applicable](#)
- [Compact View of User Interface](#)
- [Consistent User Interface Label Justification](#)
- [File Integration Record Portal](#)
- [Option to Suppress an Explicit Map Zone's Header](#)
- [Option to Suppress the Page Title Area](#)
- [Option to Suppress Tabs on a Page](#)

Batch Run Portal

The **Batch Run Tree** page has been converted to a portal, leveraging a more flexible and extendable user interface metaphor. The portal organizes information in a way that makes it easier for you to review and analyze performance and exception information for a batch run.

The following are the main new features supported by the portal:

- High level information and overall thread status are provided in the **Main** tab.
- Improved user experience in reviewing thread information (even for a high number of threads), which includes filtering, sorting, broadcasting of detailed information about a thread, and more. The previous tree presentation of threads, instances and error messages was not easy to navigate and review.
- Ability to review error messages across threads.
- Better way to review To Do entries created by the batch process.
- Display of file names created by the batch process.
- Display thread related analytical information.
- Display historical statistics from the last 20 runs.
- Use new actions to set and reset the Do Not Restart indication only when the current batch run is in error and is the latest run.

In addition, a standard **Batch Run Query** portal is also provided to support search functionality.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

There is a new business object for Batch Run and a new Determine business object algorithm linked to the Maintenance Object. The base business object includes all the user interface behavior designed for the new portal. If your implementation has introduced your own CM business object and CM Determine BO algorithm, you should review your business object's configuration and merge it into the base business object.

Upgrade scripts ensure that users with Read access to the existing application service will have access to the new application service associated with the new portal. The table lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
Batch Run Portal	F1BTCCHTH	CILTBTRP
Batch Run Query Portal	F1BTRQ	CILTBTRP

Focused User Access Checks for Business Object Maintenance Flows

When a business object based entity is displayed and maintained online, the logic that prepares the data in these flows reside in designated scripts associated with the record's business object. These scripts may be designed to read other entities and call other services in addition to the main entity being processed. A common example is that a transactional object may invoke the related "type" object to get information. User access in these specific online maintenance flows are now enhanced to focus on the main entity being processed. In the example of the transactional object invoking the related "type" object to get information, the user is not required to have access to the "type" object. Prior to this release, every one of these additional object reads and service calls were also checked for user access (in addition to the main entity being processed). This situation required that the user was granted access to secondary entities, like admin "type" objects and internal services, which inadvertently also enabled access via the main menu.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Standardize Bundle Portals

The **Bundle Export** and **Bundle Import** search portals supported a broadcast action to view the details of a bundle that deviated from standards. This is replaced by standard work list capability, which allows you to quickly review the details of each bundle from the search results.

Standardizing the export and import bundle query portals allows for a more consistent user experience across all search portals.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Access Zone Tips via Zone Portal

The **Zone Tips** sidebar zone was removed from the sidebar. You can now access these tips from the **Zone** portal. Most of the tips point to topics that are already grouped together and easily accessible from the standard online help documentation for the **Zone** portal. The allowed list of SQL functions may be viewed from a new zone header action added to the data explorer SQLs zone.

Accessing zone tips via the **Zone** portal is better integrated with specific portal content, eliminates redundancy with existing standard help information, and assists with uncluttering the sidebar of unnecessary content.

Steps To Enable

No steps are required to enable this feature.

Batch Jobs Summary Zone Sorted by Start Date/Time

The **Batch Jobs Summary** zone is now sorted by Start Date/Time, and this zone sort sequence was amended to allow pagination to preserve the start time sort sequences. Previously, the **Batch Jobs Summary** zone was sorted by batch code, run number, and rerun number and column sorting was lost when navigating to the next and previous pages.

Sorting by start date/time allows for paging through the batch jobs in start time order, which is the preferred order for the majority of users.

Steps To Enable

No steps are required to enable this feature.

Conditional Expansion of a Tree Node

The **Populate Node** algorithm entity now allows business rules to set an indication of whether a tree node should be initially expanded or not. When populated, the indication overrides the setting on the tree node definition. Previously, a tree node could be defined to be initially expanded or not as part of the tree configuration. There are cases where the node should be conditionally expanded based on business rules. For example, to prevent the initial expansion when the number of child nodes exceeds a certain threshold.

Supporting a more flexible method for presenting a tree structure where some nodes are expanded and some not based on business rules allows for a better user experience.

Steps To Enable

No steps are required to enable this feature.

Improved Display of Overridden Labels

Entities that support override labels typically display both the original and overridden values, except when these labels are maintained as a list. For example, on the Lookup portal, values and their labels are displayed as a list for which the override value (if it exists) is presented instead of the original label. Previously, you had to edit the record to view the original value, and there was no visual cue as to which label was overridden.

Now a list-based display of overridable labels is standardized to show the original and overridden values so that you do not have to edit a record to see the full content.

Steps To Enable

No steps are required to enable this feature.

Improved Process Flow Cancellation Experience

When you cancel a process flow, you navigate back to the previous page you were working on. Previously, cancelling a process flow resulted in a blank process flow page.

This allows for a more intuitive and efficient user experience.

Steps To Enable

No steps are required to enable this feature.

Improved Process Flow Query

By default, the process flow query now displays the current user's in-progress process flows. The user may further bookmark the query as a quicker way to get to these flows. The new **My Process Flows** query option also supports the ability to delete multiple flows as needed. You can no longer delete another user's process flow.

Previously, the process flow query portal may have been accessed from different parts of the menu by different products. As of this release, it is included in the **Tools** submenu consistently across all products.

Steps To Enable

No steps are required to enable this feature.

Non-applicable Zone Header Actions Hidden on Batch Run Portal

The **Download Zone** header action links on the **Threads** zone of the **Batch Run** portal are now shown only if the corresponding file exists and the user has security access to download the file.

In addition, the **Close** header action link is only shown when more than one batch job request was submitted for the batch run. When a single batch job exists, its parameters are displayed by default and there is no need to close the zone.

Steps To Enable

No steps are required to enable this feature.

Process Flow Characteristics

The control data area structure shared by all process flow scripts now includes a list of characteristics. Process flow scripts may populate the list as needed, and the list is saved along with the process flow record by the base product's process flow manager.

Allowing process flow business rules to capture additional details about a flow makes it easier to locate flows in progress that you may want to resume.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

If your implementation uses a custom process flow manager script, you may need to adjust it to handle characteristics in order to take advantage of this functionality. Refer to the base product's process flow manager script for more information.

Sidebar Reorganization

The sidebar content is organized into **Main**, **Favorites**, and **Tools** sidebars. These are accessible using an icon bar at the bottom of the sidebar.

A portal of type sidebar is introduced for the **Main**, **Favorites**, and **Tools** sidebar. **Sidebar** zones that represent the user's favorite options are displayed as part of the **Favorites** sidebar portal and those classified as tools are displayed in the **Tools** sidebar portal. The remaining zones are displayed as part of the **Main** sidebar portal and are considered key information.

This enhancement allows context sensitive zones to be directly linked to these sidebar portals and displayed relative to other zones on the portals. These context-sensitive zones can now be managed for user preference like any other zone.

This is the default configuration for new customers, but it is an opt-in feature for upgrading customers.

When enabled, it is recommended that you review your custom sidebar zones. When applicable, move the zones to the favorites or tools sidebar portals to unclutter the main sidebar and keep the focus on only key information.

In addition, the **To Do Summary** zone is no longer available by default on the sidebar for new installations. The **To Do Management** and **To Do Dashboard** portals, introduced in prior releases, provide better tools to manage and review this information, so there is no need to include it on the sidebar by default as well. If you wish to still use this sidebar zone, you can add it as needed. Note that the zone is retained as a custom zone for existing customers.

Steps To Enable

To enable this feature, complete these steps:

1. Go to the Sidebar Configuration Extendable Lookup.
2. Set the CI_DASHBOARD record to inactive.

3. Set the other records to active.
4. Flush the cache.

Worklist Sidebar Zone Hidden When Empty

As part of an effort to unclutter the sidebar, this zone is now hidden when it is empty. Previously, the **Worklist** sidebar zone was always present when enabled regardless of whether it contained a list to manage or not.

This update reduces unnecessary content in the sidebar and improves the user experience.

Steps To Enable

No steps are required to enable this feature.

Application Toolbar Consolidation

The application toolbar area has been streamlined to one line to allow for more space for the main display area.

Several changes have been made to the application toolbar.

- There is now a single **Menu** icon. **Main Menu** and **Admin Menu** are line items in the new consolidated menu dropdown. Note that the shortcut key previously used to open the Admin Menu (Ctrl+Alt+A) has been deprecated.
Note that to open submenus, you need to click the line of the name of the submenu. Previously, hovering your mouse on the submenu line expected the selection
- In addition if you have any Favorite Links, Favorite Scripts, Favorite Searches or Bookmarks configured, they are also menu items in this new consolidated menu. The sidebar zones for these are still supported.
- Navigation history is no longer a separate button. Now, if you want to see a list of your previous navigation, you simply click and hold the 'back' arrow button. The same functionality works for the 'forward' arrow button. Clicking and holding show you navigation that you had performed and have since 'gone back' from. Note that the shortcut key that used to open the History (Ctrl+Alt+H) has been deprecated.
- The badge with the environment's domain name (if populated) is now displayed directly after the product name.
- The button to toggle the sidebar to collapse / expand was previously an arrow icon on the vertical border between the sidebar and the main display area. This has been replaced by an icon in the header, adjacent to the 'help' menu icon. The icon visible depends on whether your sidebar is configured on the left or the right side of your display. Note that the shortcut key "Alt + J" is still configured for this feature.
- The **Home** icon button is now on the right side, adjacent to the toggle sidebar.
- In an environment where links to **Control Central** and **Account Information** are configured in the toolbar, these are now icons rather than link text and they are positioned before the **Advanced Search** widget.

- Finally, the toolbar is now responsive when zooming in or when resizing the browser window. As the width of the browser gets smaller, the following will occur:
 - o The application name is shortened and an ellipsis is added.
 - o The environment badge, if visible, is removed.
 - o The application name is removed.
 - o The home icon is removed.
 - o Finally, the search widget is removed.

Steps To Enable

No steps are required to enable this feature.

Determine Insight Group by Action Method

An insight class defines the UI context for which insight information should be provided. Prior to this release, the types of insights included in that context were defined by a single insight group associated with that insight class. There are situations where the list of insight types may vary based on some configuration criteria like CIS division for example. As of this release, action method rules may be used to determine the insight class to use when multiple are defined for an insight class.

Allowing multiple insight groups for an insight class and determining the appropriate one to use by action method rules supports more flexible insight configurations.

Steps To Enable

No steps are required to enable this feature.

Improved Sort Order of Insights

Prior to this release, insights were sorted alphabetically by insight type code. In this release, insights are sorted by their severity category when applicable, followed by the relative sequence of the insight type within the insight group definition and only then by the insight type code.

Sorting insights by severity and a configurable display order allows for a better user experience.

Steps To Enable

No steps are required to enable this feature.

New Base Display Icon Images

The following additional SVG icons are provided for use in contextual insights, trees, and other user interface features that support SVG icons.

Icon	ID	Description
	F1ARWORD	Arrow - Open - Down
	F1ARWOL	Arrow - Open - Left

Icon	ID	Description
	F1ARWOR	Arrow - Open - Right
	F1ARWOU	Arrow - Open - Up
	F1CISRCH	Search - Content Item
	F1CLFT	Chevron - Left
	F1DETINFO	Information - Detail
	F1EDITBOX	Edit - Box
	F1ERASER	Eraser
	F1LOCKC	Lock - Closed
	F1LOCKO	Lock - Open
	F1MENUO	Menu - Overflow
	F1RESET	Reset
	F1RESETDD	Reset - Dirty Data
	F1RESETF	Reset - Filters
	F1SLASH	Slash - Forwards
	F1ADOWN	Arrow - Down
	F1APPRLIST	Approved List
	F1AUP	Arrow - Up
	F1BCK2MAP	Back To Map
	F1BKMARK	Bookmark

Icon	ID	Description
	F1CONT	Contact
	F1CONTG	Contact Group
	F1CONTGA	Contact Group - Add
	F1DATADOC	Data Document
	F1DIAMOND	Diamond
	F1DOMAIN	Domain
	F1NEWWIN	Open in New Window
	F1PAUSEC	Pause - Circled
	F1PEN	Pen
	F1RECNR	Re-center
	F1ROWRMV	Row - Remove
	F1SBARL	Sidebar - Left
	F1SBARR	Sidebar - Right
	F1SQUARE	Square
	F1TARGET	Target
	F1TOOLSHW	Tools - Hammer and Wrench
	F1TOOLSW	Tools - Wrench
	F1VBOXNRW	Vertical Box - Narrow
	F1VBOXWIDE	Vertical Box - Wide
	F1XMLSCH	XML Schema

Icon	ID	Description
	F1SBARLC	Sidebar - Left- Collapse
	F1SBARLE	Sidebar - Left - Expand
	F1SBARRC	Sidebar - Right - Collapse
	F1SBARRE	Sidebar - Right - Expand

Additional icons enhance the user experience for displayed information. These have no impact on existing customizations.

Steps To Enable

No steps are required to enable this feature.

Schema Time Zone Support for Date/Time Elements Stored in Legal Time

Schema based UI already supports an implicit time zone and daylight-saving conversion to and from the element's storage and display time zones when the element is stored in standard time. As part of this capability, the element's time zone name is also presented along with its value on a display map for clarity.

Many date/time fields are historically stored in legal time and therefore could not have benefited from this functionality. As of this release, this functionality is also supported for elements stored in legal time.

New schema attributes `legalTime=` and `legalTimeRef=` has been introduced to explicitly identify date/time elements as stored in legal time and specify their storage time zone.

The schema based user interface engine has been enhanced to properly display and maintain such elements based on their time zone schema definition. Similar to existing functionality for elements stored in standard time.

Similarly, inbound and outbound message functionality has been enhanced to support time zone conversion for elements explicitly marked as stored in legal time. Similar to existing functionality for elements stored in standard time.

Note: Existing elements that do not explicitly define their storage time zone are not impacted.

Steps To Enable

No steps are required to enable this feature.

Switch Language Zone Only Visible When Applicable

In this release, the Switch Language zone in the sidebar is now only displayed if your implementation has more than one language enabled.

In previous releases, this zone was always visible to any user that had the appropriate security for it, even if your implementation only had one language enabled.

Steps To Enable

No steps are required to enable this feature.

Compact View of User Interface

There is now a system-wide option to turn on a compact view of the user interface. This option reduces the amount of whitespace on the rendered pages.

Enabling the compact view for all users in your implementation allows for more information to be displayed without scrolling.

Steps To Enable

To enable this feature, complete these steps:

1. Navigate to **Admin > General > Feature Configuration**.
2. Search for a feature configuration entry for the **Custom Look and Feel** feature type. If one does not exist, use the **Add** action to add a feature configuration of this type.
3. Edit the record and add an entry in the options collection for the Option Type "**UI View**". Populate the value as 'Compact'.

Consistent User Interface Label Justification

All user interfaces are now showing labels as right justified as specified in the Redwood user interface standards. Previously, there was an inconsistency on which side user interface elements were justified.

In addition, the spacing of the labels has been increased to reduce the instances of label wrapping.

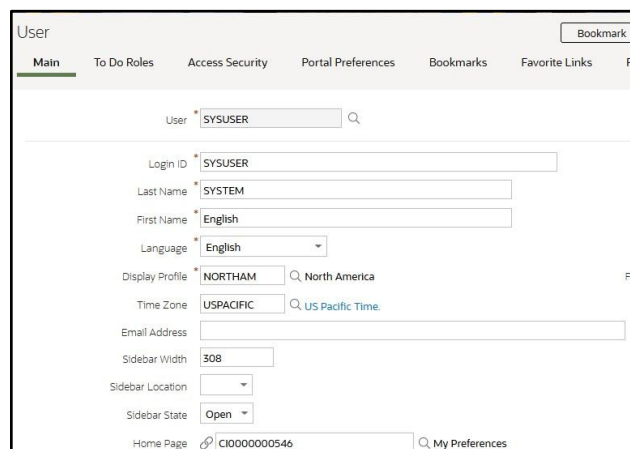


Figure 6: User Screen

Steps To Enable

No steps are required to enable this feature.

File Integration Record Portal

The **File Integration Type** portal lists all the record types included in the configuration along with key details about each record type. Previously, the only way to review the entire record type definition was to edit it, which did not support navigation to various settings like data area and algorithms.

For this release, a standard **File Integration Record** portal is provided for reviewing and maintaining a record type definition. The portal also supports a list view of all record types included in the same File Integration Type configuration. The list of record types on the **File Integration Type** portal was enhanced to support navigation to the new portal.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

Upgrade scripts ensure that users with Read access to the **File Integration Type** portal will have access to the new application service associated with the new **File Integration Record** portal. The table below lists the existing and new application services.

Object	New Application Service	Access Added to any User Groups with this Application Service/Read Access
File Integration Portal	F1FLINRC	F1FLINTP (File Integration Type Portal)

Option to Suppress an Explicit Map Zone's Header

By default, an explicit map zone includes a header area that includes the zone title, a zone menu (with the action to Print the zone), and a collapse/expand icon.

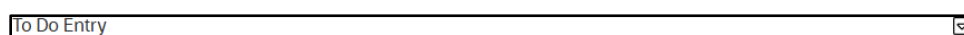


Figure 7: To Do Entry Zone

If there is a portal where this information is not needed, the system provides a new configuration to suppress the header. This is only recommended if there is one zone on the portal so the header title and collapsed option are not needed.

Suppressing an explicit map zone's header area allows you to have more vertical space when the page only has one zone and the standard actions on the zone header are not relevant.

Steps To Enable

To suppress a map zone header, complete these steps:

1. Navigate to the explicit map zone whose header you want to suppress via **Admin > System > Zone**.
2. In the **General Parameters** section, click **Edit All** and find the **Zone Header Visibility** parameter. Alternatively, you can select the **Show All** checkbox in the header, find the **Zone Header Visibility** parameter, and click the **Edit** (Pencil) icon.

3. Enter 'false' in the **Parameter Value** field and click **Save**.
4. Flush the cache.

Option to Suppress the Page Title Area

You can configure a portal to indicate that the page title should be hidden. You can do this by setting a portal option with type Page Title Visibility and an option value of 'false'. Be aware of the following:

- The page actions displayed in the same row as the page title are also suppressed. As such, page designers should only use this option if the actions in that area are not needed, including **Bookmark**, **Clear**, and **Refresh**.
- This type of option is only applicable to "Standalone" portals, which is related to the **Main** tab of a page. It is not applicable to other types of portal (for example a tab page portal).
- If the page has other portals associated with it (tab page portals), the page title and page actions are also suppressed for those tabs if a user clicks on any of those tabs.

Configuration to suppress the page title and page actions allows for portal-based pages to utilize more vertical space if the title and the page actions are not needed.

Steps To Enable

To suppress a map zone header, complete these steps:

1. Navigate to the standalone portal that defines the **Main** tab for the portal page.
2. Click the **Edit** hyperlink in the **Options** zone.
3. Add a row and choose the **Page Title Visibility** option type.
4. Enter an option value of 'false' and click **Save**.
5. Flush the cache.

Option to Suppress Tabs on a Page

You can configure a portal-based page to indicate that a tab should never appear. This is an example of the **Tab Menu Area** where tabs appear on the **To Do Entry** page.

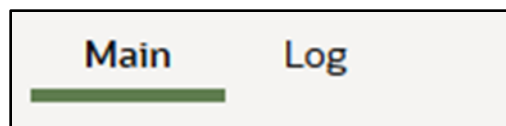


Figure 8: Tab Area

You would only want to hide the tab menu if the page has one tab (the **Main** tab), and you would like to suppress the whole **Tab Menu Area** and provide more vertical space. You can use the **Tab Menu/Tab Visibility** option type with a value of 'false' to make this change.

Additionally, you can define a service script that checks a condition and only display the tab if the conditions are met. For example, on the **Business Object** page, the **Hierarchy** tab is only applicable if the business object being viewed is part of a hierarchy.

You can use the syntax `ss='serviceScriptName' input=[ ] output=booleanValue` to configure this option. Similar to zone visibility configuration, the input supports one or more name value pairs: `input=[ELEMENT_NAME=ELEMENT_REF ELEMENT_NAME=ELEMENT_REF]`, where `ELEMENT_NAME` is the target XPath in the service script to populate and `ELEMENT_REF` is either a hard-coded value surrounded by single quotes or any portal or global context field. For example, a script to check if a business object has any hierarchy may have the option type populated as follows:

`ss='CM-CheckHierarchy' input=[bo=BUS_OBJ_CD] output=shouldShowTab.`

When a tab portal is configured with a visibility option, the **Tabs** zone on the related **Main** (standalone) portal will indicate that the tab is conditional.

Tabs				
	Sequence	Tab Page	Portal 	Conditional
1	2	Schema	Business Object Schema	☐
2	3	Algorithms	Business Object Algorithms	☐
3	4	Options	Business Object Options	☐
4	5	Lifecycle	Business Object Lifecycle	☐
5	6	Lifecycle View	Business Object Lifecycle View	☐
6	7	Hierarchy	Business Object Hierarchy	☒
7	8	References	Business Object References	☐

Figure 9: Tabs Zone

Steps To Enable

See the feature description above for details.

Miscellaneous Enhancements

This section describes the following miscellaneous enhancements introduced in this release:

- [Adjusted Locale for English Language](#)
- [Improved Explorer Zone SQL Maintenance](#)
- [Portal and Zone Roles](#)
- [Upload Large Attachments to Object Storage](#)
- [Maintenance Portal Configuration Improvements](#)
- [Option Configuration Visibility on Lookup Portal](#)
- [New Platform](#)
- [Sharing Attachments as Links](#)
- [Support for External URL-based Attachments](#)
- [Groovy Update to 3.0.17](#)

Adjusted Locale for English Language

As more integrations use the Locale as the standard method to determine a language, the product is adjusting the value defined for the default language row (ENG - English) to use the generic locale "en", instead of the more specific "en-US".

The default record's configuration is now aligned with the typical browser configuration for English.

Steps To Enable

No steps are required to enable this feature.

Improved Explorer Zone SQL Maintenance

Copy and delete actions are available in the SQLs zone when maintaining a data explorer zone. These actions are only allowed in an environment that owns the zone.

This makes it easier to configure queries.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Portal and Zone Roles

An explicit definition of the functional role associated with portal and zones is provided.

Assigning the functional role of portal and zones in metadata allows for a more streamlined conversion to corresponding Redwood templates and other role-related configuration enhancements in the future.

This does not impact any extensions.

Steps To Enable

No steps are required to enable this feature.

Upload Large Attachments to Object Storage

By default, an attachment is uploaded and stored in the database along with its entire content. Prior to this release, the process of uploading very large content like videos etc. was often limited by memory constraints. In addition, storing large content in the database is costly.

As of this release, the upload process has been enhanced to support an optional configurable threshold above which content is stored in Oracle Cloud Infrastructure Object Storage and a link to the file is kept on the attachment record.

To enable this functionality, define the object storage attachment location and threshold size in the General System Configuration feature configuration. In addition, you may also use the same feature configuration to set a maximum aggregate size for concurrent attachment uploads for performance reasons.

This feature is an opt in. If such configuration is provided then large attachments are stored in Object Storage, else they are stored in the database subject to existing resource limitations if any.

The following are known limitations with storing content in Object Storage:

- The responsibility for data recovery of attachment content shifts to the customer as part of their Object Storage files management.
- Custom logic if any that relies on attachment content to exist in the database will not work for attachments stored in Object Storage.

Steps To Enable

To enable this feature, complete these steps:

1. Add the **Attachment Location** option to the General System Configuration feature configuration.
2. Set the **Attachment Threshold Size** option on the same feature configuration.
3. Optionally, set the **Maximum Attachment Aggregate Size** option on the same feature configuration.

Maintenance Portal Configuration Improvements

Previously, introducing a new maintenance portal would require manual effort to generate a corresponding maintenance zone, a maintenance script, and an **Add** portal action. In this release, these artifacts can be generated along with the new maintenance portal.

Generating more of the artifacts needed to support a maintenance portal saves implementation time and increases product quality.

Steps To Enable

No steps are required to enable this feature.

Option Configuration Visibility on Lookup Portal

The **Lookup** portal is enhanced to simplify the review of lookup fields that represent standard options by providing a navigation for each lookup value to its corresponding Option Configuration extendable lookup record.

This improves usability by providing a navigation to additional option configuration information for applicable lookup fields.

Steps To Enable

No steps are required to enable this feature.

New Platform

A new platform ensures you are current with the latest technologies and compliant with support and industry standards.

The following changes to the platform were implemented:

- As per previous releases, the latest versions of Google Chrome, Microsoft Edge, and Mozilla Firefox are supported. It is recommended you use the relevant corporate editions of these products.
- The products now support the latest releases of Java 17. Java 8 is not supported in this release. You must upgrade all your Java extensions and related site-specific third-party libraries to Java 17 for this release. Libraries supplied by Oracle in the installation are pre-certified, but any additional libraries must be appropriate for Java 17. See the [Oracle JDK Migration Guide](#) for more information on utilities to use and to learn about the process.
- Oracle Database 19c and Oracle Database 23ai are now supported for customers. Refer to the Oracle documentation for details of the upgrade process.
- Oracle Linux 8.x and Oracle Linux 9.x are now supported to house the product tiers. In this release, Oracle Solaris and IBM AIX are not supported as Oracle WebLogic no longer supports those platforms.

Platform changes are necessary to keep the products and service current and compliant with support and industry standards.

Steps To Enable

No steps are required to enable this feature.

Sharing Attachments as Links

Previously, including large attachments in emails was rejected due to content size or caused performance issues. This release supports the ability to share attachments as links instead of sharing their content.

A new **Maximum Email Attachment Size** feature option was added to the General System Configuration feature type to give you the flexibility of restricting the size of actual attachment content embedded in emails. When populated, attachments with their content stored in the database that exceed the size limit are provided as links when attached to emails.

Attachments that are not stored in the database, such as those stored in object storage or their content is referenced via an external URL, are shared only as links when attached to emails.

Steps To Enable

No steps are required to enable this feature.

Support for External URL-based Attachments

Documents residing in an external system can be made available as attachments using a new External URL business object. When adding an attachment, the user can specify a file name (as before) or a URL to a document in an external system.

This allows users to internally reference such attachments as needed to support their business requirements.

Steps To Enable

No steps are required to enable this feature.

Groovy Update to 3.0.17

Groovy was upgraded from 3.0.7 to 3.0.17.

The Groovy upgrade was necessary for Java 17 compatibility.

Steps To Enable

No steps are required to enable this feature.

Tips and Considerations

There are some behavior differences between Groovy 3.0.7 and 3.0.17 that may require changes to existing groovy scripts. It is strongly advised to run Compile All Groovy Scripts (F1-CAGVY) and remediate any compilation errors before the upgrade so that existing compilation errors are not attributed to this groovy upgrade.

Deprecation Notices for OUAF Version 25.4

This section describes features and system data that are deprecated in this release and planned for deprecation in the future release of Oracle Utilities Application Framework. It contains the following topics:

- [Deprecation in This Release](#)
- [Deprecation Planned for Future Releases](#)

Deprecation in This Release

The following functionality or system data is deprecated in Oracle Utilities Application Framework Version 25.4:

- [Legacy User Experience \(OPE\)](#)
- [Batch Run Statistics Portal/Sidebar Zone](#)
- [Ability to Switch to the Previous User Experience](#)
- [Message Legacy Page Metadata](#)
- [Display Icon Legacy Page Metadata](#)

Legacy User Experience (OPE)

Removed the OPE engine and as an alternative to the Redwood user experience.

Batch Run Statistics Portal/Sidebar Zone

With the introduction of the new **Batch Run** portal, **Batch Day Dashboard** and **Batch Analytics**, the usefulness of the **Batch Run Statistics** zone is limited and was removed from Oracle Utilities Application Framework.

The **Batch Run Statistics** portal provided additional information about batch runs, but some functionality on the portal is related to capturing additional information from an external tool. This information is stored in a Fact record. Support for capturing additional information from an external tool will be discontinued in a future release.

The **Batch Run Statistics** portal was accessible from the original **Batch Job Submission** fixed page. Most functionality in the **Batch Run Statistics** portal is now visible in the **Batch Run** portal. There were additional functionality on the **Batch Run Statistics** portal related to capturing additional information from an external tool. This information is not supported in a future release.

Ability to Switch to the Previous User Experience

Previously, the product supported the ability to switch from the Opattern Enterprise user experience to the Redwood user experience. Going forward, only the Redwood user experience is supported.

Message Legacy Page Metadata

Replaced by portal-based user interface.

Display Icon Legacy Page Metadata

Replaced by portal-based user interface.

Deprecation Planned for Future Releases

This section lists the functionalities and system data that will be deprecated in the future releases of Oracle Utilities Application Framework:

- [Ability to Log In with SYSUSER](#)
- [Support for Zone Header Map](#)
- [Support for Cube Viewer](#)
- [Support for Guiding Business Process Assistant \(BPA\) Scripts](#)
- [Support for Switch UI View](#)
- [Workflow and Notification Metadata and Database Tables](#)
- [Mobile Application Framework Metadata and Java Packages](#)
- [Key Ring Validation Scripts, Algorithm Types, and Algorithms](#)
- [UI Metadata Related to Converted Pages](#)
- [Miscellaneous System Data](#)
- [XSLT Managed Content Type](#)
- [REST IWS - Original REST Servlet](#)
- [Append Setting from Pagination](#)
- [Support for Master/Subordinate Servers for Web Service Catalog](#)
- [F1-MAINPROC Business Object Read When Pre-processing Exists](#)

Ability to Log In with SYSUSER

The system provides a user out of the box: SYSUSER. In an upcoming release, the product is going to limit the ability to log in using SYSUSER. Implementations should plan to review all their processes and identify ones where SYSUSER is used for system authentication and authorization and instead define a proper user for the process.

In addition, other system delivered users provided as template users will limit login access in an upcoming release.

Support for Zone Header Map

Currently all base delivered zone types support a parameter called Zone Header Map, which can be used to override the zone's header area. The reasons for using this may be to have more control over Actions in the header and to be able to suppress the header.

In a future release, we are no longer going to support defining a zone header map. Implementations should review any zones that are currently defining a custom zone header map. If the map is used to implement actions, use the existing zone action parameters to implement this functionality. If the map is used to suppress the header, an upcoming release will provide zone configuration to achieve this functionality.

Support for Cube Viewer

In the future, the product plans to remove support for the Cube Viewer. Note that this includes support for the F1-COLOR characteristic type that is only used by Cube Viewer. The product uses the F1-Color extendable lookup going forward.

Support for Guiding Business Process Assistant (BPA) Scripts

In the current release, the product supports guiding BPA scripts that surf on top of one or more application pages and interact with these pages in parallel to script execution. This approach is considered legacy functionality and as such limited to fixed pages. It does not work with portal pages. In the future, the product plans to remove support for such scripts.

Support for Switch UI View

In a future release, the F1UIVIEW application service related to the function to switch the user interface to an older user experience will be removed.

Workflow and Notification Metadata and Database Tables

Workflow and notification functionality was an early way to support exchanging messages with an external system (notification) and providing a configurable process for acting on incoming messages (workflow). In more recent years, the functionality for managing external messages is supported using Outbound Message and Inbound Web Service functionality. In addition, there are several features to support processing incoming messages. Service scripts can handle simple use cases. For more complicated processes, the service task or other business object driven objects are available.

The metadata and database tables related to this feature will be removed in a future release. Note that only a portion of the functionality for this feature is managed by Oracle Utilities Application Framework. Most of the functionality is supported in the Oracle Revenue Management and Billing product.

Mobile Application Framework Metadata and Java Packages

Removal of support for the Mobile Application Framework has already been announced in a previous release. However, there is metadata still included in the application related to this functionality.

The metadata and Java packages will be removed in a future release. CM Java code that references services or methods in the `../mobile/..` package should be reviewed.

Key Ring Validation Scripts, Algorithm Types, and Algorithms

The product is removing all scripts, algorithm types, and algorithms that performed validation rules on the K1-SignatureKeyRing business object. The algorithms have been removed from the BO configuration. There are requirements to expand the use of a signature key ring beyond the current implementation for object file storage and the existing validations are not applicable to other planned use cases.

The following metadata is no longer in use and will be removed in a future release:

Object Type	Object Name
Algorithm	K1-KRDCKFS, K1-KRINCKFS
Algorithm Type	KRDCKFS, K1-KRINCKFS
Message	11009 / 1402
Plugin Script	K1-KRDCKFS, K1-KRINCKFS
Service Script	K1-ChkCfgExL

UI Metadata Related to Converted Pages

The UI metadata related to fixed pages that have been converted to portals will be removed in a future release. The navigation keys listed are related to each maintenance page. The related UI program component data will also be removed. Note that the metadata related to the search pages will not be removed at this time in case they are used on other fixed pages.

The following metadata is no longer in use and will be removed in a future release:

User Interface	Related Metadata
Script	- scriptMaintenanceMainPage - scriptMaintenanceStepPage - scriptMaintenanceStepAccordion - scriptStepSendFieldsGrid - scriptStepPromptsGrid - scriptStepReceiveFieldsGrid - scriptMaintenanceCopyStepPopup

User Interface	Related Metadata
	- scriptDataArea - scriptDataAreaGrid - scriptSchemaPage - scriptMaintenanceEligPage - scriptMaintenanceEligCritGrid - scriptTree - scriptMaintenanceTabMenu
Maintenance Object	- maintenanceObjectAlgorithmsGrid - maintenanceObjectAlgorithmsPage - maintenanceObjectGrid - maintenanceObjectTabMenu - maintenanceObjectOptionsGrid - maintenanceObjectMainPage
Business Service	- businessServiceMainPage - businessServiceSchemaPage - businessServiceTabMenu
Batch Run Portal	- batchRunTreeMaint - batchRunTree - batchRunTreePage - batchRunMaintPage - batchRunTabMenu
Batch Submission Portal	- batchSubmitMainPage - batchSubmitTabMenu - batchJobParmGrid
Business Object Portal	- businessObjectAccordionPage - businessObjectAccordionPrtPage - businessObjectAlgorithmsGrid - businessObjectAlgorithmsPage - businessObjectLifecyclePage - businessObjectMainPage - businessObjectOptTypeGrid - businessObjectSchemaPage - businessObjectStatAlgGrid

User Interface	Related Metadata
	- businessObjectStatTRRuleGrid - businessObjectStatusOptionGrid - businessObjectSummaryOptTree - businessObjectSummaryPage - businessObjectSummaryUseTree - businessObjectTabMenu
Lookup Portal	- ctLookUpMaintListGrid - ctLookUpMaintMainPage - Any help navigation keys
Algorithm Portal	- algorithmMainGrid - algorithmMainPage - algorithmTab - Any help navigation keys
User Group Portal	- userGroupMainPage - userGroupProfileGrid - userGroupProfilePage - userGroupTabMenu - userGroupTabMenu2 - userGroupUserGrid - userGroupUserPage - Any help navigation keys
To Do Entry Maintenance	- toDoEntryCharGrid - toDoEntryDrillKeyValuesListGrd - toDoEntrySortKeyValuesListGrid - todoentrykeyvalue - todoentrymain - toDoEntryMaint - toDoEntryPopupAdd - toDoEntryPopupForward - toDoEntryPopupSendBack - Any help navigation keys
Table Maintenance	- metaDataTableFieldsGrid - metaDataTableMainPage

User Interface	Related Metadata
	- metaDataTableCFldsGrid - metaDataTableConstPage - metaDataTableMaint - metaDataTableRefByConstPage - metaDataTableFieldPage - Any help navigation keys
Work Calendar Maintenance	- workCalendarMaint - workCalendarMainPage - workCalendarHolidayGrid - Any help navigation keys
Message Maintenance	- msgMaintDetailsPage - msgMaintGrid - msgMaintPage - msgMaintTabMenu - Any help navigation keys
Time Zone Maintenance	- timeZoneMainPage - timeZoneTabMenu - Any help navigation keys
Application Security Portal	f1appsecTabMenu
Display Icon Portal	displayIconRefMaint

Miscellaneous System Data

The following metadata is no longer in use and will be removed in a future release:

Object	Data	Description/Comments
Lookup Value	CHAR_ENTITY_FLG / F1SE	Characteristic Entity / Sync Request Inbound Exception
Script	F1-TDMgActSS	To Do Management – Process Actions (Deprecated) / Replaced by F1TDMgActSS
Script	F1AddDebugLg	Add Log for Monitoring Probe (Deprecated) / Replaced by a BS - F1-MONPRBLOG
Script	F1MgOImpMnt	Not in use by base functionality
Script	F1MgoSqlPks	Not in use by base functionality
Script	F1MgOImpPst	Not in use by base functionality

Object	Data	Description/Comments
UI Map	F1-MigrObjectImportMaintenance	Not in use by base functionality
Zone	F1-BOMOSRCH	Not in use by base functionality
Zone	F1-CATCHSCH	Not in use by base functionality
Zone	F1-MONAVKEY	Not in use by base functionality
Zone	F1-REVCONQRY	Not in use by base functionality

XSLT Managed Content Type

Entries in the Managed Content table related to XSL should be using the XSLTC managed content type and not the XSLT managed content type. In a future release, the XSLT managed content type will no longer be supported.

REST IWS - Original REST Servlet

The original URL supplied for invoking IWS based REST services included the IWS Service name in its makeup. Support for this will continue for backward compatibility purposes, but it will be deprecated in a future release. You should adjust your existing integrations to use the currently supported URL.

Append Setting from Pagination

There are several known issues with the functionality of the "append" option in pagination. It is recommended that you do not use this pagination setting.

Support for Master/Subordinate Servers for Web Service Catalog

The Service Catalog Configuration (master configuration) enables you to define subordinate servers. Defining subordinate servers is no longer applicable for the Oracle Integration Cloud.

F1-MAINPROC Business Object Read When Pre-processing Exists

In the original implementation of configuration tools, the main framework maintenance BPA (F1-MainProc) did not perform a Read of the BO when a pre-processing script was linked to the BO via options. The pre-processing script was responsible for the Read.

In a subsequent release, a BO Read was added in F1-MainProc (even if a pre-processing script existed) to resolve a UI Hint issue related to child business objects. This solution introduced a problem only visible for specific scenarios and a different fix has been introduced. The new fix made the BO Read unnecessary in F1-MainProc. Because there are many pre-processing scripts that are properly performing the Read of the BO, ideally the BO Read should be removed from F1-MainProc so that multiple reads are not performed. However, there may have been pre-processing scripts introduced after the BO Read was included in F1-MainProc that were coded to not perform a BO read in the pre-processing script. Due to this situation, the BO Read is still performed as part of the processing of F1-MainProc.

When a pre-processing script exists, we plan to remove the BO Read from F1-MainProc logic. You should review your custom pre-processing scripts that are linked to your BO options to ensure that they properly perform a Read of your BO.

Deprecation Notices for ORMB Version 26.1.0.0.0

This section describes features and system data that are deprecated in this release and planned for deprecation in the future release of Oracle Revenue Management and Billing. It contains the following topics:

- [Deprecation in This Release](#)
- [Deprecation Planned for Future Releases](#)

Deprecation in This Release

No objects are deprecated in the Oracle Revenue Management and Billing Version 26.1.0.0.0

Deprecation Planned for Future Releases

The following table lists the objects which will be deprecated in the future release of Oracle Revenue Management and Billing:

Object Type	Object Name
Screen	Deal Dashboard
	Note: The newly developed Deal Dashboard will replace the existing Deal Dashboard screen which is planned for deprecation in the future release.

Therefore, we strongly recommend you not to use these objects in any custom implementation.

Product Documentation

User manuals and other technical documents are available in the Portable Document Format (PDF) format. You can download the release-specific documentation from either of the following locations:

- **Oracle Technology Network (OTN)** – You can access the ORMB release-specific documentation libraries from OTN using the following URL:

<http://www.oracle.com/technetwork/indexes/documentation/fsgbu-1364781.html>

It contains the **Documentation Library for Oracle Revenue Management and Billing On-Premises Solution** section. You can view and download a release-specific documentation library by clicking the **View Library** and **Download** links, respectively, corresponding to the respective ORMB version.

- **Oracle Help Center (OHC)** – You can access the ORMB release-specific documentation from OHC using the following URL:

<https://docs.oracle.com/en/industries/financial-services/revenue-management-billing/index.html>

The ORMB OHC page contains a drop-down list which allows you to select the ORMB version for which you want to access the documentation.

Points to Note:

You can access the documentation of a release prior to 5.0.0.0.0 from OHC by selecting the **Previous Releases** option from the list.

Always ensure that you download latest revision of the document from **OTN** or **OHC**.

From 6.0.0.0.0 release onwards, the Oracle Revenue Management and Billing Online Help (i.e., help.ear file) is not packaged with the application. The ORMB Online Help is published on Oracle Help Center (OHC). You can continue to use context-sensitive help from the application which will point to the respective topic on OHC.

Technical Support

For any technical support, consult with Oracle Support, Oracle Partner, or Oracle Consulting that may be supporting your implementation or upgrade process.