Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management

Implementation Guide

Release 12.1

E64807-04

February 2022
(Updated November 2022)

ORACLE

Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management, Release 12.1 Implementation Guide

Contents

Implementation Guide

Part 1

Understanding the Integration

Chapter 1

Chapter 2

Part 2
Implementation Guidelines

Chapter 3

Chapter 4

Preface

Audience

This document is intended for anyone implementing the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management.

Documentation and Resources

For more information regarding this integration, foundation technology and the edge applications, refer to the following documents:

Product Documentation

Topic	Description
Integration documentation: Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management Release Notes Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management Implementation Guide Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management Installation Guide	Refer to the Oracle Utilities applications documentation page: http://docs.oracle.com/cd/E72219_01/documentation.html
Edge application documentation: Oracle Utilities Customer Care and Billing Oracle Utilities Meter Data Management	

Additional Documentation

Resource	Location
SOA Suite 12c documentation	Refer to the SOA documentation at: http://www.oracle.com/technetwork/middleware/soasuite/documentation/index.html
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. Access the support site for the Edge Application Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1) or refer to the Oracle Utilities Integrations page at http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm
Oracle Technology Network (OTN) Latest versions of documents	http://www.oracle.com/technetwork/index.html
Oracle University for training opportunities	http://education.oracle.com/
Web Services Security	For more information about Web services security using Oracle Fusion Middleware 12c refer to https://docs.oracle.com/middleware/12211/cross/webservicestasks.htm.
Oracle Fusion Middleware 12c documentation	Refer to the Oracle applications documentation page: http://docs.oracle.com/en/middleware/
Oracle Fusion Middleware "What's New In Oracle WebLogic Server" Section: Standards Support, Supported Configurations and WebLogic Server Compatibility, Database Interoperability For additional information on the type of database to use.	http://docs.oracle.com/middleware/1221/wls/NOTES/toc.htm
Instructions on installing this integration on non-Windows/ Linux platforms	Refer to Oracle Support Knowledge Article ID 1349320.1.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support
Oracle customers have access to electronic support for the hearing impaired. Visit: http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Abbreviations

The following abbreviations are used in this document:

Term	Expanded Form
BPEL	Business Process Execution Language
DVM	Domain Value Map
EBF	Enterprise Business Flow
EM	Enterprise Manager
JMS	Java Message Service
MDS	Metadata Store
OUCCB or CCB	Oracle Utilities Customer Care and Billing
OUMDM or MDM	Oracle Utilities Meter Data Management
SA	Service Agreement
SOA	Service Oriented Architecture
SP	Service Point

Part 1

Understanding the Integration

This section provides an overview of the participating applications and information regarding the business processes addressed by this integration. It includes the following chapters:

- Integration Overview
- Understanding the Integration

Chapter 1

Integration Overview

This document provides configuration and administration information for the integration between Oracle Utilities Customer Care and Billing (CCB), and Oracle Utilities Meter Data Management (MDM), with information about additional functionality which can be used with the Oracle Utilities Customer Self Service Application (OUCSS).

Prerequisites

All participating applications must be installed, set up, and working properly.

Note: Refer to the Documentation and Resources section for current application version details.

About the Integration Product

The integration uses Service-Oriented Architecture (SOA) Suite.

This section provides general information about the functionality and processing of Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management, including:

- About the Products
- End-to-End Integration Flow for On Premise or Cloud Applications

About the Products

The following products are involved in the integration:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Meter Data Management

These products are offered as on premise and cloud applications.

Oracle Utilities Customer Care and Billing

Oracle Utilities Customer Care and Billing is a customer and billing system that manages all aspects of customer service needed by most utilities to operate their business. Basic objects form the core of the system: person, account, premise, service agreement, and service point. These objects hold demographic, geographic, and financial information about a company's customers and properties. Related to these objects are the processes that they manage: bills, payments, meter readings, field activities, credit and collections etc.

Oracle Utilities Meter Data Management

Oracle Utilities Meter Data Management supports the loading, validation, editing, and estimation (VEE) of meter data - from meter configuration, to meter read and usage validation, to bill determinant calculations.

End-to-End Integration Flow for On Premise or Cloud Applications

This section focuses on the integration flow for on premise and cloud applications.

- Connecting to On Premise Utilities Applications
- Connecting to Utilities Cloud Applications

Connecting to On Premise Utilities Applications

When integrating with on premise Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management, implementation should use the synchronous processes as is. For the asynchronous processes, implementation has the option to use either of the following:

- Asynchronous processes: queue to queue method
- JMS wrapper services for asynchronous processes: web service method

Note: Refer to the Technical Overview section in Chapter 2: Understanding the Integration for more information about end-to-end integration processes.

Connecting to Utilities Cloud Applications

When integrating with Oracle Utilities Customer Cloud Service and Oracle Utilities Meter Solution Cloud Service, all integration flows will be accessible through web service calls. Implementation should use the synchronous processes as is and use the JMS Wrapper Services for async processes.

Note: Refer to the Technical Overview section in Chapter 2: Understanding the Integration for more information about end-to-end integration processes.

Supported Business Processes

This section provides information about the integration points and processing details, including:

- Overview
- Integration Points by Business Process
- Processing Details

Overview

In this integration, Oracle Utilities Customer Care and Billing manages customers (persons), accounts/service agreements (SAs), service points (SPs), service agreement (SA) relationships, meters, meter configurations, SP/meter history, contract options and contract option events while Oracle Utilities Meter Data Management manages usage information.

Meters, meter configurations and SP/meter history are managed in either Oracle Utilities Customer Care and Billing or Oracle Utilities Meter Data Management, depending on the implementation.

Oracle Utilities Customer Care and Billing requests bill determinants from Oracle Utilities Meter Data Management in order to generate bills for customers. Replacement read notifications are sent by Oracle Utilities Meter Data Management whenever corrections are made to read details that were previously included in a usage calculation. This could result in a cancel-rebill scenario in Oracle Utilities Customer Care and Billing that would result in new request(s) for bill determinants as part of the rebill.

During the billing cycle, Oracle Utilities Customer Care and Billing requests usage data from Oracle Utilities Meter Data Management as separate usage requests for each service agreement that is part of the billing run and that require bill determinants.

When requesting bill determinants, there is an option to pass interval data from Oracle Utilities Meter Data Management back to Oracle Utilities Customer Care and Billing.

The integration includes navigation links from the Oracle Utilities Customer Care and Billing person, SA, SP, usage request and meter into the Oracle Utilities Meter Data Management contact, US, SP, usage transaction and device. A link also exists from Oracle Utilities Customer Care and Billing service agreement to Oracle Utilities Meter Data Management's 360 View. In addition, a link from Oracle Utilities Meter Data Management SP to the Oracle Utilities Customer Care and Billing Control Central - Account Information is included.

To reduce administration setup, Bill Cycle Sync processes are available for the integration between Oracle Utilities Customer Care and Billing 2.4.0.3+ and Oracle Utilities Meter Data Management v2.1.0.3+. This functionality synchronizes bill cycle schedule from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management and it also sends updates to Oracle Utilities Customer Care and Billing for any changes in the bill cycle relationship in Oracle Utilities Meter Data Management.

Oracle Utilities Customer Care and Billing notifies Oracle Utilities Meter Data Management when:

- One or more usage transactions are linked to a completed bill
- A bill segment that is linked to a usage request is frozen or canceled

This functionality is available for the integration between Oracle Utilities Customer Care and Billing v2.6.0.1.0+ and Oracle Utilities Meter Data Management v2.2.0.2.0+.

Oracle Utilities Customer Care and Billing can also request bill determinants from Oracle Utilities Meter Data Management in order to perform rate comparison and analysis for service agreements that require bill determinants. This functionality is available for the integration between Oracle Utilities Customer Care and Billing v2.4+ and Oracle Utilities Meter Data Management v2.1+.

This integration is also used to support the business use cases described below for the web self service solution for Oracle Utilities.

The following business use cases apply to this integration:

Business Process	Description
Compare Rate Plan and Analysis	Provide a tool where the customer can compare the difference to their bill if they choose to transfer to a different rate plan.
Current Bill-To and Estimate Graph	A customer will often use a Self Service application to pay their bill. While paying their bill, it would be opportune to present them any unbilled charges to-date.

Note: For Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management outbound synchronization processing, real-time synchronous outbound messages are not recommended. The monitor process on the "Pending" state of the sync request business objects must be used so that message processing occurs asynchronously to prevent race conditions and timing issues. If near real-time processing

of sync requests are needed, schedule the deferred sync request monitor jobs frequently.

Integration Points by Business Process

The following business processes apply to this integration:

Master Data Synchronization

- Person Information Synchronization
- Service Point Information Synchronization
- Service Agreement Information Synchronization
- Service Agreement Relationship Information Synchronization
- Dynamic Option Synchronization
- Dynamic Option Event Synchronization
- Meter Information Synchronization*
- Meter Configuration Information Synchronization*
- Service Point – Meter History Information Synchronization*
- Scalar Meter Read Synchronization*

Note: The processes suffixed with * are optional. These flows do not need to be synced when meter related information is managed by Oracle Utilities Meter Data Management.

Billing Related Processes

- Batch Billing Determinants Request and Response
- Online Billing Determinants Request and Response
- Replacement Reads Notification
- Get Register Read High-Low Boundaries
- Get Usage Request
- Usage Transaction Info Update

Note: The Get Usage Request process is also used by Oracle Utilities Customer Self Service for the Compare Rate Plan and Analysis and Current Bill-To and Estimate Graph functionality.

Customer Self Service Related Processes

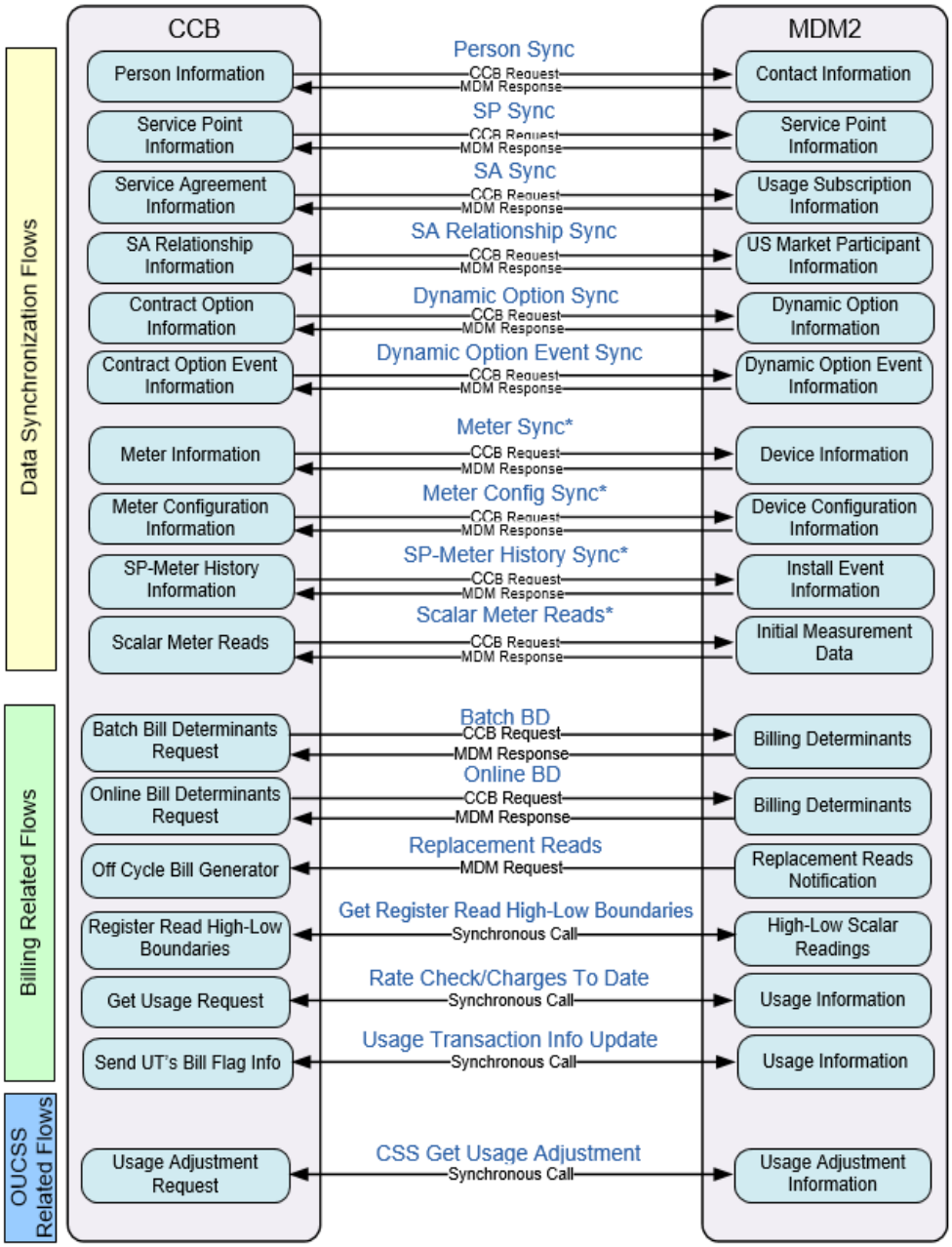
This process only applies if Oracle Utilities Customer Self Service is installed.

- Usage Adjustment Request

Except for replacement reads notification, all other processes are initiated from Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing does not send a response for replacement reads coming from Oracle Utilities Meter Data Management.

Get Register Read High-Low Boundaries and Get Usage Request and Usage Adjustment Request are synchronous processes.

The following diagram provides a visual representation of these processes:

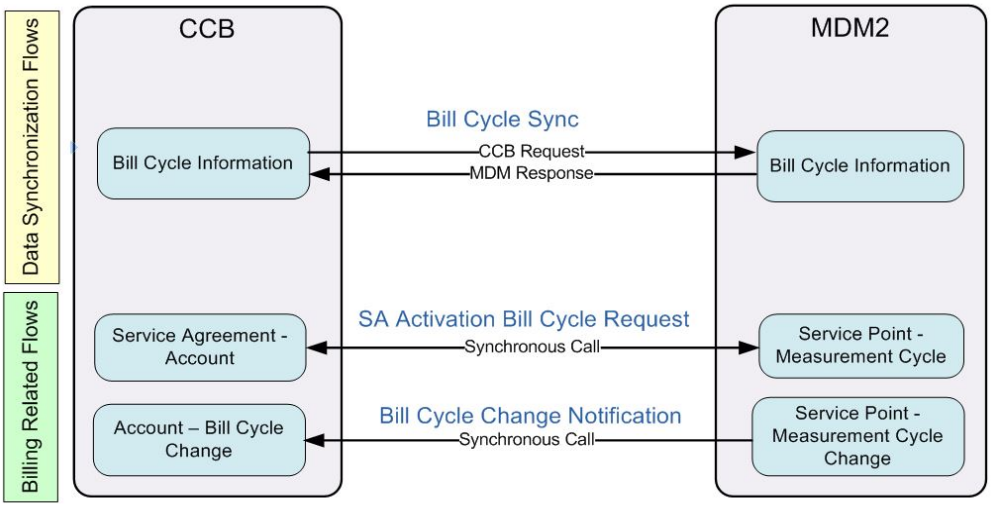


CCB-MDM Integration Points

Bill Cycle Sync Processes

- Bill Cycle Information Synchronization
- SA Activation Bill Cycle Request
- Bill Cycle Change Notification

The following diagram provides a visual representation of the new processes added to support Bill Cycle Maintenance Related Processes:



Processing Details

The following processing details apply:

1. Oracle Utilities Customer Care and Billing sends person, service point (SP), service agreement (SA), service agreement relationships, contract option and contract option events to Oracle Utilities Meter Data Management.

   Meter, meter configuration, SP-Meter history data could also be sent, depending where this information is maintained.

   The meter, meter configuration, and SP-meter history data sync functionality is not intended for service points with field work integration to Oracle Utilities Service Order Management.

   Notes:

   - The Contract Option and Contract Option Event Sync functionality is only available with the integration of Oracle Utilities Customer Care and Billing 2.5.0.2+ and Oracle Utilities Meter Data Management 2.1.0.3+.
   - The Service Agreement Relationship Sync functionality is only available with Oracle Utilities Customer Care and Billing 2.6.0.1.0+ and Oracle Utilities Meter Data Management 2.2.0.2.0+.

2. When service points are managed by Service Order Management (SOM), Oracle Utilities Customer Care and Billing synchronize Bill Cycle Schedule information to Oracle Utilities Meter Data Management to establish the Bill Cycle and Measurement Cycle relationship to determine the Bill Cycle of a Service Point. During SA Activation, Oracle Utilities Customer Care and Billing calls Oracle Utilities Meter Data Management to obtain the Bill Cycle linked to the service point related to the service agreement. Also, notifications are sent to Oracle Utilities Customer Care and Billing whenever there is a change in the bill cycle relationship in Oracle Utilities Meter Data Management.

3. Oracle Utilities Customer Care and Billing sends Scalar Meter Reads to Oracle Utilities Meter Data Management.
4. Oracle Utilities Meter Data Management processes the usage measurements coming in from meter devices.
5. Oracle Utilities Customer Care and Billing then sends online or batch billing determinants requests to Oracle Utilities Meter Data Management at the time of billing.
6. Oracle Utilities Meter Data Management responds by sending back the billing determinants as requested from the billing system. Interval data can also be sent back as part of the response.

   Note: Passing of Interval usage data from Oracle Utilities Meter Data Management to Oracle Utilities Customer Care and Billing is only available with the integration of Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management and is recommended only with the new rating engine in Oracle Utilities Customer Care and Billing version 2.4+ when interval prices need to be applied as part of the rate calculations or full interval data needs to be displayed on a bill print.
7. If there is any change to the billing determinants in Oracle Utilities Meter Data Management for a meter for which billing determinants have already been sent to Oracle Utilities Customer Care and Billing, then Oracle Utilities Meter Data Management sends a replacement read notification to Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing then creates an off cycle bill generation to inform the user.
8. For retrieving the Estimated and High-Low Boundaries for a Register, Oracle Utilities Customer Care and Billing sends a request to Oracle Utilities Meter Data Management.
9. When doing rate check on SA that requires bill determinants from the Oracle Utilities Customer Care and Billing Rate Check Page, Oracle Utilities Customer Care and Billing sends a synchronous call to Oracle Utilities Meter Data Management to get the usage information back.

   When Oracle Utilities Customer Self Service is also installed, customers who are logged in can view their unbilled charges-to-date and can also compare the difference to their bill if they should choose to transfer to a different rate plan.
10. When a usage transaction is used in billing, Oracle Utilities Customer Care and Billing sends an outbound message to Oracle Utilities Meter Data Management if any of the following actions occur:
    - A bill is completed. (Usage request is sent with an indicator that it is used on bill.)
    - A bill segment is frozen. (Usage request is sent with an indicator that it is used on bill.)
    - A bill segment is canceled. (Usage request is sent with an indicator that it is not used on bill.)

    Note: This functionality is only available with the integration of Oracle Utilities Customer Care and Billing 2.6.0.1.0+ and Oracle Utilities Meter Data Management 2.2.0.2.0+. For implementations upgrading to these versions, a batch process is provided to do a one-time sync of historical

usage transactions in Oracle Utilities Meter Data Management with corresponding usages in Oracle Utilities Customer Care and Billing. Refer to the Update Usage Information (C1-UMUI) batch control in Oracle Utilities Customer Care and Billing for more details.

Chapter 2

Understanding the Integration

This chapter outlines the overall technical overview, business processes, and specific integration points handled by the integration.

Technical Overview

This is a direct integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management.

This section provides technical information about the integration that uses the following types of end-to-end integration processes:

- Asynchronous Processes
- Synchronous Processes
- JMS Wrapper Services For Async Processes

Asynchronous Processes

Most of the end-to-end integration processes are asynchronous. These integration processes receive messages from JMS queues and send messages to JMS queues. Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management have the ability to read messages from JMS queues, and then write the processed messages to JMS queues.

The following end-to-end integration processes are asynchronous:

- Person Information Sync Integration
- SP Information Sync Integration
- SA Information Sync Integration
- SA Relationship Synchronization
- Meter Information Sync Integration
- Meter Configuration Information Sync Integration
- SP-Meter History Information Sync Integration
- Scalar Meter Read Sync Integration
- Dynamic Option Synchronization
- Dynamic Option Event Synchronization
- Batch Bill Determinant Integration
- Online Bill Determinant Integration
- Replacement Reads Integration
- Bill Cycle Synchronization

WebLogic JMS is used as a queuing mechanism in the integration layer. For each integration process there are 8 JMS queues with the exception of the replacement reads process which does not have a response process.

	Queue	Description
1.	Source application request queue	Source application adds messages to this queue, which is then picked up by the integration layer for transformation.

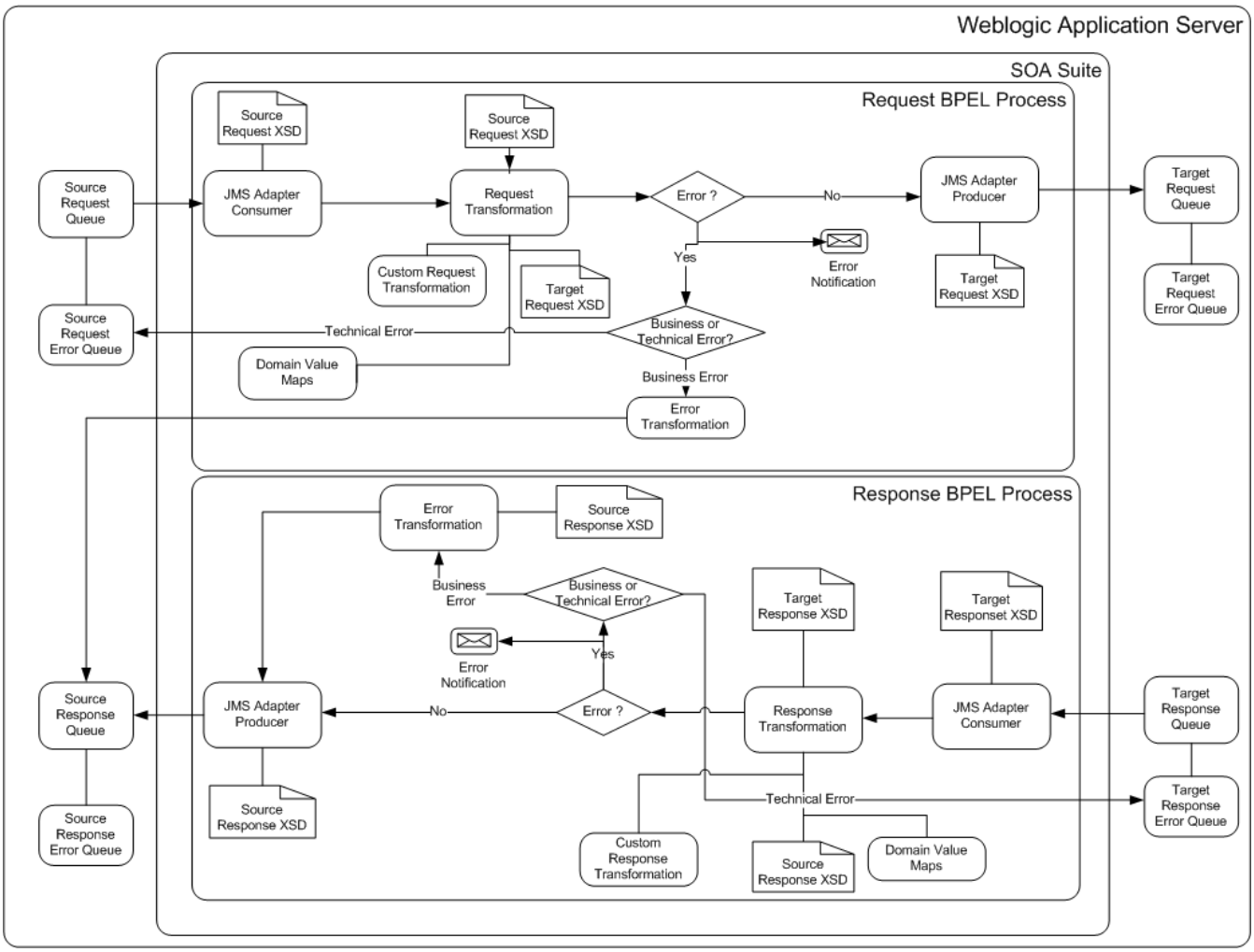
2.	Source application response queue	Business errors in the integration and success or failure acknowledgments from the target application are transformed by the integration and written to this queue The source application will read the message and process it.
3.	Source application request error queue	The corresponding error queue of the source application request queue where the request messages are moved when the target application request queue is unreachable after a set number of retries has been reached or when integration encounters a technical error.
4.	Source application response error queue	The corresponding error queue of the source application response queue where the response messages are moved when the source application rollsback the message when it encounters a technical error or fault.
5.	Target application request queue	Integration reads messages from the source application request queue, transforms them, and writes them to this queue. The target application will read the message and process it.
6.	Target application response queue	Success or failure acknowledgments from the target application are written to this queue and are read by the integration.
7.	Target application request error queue	The corresponding error queue of the target application request queue where the request messages are moved when the target application rollback back the message when it encounters a technical error or fault.
8.	Target application response error queue	The corresponding error queue of the target application response queue where the response messages are moved when the source application response queue is unreachable after a set number of retries has been reached or when integration encounters a technical error.

- Two BPEL processes manage each integration process: one for the request processing and one for the response processing.
- The Request BPEL process includes the following:
  - JMS Consumer to read from source request queue
  - JMS Producer to write to the target request queue
  - Transformations to convert messages from source format to target format. DVMs are used for the data transformation.
  - Error handling and optional error notification when configured
- The Response BPEL process includes the following:
  - JMS Consumer to read from the target response queue
  - JMS Producer to write to the source response queue

    - Acknowledgement transformations to convert messages from the target format to the source format. DVMs are used for the data transformation.
    - Error handling and optional error notification when configured
- The JMS consumer and BPEL process is configured to participate in a global transaction, so that BPEL process can issue rollback and commits on the queue. The BPEL process issues rollbacks on the queue in the scenario where it is not able to reach the target queue and the message is moved to the corresponding error queue.
- All technical errors encountered in the integration layer will issue a rollback and move the messages to the corresponding error queue of the queue from which the message has been consumed.

Note: Whether Oracle Utilities Customer Care and Billing or Oracle Utilities Meter Data Management is the source or target application or vice versa, these edge applications need to setup their JMS and MDB configurations to send and receive messages to and from the queues. Refer to Chapter 3: Configuration Guidelines for Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management - Inbound Message Configuration and Outbound Message Configuration.

The following diagram provides a graphical representation of this processing:



Asynchronous Process

Synchronous Processes

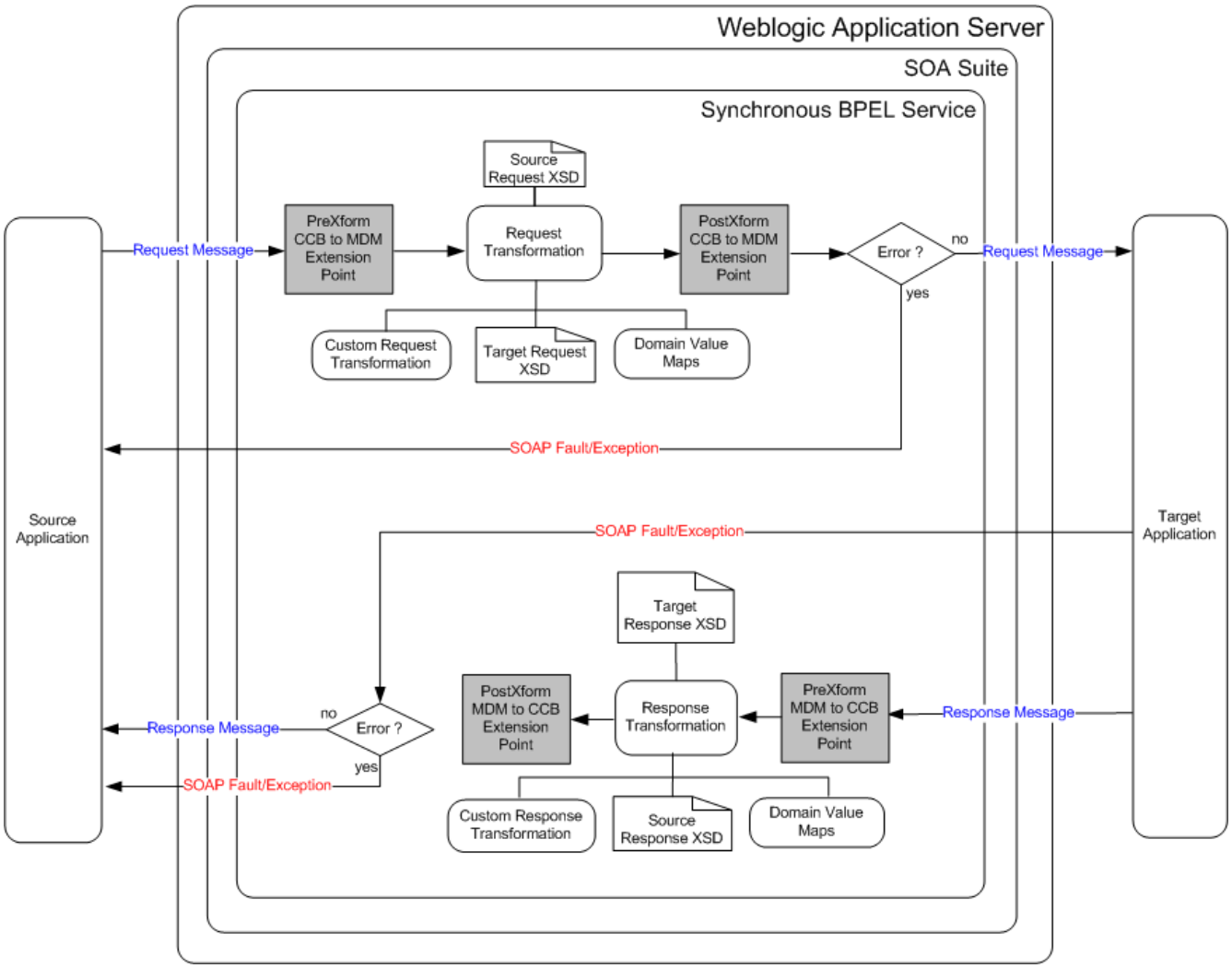
Some of the end-to-end integration processes are synchronous. These integration processes are exposed as a web service and receive the request and send the response back to the caller. The following end-to-end integration processes are synchronous:

- Get Register Read High-Low Boundaries
- Get Usage Request
- Usage Adjustment Request
- SA Activation Bill Cycle Request
- Bill Cycle Change Notification
- Usage Transaction Info Update

  One BPEL process manages each integration process and the BPEL process is exposed as a web service.

- The BPEL Process handles the following:
  - Transformations to convert messages from source format to target format. DVMs are sometimes used for the data transformation.
    - Transforms the request message coming from the source application (Oracle Utilities Customer Care and Billing) to the target application's (Oracle Utilities Meter Data Management) format.
    - Transforms the response message coming from the target application (Oracle Utilities Meter Data Management) to the source application's (Oracle Utilities Customer Care and Billing) format
  - Invokes Oracle Utilities Meter Data Management service synchronously to pass the formatted request message.
  - Receives the response message coming from the target application (Oracle Utilities Meter Data Management)
  - Message extensions:
    - If the extension point flag (*Extension.PreXformCCB2toMDM2)* is enabled, it will invoke the PreXform CCB to MDM Custom Extension Service.
    - If the extension point flag (*Extension.PostXformCCB2toMDM2)* is enabled, it will invoke the PostXform CCB to MDM Custom Extension Service.
    - If the extension point flag (*Extension.PreXformMDM2toCCB2)* is enabled, it will invoke the PreXform MDM to CCB Custom Extension Service.
    - If the extension point flag (*Extension.PostXformMDM2toCCB2)* is enabled, it will invoke the PostXform MDM to CCB Custom Extension Service.
    - The extension point flags are defaulted from the Configuration properties file.
    - Custom extension xsl templates are also provided for additional mapping.
  - Any exception encountered by the integration will send back a SOAP Fault to Oracle Utilities Customer Care and Billing. This includes technical errors (such as connectivity errors) and transformation errors.
  - Any exception or faults that the integration receives from Oracle Utilities Meter Data Management is sent back to Oracle Utilities Customer Care and Billing.

The following diagram provides a graphical representation of this processing:



Synchronous Process

JMS Wrapper Services For Async Processes

The JMS Wrapper processes interact with the edge applications through web services.

There are two types of JMS Wrapper processes:

- The JMS Write Process

  This process is exposed as a web service, so the edge applications can communicate with the corresponding asynchronous integration process through webservice calls and do not need to access the queues directly. These are referred to as the JMS Wrapper services.

  The edge applications send their messages by invoking the Integration Point's JMS Write process which will receive the message and write it to the source queue or target response queue.

- The JMS Read process

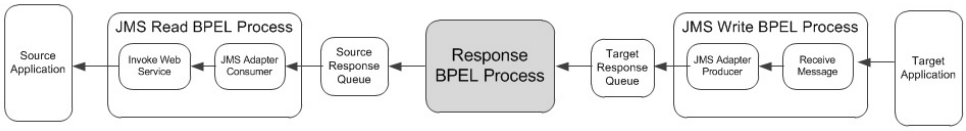
  This process consumes the message from the queue and invokes the edge application's webservice to send the message to the application.

  The Integration Point's JMS Read process consumes the message from the target request queue or source response queue and sends it to the corresponding application by invoking the application's webservice.

The main asynchronous integration processes should still work as is. The only change here is how the messages are written and consumed by the edge applications.

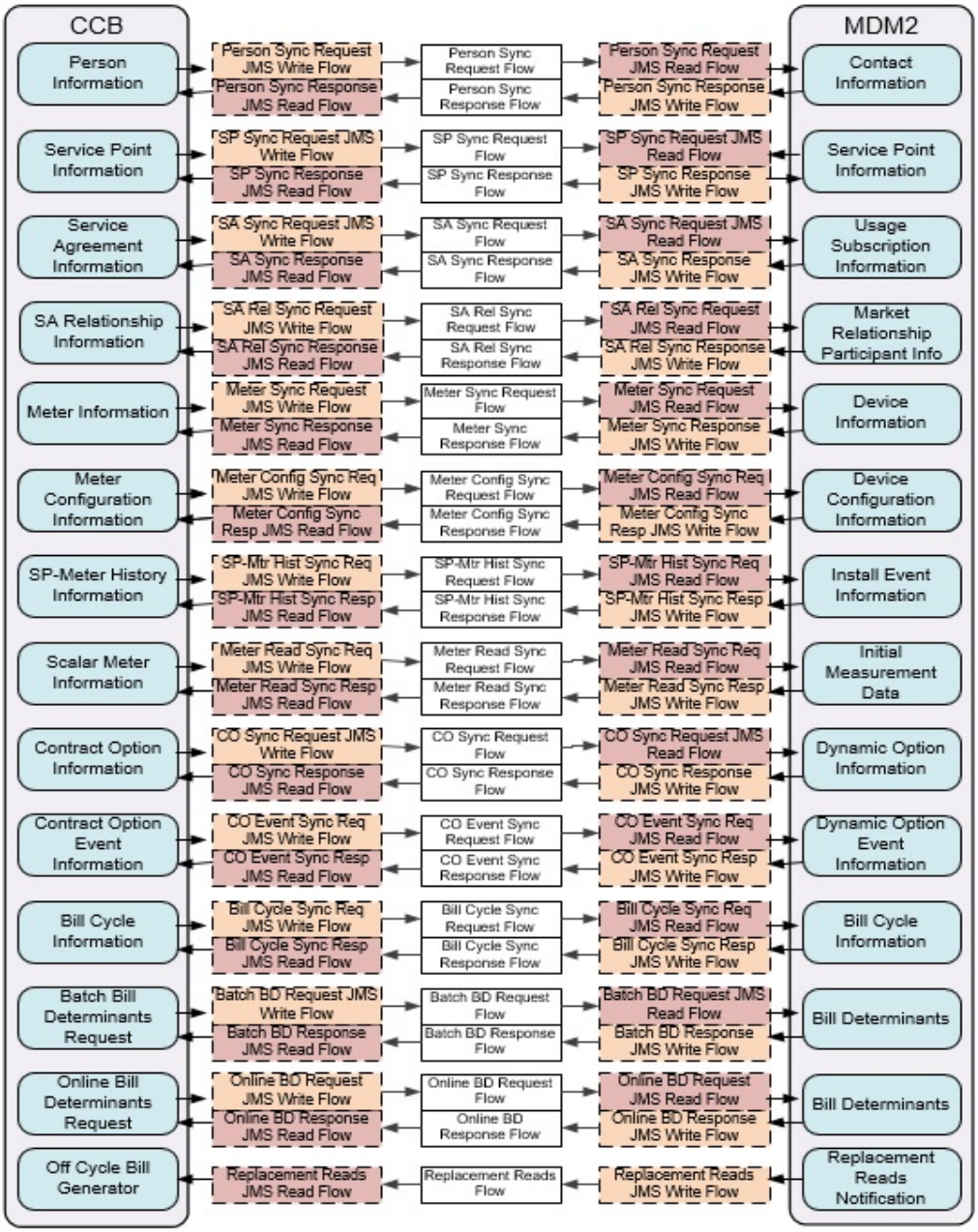
When integrating with Oracle Utilities Customer Cloud Service (OUCCS) and Oracle Utilities Meter Solution Cloud Service (OUMSCS), the JMS wrapper processes should always be used to access the asynchronous processes.

The following diagrams provide a graphical representation of the end to end processing:



Note: These JMS Wrapper processes are only available if CCB-MDM Patch 26532407 is installed.

The following diagram provides a visual representation of the JMS wrappers for asynchronous processes:



End-to-end flow using JMS Wrapper Processes

Integration Points

The integration supports the following business processes:

- Master Data Synchronization Process
- Billing Related Processes
- Customer Self Service Related Processes

Master Data Synchronization Process

Customer, Service Point, Service Agreement, Service Agreement Relationship, and sometimes meter related data are synchronized from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management System.

Oracle Utilities Customer Care and Billing uses the sync request process to capture data changes and communicate or synchronize the data changes to Oracle Utilities Meter Data Management System by sending out a sync request message to the integration layer.

The sync request process is implemented using business object technology, therefore, much of the business rules and processing logic are defined in the algorithms associated to the business objects used by the sync process.

The Audit plug-in spot defined on the entity's maintenance object is used to detect changes in data and to create sync requests.

The sync request life cycle captures the change in data, sends sync request message to the integration and awaits an acknowledgment back from the external system – whether positive or negative. Timeouts and negative acknowledgments received from the external system results in the sync request being transitioned to the Error state. As an option, implementation may choose to create a To Do entry in this case.

There is a portal used for searching and viewing sync requests. An alert also appears on the Oracle Utilities Customer Care and Billing alerts dashboard zone when a sync request exists related to the account or premise in context.

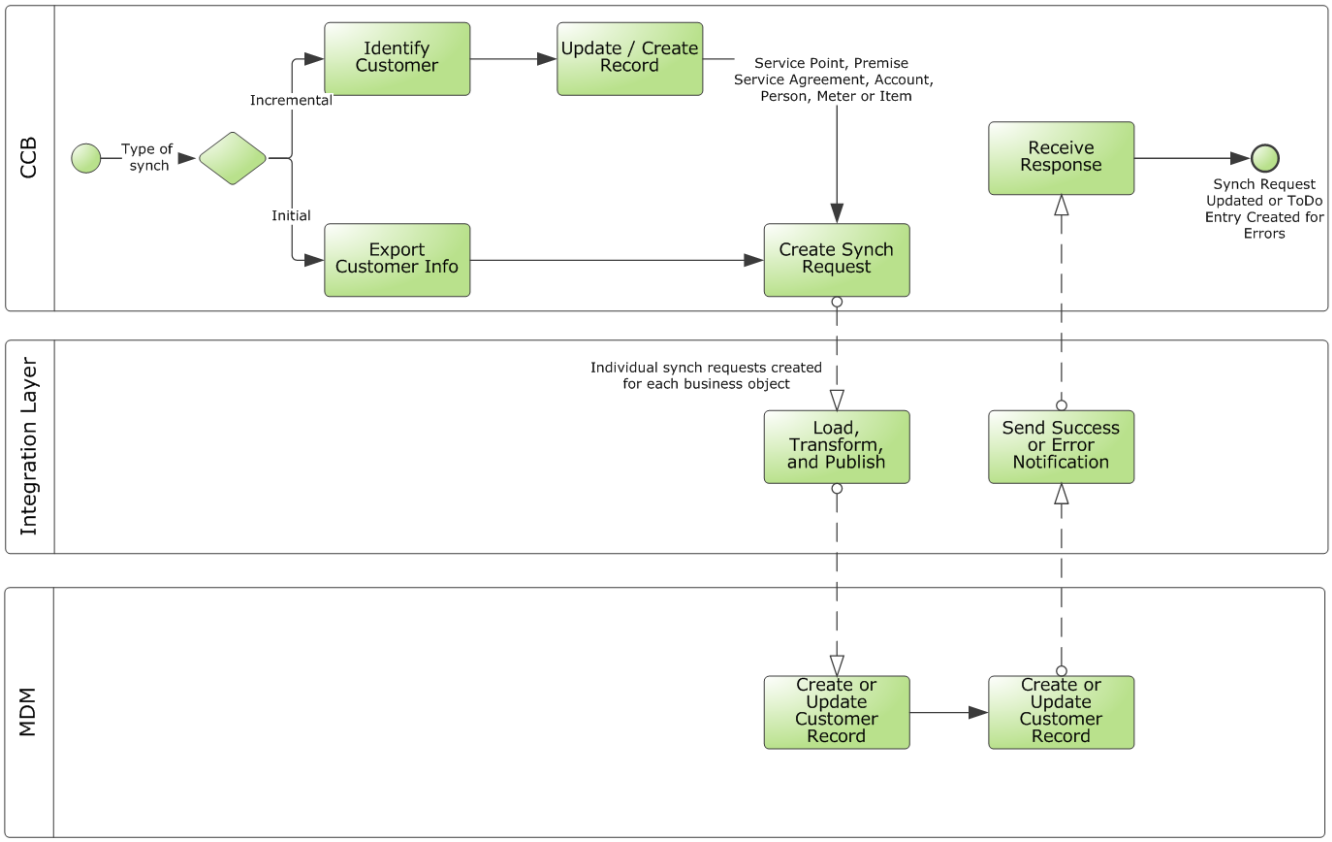
In order to submit the data synchronization batch process in Oracle Utilities Customer Care and Billing, navigate to Batch Job Submission screen and run batch F1-SYNRQ.

> **For more information** on how Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management handle data synchronization, refer to the respective documentation.

The Master Data Synchronization Process incorporates the following integration points:

- Person Information Sync Integration Process
- SP Information Sync Integration Process
- SA Information Sync Integration Process
- SA Relationship Synchronization
- Meter Information Sync Integration Process
- Meter Configuration Information Sync Integration Process
- SP-Meter History Information Sync Integration Process
- Scalar Meter Read Sync Integration Process
- Dynamic Option Sync Integration Process
- Dynamic Option Events Sync Integration Process
- Bill Cycle Synchronization Integration Process

The following process diagram shows a graphical representation of the master data synchronization process:



Master Data Synchronization Process

Person Information Synchronization Integration Process

Person Sync process synchronizes minimal person details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the person information in the form of XML messages. These messages are transformed by the integration layer, and then sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment to the integration, so that it can be transformed and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Person Information Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2PersonSyncReqEBF	Person Sync Request BPEL Process
OUMDM2OUCCB2PersonSyncRespEBF	Person Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2PersonSyncRequest	Oracle Utilities Customer Care and Billing Person Sync Request Queue used by the integration layer to read incoming Person Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2PersonSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Person Sync Request
OUCCB2PersonSyncResponse	Oracle Utilities Customer Care and Billing Person Sync Response Queue used by the integration layer to add transformed Person Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are also sent to this queue.
OUCCB2PersonSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing Person Sync Response
OUMDM2PersonSyncRequest	Oracle Utilities Meter Data Management Person Sync Request Queue used by the integration to add transformed Person Sync request messages.
OUMDM2PersonSyncRequestError	Error Queue for Oracle Utilities Meter Data Management Person Sync Request
OUMDM2PersonSyncResponse	Oracle Utilities Meter Data Management Person Sync Response Queue used by the integration to read incoming Person Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2PersonSyncResponse Error	Error Queue for Oracle Utilities Meter Data Management Person Sync Response

SP Information Synchronization Integration Process

SP Sync process synchronizes minimal SP and premise details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the SP information in the form of XML messages. These messages are transformed by the integration layer, and then sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends

an acknowledgment to the integration, so that it can be transformed and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for SP Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2SPSyncReqEBF	SP Sync Request BPEL Process
OUMDM2OUCCB2SPSyncRespEBF	SP Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2SPSyncRequest	Oracle Utilities Customer Care and Billing SP Sync Request Used by the integration layer to read incoming SP Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2SPSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing SP Sync Request
OUCCB2SPSyncResponse	Oracle Utilities Customer Care and Billing SP Sync Response Used by the integration layer to add transformed SP Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2SPSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing SP Sync Response
OUMDM2SPSyncRequest	Oracle Utilities Meter Data Management SP Sync Request Used by the integration layer to add transformed SP Sync request messages.
OUMDM2SPSyncRequestError	Error Queue for Oracle Utilities Meter Data Management SP Sync Request
OUMDM2SPSyncResponse	Oracle Utilities Meter Data Management SP Sync Response Queue used by the integration layer to read incoming SP Sync response messages from Oracle
OUMDM2SPSyncResponseError	Error Queue for Oracle Utilities Meter Data Management SP Sync Response

SA Information Synchronization Integration Process

SA Sync process synchronizes minimal service agreement, Account, and service agreement to service point relationship details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the service agreement information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for SA Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2SASyncReqEBF	SA Sync Request BPEL Process
OUMDM2OUCCB2SASyncRespEBF	SA Sync Response BPEL Process

JMS Queues

Queue Name	**Description**
OUCCB2SASyncRequest	Oracle Utilities Customer Care and Billing SA Sync Request Queue used by the integration layer to read incoming SA Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2SASyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing SA Sync Request
OUCCB2SASyncResponse	Oracle Utilities Customer Care and Billing SA Sync Response Queue used by the integration layer to add transformed SA Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2SASyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing SA Sync Response.
OUMDM2SASyncRequest	Oracle Utilities Meter Data Management SA Sync Request Queue used by the integration layer to add transformed SA Sync request messages.
OUMDM2SASyncRequestError	Error Queue for Oracle Utilities Meter Data Management SA Sync Request
OUMDM2SASyncResponse	Oracle Utilities Meter Data Management SA Sync Response Queue used by the integration layer to read incoming SA Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2SASyncResponseError	Error Queue for Oracle Utilities Meter Data Management SA Sync Response

SA Relationship Synchronization Integration Process

SA Relationship Sync process synchronizes service agreement relationship details from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management.

Technical Details

Oracle Utilities Customer Care and Billing sends the service agreement relationship information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for SA Relationship Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2SARelationshipSyncReq EBF	SA Relationship Sync Request BPEL Process
OUMDM2OUCCB2SARelationshipSyncResp EBF	SA Relationship Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2SARelationshipSync Request	Oracle Utilities Customer Care and Billing SA Relationship Sync Request Queue used by the integration layer to read incoming SA Relationship Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2SARelationshipSync RequestError	Error Queue for Oracle Utilities Customer Care and Billing SA Relationship Sync Request
OUCCB2SARelationshipSync Response	Oracle Utilities Customer Care and Billing SA Relationship Sync Response Queue used by the integration layer to add transformed SA Relationship Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2SARelationshipSync ResponseError	Error Queue for Oracle Utilities Customer Care and Billing SA Relationship Sync Response
OUMDM2SARelationshipSync Request	Oracle Utilities Meter Data Management SA Relationship Sync Request Queue used by the integration layer to add transformed SA Relationship Sync request messages.
OUMDM2SARelationshipSync RequestError	Error Queue for Oracle Utilities Meter Data Management SA Relationship Sync Request
OUMDM2SARelationshipSync Response	Oracle Utilities Meter Data Management SA Relationship Sync Response Queue used by the integration layer to read incoming SA Relationship Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2SARelationshipSync ResponseError	Error Queue for Oracle Utilities Meter Data Management SA Relationship Sync Response

Meter Information Synchronization Integration Process

Meter Sync process synchronizes minimal meter details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the meter information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Meter Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2MeterSyncReqEBF	Meter Sync Request BPEL Process
OUMDM2OUCCB2MeterSyncRespEBF	Meter Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2MeterSyncRequest	Oracle Utilities Customer Care and Billing Meter Sync Request Queue used by the integration layer to read inconing Meter Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2MeterSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Meter Sync Request
OUCCB2MeterSyncResponse	Oracle Utilities Customer Care and Billing Meter Sync Response Queue used by the integration layer to add transformed Meter Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, is sent to this queue.
OUCCB2MeterSyncResponse Error	Error Queue for Oracle Utilities Customer Care and Billing Meter Sync Response
OUMDM2MeterSyncRequest	Oracle Utilities Meter Data Management Meter Sync Request Queue used by the integration to add transformed Meter Sync request messages.
OUMDM2MeterSyncRequest Error	Error Queue for Oracle Utilities Meter Data Management Meter Sync Request
OUMDM2MeterSyncResponse	Oracle Utilities Meter Data Management Meter Sync Response Queue used by the integration to read incoming Meter Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2MeterSyncResponse	Error Queue for Oracle Utilities Meter Data Management Management Meter Sync Response Error

Meter Configuration Information Synchronization Integration Process

Meter Configuration Sync process synchronizes the minimal Meter Configuration details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the Meter Configuration information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Meter Configuration Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2MeterConfigSyncReqEBF	Meter Configuration Sync Request BPEL Process
OUMDM2OUCCB2MeterConfigSyncRespEBF	Meter Configuration Sync Response BPEL Process

JMS Queues

Queue Name	**Description**
OUCCB2MeterConfigSyncRequest	Oracle Utilities Customer Care and Billing Meter Configuration Sync Request Queue used by the integration layer to read incoming Meter configuration Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2MeterConfigSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Meter Configuration Sync Request
OUCCB2MeterConfigSyncResponse	Oracle Utilities Customer Care and Billing Meter Configuration Sync Response Queue used by the integration layer to add transformed Meter Configuration Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, is sent to this queue.
OUCCB2MeterConfigSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing Meter Configuration Sync Response
OUMDM2MeterConfigSyncRequest	Oracle Utilities Meter Data Management Meter Configuration Sync Request Queue used by the integration to add transformed Meter Configuration Sync request messages.

Queue Name	Description
OUMDM2MeterConfigSyncRequestError	Error Queue for Oracle Utilities Meter Data Management Meter Configuration Sync Request
OUMDM2MeterConfigSyncResponse	Oracle Utilities Meter Data Management Meter configuration Sync Response Queue used by the integration to read incoming Meter Configuration Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2MeterConfigSyncResponseError	Error Queue for Oracle Utilities Meter Data Management Meter Configuration Sync Response

SP-Meter History Information Synchronization Integration Process

SP-Meter History Sync process synchronizes the minimum SP-Meter history details required by Oracle Utilities Meter Data Management from Oracle Utilities Customer Care and Billing.

Technical Details

Oracle Utilities Customer Care and Billing sends the SP-Meter information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and then sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for SP-Meter History Sync include:

Composites

Composite Name	Description
OUCCB2OUMDM2SPMeterHistSyncReqEBF	SP Meter History Sync Request BPEL Process
OUMDM2OUCCB2SPMeterHistSyncRespEBF	SP Meter History Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2SPMeterHistSyncRequest	Oracle Utilities Customer Care and Billing SP Meter History Sync Request used by the integration layer to read incoming SP Meter History Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2SPMeterHistSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing SP Meter History Sync Request

Queue Name	Description
OUCCB2SPMeterHistSyncResponse	Oracle Utilities Customer Care and Billing SP Meter History Sync Response used by the integration layer to add transformed SP Meter History Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, is sent to this queue.
OUCCB2SPMeterHistSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing SP Meter History Sync Response
OUMDM2SPMeterHistSyncRequest	Oracle Utilities Meter Data Management SP Meter History Sync Request used by the Integration to add transformed SP Meter History Sync request messages.
OUMDM2SPMeterHistSyncRequestError	Error Queue for Oracle Utilities Meter Data Management SP Meter History Sync Request
OUMDM2SPMeterHistSyncResponse	Oracle Utilities Meter Data Management SP Meter History Sync Response used by the integration to read incoming SP Meter History Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2SPMeterHistSyncResponseError	Error Queue for Oracle Utilities Meter Data Management SP Meter History Sync Response

Scalar Meter Read Sync Integration Process

Scalar Meter Read Sync process synchronizes the scalar meter reads from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management.

Technical Details

Oracle Utilities Customer Care and Billing sends the scalar meter reads information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgement which is transformed in the integration layer and then sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Scalar Meter Read Sync include:

Composites

Composite Name	**Description**
OUCCB2OUMDM2MeterReadSyncReqEBF	Scalar Meter Read Sync Request BPEL Process
OUMDM2OUCCB2MeterReadSyncRespEBF	Scalar Meter Read Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2SPMeterReadSyncRequest	Oracle Utilities Customer Care and Billing Scalar Meter Read Sync Request Queue used by the integration layer to read incoming Scalar Meter Read messages from Oracle Utilities Customer Care and Billing.
OUCCB2SPMeterReadSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Scalar Meter Read Sync Request
OUCCB2SPMeterReadSyncResponse	Oracle Utilities Customer Care and Billing Scalar Meter Read Sync Response Queue used by the integration layer to add transformed Scalar Meter Read Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, is sent to this queue.
OUCCB2SPMeterReadSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing Scalar Meter Read Sync Response
OUMDM2SPMeterReadSyncRequest	Oracle Utilities Meter Data Management Scalar Meter Read Sync Request Queue used by the integration to add transformed Scalar Meter Read request messages.
OUMDM2SPMeterReadSyncRequestError	Error Queue for Oracle Utilities Meter Data Management Scalar Meter Read Sync Request
OUMDM2SPMeterReadSyncResponse	Oracle Utilities Meter Data Management Scalar Meter Read Response Queue used by the integration to read incoming Scalar Meter Read response messages from Oracle Utilities Meter Data Management.
OUMDM2SPMeterReadSyncResponseError	Error Queue for Oracle Utilities Meter Data Management Scalar Meter Read Sync Response

Contract Option/Dynamic Option Synchronization Integration Process

The Dynamic Option Sync process synchronizes the contract option from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management.

Technical Details

Oracle Utilities Customer Care and Billing sends the contract option information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and then sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Dynamic Option Synchronization include:

Composites

Composite Name	Description
OUCCB2OUMDM2DynamicOptSyncReqEBF	Dynamic Options Request BPEL Process
OUMDM2OUCCB2DynamicOptSyncRespEBF	Dynamic Options Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2DynamicOptSyncRequest	Oracle Utilities Customer Care and Billing Dynamic Option Request Queue used by the integration layer to read incoming Dynamic Option messages from Oracle Utilities Customer Care and Billing.
OUCCB2DynamicOptSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Dynamic Option Request
OUCCB2DynamicOptSyncResponse	Oracle Utilities Customer Care and Billing Dynamic Option Response Queue used by the integration layer to add incoming transformed Dynamic Option response messages coming from Oracle Utilities Meter Data Management. Integration business errors, if any, are also added to this queue.
OUCCB2DynamicOptSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing Dynamic Options Response
OUMDM2DynamicOptSyncRequest	Oracle Utilities Meter Data Management Dynamic Options Request Queue used by the integration to add transformed Dynamic Options request messages.
OUMDM2DynamicOptSyncRequestError	Error Queue for Oracle Utilities Meter Data Management Dynamic Options Request
OUMDM2DynamicOptSyncResponse	Oracle Utilities Meter Data Management Dynamic Options Response Queue used by the integration layer to read incoming Dynamic Options response messages from Oracle Utilities Meter Data Management.
OUMDM2DynamicOptSyncResponseError	Error Queue for Oracle Utilities Meter Data Management Dynamic Options Response

Contract Option Event /Dynamic Option Event Synchronization Integration Process

The Dynamic Option Event Sync process synchronizes the contract option events from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management.

Technical Details

Oracle Utilities Customer Care and Billing sends the contract option event information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends an acknowledgment which is transformed in the integration layer and then sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Dynamic Option Event Sync include:

Composites

Composite Name	Description
OUCCB2OUMDM2DynamicOptEvtSyncReqEBF	Dynamic Options Event Request BPEL Process
OUMDM2OUCCB2DynamicOptEvtSyncRespEBF	Dynamic Options Event Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2DynamicOptEvtSyncRequest	Oracle Utilities Customer Care and Billing Dynamic Options Event Request Queue used by the integration layer to read incoming Dynamic Options Event messages from Oracle Utilities Customer Care and Billing.
OUCCB2DynamicOptEvtSyncRequestError	Error Queue for Oracle Utilities Customer Care and Billing Dynamic Options Event Request
OUCCB2DynamicOptEvtSyncResponse	Oracle Utilities Customer Care and Billing Dynamic Options Event Response Queue used by the integration layer to add transformed Dynamic Options Event response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2DynamicOptEvtSyncResponseError	Error Queue for Oracle Utilities Customer Care and Billing Dynamic Options Event Response
OUMDM2DynamicOptEvtSyncRequest	Oracle Utilities Meter Data Management Dynamic Options Event Request Queue used by the integration layer to add transformed Dynamic Options Event request messages.
OUMDM2DynamicOptEvtSyncRequestError	Error Queue for Oracle Utilities Meter Data Management Dynamic Options Event Request

Queue Name	Description
OUMDM2DynamicOptEvtSyncResponse	Oracle Utilities Meter Data Management Dynamic Options Event Response Queue used by the integration layer to read incoming Dynamic Options Event response messages from Oracle Utilities Meter Data Management.
OUMDM2DynamicOptevtSyncResponseError	Error Queue for Oracle Utilities Meter Data Management Dynamic Options Event Response Error

Billing Related Processes

Oracle Utilities Customer Care and Billing supports billing for bill determinant oriented service agreements that require usage from Oracle Meter Data Management system.

During billing, bill segments that require usage requests are created in an error state.

These bill segments are generated within the usage request's lifecycle once bill determinants are received from Oracle Meter Data Management.

The create bill segment, using a usage request algorithm retrieves the usage period's list which contains an entry for each usage period that Oracle Meter Data Management calculated bill determinants.

> **Note:** Rate application is called for each entry in the usage period list; the usage period and bill determinants are passed to rate application.

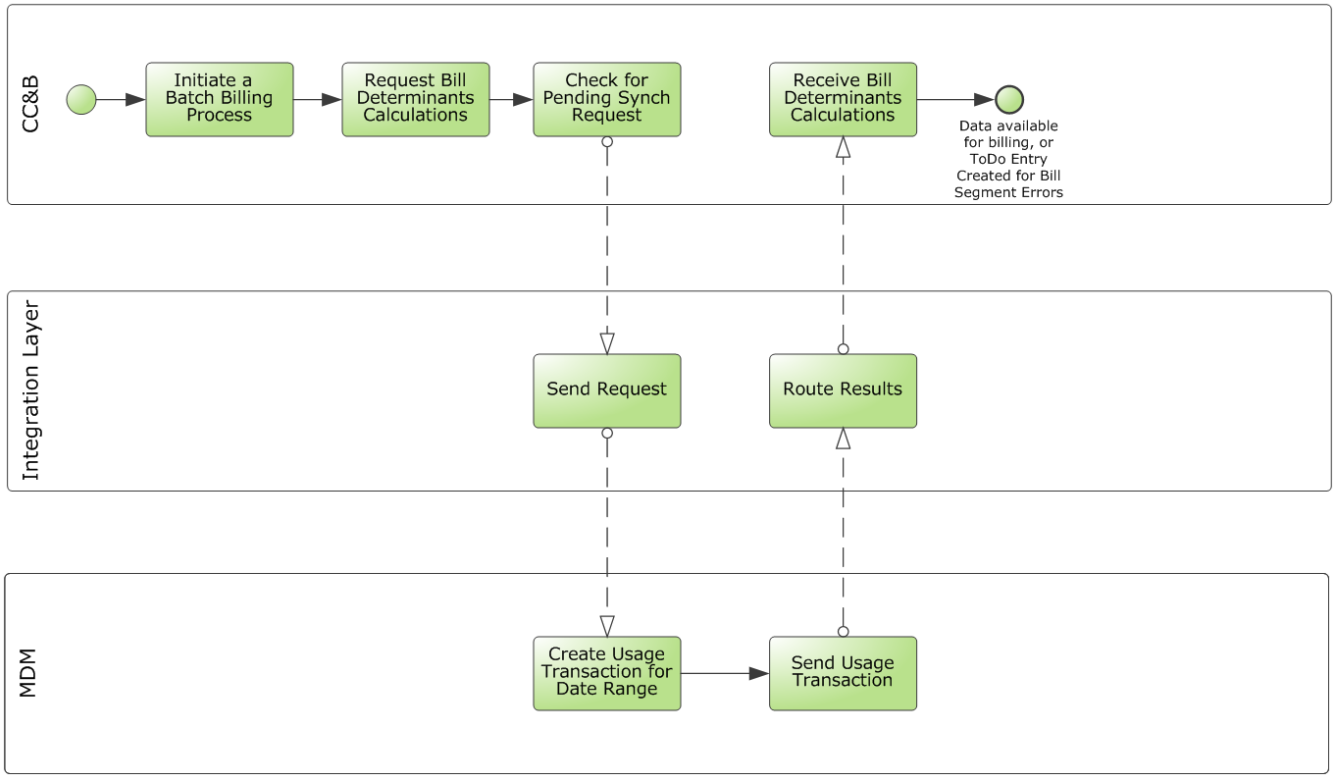
The Billing Related Processes incorporate the following integration points:

- Batch Bill Determinants Integration Process
- Online Bill Determinants Integration Process
- Get Register Read High-Low Boundaries Integration Process
- Get Usage Request Integration Process
- Usage Transaction Info Update Integration Process

Batch Bill Determinants Integration Process

Batch bill determinant requests sent from Oracle Utilities Customer Care and Billing contain the bill segment period, as well as all applicable rate version and service agreement rate schedule change break periods. Oracle Utilities Meter Data Management calculates bill determinants based on the available read data and usage subscription configuration. These Bill determinants are returned to Oracle Utilities Customer Care and Billing and used for billing. Billing Determinants do not replace billing. Instead they are a result of the determinants calculations (list of service quantities) and provide usage information (audit reads) needed to calculate and generate a bill segment.

The following process diagram shows a graphical representation of this processing:



Batch Bill Determinants Integration Process

Technical Details

The batch billing process in Oracle Utilities Customer Care and Billing is running, requesting bill determinant calculations from Oracle Utilities Meter Data Management for multiple bill segments. Oracle Utilities Customer Care and Billing initiates the Batch Billing request and Oracle Utilities Meter Data Management returns Bill determinants to Oracle Utilities Customer Care and Billing per bill segment.

The integration artifacts for Batch Bill Determinants process include:

Composites

Composite Name	Description
OUCC2BOUMDM2BatchBDReqEBF	Batch BD Request BPEL Process
OUMDM2OUCCB2BatchBDRespEBF	Batch BD Response BPEL Process

JMS Queues

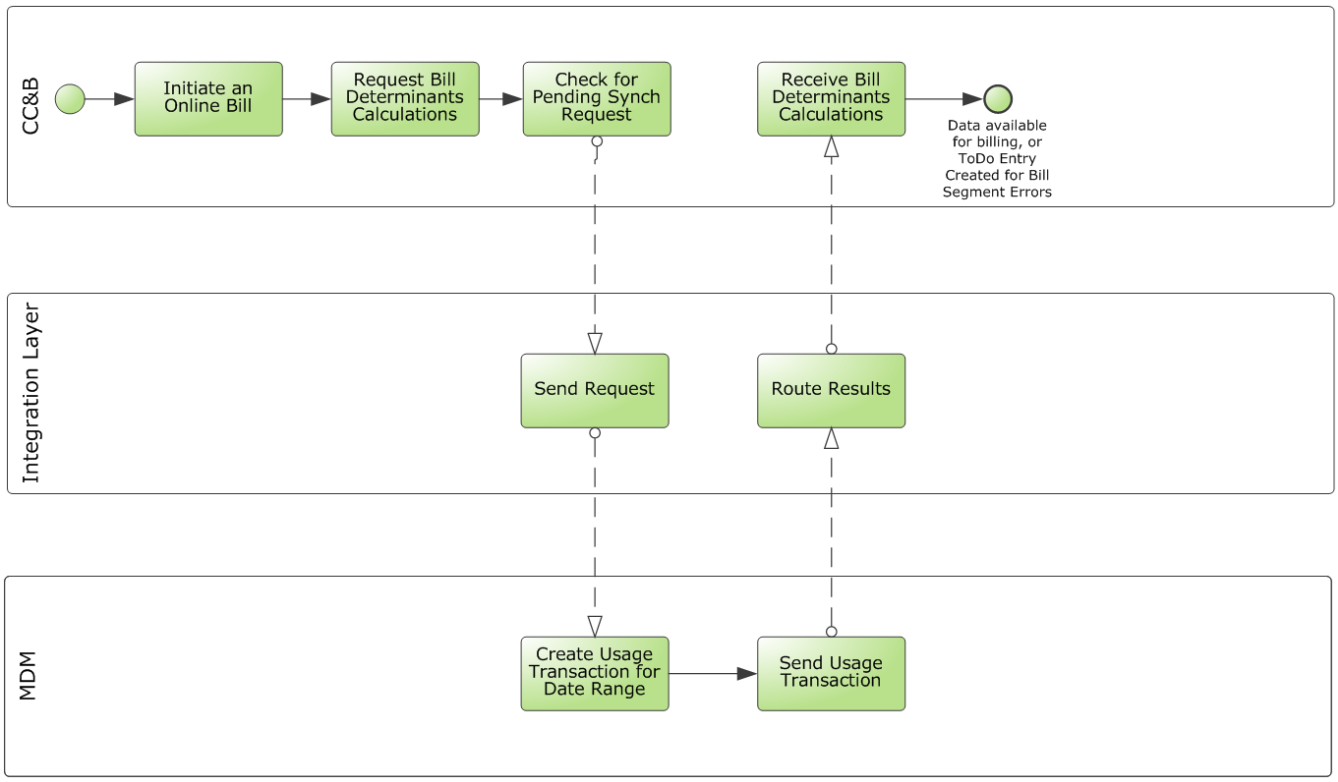
Queue Name	Description
OUCCB2BatchBDRequest	Oracle Utilities Customer Care and Billing Batch BD Request Queue used by the integration layer to read incoming Batch BD messages from Oracle Utilities Customer Care and Billing.
OUCCB2BatchBDRequestError	Error Queue for Oracle Utilities Customer Care and Billing Batch BD Request

Queue Name	Description
OUCCB2BatchBDResponse	Oracle Utilities Customer Care and Billing Batch BD Response Queue used by the integration layer to add Transformed Batch BD response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2BatchBDResponseError	Error Queue for Oracle Utilities Customer Care and Billing Batch BD Response
OUMDM2BatchBDRequest	Oracle Utilities Meter Data Management Batch BD Request Queue used by the integration layer to add transformed Batch BD request messages.
OUMDM2BatchBDRequestError	Error Queue for Oracle Utilities Meter Data Management Batch BD Request
OUMDM2BatchBDResponse	Oracle Utilities Meter Data Management Batch BD Response Queue used by the integration layer to read incoming Batch BD response messages from Oracle Utilities Meter Data Management.
OUMDM2BatchBDResponseError	Error Queue for Oracle Utilities Meter Data Management Batch BD Response

Online Bill Determinants Integration Process

Online bill determinant requests sent from Oracle Utilities Customer Care and Billing contains the bill segment period, as well as all applicable rate version and service agreement rate schedule change break periods. Oracle Utilities Meter Data Management calculates bill determinants based on the available read data and usage subscription configuration. These bill determinants are returned to Oracle Utilities Customer Care and Billing and used for billing. Billing determinants do not replace billing. Instead they calculate the determinants and provide usage information needed to calculate and generate a bill segment.

The following process diagram shows a graphical representation of this processing:



Online Bill Determinants Process

Technical Details

If a user requests an ad-hoc bill determinant calculation in Oracle Utilities Customer Care and Billing for a specific account, then Oracle Utilities Customer Care and Billing initiates the Online Bill request for each bill segment that requires bill determinants, and Oracle Utilities Meter Data Management returns bill determinants for each request. Oracle Utilities Meter Data Management sends out success or failure acknowledgement to the integration layer, so that it can be transformed and sent to Oracle Utilities Customer Care and Billing.

The integration artifacts for Online Bill Determinants process include:

Composites

Composite Name	Description
OUCCB2OUMDM2OnlineBDReqEBF	Online BD Request BPEL Process
OUMDM2OUCCB2OnlineBDRespEBF	Online BD Response BPEL Process

JMS Queues

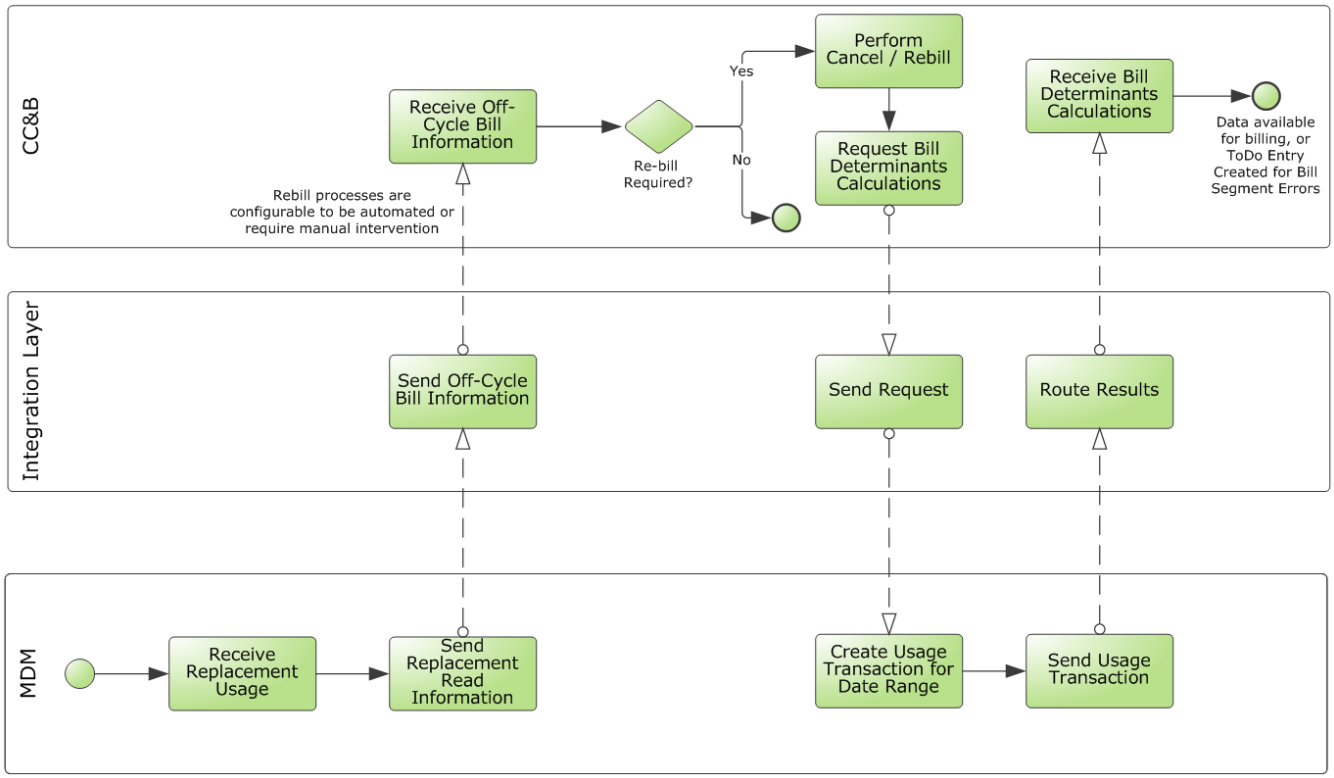
Queue Name	Description
OUCCB2OnlineBDRequest	Oracle Utilities Customer Care and Billing Online BD Request Queue used by the integration layer to read incoming Online BD messages from Oracle Utilities Customer Care and Billing.

Queue Name	Description
OUCCB2OnlineBDRequestError	Error Queue for Oracle Utilities Customer Care and Billing Online BD Request
OUCCB2OnlineBDResponse	Oracle Utilities Customer Care and Billing Online BD Response Queue used by the integration layer to add transformed Online BD response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUCCB2OnlineBDResponseError	Error Queue for Oracle Utilities Customer Care and Billing Online BD Response
OUMDM2OnlineBDRequest	Oracle Utilities Meter Data Management Online BD Request Queue used by the integration layer to add transformed Online BD request messages.
OUMDM2OnlineBDRequestError	Error Queue for Oracle Utilities Meter Data Management Online BD Request
OUMDM2OnlineBDResponse	Oracle Utilities Meter Data Management Online BD Response Queue used by the integration layer to read incoming Online BD response messages from Oracle Utilities Meter Data Management.
OUMDM2OnlineBDResponseError	Error Queue for Oracle Utilities Meter Data Management Online BD Response

Replacement Reads Integration Process

As usage is received into Oracle Utilities Meter Data Management as initial measurements data, it must be validated to determine if the usage constitutes a subsequent correction to usage that was already received and used for bill determinants calculations. If there is a subsequent correction, a replacement reads notification can be sent to Oracle Utilities Customer Care and Billing to indicate that the replacement usage was received. Oracle Utilities Customer Care and Billing creates an off cycle bill generator object and either an automatic rebill or manual rebill (via a To Do entry) can be configured in Oracle Utilities Customer Care and Billing.

The following process diagram shows a graphical representation of this processing:



Replacement Reads Integration Process

Technical Details

Replacement meter reads are created in Oracle Utilities Meter Data Management and notification is sent to Oracle Utilities Customer Care and Billing. Oracle Utilities Customer Care and Billing creates an off cycle bill generator based on the Oracle Utilities Meter Data Management request. Oracle Utilities Customer Care and Billing does not send acknowledgments back to Oracle Utilities Meter Data Management.

The integration artifacts for Replacement Read Notification include:

Composites

Composite Name	Description
OUMDM2OUCCB2ReplReadReqEBF	Replacement Read Request BPEL Process

JMS Queues

Queue Name	Description
OUMDM2ReplReadRequest	Oracle Utilities Customer Care and Billing Replacement Read Request Queue used by the integration layer to read incoming Replacement Read messages from Oracle Utilities Meter Data Management.
OUMDM2ReplReadRequestError	Error Queue for Oracle Utilities Meter Data Management Replacement Read Request
OUMDM2ReplReadResponse	Oracle Utilities Meter Data Management Replacement Read Response Queue used by the integration layer to add transformed Replacement Read response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are sent to this queue.
OUMDM2ReplReadResponseError	Error Queue for Oracle Utilities Meter Data Management Replacement Read Response

Get Register Read High-Low Boundaries Integration Process

If the scalar meter reads are stored in Oracle Utilities Meter Data Management, then Oracle Utilities Customer Care and Billing has no way to calculate the High-Low Register Read Boundary values. Oracle Utilities Customer Care and Billing sends a request to Oracle Utilities Meter Data Management for the High-Low Boundary values.

Technical Details

If the Register Read High-Low Boundary values need to be retrieved as part of any process in Oracle Utilities Customer Care and Billing, the integration is invoked and this sends a request to Oracle Utilities Meter Data Management for the High-Low Boundary values. The response and any errors are returned to Oracle Utilities Customer Care and Billing.

If errors are returned from Oracle Utilities Meter Data Management, the integration invokes the Error Handling process. Oracle Utilities Customer Care and Billing reports

the error in the logs but the High-Low values are returned as zero and no error is shown in the user interface.

The integration artifacts for this process include:

Composites

Composite Name	Description
OUCCB2OUMDM2HighLowReadReqEBF	Get Register Read High-Low Boundaries BPEL Process

External Webservice Call

Application	Service Name	Description
MDM	D2-DetermineEstimatedAndHighLowScalarReadings	This service determines the estimated and high-low scalar readings.

Get Usage Request Integration Process

This process is a real-time synchronous interface from Oracle Utilities Customer Care and Billing to get usage from Oracle Utilities Meter Data Management to be used for Usage Charges To Date and Rate Analysis functionalities in the Oracle Utilities Customer Self Service application or Customer Care and Billing Rate Check page.

This process is used by the following:

- Oracle Utilities Customer Self Service Rate Compare page and/or the Oracle Utilities Customer Care and Billing Rate Check page:
    - During rate compare, customers have the option to change their current rate or maintain their current rate but change their consumption behavior or change both their current rate and consumption behavior to assess the impact on their energy bill.
    - The option to change the consumption behavior is only available from Oracle Utilities Customer Self Service Rate Compare page.
    - This process is only called by Oracle Utilities Customer Care and Billing if the service agreement used for rate compare has an SA Type of Bill Determinant (BD) Required.
    - When Oracle Utilities Customer Care and Billing does Rate Analysis for a given service agreement, it first determines the most recent 12 months charges for the given service agreement. If the service agreement requires bill determinants from Oracle Utilities Meter Data Management, it sends a real time usage request to Oracle Utilities Meter Data Management to get the usage for the 12 month periods provided for both the base rate schedule and the comparison rate schedule.

      When provided, it will also send the usage adjustment options as part of the request message. These usage adjustment options comes from Oracle Utilities Customer Self Service. The request contains a list of bill segment periods for the given service agreement, base rate schedule and any rate version break periods and another list of bill segment periods for the given

service agreement and the comparison rate schedule and any rate version break periods. Oracle Utilities Meter Data Management calculates bill determinants (usage) based on the available read data and usage subscription configuration. These bill determinants are returned to Oracle Utilities Customer Care and Billing and used for rate calculation.

- Oracle Utilities Customer Self Service Usage Charges To Date
  - When Oracle Utilities Customer Care and Billing calculates the Usage Charges to Date for a specific service agreement or specific account, which can have more than one service agreement, and the service agreement requires bill determinants from Oracle Utilities Meter Data Management, it sends a real time usage request to Oracle Utilities Meter Data Management to get the usage for the period provided for the service agreement. The request can contain a service agreement or a list of service agreements for a given bill segment period. Oracle Utilities Meter Data Management calculates bill determinants (usage) based on the available read data and usage subscription configuration. These bill determinants are returned to Oracle Utilities Customer Care and Billing and used for calculation of usage charges to date.

Technical Details

Oracle Utilities Customer Care and Billing initiates a Usage Request when the Rate Analysis Service or Usage To Date service requires bill determinants. Oracle Utilities Meter Data Management returns bill determinants for each request.

- Oracle Utilities Customer Care and Billing sends the usage request information in the form of xml messages which are transformed by the integration and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management responds back with the usage information which is transformed by the integration and sent back to Oracle Utilities Customer Care and Billing.
- DVMs are used for some of the data transformation. For missing DVM lookup values, where the value coming from an element in the Oracle Utilities Customer Care and Billing message is not found in the DVM table, integration always passes the value as is to Oracle Utilities Meter Data Management and vice versa for messages coming from Oracle Utilities Meter Data Management to Oracle Utilities Customer Care and Billing. It does not send any error to Oracle Utilities Customer Care and Billing. The DVM exception flag defined in the configuration properties are not used in this process.
- Integration passes the language value coming from the Oracle Utilities Customer Care and Billing request message to Oracle Utilities Meter Data Management by assigning the language in the SOAP Header when the Oracle Utilities Meter Data Management Inbound service, *D2_CalculateUsageMultipleRequests*, is invoked. If this process is used for Oracle Utilities Customer Self Service, the language code that Oracle Utilities Customer Care and Billing passed to Oracle Utilities Meter Data Management is the CSS user's language. This code is used to get the appropriate descriptions in Oracle Utilities Meter Data Management as part of the response message going back to Oracle Utilities Customer Self Service given the CSS user's language.
- Oracle Utilities Customer Care and Billing's request message contains a list of usage request and Oracle Utilities Meter Data Management responds with a list

of usage back to Oracle Utilities Customer Care and Billing. For more details about the request and response message, refer to Appendix A: Data Mapping.

- For Rate Analysis, Oracle Utilities Customer Care and Billing's request message contains a list of bill segment periods for the given service agreement, the base rate schedule, and any rate version break periods along with another list of bill segment periods for the given service agreement and the comparison rate schedule and any rate version break periods.
- For the Usage To Date Calculation, Oracle Utilities Customer Care and Billing's request message contains a service agreement for a given bill segment period or a list of service agreements for a given bill segment period.
- While processing a record in the usage request list and Oracle Utilities Meter Data Management encounters an application error, Oracle Utilities Meter Data Management populates the error in the exception information of the Oracle Utilities Meter Data Management response and moves on to the next record on the list. When the integration gets the response back, it maps the exception information from the Oracle Utilities Meter Data Management response to the error information in the Oracle Utilities Customer Care and Billing response message.
- If the SA ID of a record in the usage request list is not supported in Oracle Utilities Meter Data Management, Oracle Utilities Meter Data Management skips the record and marks it as skipped in the response message and proceeds to the next record.

- If the integration encounters an exception (i.e. connectivity error, transformation error) while processing the message, the integration returns a SOAP fault back to Oracle Utilities Customer Care and Billing.
- If Oracle Utilities Meter Data Management sends an exception or fault back to the integration, the integration returns a SOAP fault back to Oracle Utilities Customer Care and Billing.
- No email notifications for Business and Technical errors are sent out from the integration service.

The integration artifacts for this process include:

Integration Service

Composite Name	Description
OUCCB2OUMDM2SSUsageReqEBF	CCB-MDM Usage Request BPEL Process Synchronous BPEL process that transform incoming CCB request message to MDM format and invoke the MDM inbound service to retrieve usage information. Transform the response coming from MDM back to CCB format

External Webservice Call

Application	Service Name	Description
MDM	D2-CalculateUsageMultipleRequests	Calculate Usage Multiple Requests This inbound service is used by the self service application for retrieving usage information for Rate Analysis and Charges to Date calculation.

Usage Transaction Info Update Integration Process

This process is a real-time synchronous interface from Oracle Utilities Customer Care and Billing to inform Oracle Utilities Meter Data Management of when a usage transaction (UT) has been used for billing. A notification will be sent to Oracle Utilities Meter Data Management when a UT has been used on a frozen bill segment and also if the bill segment is subsequently canceled. Bill segment cancellation will result in the corresponding UT to be discarded in Oracle Utilities Meter Data Management.

Technical Details

Oracle Utilities Customer Care and Billing initiates a Usage Transaction Information Update when a bill is freeze/canceled or in some cases completed.

- Oracle Utilities Customer Care and Billing sends the usage transaction's bill flags information in the form of XML messages which are transformed by the integration and sent to Oracle Utilities Meter Data Management. No response message is expected back from Oracle Utilities Meter Data Management.
- No DVMs are used for the transformation.
- If the integration encounters an exception (connectivity error, transformation error) while processing the message, the integration returns a SOAP fault back to Oracle Utilities Customer Care and Billing.
- The integration also invokes the Integration Common Error Handling process to log the error and send out an email notification if configured.

The integration artifacts for this process include:

Integration Service

Composite Name	Description
OUCCB2OUMDM2UpdateUTInfoEBF	CCB-MDM Usage Transaction Info Update BPEL Process Synchronous BPEL process that transform incoming CCB request message to MDM format and invoke the MDM inbound service to retrieve usage information.

External Webservice Call

Application	Service Name	Description
MDM	D2-UsageTransactionUpdate Inbound	Update Usage Transaction Bill Flags This inbound service is used to update Usage transaction's bill flags to keep Usage transactions in sync with the billing system.

Customer Self Service Related Processes

These processes are only used when Oracle Utilities Customer Self Service-Application is installed.

Usage Adjustment Request Integration Process

This process is a real-time synchronous interface from Oracle Utilities Customer Care and Billing to get usage adjustment options from Oracle Utilities Meter Data Management given one or more service agreement with a SA Type of Bill Determinant (BD) Required and the valid rate schedules for each service agreement.

This process is used by the Oracle Utilities Customer Self Service Application Rate Compare module; when the Rate Compare page is loaded, it calls Oracle Utilities Customer Care and Billing to retrieve the rated service agreements of the given account and the valid rate schedules for each service agreement. If the service agreement is BD Required, Oracle Utilities Customer Care and Billing invokes this Usage Adjustment Request Integration process to get the usage adjustment options available for the valid rate schedule for each service agreement in Oracle Utilities Meter Data Management and also return the usage adjustment options back to Oracle Utilities Customer Self Service Application.

This allows customers to not only change their current rate but also change their consumption behavior to assess the impact on their energy bill.

Technical Details

When the Oracle Utilities Customer Self Service Application invokes the Oracle Utilities Customer Care and Billing Get Rated Service Agreements service and the service agreement to get the service agreements and rate schedules for the given account, Oracle Utilities Customer Self Service Application also gets the usage adjustment options from Oracle Utilities Meter Data Management if the SA Type is BD Required. Oracle Utilities

Customer Care and Billing initiates a usage adjustment request and Oracle Utilities Meter Data Management returns the usage adjustment options back to Oracle Utilities Customer Care and Billing.

- Oracle Utilities Customer Care and Billing sends the usage adjustment request information in the form of xml messages which are transformed by the integration and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management responds with the usage adjustment options which are transformed by the integration and sent back to Oracle Utilities Customer Care and Billing.
- No DVMs are used for data transformation.
- Integration passes the language value coming from the Oracle Utilities Customer Care and Billing request message to Oracle Utilities Meter Data Management by assigning the language in the SOAP Header when the Oracle Utilities Meter Data Management Inbound service.
- WX-UsageAdjustmentRetrieval, is invoked. This language code that Oracle Utilities Customer Care and Billing passed to Oracle Utilities Meter Data Management is the CSS user's language. This is used to get the appropriate descriptions in Oracle Utilities Meter Data Management as part of the response message going back to Oracle Utilities Customer Self Service given the CSS user's language.
- For more details about the request and response message, refer to Appendix A: Data Mapping.
- If the SA ID of a record in the request list is not supported in Oracle Utilities Meter Data Management or one of the rate schedule in the list is not supported in Oracle Utilities Meter Data Management, Oracle Utilities Meter Data Management skips the record and mark it as skipped in the response message and proceed to the next record.
- If Oracle Utilities Meter Data Management sends an error in the error information of the response message, the error information is sent back to Oracle Utilities Customer Care and Billing as part of the response message.
- If Oracle Utilities Meter Data Management sends an exception or fault back to the integration, integration returns a SOAP fault back to Oracle Utilities Customer Care and Billing.
- If integration encounters an exception (i.e. connectivity error, transformation error) while processing the message, integration returns a SOAP fault back to Oracle Utilities Customer Care and Billing.
- No email notifications for Business and Technical errors are sent out from the integration service.

The integration artifacts for this process include:

Integration Service

Composite Name	Description
OUCCB2OUMDM2SSUsageAdjustment ReqEBF	Self Service Usage Adjustment Request BPEL Process - This synchronous BPEL process gets the usage adjustment options from MDM for the given service agreement and rate schedules for each service agreement. It transforms incoming CCB request message to MDM format, invokes the MDM inbound service and transforms the response coming from MDM back to CCB format.

External Webservice Call

Application	Service Name	Description
MDM	WX-UsageAdjustmentRetrieval	Usage Adjustment Retrieval - This inbound service is used by the self service application when initially building the rate compare screen. The service receives as input list of customers (external account IDs or usage subscription IDs) and a list of rates for each customer. It supplies as output a list of available usage adjustments for each rate, for each customer. Each of these usage adjustments is represented by a profile factor in MDM. The customer self service user will then be able to pick from the returned list based on the rate they have selected.

Note: In order for this integration process to work properly in the Oracle Utilities Customer Self Service Application, Self Service must be set up in both Oracle Utilities Customer Care and Billing Master Configuration and Oracle Utilities Meter Data Management Master Configuration. You must also configure Usage Adjustment Profiles in Oracle Utilities Meter Data Management. Please refer to the respective configuration guide for detailed information.

Bill Cycle Synchronization Related Processes

The following integration points are required when Oracle Utilities Customer Care and Billing service points are managed by Service Order Management (SOM).

- Bill Cycle Synchronization Integration Process
- SA Activation Bill Cycle Request Integration Process
- Bill Cycle Change Notification Integration Process

  Note: This functionality is only available if CCB-MDM patch **24797059** is applied.

Bill Cycle Synchronization Integration Process

Bill Cycle Synchronization process synchronizes bill cycle information from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management to establish the Bill Cycle and Measurement Cycle relationship used to determine the Bill Cycle of a Service Point.

Technical Details

Oracle Utilities Customer Care and Billing sends the bill cycle information in the form of XML messages which are transformed by the integration layer and sent to Oracle Utilities Meter Data Management. Oracle Utilities Meter Data Management sends a positive or negative acknowledgment which is transformed in the integration layer and sent to Oracle Utilities Customer Care and Billing.

> **Note**: Bill Cycle Synchronization Process V2 is still part of the CCB-MDM Integration install but it is not used by the integration. The Bill Cycle Synchronization V2 process will be deprecated in the next major release of this integration.

Bill Cycle Synchronization Integration Process

The integration artifacts for Bill Cycle Synchronization Integration Process include:

Composites

Composite Name	Description
OUCCB2OUMDM2BillCycleSyncReqEBF	Bill Cycle Sync Request BPEL Process
OUMDM2OUCCB2BillCycleSyncRespEBF	Bill Cycle Sync Response BPEL Process

JMS Queues

Queue Name	Description
OUCCB2BillCycleSyncRequest	Oracle Utilities Customer Care and Billing Bill Cycle Sync Request Queue Used by the integration layer to read incoming Bill Cycle Sync messages from Oracle Utilities Customer Care and Billing.
OUCCB2BillCycleSyncRequestError	Oracle Utilities Customer Care and Billing Bill Cycle Sync Request Error Queue This is the target error destination for CCB response messages that failed after a set number of retries has been reached.
OUCCB2BillCycleSyncResponse	Oracle Utilities Customer Care and Billing Bill Cycle Sync Response Queue Used by the integration layer to add transformed Bill Cycle Sync response messages from Oracle Utilities Meter Data Management. Integration business errors, if any, are also sent to this queue.

Queue Name	Description
OUCCB2BillCycleSyncResponseError	Oracle Utilities Customer Care and Billing Bill Cycle Sync Response Error Queue This is the target error destination for CCB response messages that failed after a set number of retries has been reached.
OUMDM2BillCycleSyncRequest	Oracle Utilities Meter Data Management Bill Cycle Sync Request Queue Used by the integration layer to add transformed Bill Cycle Sync request messages.
OUMDM2BillCycleSyncRequestError	Oracle Utilities Meter Data Management Bill Cycle Sync Request Error Queue This is the target error destination for MDM request messages that failed after a set number of retries has been reached.
OUMDM2BillCycleSyncResponse	Oracle Utilities Meter Data Management Bill Cycle Sync Response Queue Used by the integration layer to read incoming Bill Cycle Sync response messages from Oracle Utilities Meter Data Management.
OUMDM2BillCycleSyncResponseError	Oracle Utilities Meter Data Management Bill Cycle Sync Response Error Queue This is the target error destination for MDM response messages that failed after a set number of retries has been reached.

SA Activation Bill Cycle Request Integration Process

During SA Activation, Oracle Utilities Customer Care and Billing performs a real time call to Oracle Utilities Meter Data Management to obtain the Bill Cycle if the service point related to the service agreement is managed by Service Order Management. The bill cycle returned is assigned to the account on the service agreement.

Technical Details

Oracle Utilities Customer Care and Billing sends a request message to get the bill cycle for a given service point in the form of xml messages which are transformed by the integration and sent to Oracle Utilities Meter Data Management. The synchronous call returns either a bill cycle or a remark indicating the reason why bill cycle is not identified. The remark maybe recorded as a To Do if to do type for this event is configured in the Oracle Utilities Meter Data Management Integration master configuration.

No DVMs are used for data transformation.

No email notifications for Business and Technical errors are sent out from the integration service.

> **Note**: For more information on how this flow works, refer to the Synchronous Processes section.

The integration artifacts for this process include:

Integration Service

Composite Name	Description
OUCCB2OUMDM2SAActivationBillCycleReq EBF	CCB-MDM SA Activation Bill Cycle Request BPEL Process Synchronous BPEL process that retrieves the bill cycle from MDM for the given input service point. It transforms incoming CCB request message to MDM format, invokes the MDM inbound service and transforms the response coming from MDM back to CCB format.

External Webservice Call

Applicatio	Service Name	Description
MDM	D2-DetermineBillCycleForSP	Determine Bill Cycle SP This inbound service is used for retrieving bill cycle for a given service point.

Bill Cycle Change Notification Integration Process

When Oracle Utilities Meter Data Management service point's measurement cycle change resulted to a change in the bill cycle, a notification of the change is sent to Oracle Utilities Customer Care and Billing.

Technical Details

This synchronous BPEL process receives the Oracle Utilities Meter Data Management message, transforms it and invokes the Oracle Utilities Customer Care and Billing web service into Oracle Utilities Customer Care and Billing. which evaluates the feature option – Allow Bill Cycle Synchronization, under General System Configuration feature type. If set to 'Y', the bill cycle of the account associated with the SP is updated with the new bill cycle. No response is sent back to Oracle Utilities Meter Data Management. If an error is encountered in Oracle Utilities Customer Care and Billing, it may be recorded as a To Do if to do type for this event is configured in the MDM Integration master configuration.

No DVMs are used for data transformation.

Oracle Utilities Customer Care and Billing does not send a response back to Oracle Utilities Meter Data Management. If a business error is encountered in Oracle Utilities Customer Care and Billing, the system creates a To Do entry in Oracle Utilities Customer Care and Billing instead of sending an error.

> **Note**: For more information on how this flow works, refer to the Synchronous Processes section.

The integration artifacts for this process include:

Integration Service

Composite Name	Description
OUMDM2OUCCBBillCycle ChangeNotifEBF	MDM Bill Cycle Change Notification BPEL Process Synchronous BPEL process that sends the bill cycle change notification to CCB when the bill cycles change due to the SP's measurement cycle change It transforms incoming MDM message to CCB format and invokes the CCB inbound service.

External Webservice Call

Application	Service Name	Description
CCB	C1-BillCycleUpdateNotification	Bill Cycle Update Notification This inbound service is used to send bill cycle update related to an SP.

Part 2

Implementation Guidelines

This section provides details on how to configure the participating applications and middle layer for this integration. It also includes information on error handling, monitoring, customization options, and data mapping.

This section contains the following chapters:

- Configuration Guidelines
- Monitoring and Troubleshooting
- Customization Options

Chapter 3

Configuration Guidelines

This chapter provides details regarding the configuration settings required for the integration, including:

- Integration Configuration Checklist
- Setting up the Integration JMS Wrapper Processes
- Data Synchronization
- Setting up Oracle Utilities Customer Care and Billing
- Setting up Oracle Utilities Meter Data Management
- Setting up the Process Integration

Integration Configuration Checklist

Extensive configuration is required to implement the integration between Oracle Customer Care and Billing and Oracle Meter Data Management. This section provides a list of configuration tasks that may be used as a reference or roadmap, including:

- Integration JMS Wrapper Configuration
- Oracle Utilities Customer Care and Billing Configuration
- Oracle Utilities Meter Data Management Configuration
- Integration Product Configuration

Integration JMS Wrapper Configuration

Task	Description
Install Patch	Install CCB-MDM Patch 26532407 to use the JMS Wrapper processes to send and receive messages to and from the edge applications instead of writing and reading the messages from the queues directly.
Setting Configuration Properties for JMS Wrapper Processes	Set Service Configuration properties that are used by the JMS Wrapper BPEL processes.

Note: When using the Integration JMS Wrapper Processes, Inbound Message Configuration (JMS and MDB configuration) and some Oubound Message Configurations are not needed in both CCB and MDM applications. See each section for more details.

Oracle Utilities Customer Care and Billing Configuration

Task	Description
Admin Data Setup	
Admin Data Tables	There are admin tables that are essential to the integration and must be set up in CCB and in the corresponding DVMs. Examples include: SP Type, SA Type, Service Type, UOM, TOU, SQI, Meter Type, etc.
MDM Navigation Setup	Configure the General System Configuration feature configuration. The MDM URL option value must contain the URL for the MDM .
System Data Setup	
Sync Read Business Objects	Define the read BOs used to build the initial/final sync snapshot.
Sync Data Area	Define the data area that holds the elements needed in the snapshot.

Task	Description
Sync Pre-processing Algorithm	Configure the pre-processing algorithms that create the initial snapshot for the various entities.
Timeout Algorithm	Configure the timeout algorithm(s) that are used in sync, usage and corrected read processing.
To Do Creation Algorithm	Configure the To Do entry algorithm(s) that are used to notify users of anomalies.
Sync Request Business Object	Setup business objects that define the behavior of the outbound sync requests (link pre-processing, timeout and To Do algorithms, etc.).
MO Audit Algorithms	Configure the MO Audit algorithms responsible for sync request creation.
Maintenance Objects	Update the maintenance objects that your implementation wants to create sync requests for (link audit algorithms and specify option values for sync request BO).
Usage Business Objects	This business object defines the behavior of a usage request
Replacement Read BO	This business object is used to process a corrected read notification received from Oracle Utilities Meter Data Management.
Menu Setup	Enable the links from CCB to MDM.
Batch Scheduling	Note the batch jobs involved in the sync and billing processes and ensure that these are incorporated in your scheduler accordingly.
Inbound Message Configuration	
JMS and MDB Setup	Configure the application to receive JMS messages from the integration layer. Configure WebLogic JMS Configuration and MDB files. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.
Outbound Message Configuration	
JNDI Server Setup	Configure the application to send out JMS messages to the integration. Define the JNDI Server when using JMS to communicate outbound messages. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.
JMS Queues and Connection Setup	Configure the JMS Queues and JMS Connection. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.
Message Sender Setup	Configure outbound message types and message senders for the external system.

Demo Export Bundles: Export bundles are available in the demo environment to assist with the configuration needed:

- CI_MDMUsageRequest: This bundle contains additional objects that should be configured for Oracle Utilities Meter Data Management usage request processing.
- CI_MasterDataSyncForMDM: This bundle contains the objects for the Master Data Synchronization with MDM2.

Oracle Utilities Meter Data Management Configuration

Task	Description
Admin Data Setup	
Admin Data Tables	There are admin tables that are essential to the integration and must be set up in MDM and in the corresponding DVMs. Examples include: SP Type, US Type, Service Type, UOM, TOU, SQI, Device Type, etc.
MDM Navigation Setup	Configure the General System Configuration feature configuration. The CCB URL option value must contain the URL for the CCB.
System Data Setup	
Sync Business Objects	These are the inbound sync business objects that are used to add or update the data in MDM. Only the ongoing sync business objects need further setup to define the Outbound Message Type to be used for any acknowledgments sent back to CCB.
BO Algorithms	These are CCB-specific algorithms that need to be plugged into the sync BOs. A BPA script is provided to for your convenience.
Extendable Lookups	Some extendable lookups were created to hold the values as defined in the external system being integrated with. Configure the values for these extendable lookups.
Lookup Field	Configure the required values for this lookup field.
Menu Setup	Enable the links from MDM to CCB.
Batch Scheduling	Note the batch jobs involved in the sync and billing processes and ensure that these are incorporated in your scheduler accordingly.
Inbound Message Configuration	
JMS and MDB Setup	Configure the application to receive JMS messages from the integration layer. Configure WebLogic JMS Configuration and MDB files. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.

Task	Description
Outbound Message Configuration	
JNDI Server Setup	Configure the application to send out JMS messages to the integration. Define the JNDI Server when using JMS to communicate outbound messages. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.
JMS Queues and Connection Setup	Configure the JMS Queues and JMS Connection. **Note**: This setup is not needed when using the Integration JMS Wrapper processes.
Message Sender Setup	Configure outbound message types and message senders for the external system.

Demo Export Bundles: Export bundles are available in the demo environment to assist with the configuration needed:

- CI_MasterDataSyncFromCCB: This bundle contains the objects for the Master Data Synchronization with Oracle Utilities Customer Care and Billing.

Integration Product Configuration

Task	Description
Setting Configuration Properties	Set Module Configuration properties that are shared by multiple integration processes and Service Configuration properties that are used by specific BPEL process.
Domain Value Maps	Set Domain value maps (DVMs) to map codes and other static values across applications.
Error Handling	Setup error notification

Setting up the Integration JMS Wrapper Processes

This section describes how to configure the Integration JMS Wrapper processes to allow CCB and MDM to communicate with the CCB-MDM asynchronous integration processes through webservices and not access the queues directly.

The configuration steps include the following:

- Installing CCB-MDM Patch 26532407
- Setting Configuration Properties for JMS Wrapper Processes
- Setting Outbound Message Configuration for CCB and MDM

Installing CCB-MDM Patch 26532407

Download and install the CCB-MDM patch 26532407.

Setting Configuration Properties for JMS Wrapper Processes

Various configurations that apply to specific JMS Wrapper integration processes are stored in the JMSWrapperConfigurationProperties.xml file located in MDS under the apps/CCB2-MDM2/AIAMetaData/config directory.

The JMSWrapperConfigurationProperties file holds the edge application's endpoint references that are picked up by the Integration JMS Read processes at runtime to use to call the specific edge application's webservices.

> **Note**: Whenever the JMSWrapperConfigurationProperties.xml file is updated, the file must be reloaded to MDS for updates to be reflected in the applications or services that use the updated properties. You can perform the reload by restarting the SOA server.

Refer to Appendix D: JMS Wrapper Configuration Properties File for more information on how to configure the JMS Wrapper Configuration Properties File values.

Setting Outbound Message Configuration for CCB and MDM

Message senders should be created in Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management to invoke the Integration JMS Wrapper Write Services. These message senders should be linked to the Oracle Utilities Customer Care and Billing or Oracle Utilities Meter Data Management external system.

> **Note**: When using the Integration JMS Wrapper processes, some outbound message configurations like the JNDI Server, JMS Queues and Connection configurations are not needed in Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management.
>
> The Inbound Message Configurations, the JMS and MDB setup, for both Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management applications, are also not needed.
>
> Refer to the Oracle Utilities Customer Care and Billing Configuration and Oracle Utilities Meter Data Management Configuration sections for more details.

Data Synchronization

Oracle Utilities Meter Data Management serves as the database of record for meter device connections and usage while Oracle Utilities Customer Care and Billing manages customers (persons), accounts (service agreements), and service points. The person, service point (SP), service agreement (SA), meter, meter configuration, and SP-meter

history sync integration points add relevant SP/SA and meter data from Oracle Utilities Customer Care and Billing in Oracle Utilities Meter Data Management.

Rates Setup data synchronization in Oracle Utilities Meter Data Management and Oracle Utilities Customer Care and Billing is not completed by the integration product.

> **For more information** on configuring rates, refer to Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management product documentation.

Setting up Oracle Utilities Customer Care and Billing

Setting up Oracle Utilities Customer Care and Billing for the integration involves:

- Oracle Utilities Customer Care and Billing Admin Data Table Configuration
- Oracle Utilities Customer Care and Billing System Data Table Configuration
- Oracle Utilities Customer Care and Billing Inbound Message Configuration
- Oracle Utilities Customer Care and Billing Outbound Message Configuration

> **For more information** on configuring and working with Oracle Utilities Customer Care and Billing, refer to the Oracle Utilities Customer Care and Billing user documentation.

This section provides details about how to configure these items.

Some configurations described may be required for general functionality and do not necessarily relate directly to the integration; however these are called out as particularly significant configuration items. The inclusion of such items does not mean that other general items that are not mentioned do not need to be configured.

Oracle Utilities Customer Care and Billing Admin Data Table Configuration

This section describes the unique setup issues specifically related to configuring your system for the integration.

> **For more information** about configuring Oracle Utilities Customer Care and Billing, see the Oracle Utilities Customer Care and Billing User Guide.

Country

Navigate to the portal under the **Admin** menu to create as needed.

The **Main** page is used to customize the fields and field descriptions that are displayed where addresses are used in the system. This ensures that all addresses conform to the customary address format and conventions of the particular country you have defined.

Guideline	Corresponding DVM
Create the Country codes	OUCCB2_OUMDM2_Country

Disconnect Location

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Disconnect Location codes The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_DisconnectLocation

SP Type

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create SP Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_SPType

CIS Division

Define a CIS division is associated with a jurisdiction by navigating to the CIS Division portal under the Admin menu. The definition of a jurisdiction is a geographic-oriented entity with unique business rules. For example, if you conduct business in California and Nevada, and each state has different collection rules, you need a separate jurisdiction for each state. Set up a CIS division for each jurisdiction in which you conduct business.

Create the required CIS Division codes. The CIS Division and SA Type combination are concatenated with an exclamation point as a separator of the two values in the DVM indicated.

Example: CIS Division is CA and SA Type is E-RES. The Oracle Utilities Customer Care and Billing value defined in the OUCCB2_OUMDM2_USType dvm is CA!E-RES.

Guideline	Corresponding DVM
Create CIS Division codes	OUCCB2_OUMDM2_USType

SA Type

Navigate to the portal under the **Admin** menu to create as needed. The CIS Division and SA Type combination are concatenated with an exclamation point as a separator of the two values in the DVM indicated.

Example: CIS Division is CA and SA Type is E-RES. The Oracle Utilities Customer Care and Billing value defined in the OUCCB2_OUMDM2_USType DVM is CA!E-RES.

Guideline	Corresponding DVM
Create SA Types	OUCCB2_OUMDM2_USType

Meter Type

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Meter Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_DeviceType

Manufacturer and Model

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Manufacturer codes	OUCCB2_OUMDM2_Manufacturer
Create Model codes	OUCCB2_OUMDM2_Model
The codes defined here must exactly match values in the DVM indicated.	

Meter Configuration Type

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Meter Configuration Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_DeviceConfigType

Read Out Type

Navigate to the **Lookup** portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Read Out Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_ReadOutType

Service Type

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Create Service Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_MCServiceType

Unit of Measure

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Define unit of measurement codes. The codes defined here must exactly match values in the DVM indicated.	OUMDM2_OUCCB2_UOM

Time of Use

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Define time of use codes The codes defined here must exactly match values in the DVM indicated.	OUMDM2_OUCCB2_TOU

Service Quantity Identifier

Navigate to the portal under the **Admin** menu to create as needed.

Guideline	Corresponding DVM
Define service quantity identifiers The codes defined here must exactly match values in the DVM indicated.	OUMDM2_OUCCB2_SQI

Feature Configuration

To enable navigation from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management, setup the Oracle Utilities Meter Data Management URL option type on the General System Configuration feature configuration. The option value must contain the URL for the Oracle Utilities Meter Data Management system (see the demo environment for an example).

Master Configuration

Navigate to the Master Configuration portal in the Admin menu to configure the Meter Data Management Integration Master Configuration:

Field	Value
External System	MDM
Meter Read High Low Details - Outbound Message Type	Estimated and High- Low Readings Outbound Message Type
To Do Types	To Do Type for the event

Installation Options - Framework

Select the algorithm 'C1-MDM2HLB' for the System Event 'Meter Read High Low Limits'.

Oracle Utilities Customer Care and Billing System Data Table Configuration

This section provides information on configuring system data in Oracle Utilities Customer Care and Billing.

BO Algorithms

Algorithm Type	Description
C1-CMDM2PRI C1-CMDM2SAI C1-CMDM2SPI C1-CMDM2MTRI C1-CMDM2CFGI C1-CMDM2SMHI C1-CMDM2MRI C1-CMDM2COI C1-CMDM2COEI C1-CMDM2BCI	Configure the pre-processing algorithms that create the initial snapshot for the Person, SA, SA Relationship, SP, Meter, Meter Configuration, Meter Read and SP/ Meter History entities. Refer to the algorithm descriptions for details on how to specify the parameters below. Define the read BOs that each of the algorithms uses to build the initial/final snapshot. The following read BOs are delivered for use by these algorithms: • C1-MDM2Person • C1-MDM2Account • C1-MDM2SA • C1-MDM2Premise • C1-MDM2SP • C1-MDM2Meter • C1-MDM2MeterConfiguration • C1-MDM2MR • C1-MDM2SPMeterHistory • C1-MDM2ContractOption • C1-MDM2ContractOptionEvent • C1-MDM2BillCycle If additional elements are needed in the sync request, your implementation may create a child of any of these BOs and add the element under a group called <customElements>. This ensures that they are included in the sync request message at the proper group nodes, so that any custom translation your implementation may decide to do at the integration layer can be done.

Algorithm Type	Description
	Define the data area that holds the elements needed in the snapshot. The following data areas are delivered for use by these algorithms: • C1- MDM2PersonBasedSnapshot • C1-MDM2SABasedSnapshot • C1- MDM2SPBasedSnapshot • C1-MDM2MeterBasedSnapshot • C1- MDM2MtrConfigBasedSnapshot • C1-MDM2MRBasedSnapshot • C1- MDM2SPMtrHistorySnapshot • C1-MDM2ContrOptBasedSnapshot • C1-MDM2ContrOptEvBasedSnapshot. • C1-MDM2BillCycleBasedSnapshot Your implementation should not have to create a custom data area as this already provides a <customElements> node in its schema to allow the addition of any elements not included in the base solution. To also pass additional SP Information like Latitude and Longitude elements as part of the SP Sync, define post script = C1-CapAddSPI as part of parameter1 of Capture MDM2 SP-Based Initial Snapshot algorithm. To filter the qualifying types for each of the syncs define these values in the algorithm, so that only changes to records of these types are communicated across to Oracle Utilities Meter Data Management. (i.e., Person or Business Flag (person type), SA Type, SP Type, Meter Type, Meter Configuration Type – this is used for both Meter Configuration Sync and SP/Meter History Sync., Contract Option Type and Contract Option Event Type) To specify custom read BOs and data areas by Type define your custom BO along with the Type value you wish to use it with. For example, particular SA types for the SA Sync or particular SP types for the SP sync. The algorithm uses these values instead of those defined in points 1 and 2.
C1-MDM-TMOT	This monitor algorithm sets a timeout limit on the receipt of a response from the external system. Define the number of hours your implementation wishes to wait for a response from Oracle Utilities Meter Data Management before transitioning the sync request into the Error state.
F1-TD-CREATE	This enter algorithm creates a To Do entry. At a minimum, your implementation must define the To Do Type to use in creating the To Do entry and the Characteristic Type For Log Entry used in linking the To Do entry to the sync request via its logs. The base product provides F1-SYNRQ and F1-TODO, respectively, for this purpose. For details on the other parameters used by this algorithm, see the algorithm type description.
C1-CHK-DTSY	This monitor algorithm delays the usage request transmission until all related sync requests are in a final state. If your implementation only wishes to delay usage requests for certain external system sync requests, define the external system as an algorithm parameter.

Algorithm Type	Description
C1-USGCY-PRE	If your implementation would like to use the automated retry option for batch billing, add the pre-processing algorithm (C1-USGCY-PRE) on the MDM Cyclical Billing Usage Request BO. Refer to the description on the BO for further detail.
C1-TRN-RELSY	If your implementation would prefer online bills to not have to be dependent on sync batch jobs to transition any related sync requests, plug this algorithm in on the MDM Non Cyclical Billing Usage Request BO. Note that the monitor algorithms on the Awaiting Data Sync state of the parent BO need to be moved down to the children BOs (both the Oracle Utilities Meter Data Management Non Cyclical and Cyclical Billing Usage Request BOs). C1-TRN-RELSY needs to be placed before these monitor algorithms. The ongoing sync request BOs in Oracle Utilities Meter Data Management also will need to have the monitor process on their initial states removed (this includes the composite sync request).

Maintenance Object Algorithms

Maintenance object audit algorithms contain the logic to instantiate a sync request (as long as one does not already exist in the initial state for the MO-Primary Keys combination). A generic algorithm F1-GCHG-CDCP comes with the base product and is plugged in on maintenance objects that need to instantiate sync requests for the same maintenance object. This algorithm instantiates the BOs defined in the Sync Request BO MO Option (see Maintenance Objects below). For maintenance objects that need a sync request instantiated for a different maintenance object, unique algorithms that contain this logic are used. (For example, changes to the Account maintenance object need to be communicated via an SA sync request; or changes to the Premise maintenance object need to be communicated via an SP sync).

Algorithm Type	Description
C1-ACCTCDCSA	This algorithm instantiates an SA-based sync request whenever a change to the Account maintenance object is detected. Define the sync request BO to be instantiated in the algorithm's parameters.
C1-PREMCDCSP	This algorithm instantiates an SP-based sync request whenever a change to the Premise maintenance object is detected. Define the sync request BO to be instantiated in the algorithm's parameters.

Maintenance Objects

Maintenance Object	Description
PERSON	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2PersonSyncRequest BO in the Sync Request BO MO Option.
ACCOUNT	Specify the MO Audit algorithm configured in the previous section.
SA	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2SASyncRequest BO in the Sync Request BO MO Option.
SP	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2SPSyncRequest BO in the Sync Request BO MO Option.
PREMISE	Specify the MO Audit algorithm configured in the previous section.

Maintenance Object	Description
METER	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2MtrSyncRequest BO in the Sync Request BO MO Option.
MTR CONFIG	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2MtrConfigSyncRequest BO in the Sync Request BO MO Option.
SP/MTR HIST	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2SpMtrHistSyncRequest BO in the Sync Request BO MO Option.
METER READ	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2MRSyncRequest BO in the Sync Request BO MO Option.
CONTRACT OPT	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2ContractOptSyncRequest BO in the Sync Request BO MO Option.
COP EVENT	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2ContrOptEvtSyncRequest BO in the Sync Request BO MO Option.
BILL CYCLE	Specify the generic MO Audit algorithm F1-GCHG-CDCP. Also specify the C1-MDM2BillCycleSyncRequest BO in the Sync Request BO MO Option.

Business Objects

Business Object	Description
C1-MDM2PersonSyncRequest C1-MDM2SASyncRequest C1-MDM2SPSyncRequest C1-MDM2MtrSyncRequest C1-MDM2MtrConfigSyncRequest C1-MDM2ContractOptSyncRequest C1-MDM2ContrOptEvtSyncRequest C1-MDM2BillCycleSyncRequest	These business objects define the behavior of the outbound sync requests for Oracle Utilities Meter Data Management. It contains the schema elements monitored and synchronized to Oracle Utilities Meter Data Management. The following BO Options must be configured to create the outbound sync request: • Outbound Message Type: This has a reference to the outbound message BO to use. The base package includes the following BOs for use with each sync request: • C1-MDM2PersonSyncReqOutMsg • C1- MDM2SASyncReqOutMsg • C1- MDM2SPSyncReqOutMsg • C1- MDM2MtrSyncReqOutMsg • C1- MDM2MtrConfigSyncReqOutMsg • C1- MDM2MRSyncReqOutMsg • C1- SpMtrHistSyncReqOutMsg • C1-MDM2ContrOptSyncReqOutMsg • C1-MDM2ContrOptEvSyncReqOutMsg • C1-MDM2BillCycleSyncReqOutMsg Refer to "Defining Outbound Message Types" in the user documentation for more information. • External System: This has a reference to the outbound message type and its corresponding configuration for communicating with the external system. The base package includes the message XSL C1-CCBJMSQAddNamespace.xsl. Refer to "External Systems" in the user documentation for more information. Specify the pre-processing algorithm configured in the previous section. Specify the time out algorithm as a monitor algorithm on the Awaiting Acknowledgement state for this BO. Specify the To Do creation algorithm on the Error state for this BO. Depending on the technology used to communicate the sync request to the external system, you may need to create your own enter algorithm and plug it into the Send Request state. The base package comes with an algorithm that creates a message and sends it into a JMS Queue. If your implementation uses this algorithm (C1-CR-OUTMSG), you must define the BO Options for External System and Outbound Message Type. The monitor process on the "Pending" state of the sync request business objects should not be removed by implementation. If near real time processing of sync requests are needed, schedule the sync request monitor batch (F1-SYNRQ) frequently.

Business Object	Description

C1-UsageRequest	This business object defines the behavior of a usage request.
	To configure your system for usage requests using this business object:
	• Create a bill segment type for service agreements that require bill determinants. This bill segment type should reference the following base product algorithms:
	  • Create Algorithm: Create bill segment using a usage request.
	  • Get Consumption Algorithm: Get bill segment consumption using a usage request.
	• Set up SA types for service agreements that require bill determinants. These SA types should have a special role flag of Bill Determinants Required and should reference the bill segment type mentioned above.
	• A cancellation reason is required when a usage request is cancelled. Your implementation must define valid cancel reasons. Navigate to the lookup page and then define valid values for the lookup field C1_USG_CANCEL_RSN_FLG.
	• Create a 'Check for Response Timeout' algorithm (see above) and specify your timeout criteria. Update the Awaiting Bill Determinants state on the usage request BO to reference the timeout algorithm.
	In addition to the standard BO options, the following BO options are relevant to usage request business objects:
	• External System: An external system is required to communicate usage requests to the external system.
	• Outbound Message Type: An outbound message type is required for the usage request outbound message.

C1-UsageRequestNonCyclical	This business object defines the behavior of a usage request created from non-cyclical or online bill generation. In addition to the standard BO options, the following BO options are relevant to usage request business objects: • External System: An external system is required to communicate usage requests to the external system. • Outbound Message Type: An outbound message type is required for the non-cyclical billing usage request outbound message. This outbound message type must reference the base MDM Non-Cyclical Billing Usage Request Outbound Message.
C1-UsageRequestCyclicalBilling	This business object defines the behavior of a usage request created from the cyclical or batch billing process. In addition to the standard BO options, the following BO options are relevant to usage request business objects: • External System: An external system is required to communicate usage requests to the external system. • Outbound Message Type: An outbound message type is required for the cyclical billing usage request outbound message. This outbound message type must reference the base MDM Cyclical Billing Usage Request Outbound Message business object.

Business Object	Description
	There are two possible options if MDM is unable to calculate bill determinants within the bill cycle window. The first option is for CCB to create and send a usage request each night of the billing window and for MDM to return an error each night it's unable to calculate usage. The second option is for CCB to send a usage request on the first night of the billing window and for MDM to keep retrying to calculate usage throughout the bill cycle window. If your implementation prefers the latter approach, then specify the Set Automated Retry On Usage Request algorithm on the MDM Cyclical Billing Usage Request BO.
C1-CorrectedReadNotification	This business object is used to process a corrected read notification received from Oracle Utilities Meter Data Management. The system attempts to find any frozen bill segments and rebills these segments using one of the following methods: • Given a usage ID (MDM2 integration). • Given a service agreement and corrected read period (MDM1 integration). To configure your system for corrected read processing using this business object: • Ensure that it's specified as the OCBG Corrected Read BO maintenance object option on the Off Cycle Bill Generator MO (C1-OCBG) • A cancellation reason is required when a corrected read notification is cancelled. Your implementation must define valid cancel reasons. Navigate to the lookup page and define valid values for the lookup field C1_CORRD_CAN_RSN_FLG • Create a 'Check for Response Timeout' algorithm (see above) and specify your timeout criteria. Update the Processing Required state on the corrected read BO to reference the timeout algorithm In addition to the standard BO options, the following BO options are relevant to usage request business objects: • System Creation Only: Use this option to identify OCBG BO's that may not be instantiated by a user. For example, corrected reads are only created by the system when notification is received from MDM. This option is used to exclude a BO from the drop-down list of valid BO's on add. It also prevents the SA linked to the corrected read OCBG from being skipped by normal billing.

Menus

Configure the following context menus to allow navigation from Oracle Utilities Customer Care and Billing to Oracle Utilities Meter Data Management:

Menu	Navigation Option	Description
CI_CONTEXTSERVICEPOINT	c1SPMDM2GoTo	Allows navigation from the CCB SP context menu to MDM service point portal

CI_CONTEXTSERVICEAGREEMENT	c1SAMDM2GoTo	Allows navigation from the CCB SA context menu to MDM usage subscription portal
CI_CONTEXTSERVICEAGREEMENT	c1SAGoToMDM2-360	Allows navigation from the CCB SA context menu to MDM 360 View
CI_CONTEXTPERSON	c1PerMDM2GoTo	Allows navigation from the CCB person context menu to MDM contact portal
CI_CONTEXTMETER	c1MtrMDM2GoTo	Allows navigation from the CCB meter context menu to MDM device portal
CI_CONTEXTUSAGE	c1UsgMDM2GoTo	Allows navigation from the CCB usage request context menu to MDM usage transaction portal

Once configured, users should be able to launch the Oracle Utilities Meter Data Management system from these context menus. Also note that these context menus have been configured in the demo environment; use the demo data as a reference.

Batch Scheduling

This is the batch process to run the sync request. It is a generic batch process that is used for different sync processes. It includes parameters that can be used to control which sync request BOs to process.

Batch Code	Description
F1-SYNRQ	Sync Request Monitor Process. This is the batch process to run the sync request. It is a generic batch process that is used for different sync processes. It includes parameters that can be used to control which sync request BOs to process.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object.	F1-SYNC REQ (This is the default value.)
isRestrictedByBatchCode	The value of true restricts processing to sync requests whose current state is linked to this batch code.	
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	
restrictToBOStatus	Enter a status code here to limit the process to sync requests in this state.	PENDING Populate this value to only process sync request, in Pending status.

Batch Code	Description
C1-SYNIL	Generic Sync Request Initial Load - This process creates an initial sync request BO for a particular MO. A script parameter is provided, so implementations can further restrict the creation of initial sync requests to certain records within the MO.
C1-USGDF	Usage Scheduled Monitor Process (Deferred) - This batch process invokes monitoring rules associated with the current state of usage records. This batch needs to be executed twice for the Business Object "C1-UsageRequestCyclicalBilling", once for Pending state and then for Billing Determinants Received state.
BILLING	Create bills using the bill cycle - The bill cycle process creates bills for accounts with an "open" bill cycle.

- To generate initial sync requests, submit the C1-SYNIL batch job. (Refer to the previous section for the parameters necessary to set it up.)
- To transition Sync Requests out of the Pending state, run the F1-SYNRQ batch job.
- To create Usage Requests from batch billing, submit the BILLING batch job.
- To transition Usage Requests out of the Pending state or the Billing Determinants Received state, run the C1-USGDF batch job.

  For more information about the sync request process, the business objects, maintenance objects, and other components used for this process, see the "Data Synchronization" section in the *Oracle Utilities Framework User Guide*.

  For more information about the usage request process, see the "Defining Meter, Item & Equipment Options" chapter in the *Oracle Utilities Customer Care and Billing User Guide*.

Oracle Utilities Customer Care and Billing Inbound Message Configuration

This section describes the configuration needed for Oracle Utilities Customer Care and Billing to receive messages from the integration layer by consuming them from the queues.

- WebLogic Server JMS Configuration
- Configuration File Changes for MDBs

  Note: This Inbound Message Configuration setup is NOT needed if implementation uses the Integration JMS Wrapper processes to receive messages coming from the integration processes. Skip this section and proceed to Oracle Utilities Customer Care and Billing Outbound Message Configuration.

  For first-time installation, skip this configuration. For an existing implementation that has already done this setup but want to switch and use the Integration JMS Wrapper processes instead, the JMS configuration can be left as is. These configurations will not be used but

the MDB Configuration files must be removed to avoid any issues with message consumption from the queue.

WebLogic Server JMS Configuration

To configure JMS on the Oracle Utilities Customer Care and Billing WebLogic server, log in to the console using the URL http://<server_name>:<port_number>/console.

Example: http://ccbserver:7001/console

Note: The WebLogic Server JMS Configuration is NOT needed if the optional CCB-MDM Patch 26532407 is installed.

JMS Module

Create a new JMS module in the WebLogic console.

1. Open the WebLogic console and create a new JMS module.
2. Enter a meaningful name for the JMS module. This JMS module is used to create configurations which consume messages from remote WebLogic queues.
   Example: MDMInegrationModule.

Foreign Server

Create a new Foreign server under the JMS module in the WebLogic console.

1. Enter the WebLogic console and select the JMS module created for the integration.
2. Create a Foreign server under the JMS module.
3. Enter the following for the Foreign server:
   - **Name** – Name for the Foreign server.
     Example: CCBMDMForeignServer
   - **JNDI Initial Context Factory** – *weblogic.jndi.WLInitialContextFactory*
   - **JNDI Connection URL** – Add the URL for the Integration SOA server in the format t3://<SOA Server>:<SOA_ManagedServer_Port>.
     Example: **t3://soaserver.com:8002**
   - **JNDI Properties Credential** – Password for the SOA server user
   - **JNDI Properties** - *java.naming.security.principal=<SOA Server user>*
     Example: weblogic.
4. Under the **Foreign** server, create a foreign destination for each remote queue.
   - **Name** – Name of the foreign destination.
   - **Local JNDI Name** – Add a local JNDI name for the Integration Queue. Local JNDI name is later added manually as part of configuration in weblogic-ejb-jar.xml → <weblogic-enterprise-bean> → <message-driven-descriptor> → <destination-jndi-name>.
   - **Remote JNDI Name** – JNDI name of the queue on the Integration SOA server.
   - For each integration point, one destination is created.
5. Under the **Foreign** server, create a **Remote Connection Factory** according to the following example:
   - **Name** – Name of the remote connection factory.

- **Local JNDI Name** – Add a local JNDI name to the Integration Connection Factory. This JNDI name is added manually later as part of configuration in WebLogic-ejb-jar.xml → <weblogic-enterprise-bean> → <message-driven-descriptor> → <connection-factory-jndi-name>.
- **Remote JNDI Name** – JNDI name of the JMS Connection factory on the Integration SOA server.

Example WebLogic Server JMS Setup

Person Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 PersonSyncResponse	jms/LocalOUCCB2 PersonSyncResponse	jms/OUCCB2 PersonSyncResponse

SP Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 SPSyncResponse	jms/LocalOUCCB2 SPSyncResponse	jms/OUCCB2 SPSyncResponse

SA Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 SASyncResponse	jms/LocalOUCCB2 SASyncResponse	jms/OUCCB2 SASyncResponse

SA Relationship Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 SARelSyncResponse	jms/LocalOUCCB2SA RelationshipSyncResponse	jms/OUCCB2SA RelationshipSyncResponse

Meter Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 MeterSyncResponse	jms/LocalOUCCB2 MeterSyncResponse	jms/OUCCB2 MeterSyncResponse

Meter Configuration Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 MeterConfigSyncResponse	jms/LocalOUCCB2 MeterConfigSyncResponse	jms/OUCCB2 MeterConfigSyncResponse

SP-Meter History Sync

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 SPMeterHistSyncResponse	jms/LocalOUCCB2 SPMeterHistSyncResponse	jms/OUCCB2 SPMeterHistSyncResponse

Batch BD

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 BatchBDResponse	jms/LocalOUCCB2 BatchBDResponse	jms/OUCCB2 BatchBDResponse

Online BD

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 OnlineBDResponse	jms/LocalOUCCB2 OnlineBDResponse	jms/OUCCB2 OnlineBDResponse

Replacement Reads

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 ReplReadRequest	jms/LocalOUCCB2 ReplReadRequest	jms/OUCCB2 ReplReadRequest

Scalar Meter Reads

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2Meter ReadSyncResponse	jms/LocalOUCCB2 MeterReadSyncResponse	jms/OUCCB2 MeterReadSyncResponse

Dynamic Options

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2 DyanmicOptSyncResponse	jms/LocalOUCCB2 DynamicOptSyncResponse	jms/OUCCB2 DynamicOptSyncResponse

Dynamic Options Events

Destination Name	Local JNDI Name
OUCCB2DynamicOptEvtSyncResponse	jms/ LocalOUCCB2OUMDM2DynamicOptEvtSyncResponse

Bill Cycle

Destination Name	Local JNDI Name	Remote JNDI Name
OUCCB2BillCycleSyncResponse	jms/LocalOUCCB2BillCycle SyncResponse	jms/OUCCB2BillCycle SyncResponse

Configuration File Changes for MDBs

Note that the MDB configuration is NOT needed if implementation uses the Integration JMS Wrapper processes to receive messages coming from the integration processes.

Configure Message Driven Beans (MDB)

It is recommended that you use the Oracle Utilities Customer Care and Billing template and the CM (Customer Modification) feature to make changes to these configuration files. This ensures that your modifications cannot be overwritten by future application patches.

- **Modify files:** ejb-jar.xml and ejb-weblogic-jar.xml
- **Location:** Oracle Utilities Customer Care and Billing Enterprise Archive (EAR) file.

  Observe the following while making configuration file changes:

  - The Oracle Utilities Customer Care and Billing configuration files, ejb-jar.xml and ejb-weblogic-jar.xml, must be modified to configure Message Driven Beans (MDB). MDBs which receive messages from the integration queues. These files are part of the Oracle Utilities Customer Care and Billing Enterprise Archive (EAR) file.
  - The Oracle Utilities Customer Care and Billing application needs to be redeployed after these changes are made.
- **Managing configuration files:** Configuration files such as config.xml, ejb-jar.xml, and ejb-weblogic-jar.xml are managed through template configuration files which reside in the environment's templates directory. When the

initialSetup.sh script is executed, environment specific information is combined with the template to create the target file which is then deployed to the correct location. When the environment is started (spl.sh start), changes are automatically deployed to WebLogic.

- **Templates**: **Extending existing templates:** For Oracle Utilities Customer Care and Billing version 2.4+, it is possible to extend existing templates with the use of Include template file(s) in the same location as the existing template. Using #ouaf_user_exit within the target template that is extended, additional configuration from the included template is processed and appended to the target template where the #ouaf_user_exit is present.
- **Enabling changes for the integration:** To enable your changes for integration with Oracle Utilities Meter Data Management it is recommended that you first make a "CM" copy of the existing template and then make your changes to the CM version. If there are any problems with starting the application, delete the CM versions of the files and rerun initialSetup to regenerate and redeploy the original versions.

  If you make CM versions of the template files and later install a patch which updates the base template, the CM version will not be updated.

Note: For Oracle Utilities Customer Care and Billing Version 2.4.0.3+, working examples of the configuration files are available for download from My Oracle Support in patch number Bug 25542366 - COPY OF BUG 24839119 - 11821 ADD BILL CYCLE MDB CONFIG.

For Oracle Utilities Customer Care and Billing Version 2.5.0.2+, working examples of the configuration files are available for download from My Oracle Support in patch number Bug 24839119 - 11821 ADD BILL CYCLE MDB CONFIG. Before installing the examples, read the Product Fix design document included in the patch for more information.

Create an MDB to Receive Messages

Use these steps to create an MDB from the Oracle Utilities Customer Care and Billing inbound queue:

1. Create an MDB for each Oracle Utilities Customer Care and Billing inbound queue to receive messages and invoke the Oracle Utilities Customer Care and Billing service. For simplicity, we refer to the names of the target configuration files in the following examples. However, you should make your changes in the templates/ cm_<target file>.include version of the file and then execute initalSetup.sh (Unix) or initalSetup.cmd (Windows) to deploy the generated file.
2. Create or modify the following files to configure the MDBs:
   - cm_ejb-jar.xml.wls.jms_1.include
   - cm_ejb-jar.xml.wls.jms_2.include
   - cm_weblogic-ejb-jar.xml.jms.include
   - cm_config.xml.jms.include

   a. Add the <message-driven> and <container-transaction> tag for each inbound queue in the ejb-jar.xml files. Also, add a security role with role cisusers in the ejb-jar.xml files.

Example: cm_ejb-jar.xml.wls.jms_1.include

```
<!--Batch BD Response Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2BatchBDResponse</description>
  <display-name>OUCCB2BatchBDResponse</display-name>
  <ejb-name>OUCCB2BatchBDResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Meter Config Sync Response Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2MeterConfigSyncResponse</
description>
  <display-name>OUCCB2MeterConfigSyncResponse</display-name>
  <ejb-name>OUCCB2MeterConfigSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Meter Sync Response Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2MeterSyncResponse</description>
  <display-name>OUCCB2MeterSyncResponse</display-name>
  <ejb-name>OUCCB2MeterSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Online BD Response Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2OnlineBDResponse</description>
  <display-name>OUCCB2OnlineBDResponse</display-name>
  <ejb-name>OUCCB2OnlineBDResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Person Sync Response Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2PersonSyncResponse</description>
  <display-name>OUCCB2PersonSyncResponse</display-name>
  <ejb-name>OUCCB2PersonSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Replacement Read Request Integration Point -->
    <message-driven>
  <description>MDB for OUCCB2ReplReadRequest</description>
```

```
  <display-name>OUCCB2ReplReadRequest</display-name>
  <ejb-name>OUCCB2ReplReadRequest</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—SA Sync Response Integration Point -->
   <message-driven>
  <description>MDB for OUCCB2SASyncResponse</description>
  <display-name>OUCCB2SASyncResponse</display-name>
  <ejb-name>OUCCB2SASyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!-SA Relationship Sync Response Integration Point -->
<container-transaction>
<method>
<ejb-name>OUCCB2SARelationshipSyncResponse</ejb-name>
<method-name>onMessage</method-name>
</method>
<trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—Meter History Sync Response Integration Point -->
   <message-driven>
  <description>MDB for OUCCB2SPMeterHistSyncResponse</
description>
  <display-name>OUCCB2SPMeterHistSyncResponse</display-name>
  <ejb-name>OUCCB2SPMeterHistSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—SP Sync Response Integration Point -->
  <message-driven>
  <description>MDB for OUCCB2SPSyncResponse</description>
  <display-name>OUCCB2SPSyncResponse</display-name>
  <ejb-name>OUCCB2SPSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
<!—Meter Read Sync Response Integration Point -->
  <message-driven>
  <description>MDB for OUCCB2MeterReadSyncResponse</
description>
  <display-name>OUCCB2MeterReadSyncResponse</display-name>
  <ejb-name>OUCCB2MeterReadSyncResponse</ejb-name>
  <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Bean</transaction-type>
  <message-destination-type>javax.jms.Queue</message-
destination-type>
   </message-driven>
```

```
<!—Dynamic Option Event Sync Response Integration Point -->
<message-driven>
<description>MDB for OUCCB2DynamicOptEvtSyncResponse</
description>
<display-name>OUCCB2DynamicOptEvtSyncResponse</display-name>
<ejb-name>OUCCB2DynamicOptEvtSyncResponse</ejb-name>
<ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
<messaging-type>javax.jms.MessageListener</messaging-type>
<transaction-type>Bean</transaction-type>
<message-destination-type>javax.jms.Queue</message-destination-
type>
 </message-driven>
<!—Dynamic Option Sync Response Integration Point -->
<message-driven>
<description>MDB for OUCCB2DynamicOptSyncResponse</description>
<display-name>OUCCB2DynamicOptSyncResponse</display-name>
<ejb-name>OUCCB2DynamicOptSyncResponse</ejb-name>
<ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
<messaging-type>javax.jms.MessageListener</messaging-type>
<transaction-type>Bean</transaction-type>
<message-destination-type>javax.jms.Queue</message-destination-
type>

</message-driven>
<!-Bill Cycle Sync Response Integration Point -->
<message-driven>
<description>MDB for OUCCB2BillCycleSyncResponse</description>
<display-name>OUCCB2BillCycleSyncResponse</display-name>
<ejb-name>OUCCB2BillCycleSyncResponse</ejb-name>
<ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
<messaging-type>javax.jms.MessageListener</messaging-type>
<transaction-type>Bean</transaction-type>
<message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
```

Example: cm_ejb-jar.xml.wls. jms_2.include

```
   <security-role>
  <role-name>cisusers</role-name>
   </security-role>

 <!—Batch BD Response Integration Point -->
   <container-transaction>
  <method>
 <ejb-name>OUCCB2BatchBDResponse</ejb-name>
 <method-name>onMessage</method-name>
  </method>
  <trans-attribute>NotSupported</trans-attribute>
   </container-transaction>
 <!—Meter Config Sync Response Integration Point -->
   <container-transaction>
  <method>
 <ejb-name>OUCCB2MeterConfigSyncResponse</ejb-name>
 <method-name>onMessage</method-name>
  </method>
  <trans-attribute>NotSupported</trans-attribute>
   </container-transaction>
 <!—Meter Sync Response Integration Point -->
   <container-transaction>
  <method>
 <ejb-name>OUCCB2MeterSyncResponse</ejb-name>
```

```
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—Online BD Response Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2OnlineBDResponse</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—Person Sync Response Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2PersonSyncResponse</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
 <!—Replacement Read Request Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2ReplReadRequest</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—SA Sync Response Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2SASyncResponse</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—SA Relationship Sync Response Integration Point -->
   <container-transaction>
   <method>
   <ejb-name>OUCCB2SARelationshipSyncResponse</ejb-name>
   <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
   </container-transaction>
<!—Meter History Sync Response Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2SPMeterHistSyncResponse</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—SP Sync Response Integration Point -->
  <container-transaction>
 <method>
<ejb-name>OUCCB2SPSyncResponse</ejb-name>
<method-name>onMessage</method-name>
 </method>
 <trans-attribute>NotSupported</trans-attribute>
  </container-transaction>
<!—SA Relationship Sync Response Integration Point -->
   <container-transaction>
```

```
    <method>
    <ejb-name>OUCCB2SARelationshipSyncResponse</ejb-name>
    <method-name>onMessage</method-name>
    </method>
    <trans-attribute>NotSupported</trans-attribute>
    </container-transaction>
<!—Meter Read Sync Response Integration Point -->
   <container-transaction>
  <method>
 <ejb-name>OUCCB2MeterReadSyncResponse</ejb-name>
 <method-name>onMessage</method-name>
  </method>
  <trans-attribute>NotSupported</trans-attribute>
   </container-transaction>
<!-Dynamic Option Event Sync Response Integration Point -->
 <container-transaction>
   <method>
     <ejb-name>OUCCB2DynamicOptEvtSyncResponse</ejb-name>
    <method-name>onMessage</method-name>
   </method>
  <trans-attribute>NotSupported</trans-attribute>
 </container-transaction>
<!-Dynamic Option Sync Response Integration Point -->
<container-transaction>
<method>
  <ejb-name>OUCCB2DynamicOptSyncResponse</ejb-name>
<method-name>onMessage</method-name>
</method>
<trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!-Bill Cycle Sync Response Integration Point -->
<container-transaction>
<method>
  <ejb-name>OUCCB2BillCycleSyncResponse</ejb-name>
<method-name>onMessage</method-name>
</method>
<trans-attribute>NotSupported</trans-attribute>
</container-transaction>
```

b. Modify the cm_weblogic-ejb-jar.xml.jms.include file. Add the <weblogic-enterprise-bean> tag for each inbound queue.

The references in <weblogic-enterprise-bean> tag include:

- <ejb-name> - MDB name given in ejb-jar.xml.
- <destination-jndi-name> - JNDI name provided in JMS module → Foreign server → Foreign destination → Local JNDI name.
- <connection-factory-jndi-name> - JNDI name provided in JMS module → Foreign server → Remote Connection Factory → Local JNDI name.

- Example: cm_weblogic-ejb-jar.xml.jms.include

```
<!—Batch BD Response Integration Point -->
   <weblogic-enterprise-bean>
   <ejb-name>OUCCB2BatchBDResponse</ejb-name>
   <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
```

```
</pool>
<destination-jndi-name>jms/LocalOUCCB2BatchBDResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>

<!—Meter Configuration Sync  Response Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUCCB2MeterConfigSyncResponse</ejb-name>
   <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2MeterConfigSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Meter Sync Response Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUCCB2MeterSyncResponse</ejb-name>
   <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2MeterSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Online BD Response Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUCCB2OnlineBDResponse</ejb-name>
   <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2OnlineBDResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Person Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2PersonSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
```

```
<destination-jndi-name>jms/LocalOUCCB2PersonSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Replacement Read Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2ReplReadRequest</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
  <destination-jndi-name>jms/LocalOUCCB2ReplReadRequest</
destination-jndi-name>
  <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—SA Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2SASyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2SASyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-SA Relationship Sync Response Integration Point -->
<weblogic-enterprise-bean>
<ejb-name>OUCCB2SARelationshipSyncResponse</ejb-name>
<message-driven-descriptor>
<pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/
LocalOUCCB2SARelationshipSyncResponse</destination-
jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
</message-driven-descriptor>
</weblogic-enterprise-bean>
<!—SP Meter History Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2SPMeterHistSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
```

```
<destination-jndi-name>jms/LocalOUCCB2SPMeterHistSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—SP Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2SPSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
   <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2SPSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Meter Read Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2MeterReadSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
    <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2MeterReadSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
 <!-Dynamic Options Event Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2DynamicOptEvtSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
    <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/
LocalOUCCB2DynamicOptEvtSyncResponse</destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-Dynamic Options Sync Response Integration Point -->
<weblogic-enterprise-bean>
  <ejb-name>OUCCB2DynamicOptSyncResponse</ejb-name>
  <message-driven-descriptor>
<pool>
   <max-beans-in-free-pool>5</max-beans-in-free-pool>
    <initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2DynamicOptSyncResponse</
destination-jndi-name>
```

```
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-Bill Cycle Sync Response Integration Point -->
<weblogic-enterprise-bean>
<ejb-name>OUCCB2BillCycleSyncResponse</ejb-name>
<message-driven-descriptor>
<pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUCCB2BillCycleSyncResponse</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-
name>
</message-driven-descriptor>
</weblogic-enterprise-bean>
```

c.Example: cm_config.xml.jms.include

```
<jms-system-resource>
<name>CCBMDMForeignServer</name>
<target>myserver</target>
<sub-deployment>
<name>JMSCCBMDMForeignServer</name>
<target>myserver</target>
</sub-deployment>
<descriptor-file-name>jms/ccbmdmintegrationmodule-jms.xml</
descriptor-file-name>
</jms-system-resource>
```

Oracle Utilities Customer Care and Billing Outbound Message Configuration

This section describes the following configuration needed for Oracle Utilities Customer and Billing to send messages out to the integration layer:

- JNDI Server
- JMS Queue
- JMS Connection
- Message Sender
- Outbound Message Type
- External System

If the edge application is using OUAF version v4.3.0.2, all the jms queues/server/JMS connections can be found by navigating to **Admin** > **J** > **JMS Connection**.

Similarly message senders can be found by navigating to **Admin** > **M** > **Message Sender**. In older versions, all JMS related portals can be found under **IWS** on the **Admin** menu.

> **Note**: The Outbound Message Configurations (JNDI Server, JMS Queue and JMS Connection) setup are NOT needed when using the

Integration JMS Wrapper processes to send messages to the integration. Proceed to Message Sender, Outbound Message Type and External System Configuration setup.

For new installation and existing implementations that want to use the Integration JMS Wrapper services instead of the queues, follow the instructions above. Existing implementations that has already done the outbound message configuration to send messages to queues can just leave the old setup as is. These configuration will just be ignored and not use.

JNDI Server

Create a new JNDI server pointing to the integration SOA server.

1. Navigate to the JNDI Server portal under the **Admin** menu.
2. Enter the JNDI server name.
   Example: *CI_MDM_JNDI*
3. Enter the JNDI server description
   Example: *CCB-MDM Integration server*
4. Enter the Provider URL in the format **t3//<SOA Server>: <SOA _ManagedServer_Port>.**
   Example: **t3://***soaserver.us.oracle.com:8002*
5. Enter the Initial Context Factory.
   Example: *weblogic.jndi.WLInitialContextFactor*

JMS Queue

Create a new JMS queue for each integration queue where Oracle Utilities Customer Care and Billing sends messages.

1. Navigate to the **JMS Queue** portal under the **Admin** menu.
2. Enter the following:
   - **JMS Queue –** Queue name in Oracle Utilities Customer Care and Billing.
   - **Description** – Queue description
   - **Queue Name** – JNDI name of the queue on the integration server.
     Example: *jms/OUCCB2PersonSyncRequest*.
   - **Target Client Flag** – *JMS*
   - **JNDI Server** – Select the JNDI server created for integration.

     Note: Only define the queues where Oracle Utilities Customer Care and Billing will publish or write messages.

Example JMS Queue Setup

Person Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2PSyn	Person Sync Request	jms/OUCCB2 PersonSyncRequest	JMS	CI_MDM_JNDI

SP Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2SPSyn	SP Sync Request	jms/OUCCB2 SPSyncRequest	JMS	CI_MDM_JNDI

SA Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2SASyn	SA Sync Request	jms/OUCCB2 SASyncRequest	JMS	CI_MDM_JNDI

SA Relationship Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
SA Relationship Synchronization Integration	SA Relationship Sync Request	jms/OUCCB2 SARelationship SyncRequest	JMS	CI_MDM_JNDI

Meter Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2MSyn	Meter Sync Request	jms/OUCCB2 MeterSyncRequest	JMS	CI_MDM_JNDI

Meter Configuration Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2MCSyn	Meter Configuration Sync Request	jms/OUCCB2 MeterConfigSyncRequest	JMS	CI_MDM_JNDI

SP-Meter History Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2SHSyn	SP-Meter History Sync Request	jms/OUCCB2 SPMeterHistSyncRequest	JMS	CI_MDM_JNDI

Batch BD Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
BatchBDReq2	Batch Bill Determinant Request	jms/OUCCB2 BatchBDRequest	JMS	CI_MDM_JNDI

Online BD Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
OnlineBDReq2	Online Bill Determinant Request	jms/OUCCB2OnlineBD Request	JMS	CI_MDM_JNDI

Scalar Meter Read Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDM2MRSyn	Scalar Meter Read Sync Request	jms/OUCCB2 MeterReadSyncRequest	JMS	CI_MDM_JNDI

Dynamic Options Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDMCOSync	Dynamic Option Sync	jms/OUCCB2DynamicOptSyncRequest	JMS	CI_MDM_JNDI

Dynamic Option Events Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDMCOESyn	Dynamic Option Events Sync Request	jms/OUCCB2 DynamicOptEvtSync Request	JMS	CI_MDM_JNDI

Bill Cycle Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
CI_MDMBCSync	Bill Cycle Sync Request	jms/OUCCB2 BillCycleSyncRequest	JMS	CI_MDM_JNDI

JMS Connection

Create a new JMS connection used to connect to the integration queues.

1. Navigate to the **JMS Connection** portal under the **Admin** menu.
2. Enter the following:
   - **JMS Connection –** Connection name in Oracle Utilities Customer Care and Billing.
   - **Description –** Connection description
   - **JNDI Server** – Select the JNDI server created for this integration (as described in the JNDI Server section).
   - **JNDI ConnectionFactory** – JNDI name of the connection factory on the Integration server.
     Example: jms/OUCCOUMDMConnectionFactory

JMS Connection	Description	JNDI Server	JNDI Connection Factory
CI_MDM2_CF	CCB MDM Integration Connection	CI_MDM_JNDI	jms/OUCCB2OUMDM2 ConnectionFactory

Message Sender

This section focuses on the message sender.

- Message Sender to Invoke Integration Asynchronous Processes
- Message Sender to Invoke Integration Synchronous Services

Message Sender to Invoke Integration Asynchronous Processes

If Oracle Utilities Customer Care and Billing is writing to the integration queues, create a Message Sender for each outbound queue. Refer to Message Sender for Each Outbound Queue setup below.

> **Note that** the Message Sender for each JMS Wrapper Service Configuration is not needed.

If Oracle Utilities Customer Care and Billing is calling the integration JMS Wrapper services, create a Message Sender for each JMS Wrapper service. Refer to Message Sender for Each Integration JMS Wrapper Service setup below.

> **Note that** the CCB-MDM Patch 26532407 must be installed to use the Integration JMS Wrapper Services. Message Sender for each outbound queue configuration is not needed.

Message Sender for Each Outbound Queue

Create a real time Message Sender configured to communicate with the integration queue.

Navigate to the Message Sender portal under the **Admin** menu. Do the following:

1. Enter a unique Message Sender and its description.
2. Populate the following values:
   - **Message Sender –** Sender name in Oracle Utilities Customer Care and Billing.
   - **Description** – Description of the sender.
   - **Invocation Type** – *Real-time*
   - **Message Class –** *RTJMSQSNDR* (Realtime JMS Queue Sender)
   - **Active** - Select the checkbox.
   - **MSG Encoding** – *UTF-8 message encoding*
   - **JMS Connection –** JMS Connection created for the integration.
   - **JMS Queue** – JMS Queue created for the Oracle Utilities Customer Care and Billing outbound queue.
3. Select the **Context** tab and set values for the following context types:
   - **JMS Message Type (Bytes(Y)/Text(N))** – *N*
   - **JMS User Name** – User for the SOA server to be accessed.
   - **JMS User Password** – Password for the SOA server to be accessed.

Message Sender for Each Integration JMS Wrapper Service
Create a real time Message Sender configured to communicate with the integration JMS wrapper service.

Navigate to the Message Sender portal under the **Admin** menu and do the following:

1. Enter a unique Message Sender and its description.
2. Populate the following values:
   - **Message Sender –** Sender name in Oracle Utilities Customer Care and Billing.
   - **Description** – Sender description
   - I**nvocation Type** – *Real-time*
   - **Message Class –** *SOAPSNDR (SOAP Sender)*
   - **Active** - Select the checkbox.
   - **MSG Encoding** – *UTF-8 message encoding*
3. Select the Context tab and set values for the following context types:
   - **HTTP Header -** *SOAPAction:"process"*
   - **HTTP Login User -** User ID to access Integration BPEL process
   - **HTTP Password -** Password to access Integration BPEL process
   - **HTTP Method (POST/GET) -** POST
   - **HTTP Timeout -** 60
   - **HTTP Transport Method -** SendReceive
   - **HTTP URL 1 -** Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL.

Example Message Sender Setup For Outbound Queues

Person Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2PSyn	MDM Person Sync Request Sender	CI_MDM2_CF	CI_MDM2PSyn

SP Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2SPSyn	MDM SP Sync Request Sender	CI_MDM2_CF	CI_MDM2SPSyn

SA Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2SASyn	MDM SA Sync Request Sender	CI_MDM2_CF	CI_MDM2SASyn

SA Relationship Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2SARelSyn	MDM SA Relationship Sync Request Sender	CI_MDM2_CF	CI_MDM2SA RelSyn

Meter Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2MSyn	MDM Meter Sync Request Sender	CI_MDM2_CF	CI_MDM2MSyn

Meter Configuration Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2MCSyn	MDM Meter Configuration Sync Request Sender	CI_MDM2_CF	CI_MDM2MCSyn

SP-Meter History Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2SHSyn	MDM SP-Meter History Sync Request Sender	CI_MDM2_CF	CI_MDM2SHSyn

Batch BD Integration Process

Message Sender	Description	JMS Connection	JMS Queue
BatchBDReq2	MDM Batch Bill Determinant JMS Queue Sender	CI_MDM2_CF	BatchBDReq2

Online BD Integration Process

Message Sender	Description	JMS Connection	JMS Queue
OnlineBDReq2	MDM Online Bill Determinant JMS Queue Sender	CI_MDM2_CF	OnlineBDReq2

Scalar Meter Read Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDM2MRSyn	MDM Scalar Meter Read JMS Queue Sender	CI_MDM2_CF	CI_MDM2MRSyn

Dynamic Options Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDMCOSYNC	MDM Contract Option Sync Request Sender	CI_MDM2_CF	CI_MDMCOSync

Dynamic Option Synchronization Events Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDMCOESYN	MDM Contract Option Event Sync Request Sender	CI_MDM2_CF	CI_MDMCOESyn

Bill Cycle Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
CI_MDMBCSync	MDM Bill Cycle Sync Request Sender	CI_MDM2_CF	CI_MDMBCSync

Example Message Sender Setup For Integration JMS Wrapper Services

Person Sync Request JMS Write Service

Message Sender	Description	HTTP URL
PerSynReqJW	Person Sync Request JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2PersonSyncReqJMSWriteSvc/OUCCB2OUMDM2PersonSyncReqJMSWriteSvc_client_ep

SP Sync Request JMS Write Service

Message Sender	Description	HTTP URL
SPSynReqJW	SP Sync Request JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SPSyncReqJMSWriteSvc/OUCCB2OUMDM2SPSyncReqJMSWriteS vc_client_ep

SA Sync Request JMS Write Service

Message Sender	Description	HTTP URL
SASynReqJW	SASyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SASyncReqJMSWriteSvc/OUCCB2OUMDM2SASyncReqJMSWriteSvc_client_ep

SA Relationship Sync Request JMS Write Service

Message Sender	Description	HTTP URL
SARelSynReqJW	SARelSyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SARelationshipSyncReqJMSWriteSvc/OUCCB2OUMDM2SARelationshipSyncReqJMSWriteSvc_client_ep

Meter Sync Request JMS Write Service

Message Sender	Description	HTTP URL
MtrSynReqJW	MeterSyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2MeterSyncReqJMSWriteSvc/OUCCB2OUMDM2MeterSyncReqJMSWriteSvc_client_ep

SP/Meter History Sync Request JMS Write Service

Message Sender	Description	HTTP URL
SPMHSynReqJW	SPMeterHistory Sync Request JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SPMeterHistSyncReqJMSWriteSvc/OUCCB2OUMDM2SPMeterHistSyncReqJMSWriteSvc_client_ep

Meter Configuration Sync Request JMS Write Service

Message Sender	Description	HTTP URL
MtCfSynReqJW	Meter Configuration SyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2MeterConfigSyncReqJMSWriteSvc/OUCCB2OUMDM2MeterConfigSyncReqJMSWriteSvc_client_ep

Batch BD Request JMS Write Service

Message Sender	Description	HTTP URL
BatchBDReqJW	BatchBDRequest JMS Write Wrapper Service	http://intenv:8001/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2BatchBDReqJMSWrit eSvc/OUCCB2OUMDM2BatchBDReqJMSWrit eSvc_client_ep

Online BD Request JMS Write Service

Message Sender	Description	HTTP URL
OnlineBDReqJW	OnlineBDRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2OnlineBDReqJMSWriteSvc/ OUCCB2OUMDM2OnlineBDReqJMSWriteSvc_client_ep

Meter Read Sync Request JMS Write Service

Message Sender	Description	HTTP URL
MRSynReqJW	MeterReadSyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2MeterReadSyncReqJMSWriteSvc/OUCCB2OUMDM2MeterReadSyncReqJMSWriteSvc_client_ep

Contract Option Sync Request JMS Write Service

Message Sender	Description	HTTP URL
COSynReqJW	Contract Option Sync Request JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2DynamicOptSyncReqJMSWriteSvc/OUCCB2OUMDM2DynamicOptEvtSyncReqJMSWriteSvc_client_ep

Contract Option Event Sync Request JMS Write Service

Message Sender	Description	HTTP URL
COEvSynReqJW	ContractOptionEventSync Request JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2DynamicOptEvtSyncReqJMSWriteSvc/OUCCB2OUMDM2DynamicOptEvtSyncReqJMSWriteSvc_client_ep

Bill Cycle Sync Request JMS Write Service

Message Sender	Description	HTTP URL
BCSynReqJW	BillCycleSyncRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2BillCycleSyncReqJMSWriteSvc/OUCCB2OUMDM2BillCycleSyncReqJMSWriteSvc_client_ep

Note: The endpoint URL for the integration services can be obtained from the SOA EnterpriseManager. From the SOA folder, navigate to **Navigator** > **soa-infra** > **CCB2-MDM2** partition and select the composite application. At the top of the page, click **Test**. The composite application's endpoint URL is shown there.

Message Sender to Invoke Integration Synchronous Services

Create a new Message Sender for each Integration Synchronous Service being called.

1. Navigate to the **Message Sender** portal under the **Admin** menu.

2. Enter a unique **Message Sender** and its description.
3. Populate the following values:
   - **Message Sender –** Sender name in Oracle Utilities Customer Care and Billing Example: REGHILOW
   - Description – Description of the sender.
   - Invocation Type – *Real-time*
   - **Message Class –** *RTHTTPSNDR* (Real Time Sender to route messages via HTTP)
   - Active - Select the checkbox.
   - MSG Encoding – *UTF-8 message encoding*
4. Select the Context tab and set values for the following context types:
   - **HTTP Header – SOAPAction:"process"**
   - **HTTP Login User –** User ID to access Integration BPEL process
   - **HTTP Password -** Password to access Integration BPEL process
   - **HTTP Method (POST/GET)** – POST
   - **HTTP Timeout** - 60
   - **HTTP Transport Method** - SendReceive
   - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL.

Example Message Sender Setup For Integration Synchronous Services

Get Register Read High-Low Boundaries Integration Process

Message Sender	Description	HTTP URL
REGHILOW	Request For Estimated and High-Low Readings Sender	http://demoenv:8015/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2HighLowReadReqEBF/ouccb2oumdm2highlowreadreqebf_client_ep

Get Usage Request Integration Process

Message Sender	Description	HTTP URL
WX-RateAnlys	Usage Request Sender	http://demoenv:8015/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SSUsageReqEBF/ouccb2oumdm2ssusagereqebf_client_ep

Usage Adjustment Request Integration Process

Message Sender	Description	HTTP URL
WX-UsageAdjs	Usage Adjustment Request Sender	http://demoenv:8015/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SSUsageAdjustmentReqEBF/ouccb2oumdm2ssusageadjustmentreqebf_client_ep

SA Activation Bill Cycle Request Integration Process

Message Sender	Description	HTTP URL
DETBILLCYCLE	Determine Bill Cycle Sender	http://demoenv:8015/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2SAActivationBillCycleRequestEBF/ouccb2oumdm2saactivationbillcyclereqebf_client_ep

Usage Transaction Info Update Integration Process

Message Sender	Description	HTTP URL
UTSTATUPD	Send UT Info Update Sender	http://demoenv:8015/soa-infra/services/CCB2-MDM2/OUCCB2OUMDM2UpdateUTInfoEBFUpdateUTInfo

Note: The endpoint URL for the integration processes can be obtained from the SOA Enterprise Manager. From the SOA folder navigate to **Navigator> soa-infra > CCB2-MDM2** and select the composite application. At the top of the page, click the **Test** tab. The composite application's endpoint URL is shown there.

Outbound Message Type

Create an outbound message type for each Oracle Utilities Customer Care and Billing outbound message to send out.

1. Navigate to the **Outbound Message Type** portal **under the Admin** menu.
2. Enter an outbound message type, description, and detailed description.
3. Select the outbound message business object created for a specific outbound queue.

Example Outbound Message Type Setup

Person Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2PSYN	MDM Person Sync Request Outbound Message	C1-MDM2 PersonSyncReqOutMsg

SP Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2SPSYN	MDM SP Sync Request Outbound Message	C1-MDM2 SPSyncReqOutMsg

SA Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2SASYN	MDM SA Sync Request Outbound Message	C1-MDM2SASyncReqOutMsg

SA Relationship Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2SARELSYN	MDM SA Relationship Sync Request Outbound Message	C1-MDM2SARelSyncReqOutMsg

Meter Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2MSYN	MDM Meter Sync Request Outbound Message	C1-MDM2MtrSyncReqOutMsg

Meter Configuration Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2MCSYN	MDM Meter Configuration Sync Request Outbound Message	C1-MDM2 MtrConfigSyncReqOutMsg

SP-Meter History Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2SHSYN	MDM SP-Meter History Sync Request Outbound Message	C1-MDM2 SpMtrHistSyncReqOutMsg

Batch BD Integration Process

Outbound Message Type	Description	Business Object
CI_MDM_BBD	MDM Batch Bill Determinants Outbound Message	C1-CyclicalUsgReqOutMsg

Online BD Integration Process

Outbound Message Type	Description	Business Object
CI_MDM_OBD	MDM Online Bill Determinants Outbound Message	C1-NonCyclicalUsgReqOutMsg

Scalar Meter Read Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2MRSYN	MDM Meter Read Sync Request Outbound Message	C1-MDM2MRSyncReqOutMsg

Get Register Read High-Low Boundaries Integration Process

Outbound Message Type	Description	Business Object
CI_MDM2RHILO	Request For Estimated and High-Low Readings Outbound Message	C1-MDM2EstAndHighLowReqOutMsg

Get Usage Request Integration Process

Outbound Message Type	Description	Business Object
C1-USAGEREQ	Usage Request Outbound Message	C1-UsageRequestOutMsg

Get Usage Adjustment Request Integration Process

Outbound Message Type	Description	Business Object
WX-USGADJREQ	Usage Adjustment Request Outbound Message	C1-UsageAdjustmentsOutMsg

SA Activation Bill Cycle Request Integration Process

Outbound Message Type	Description	Business Object
CI_DETBILCYC	SA Activation Bill Cycle Request Outbound Message	C1-DetSPBillCycleOutMsg

Dynamic Options Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDMCOSYNC	MDM Contract Option Sync Request Outbound Message	C1-MDM2ContrOptSyncReqOutMsg

Dynamic Options Event Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDMCOESYN	MDM Contract Option Event Sync Request Outbound Message	C1-MDM2ContrOptEvSyncReqOutMsg

Bill Cycle Synchronization Integration Process

Outbound Message Type	Description	Business Object
CI_MDMBCSYNC	MDM Bill Cycle Sync Request Outbound Message	C1-MDM2BillCycleSyncReqOutMsg

Usage Transaction Info Update Integration Process

Outbound Message Type	Description	Business Object
CI-MDMUTUPD	Usage Transaction Info Update Outbound Message	C1-UpdateMDMUsageInfoOutMsg

External System

Create an external system for the integration.

> **Note**: The system supports defining XSLs as a managed content record. For backward compatibility, the system supports defining XSL as a file in the file system. This is a system wide setting that is defined using the **Feature Configuration** page. The Feature Type is "External Messages" and **Option Type** is "XSL Location". Set the value to "F1FL" to support XSL in the file system. The file location is configured using a system property. To support XSL in managed content, no option is needed since it is the default. You may explicitly define the "F1MC" value, if required.

1. Navigate to the **External System** portal under the **Admin** menu.
2. Enter a unique external system and description.

   Example: Name = CI_MDM, Description = Oracle Utilities Meter Data Management
3. Set the **Our Name in Their System** field to Customer Care and Billing.
4. Associate the outbound message types created to the external system.

   For each outbound message type, set the following:

- **Outbound Message Type** – Set the outbound message type created for Oracle Utilities Customer Care and Billing outbound message.
- **Processing Method** – *Real-time*
- **Message Sender** – Set the Message Sender created for the message.
- **Message XSL**
  - When sending to queues - Use *C1-CCB2JMSQAddNamespace.xsl*
  - When invoking webservices - Use *CDxAddEnvelope-SOAP1-2.xsl*
- **Response XSL**
  - When invoking webservices - Use *C1-CCBRemoveEnvEnvelopeAndNamespace.xsl*

  Note: When sending outbound messages through web services, Message XSL and Response XSL only need to be populated when the Message Sender used for this outbound message type has a Message Class of *RTHTTPSNDR* (Real Time Sender to route messages via HTTP. Message Senders with Message Class of *SOAPSNDR* (Sender for real-time HTTP/SOAP messages) do not need to populate the Message XSL and Response XSL to add and remove SOAP envelope.

If Oracle Utilities Customer Care and Billing sends JMS messages to the integration queues, use the message senders created for each outbound queue. See Message Sender for Each Outbound Queue for more information.

If Oracle Utilities Customer Care and Billing is sending JMS messages to the integration JMS Wrapper service, use the message senders create for each JMS Wrapper service. See Message Sender for Each Integration JMS Wrapper Service for more information.

Example: External System – CI_MDM1

Outbound Message Type	Processing Method	Message Sender	Message XSL
CI_MDM2PSYN	Real-time	CI_MDM2PSyn or PerSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2SPSYN	Real-time	CI_MDM2SPSyn or SPSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2SASYN	Real-time	CI_MDM2SASyn or SASynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2SARELSYN	Real-time	CI_MDM2SARelSyn or SARelSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2MSYN	Real-time	CI_MDM2MSyn or MtrSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2MCSYN	Real-time	CI_MDM2MCSyn or MtCfSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2SHSYN	Real-time	CI_MDM2SHSyn or SPMHSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDMCOSYNC	Real-time	CI_MDMCOSync or COPTSynReqJW	C1-CCB2JMSQAddNamespace.xsl

Outbound Message Type	Processing Method	Message Sender	Message XSL
CI_MDMCOESYN	Real-time	CI_MDMCOESyn or COEvSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDMBCSYNC	Real-time	CI_MDMBCSync or BCSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM_BBD	Real-time	BatchBDReq2 or BatchBDReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM_OBD	Real-time	OnlineBDReq2 or OnlineBDReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2MRSYN	Real-time	CI_MDM2MRSyn or MRSynReqJW	C1-CCB2JMSQAddNamespace.xsl
CI_MDM2RHILO	Real-time	REGHILOW	CDxAddEnvelope-SOAP1-2.xsl **Response XSL**: C1-CCBRemoveEnvEnvelopeAndNamespace.xsl
C1-USAGEREQ	Real-time	WX-RateAnlys	CDxAddEnvelope-SOAP1-2.xsl **Response XSL**: C1-CCBRemoveEnvEnvelopeAndNamespace.xsl
WX-USGADJREQ	Real-time	WX-UsageAdjs	CDxAddEnvelope-SOAP1-2.xsl **Response XSL**: C1-CCBRemoveEnvEnvelopeAndNamespace.xsl
CI_DETBILCYC	Real-time	DETBILLCYCLE	CDxAddEnvelope-SOAP1-2.xsl Response XSL: C1-CCBRemoveEnvEnvelopeAndNamespace.xsl
CI-MDMUTUPD	Real-time	UTSTATUPD	CDxAddEnvelope-SOAP1-2.xsl

For more information on configuration guidelines, refer to the Oracle Utilities Customer Care and Billing documentation.

Setting up Oracle Utilities Meter Data Management

Two BPA scripts are provided to aid in the setup of Oracle Utilities Meter Data Management in sync processing. Consequently, the amount of setup work to be done by an implementation is greatly reduced. These scripts are intended to be executed only once prior to any customizations being made to any of the sync objects:

1. Insert Oracle Utilities Customer Care and Billing-specific algorithms to Sync Request business objects in Oracle Utilities Meter Data Management.
    - D2-AddCCBAlg - This script inserts transformation algorithms specific to the Oracle Utilities Customer Care and Billing integration into the sync request BOs. If your implementation needs to introduce additional transformation algorithms, they need to be inserted after this script is run.
    - D2-PopMstCfg- This script sets up data in the following master configurations:
        - Master Data Synchronization Configuration – contains the foreign key reference information used by framework to validate and/or resolve foreign keys in the master data sync requests.

- Seeder Sync Request Master Configuration – contains information needed by the sync request seeder BO to determine the actual BO to instantiate. The information is keyed to external system, maintenance object, and initial load indicator in the sync request.

The rest of the setup tasks in Oracle Utilities Meter Data Management include:

- Oracle Utilities Meter Data Management Admin Data Table Configuration
- Oracle Utilities Meter Data Management System Data Table Configuration
- Oracle Utilities Meter Data Management Inbound Message Configuration
- Oracle Utilities Meter Data Management Outbound Message Configuration

For more information on configuring and working with Oracle Utilities Meter Data Management, refer to Oracle Utilities Meter Data Management Installation and Configuration Guide.

Standard Oracle Utilities Meter Data Management configuration, such as setting up usage validation rules and setting up services to poll for usage data, is covered in the standard Oracle Utilities Meter Data Management configuration guides.

The following sections provide a general overview of these steps. However, you should refer to the Oracle Utilities Meter Data Management Installation and Configuration Guide for detailed steps.

Oracle Utilities Meter Data Management Admin Data Table Configuration

This section describes the unique setup issues specifically related to configuring your system for the integration.

For more information about configuring Oracle Utilities Meter Data Management, see the Oracle Utilities Meter Data Management User Guide.

Country

Create a country code in Oracle Utilities Meter Data Management by navigating to the Country portal under the Admin menu.

The **Main** page is used to customize the fields and field descriptions that are displayed where addresses are used in the system. This ensures that all addresses conform to the customary address format and conventions of the particular country you have defined.

Guideline	Corresponding DVM
Create the Country codes	OUCCB2_OUMDM2_Country

Service Point Type

Create the required SP Types by navigating to the SP Type portal under the Admin menu.

Guideline	Corresponding DVM
Create SP Types The codes defined here must exactly match values in the DVM indicated.	OUCCB2_OUMDM2_SPType

Usage Subscription Type

Create the required US Types by navigating to the Usage Subscription Type portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create US Types	OUCCB2_OUMDM2_USType

Device Type

Create the required Device Types by navigating to the Device Type portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create Device Types	OUCCB2_OUMDM2_DeviceType

Manufacturer and Model

Create the required Manufacturer and Model codes by navigating to the Manufacturer portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create Manufacturer codes	OUCCB2_OUMDM2_Manufacturer
Create Model codes	OUCCB2_OUMDM2_Model

Device Configuration Type

Create the required Device Configuration Types by navigating to the Device Configuration Type portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create Device Configuration Types	OUCCB2_OUMDM2_DeviceConfigType

Service Type

Create the required Service Types by navigating to the Service Type portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create Service Types	OUCCB2_OUMDM2_MCServiceType

Unit of Measure

Define the Unit of Measure codes by navigating to the Unit of Measure portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Define unit of measurement codes.	OUMDM2_OUCCB2_UOM

Time of Use

Define the Time of Use codes by navigating to the Time of Use portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Define time of use codes	OUMDM2_OUCCB2_TOU

Service Quantity Identifier

Define the SQI codes by navigating to the Service Quantity Identifier portal under the Admin menu. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Define service quantity identifiers	OUMDM2_OUCCB2_SQI

Service Provider

Create a service provider that references the external system for Oracle Utilities Customer Care and Billing.

To create usage transactions (and calculate bill determinants) based on usage requests from Oracle Utilities Customer Care and Billing, add this processing method:

- Processing Role: Usage Transaction Creation, Business Object: How To Create US Related Information, Default Processing Method Business Object: D2-UsageTransaction

To send usage (bill determinants) to Oracle Utilities Customer Care and Billing, add this processing method:

- Processing Role: Usage Transaction Notification - Online, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message type for usage transaction response for an online usage request>
- Processing Role: Usage Transaction Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message type for usage transaction response for a batch usage request>
- Processing Role: Usage Transaction Error Notification - Online, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message type for usage transaction error response for an online usage request>
- Processing Role: Usage Transaction Error Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message type for usage transaction error response for a batch usage request>
- Processing Role: Usage Transaction Subsequent Correction Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message type for usage transaction subsequent correction notification>

To support Oracle Utilities Customer Care and Billing meter read sync, add this processing method:

- Processing Role: Initial Measurement Creation, Business Object: How To Create MC Related Information, Default Processing Method Business Object: D1-SyncIMDScalar

To sync dynamic options and dynamic option events from Oracle Utilities Customer Care and Billing, add this processing method:

- Processing Role: Contract Option Type Translation, Business Object: How To Translate External Value, Default Processing Method Business Object: D2-CCBContractOptionTypeLookup

To support notification of bill cycle change to Oracle Utilities Customer Care when bill cycle changes resulting from change in SP's measurement cycle, add this processing method:

- Processing Role: SP Measurement Cycle Change, Business Object: How To Request Customer Notification, Default Processing Method Outbound Message Type: <outbound message type>

Master Configuration

A BPA script is provided to pre-populate the master configurations with the information necessary to support the base objects included in the data sync. Run D2-PopMstCfg to complete the BPA script.

Navigation	Field
Master Configuration portal under the Admin menu.,	Master Data Synchronization Configuration
	Seeder Sync Request
	Self Service Rate Compare Configuration

Feature Configuration

To enable navigation from Oracle Utilities Meter Data Management to Oracle Utilities Customer Care and Billing, setup the Oracle Utilities Customer Care and Billing URL option type on the General System Configuration feature configuration. The option value must contain the URL for the Oracle Utilities Customer Care and Billing system (see the demo environment for an example).

Usage Adjustment Profiles

Refer to the Oracle Utilities Meter Data Management Configuration Guide in the Integration chapter for information on setting up the complete usage adjustment profile functionality. This feature only used for the Oracle Utilities Customer Self Service Rate Compare feature.

Oracle Utilities Meter Data Management System Data Table Configuration

To configure System Data Tables, you need the following:

Business Objects

This section describes unique setup issues specifically related to configuring your system for integration.

Business Object	Description
D1-OngoingSyncRequestContact D1-OngoingSyncRequestDC D1-OngoingSyncRequestDevice D1-OngoingSyncRequestIE D1-OngoingSyncRequestMC D1-OngoingSyncRequestSP D2-OngoingSyncRequestUS CompositeSyncRequestDC D2-OngoingSyncRequestDynOpt D2-OngoingSyncRequestDynOptEvt	These business objects define the behavior of the ongoing sync requests. The schema elements define information required to maintain the master data in Oracle Utilities Meter Data Management. As part of sync request processing, an acknowledgement message is sent to the external system (either positive or negative). The "Outbound Message Type" BO option contains a reference to the outbound message BO to use for this purpose. The base package includes BO D1-OngoingSyncReqAckMsg to be used on the outbound message type configuration. (Note that this option does not need to be configured on the ongoing sync requests for Device Configuration and Measuring Component, but does have to be configured on the Composite Sync Request for Device Configuration.) The error states in the ongoing sync requests contain automatic To Do creation and automatic retry. The parameters relevant to these processes (To Do Retry Frequency and To Do Maximum Retries) are captured as BO status options. If your implementation needs to introduce custom values, add a higher sequenced row for the option you need to modify. The algorithms will automatically use these values. The Create To Do algorithm (D1-TDCREATE) has been delivered to use the base package supplied To Do Type D1-SYNIN for this process. If your implementation needs to use a different To Do Type, you will need to configure your own algorithm and supply the value in its parameters. The monitor process on the initial states of these business objects can be removed by the implementation if immediate processing of sync requests as they are created is desired. For example, in the case where implementations have opted to use the C1-TRN-RELSY algorithm in their online Oracle Utilities Customer Care and Billing bill generation process.

D2-UsageTransaction	This business object defines the behavior of a usage transaction. To configure your system to create usage transactions based on usage requests from external system using this business object: • Create a service provider that references the usage subscriber's external system (e.g. Oracle Utilities Customer Care and Billing). • Add a processing method for the service provider created earlier. Use a processing role of Usage Transaction Creation and a business object of How To Create US Related Information. Define business object D2-UsageTransaction as the default processing method. To configure your system to send usage back to the external system, add the following processing methods (using the same provider created earlier). • Processing Role: Usage Transaction Notification - Online, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message for usage transaction response for an online usage request> • Processing Role: Usage Transaction Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message for usage transaction response for a batch usage request> • Processing Role: Usage Transaction Error Notification - Online, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message for usage transaction error response for an online usage request> • Processing Role: Usage Transaction Error Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message for usage transaction error response for a batch usage request> • Processing Role: Usage Transaction Subsequent Correction Notification - Batch, Business Object: How To Send US Related Information, Default Processing Method Outbound Message Type: <outbound message for usage transaction subsequent correction notification>

D1-OngoingSyncReqScalarMtrRead	This business object defines the behavior of the Scalar Meter Read ongoing sync requests. The schema elements define information required to sync a Scalar Meter Read as IMD in Oracle Utilities Meter Data Management. Notable system data delivered for sync Scalar Meter Read - - Transform algorithm (D1-FRMTRANDT) transforms the sync request's register reads into IMD Seeder BO data. - IMD Creation algorithm (D1-CRESYNIMD) instantiates IMD Seeder BOs. - Sync Request IMD BO (D1-SyncIMDScalar) transformed from IMD Seeder BO. - Sync Request IMD Scalar Other Info DA (D1-SyncIMDScalarOtherInfo) is an empty DA, that implementation may extend to capture other Oracle Utilities Customer Care and Billing meter/register read elements and custom elements, in the MDM Sync Request IMD BO. Similar to Master Data Sync, Scalar Meter Read Sync supports - Sending acknowledgments - Automatic to do creation and retry in error states. The monitor process on the initial states of these BOs may be removed by the implementation if immediate processing of they sync requests is desired as they are created (as in the case where implementations have opted to use the C1-TRN-RELSY algorithm in their online Oracle Utilities Customer Care and Billing bill generation process – the previous section for more information).
D2-InboundBillCycleSyncRequest	This business object defines the schema elements and behavior of an ongoing Bill Cycle sync requests in Oracle Utilities Meter Data Management. The Construct Bill Cycle and Bill Cycle Schedule algorithm (D2-CONBCSCH) derives the primary key and instantiates the bill cycle and bill cycle schedule into the MDM table. As part of sync request processing, an acknowledgement message (either positive or negative) is sent to the external system. The "Outbound Message Type" BO option contains a reference to the outbound message BO to use for this purpose. The base package includes BO D1-OngoingSyncReqAckMsg to be used on the outbound message type configuration.

For more information about the sync request process, the business objects, maintenance objects, and other components used for this process, see the "Data Synchronization" section in Oracle Utilities Framework User Guide.

BO Algorithms

- Oracle Utilities Customer Care and Billing-specific algorithms need to be plugged in on the sync request business objects. A BPA script (D2-AddCCBAlg) is provided to plug-in these algorithms on to the sync BOs. This BPA script should be executed prior to any further customizations done on the sync BOs and this should only be executed once.
- To support notification of bill cycle change to Oracle Utilities Customer Care when bill cycle changes resulting from change in SP's measurement cycle, the

BO audit algorithm (D2-SPMCCHG) must be plugged-in to service point BO (D1-ServicePoint).

Extendable Lookups

Configure the following extendable lookups in Oracle Utilities Meter Data Management:

- D1-DeviceLocationLookup – Configure the corresponding values from the Oracle Utilities Customer Care and Billing Meter Location admin table.
- D1-SPInstructionLookup – Configure the corresponding values from the
- Oracle Utilities Customer Care and Billing Meter Read Instruction admin table.
- D1-SPWarningLookup – Configure the corresponding values from the
- Oracle Utilities Customer Care and Billing Meter Read Warning admin table.
- D1-OkToEnterLookup – Configure the corresponding values from
- Oracle Utilities Customer Care and Billing (values are true or false).
- D1-KeyLookup – Configure the corresponding values from
- Oracle Utilities Customer Care and Billing (values are true or false).
- D2-CCBRateScheduleLookup – Configure the
- Oracle Utilities Customer Care and Billing rate schedule and its corresponding Oracle Utilities Meter Data Management usage group.
- D2-CCBContractOptionTypeLookup - Configure the Oracle Utilities Customer Care and Billing contract option types and their corresponding Oracle Utilities Meter Data Management dynamic option type.

Read Out Type

Navigate to the **Lookup** portal under the **Admin** menu to create as needed. The codes defined here must exactly match values in the DVM indicated.

Guideline	Corresponding DVM
Create Read Out Types for READ_OUT_TYPE_FLG field	OUCCB2_OUMDM2_ReadOutType

Menus

Configure the following context menus to allow navigation from Oracle Utilities Meter Data Management to Oracle Utilities Customer Care and Billing:

Menu	Navigation Option	Description
D1_CONTEXT_SP	d1SPGotoCCB	Allows navigation from the MDM SP context menu to Oracle Utilities Customer Care and Billing Control Central - Account Information

Batch Scheduling

The delivered batch codes need no further setup in Oracle Utilities Meter Data Management. The following batch processes can be run from the Batch Submission page.

The following batch processes are used for Initial Sync requests:

All sync requests for all objects being synchronized are expected to be present in the Pending state. The following section describes the general processing for the initial sync request batches.

Batch Code	Description
D1-CMSYN	This batch process split the composite sync request for device configuration into its constituent MO-based sync requests for device configuration and measuring component.
F1-SYSRQ	This batch process transitions all the sync requests out of the **PENDING** state.
F1-SAKRQ	This batch process pre-allocates the production key to each record and transitions all the sync requests out of the Transformed/Schema Validated state into the Key Allocated state.
D1-SIKCN D1-SIKSP, D1-SIKDV, D1-SIKDC	These batch processes resolves any foreign keys within the schema as well as executes the validation algorithms on the target BOs. These batch codes are for processing Contact, SP, Device and Device Configuration initial sync requests. These batch processes can be run in parallel.
D1-SILCN D1-SILDV	These batch processes loads the records for Contact and Device into the production tables. They are loaded first into the system because the other sync request records are dependent on these records before they can be loaded successfully into the system. These batch processes can be run in parallel.
D1-SILSP D1-SILDC	These batch processes loads the records for SP and Device Configuration into the production tables. These batch processes can be run in parallel.
D1-SIKIE D1-SIKMC	These batch processes resolves any foreign keys within the schema as well as executes the validation algorithms on the target BOs for Install Event and Measuring Component. These batch processes can be run in parallel.
D1-SILIE D1-SILMC	These batch processes loads the records for Install Event and Measuring Component. These batch processes can be run in parallel.
D1-SIKUS	This batch process resolves any foreign keys within the schema and executes the validation algorithms on the US target BO.
D1-SILUS	This batch process loads the US records into the production tables.
D1-SIIER	This is the batch process to transition sync request out of the **ERROR** state.

If any sync requests exist in the Validation Error state, run D1-SIIER to retry the data transformation/schema validation process (after, of course, the error have been investigated and resolved).

If any sync requests exist in the Resolution/BO Validation Error state, run its respective D1-SIK* batch job (see above for the proper suffix to use for each master data record being synchronized).

The following batch process are used for Ongoing Sync requests

Batch Code	Description
D1-SIOPE	This is the generic batch process that is used for different sync processes including to transition ongoing sync requests out of the **PENDING** state. This process includes parameters that can be used to control which sync request BOs to process.
D1-SIOER	This is the batch process to transition ongoing sync request out of the **ERROR** state.

Depending on how sync requests are sent from Oracle Utilities Customer Care and Billing, it is possible that interdependent sync requests might be received out of order. If you wish to control the order of processing the ongoing sync requests within, you can either introduce your own batch controls to replace D1-SIOPE (each batch control will have the specific ongoing sync BO defaulted in the input parameter); or you can submit D1-SIOPE several times, each time specifying a different ongoing sync BO in the input parameter. Otherwise, you can let the built-in retry processing within the ongoing sync request life cycle resolve the error by running D1-SIOER.

The above also applies to processing of the meter configuration sync request from Oracle Utilities Customer Care and Billing. Since the latter is split into several sync requests in Oracle Utilities Meter Data Management, it is possible that the MC syncs are processed before the DC sync. Any of the options already mentioned can be used to handle this scenario.

The following batch process is used to purge sync requests

Batch Code	Description
C1-PRGSY	This batch process purges sync requests in a Discarded state. The discarded sync requests to be deleted can be filtered by the sync request BO and the number of days since its creation.

The following batch processes are used for usage transaction processing

Batch Code	Description
D2-UTCD	This is the batch process to transition usage transactions out of the **Calculation Deferred** state. Usage transactions created as a result of batch billing initiated usage requests stop on the Calculation Deferred state. Run this batch process to proceed with the calculation.
D2-UTID	This is the batch process to transition usage transactions out of the **Issue Detected** state. Usage transactions that encounter issues during calculation stop on the Issue Detected state. Run this batch process to retry calculation.

Oracle Utilities Meter Data Management Inbound Message Configuration

This section describes the configuration needed for Oracle Utilities Meter Data Management to receive messages from the integration layer by consuming them from the queues:

- WebLogic Server JMS Configuration
- Configuration File Changes for MDBs

Note: This Inbound Message Configuration is NOT needed if implementation uses the Integration JMS Wrapper processes to receive messages coming from the integration processes. Skip this section and proceed to the Oracle Utilities Meter Data Management Outbound Message Configuration section.

For first-time installation, skip this configuration. For an existing implementation that has already done this setup but want to switch and use the Integration JMS Wrapper processes instead, the JMS configuration can be left as is since these configuration will not be used but the MDB Configuration files must be removed to avoid having issues with message consumption from the queue.

WebLogic Server JMS Configuration

To configure JMS in the Oracle Utilities Meter Data Management WebLogic server log in to the console using the URL http://<server_name>:<port_number>/console. Example: http://mdmserver:7001/console

Note that the WebLogic Server JMS Configuration is NOT needed if the optional CCB-MDM Patch 26532407 is installed.

JMS Module

Create a new JMS module in the WebLogic console used for remote queue configuration.

1. Open the WebLogic console and create a new JMS module.
2. Enter a meaningful name for the JMS module. This JMS module is used to create configurations which consume messages from remote WebLogic queues. Example: MDMInegrationModule

Foreign Server

Create a new Foreign server under the JMS module in the WebLogic console used for remote queue configuration.

1. Open the WebLogic console and select the JMS module created for integration.
2. Create a Foreign server under the JMS module.
3. Add the following:
   - **Name** – Name of the Foreign server. Example: MDMCCBForeignServer
   - **JNDI Initial Context Factory** – *weblogic.jndi.WLInitialContextFactory*
   - **JNDI Connection URL** – Add the URL of Integration SOA server. Example: t3://soaserver.com:8002

- **JNDI Properties Credential** – Password for the SOA server user.
- **JNDI Properties** - *java.naming.security.principal=<SOA Server user>*. Example: weblogic

4. Under the Foreign server, create a Foreign destination for each remote queue.
   - **Name** – Name of foreign destination.
   - **Local JNDI Name** – Add a local JNDI name for the Integration queue. Local JNDI name is later added manually as part of configuration in the WebLogic-ejb-jar.xml → <weblogic-enterprise-bean> → <message-driven-descriptor> → <destination-jndi-name>.
   - **Remote JNDI Name** – JNDI name of the queue on the Integration SOA server.

     For each integration point, one destination is created.
5. Under the **Foreign** server, create a **Remote Connection Factory**.
   - **Name** – Name of remote connection factory.
   - **Local JNDI Name** – Add a local JNDI name for the Integration Connection Factory. This JNDI name is added manually later as part of configuration in the WebLogic-ejb-jar.xml → <weblogic-enterprise-bean> → <message-driven-descriptor> → <connection-factory-jndi-name>.
   - **Remote JNDI Name** – JNDI name of the JMS Connection Factory on the Integration SOA server.

Example WebLogic Server JMS Configuration Setup

Person Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 PersonSyncRequest	jms/LocalOUMDM2 PersonSyncRequest	jms/OUMDM2 PersonSyncRequest

SP Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 SPSyncRequest	jms/LocalOUMDM2 SPSyncRequest	jms/OUMDM2 SPSyncRequest

SA Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 SASyncRequest	jms/LocalOUMDM2 SASyncRequest	jms/OUMDM2 SASyncRequest

SA Relationship Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2SA RelationshipSyncRequest	jms/LocalOUMDM2 SARelationshipSyncRequest	jms/OUMDM2SARelationship SyncRequest

Meter Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 MeterSyncRequest	jms/LocalOUMDM2 MeterSyncRequest	jms/OUMDM2 MeterSyncRequest

Meter Configuration Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 MeterConfigSyncRequest	jms/LocalOUMDM2 MeterConfigSyncRequest	jms/OUMDM2 MeterConfigSyncRequest

SP-Meter History Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 SPMeterHistSyncRequest	jms/LocalOUMDM2 SPMeterHistSyncRequest	jms/OUMDM2 SPMeterHistSyncRequest

Batch BD Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 BatchBDRequest	jms/LocalOUMDM2 BatchBDRequest	jms/OUMDM2 BatchBDRequest

Online BD Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 OnlineBDRequest	jms/LocalOUMDM2 OnlineBDRequest	jms/OUMDM2 OnlineBDRequest

Meter Read Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 MeterReadSyncRequest	jms/LocalOUMDM2 MeterReadSyncRequest	jms/OUMDM2 MeterReadSyncRequest

Remote Connection Factory

Connection Factory Name	Local JNDI Name	Remote JNDI Name
OUCCB2OUMDM2 ConnectionFactory	jms/LocalOUCCB2OUMDM2 ConnectionFactory	jms/OUCCB2OUMDM2 ConnectionFactory

Dynamic Options Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 DynamicOptSyncRequest	jms/LocalOUMDM2 DynamicOptSyncRequest	jms/OUMDM2 DynamicOptSyncRequest

Dynamic Option Events Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2 DynamicOptEvtSyncRequest	jms/LocalOUMDM2 DynamicOptEvtSync Request	jms/OUMDM2 DynamicOptEvtSync Request

Bill Cycle Synchronization Integration Process

Destination Name	Local JNDI Name	Remote JNDI Name
OUMDM2InboundBillCycleSyncRequest	jms/ LocalOUMDM2BillCycleSync Request	jms/OUMDM2Bill CycleSyncRequest

Configuration File Changes for MDBs

Note that the MDB Configuration is NOT needed if implementation will use the Integration JMS Wrapper processes to receive messages coming from the integration processes.

Configure Message Driven Beans (MDB)

It is recommended that you use the Oracle Utilities Meter Data Management template and CM (Customer Modification) feature to make changes to these configuration files. This ensures that your modifications cannot be overwritten by future application patches.

- **Modify files:** ejb-jar.xml and ejb-weblogic-jar.xml

- **Location:** Oracle Utilities Meter Data Management Enterprise Archive (EAR) file.

  Observe the following points while making configuration file changes:

- The Oracle Utilities Meter Data Management configuration files, ejb-jar.xml and ejb-weblogic-jar.xml, must be modified to configure Message Driven Beans (MDB). MDBs which receive messages from the integration queues. These files are part of the Oracle Utilities Meter Data Management Enterprise Archive (EAR) file.
- The Oracle Meter Data Management application needs to be redeployed after these changes are made.

- **Managing Configuration Files:** Configuration files such as config.xml, ejb-jar.xml and ejb-weblogic-jar.xml are managed through template configuration files which reside in the environment's templates directory. When the initialSetup.sh script is executed, environment specific information is combined with the template to create the target file which is then deployed to the correct location. When the environment is started up (spl.sh start) the changes are automatically deployed to WebLogic.
  - **Extending existing templates:** It is possiable to extend existing templates with the use of Include template file(s) in the same location as the existing template. Using #ouaf_user_exit within the target template that is extended, additional configuration from the included template is processed and appended to the target template where the #ouaf_user_exit is present.
  - **Enabling changes for the integration:** To enable your changes for integration with Oracle Utilities Meter Data Management it is recommended that you first make a "CM" copy of the existing template and make your changes to the CM version. If there are any problems with starting the application it is a simple process to delete the CM versions of the files and rerun initialSetup to regenerate and redeploy the original versions.

    If you make CM versions of the template files and later install a patch which updates the base template, the CM version will not be updated.

Note: For Oracle Utilities Meter Data Management Version 2.1.0.3+, working examples of the configuration files are available for download from My Oracle Support in patch number Bug 24755497 - 75108 ADD BILL CYCLE. Before installing the examples, read the Product Fix design document included in the patch for more information.

For Oracle Utilities Meter Data Management Version 2.2+, working examples of the configuration files are available for download from My Oracle Support in patch number Bug 25221480 - 75108 ADD BILL CYCLE MDB TEMPLATE CONFIGURATIONS. Before installing the examples, read the Product Fix design document included in the patch for more information.

Create an MDB to Receive Messages

Use these steps to create an MDB from the Oracle Utilities Meter Data Management inbound queue:

1. Create a new MDB to receive messages from each integration inbound queue.

   For simplicity, we refer to the names of the target configuration files in the following examples. However, you should make your changes in the "templates/cm_<target file>"(for Oracle Utilities Meter Data Management Version 2.1.0.3+) and "MDM-CCB/templates/cm_<target file>"(for Oracle Utilities Meter Data Management Version 2.2 +, include a version of the file and then execute initalSetup.sh (Unix) or initalSetup.cmd (Windows) to deploy the generated file.

2. Create an MDB for each Oracle Utilities Meter Data Management inbound queue to receive messages and invoke the Oracle Utilities Meter Data Management service.

3. Create or modify the following files to configure the MDBs:

   - cm_ejb-jar.xml.wls.jms_1.include
   - cm_ejb-jar.xml.wls.jms_2.include
   - cm_weblogic-ejb-jar.xml.jms.include
   - cm_config.xml.jms.include or cm_config.xml.win.jms.include (for Windows systems only)

   a. Add the <message-driven> and <container-transaction> tag for each inbound queue in the ejb-jar.xml. Also, add a security role with role cisusers in the ejb-jar.xml files.

      - Example: cm_ejb-jar.xml.wls.jms_1.include

```
<!--Batch BD Integration Point -->
<message-driven>
  <description>MDB for OUMDM2BatchBDRequest</description>
   <display-name>OUMDM2BatchBDRequest</display-name>
   <ejb-name>OUMDM2BatchBDRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—Meter Config Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2MeterConfigSyncRequest</description>
   <display-name>OUMDM2MeterConfigSyncRequest</display-name>
   <ejb-name>OUMDM2MeterConfigSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—Meter Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2MeterSyncRequest</description>
   <display-name>OUMDM2MeterSyncRequest</display-name>
   <ejb-name>OUMDM2MeterSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
```

```
</message-driven>
<!--Online BD Integration Point -->
<message-driven>
   <description>MDB for OUMDM2OnlineBDRequest</description>
   <display-name>OUMDM2OnlineBDRequest</display-name>
   <ejb-name>OUMDM2OnlineBDRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—Person Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2PersonSyncRequest</description>
   <display-name>OUMDM2PersonSyncRequest</display-name>
   <ejb-name>OUMDM2PersonSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—SA Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2SASyncRequest</description>
   <display-name>OUMDM2SASyncRequest</display-name>
   <ejb-name>OUMDM2SASyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!-SA Relationship Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2SARelationshipSyncRequest</
   description> <display-name>OUMDM2SARelationshipSyncRequest</
   display-name> <ejb-name>OUMDM2SARelationshipSyncRequest</ejb-
   name> <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type> <message-destination-
   type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—SP-Meter History Integration Point -->
<message-driven>
   <description>MDB for OUMDM2SPMeterHistSyncRequest</description>
   <display-name>OUMDM2SPMeterHistSyncRequest</display-name>
   <ejb-name>OUMDM2SPMeterHistSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!-- SP Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2SPSyncRequest</description>
   <display-name>OUMDM2SPSyncRequest</display-name>
   <ejb-name>OUMDM2SPSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
```

```
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!—Meter Read Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2MeterReadSyncRequest</description>
   <display-name>OUMDM2MeterReadSyncRequest</display-name>
   <ejb-name>OUMDM2MeterReadSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!-Dynamic Option Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2DynamicOptSyncRequest</description>
   <display-name>OUMDM2DynamicOptSyncRequest</display-name>
   <ejb-name>OUMDM2DynamicOptSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!-Dynamic Option Event Sync Integration Point -->
<message-driven>
   <description>MDB for OUMDM2DynamicOptEvtSyncRequest</
description>
   <display-name>OUMDM2DynamicOptEvtSyncRequest</display-name>
   <ejb-name>OUMDM2DynamicOptEvtSyncRequest</ejb-name>
   <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
   <messaging-type>javax.jms.MessageListener</messaging-type>
   <transaction-type>Bean</transaction-type>
   <message-destination-type>javax.jms.Queue</message-destination-
type>
</message-driven>
<!-Bill Cycle Sync Request Integration Point -->
<message-driven>
       <description>MDB for OUMDM2InboundBillCycleSyncRequest</
description>
       <display-name>OUMDM2BillCycleSyncRequest</display-name>
       <ejb-name>OUMDM2BillCycleSyncRequest</ejb-name>
       <ejb-class>com.splwg.ejb.mdb.MessageProcessor</ejb-class>
       <messaging-type>javax.jms.MessageListener</messaging-type>
       <transaction-type>Bean</transaction-type>
       <message-destination-type>javax.jms.Queue</message-
destination-type>
        </message-driven>
```

- Example: cm_ejb-jar.xml.wls. jms_2.include

```
<security-role>
   <role-name>cisusers</role-name>
</security-role>
<!--Batch BD Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2BatchBDRequest</ejb-name>
```

```
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—Meter Config Sync Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2MeterConfigSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—Meter Sync Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2MeterSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!--Online BD Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2OnlineBDRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!--Person Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2PersonSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—SA Sync Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2SASyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!-SA Relationship Sync Integration Point -->
<container-transaction>
<method>
<ejb-name>OUMDM2SARelationshipSyncRequest</ejb-name>
<method-name>onMessage</method-name>
</method>
<trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—SP-Meter History Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2SPMeterHistSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!-- SP Sync Integration Point -->
<container-transaction>
```

```
   <method>
 <ejb-name>OUMDM2SPSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!—Meter Read Sync Integration Point -->
<container-transaction>
   <method>
 <ejb-name>OUMDM2MeterReadSyncRequest</ejb-name>
 <method-name>onMessage</method-name>
   </method>
   <trans-attribute>NotSupported</trans-attribute>
</container-transaction>
<!-Dynamic Option Sync Integration Point -->
<container-transaction>
    <method>
  <ejb-name>OUMDM2DynamicOptSyncRequest</ejb-name>
  <method-name>onMessage</method-name>
    </method>
    <trans-attribute>NotSupported</trans-attribute>
 </container-transaction>
<!-Dynamic Option Event Sync Integration Point -->
 <container-transaction>
     <method>
    <ejb-name>OUMDM2DynamicOptEvtSyncRequest</ejb-name>
    <method-name>onMessage</method-name>
     </method>
     <trans-attribute>NotSupported</trans-attribute>
 </container-transaction>
<!-Inbound Bill Cycle Sync Request Integration Point -->
<container-transaction>
            <method>
                <ejb-name>OUMDM2BillCycleSyncRequest</ejb-name>
                <method-name>onMessage</method-name>
            </method>
            <trans-attribute>NotSupported</trans-attribute>
        </container-transaction>
```

b. Modify the cm_weblogic-ejb-jar.xml.jms.include file. Add the <weblogic-enterprise-bean> tag for each inbound queue.

- The references in <weblogic-enterprise-bean> tag include:
  - <ejb-name> - MDB name given in ejb-jar.xml.
  - <destination-jndi-name> - JNDI name provided in JMS module → Foreign server → Foreign destination Local JNDI name.
  - <connection-factory-jndi-name> - JNDI name provided in JMS module → Foreign server → Remote Connection Factory → Local JNDI name.
- Example: cm_weblogic-ejb-jar.xml.jms.include

```
<!--Batch BD Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2BatchBDRequest</ejb-name>
   <message-driven-descriptor>
 <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
 </pool>
```

```
 <destination-jndi-name>jms/LocalOUMDM2BatchBDRequest</
destination-jndi-name>
 <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!--Meter Config Sync Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2MeterConfigSyncRequest</ejb-name>
   <message-driven-descriptor>
 <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
 </pool>
 <destination-jndi-name>jms/LocalOUMDM2MeterConfigSyncRequest</
destination-jndi-name>
 <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Meter Sync Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2MeterSyncRequest</ejb-name>
   <message-driven-descriptor>
 <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
 </pool>
 <destination-jndi-name>jms/LocalOUMDM2MeterSyncRequest</
destination-jndi-name>
 <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!--Online BD Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2OnlineBDRequest</ejb-name>
   <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
  </pool>
   <destination-jndi-name>jms/LocalOUMDM2OnlineBDRequest</
destination-jndi-name>
   <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
    </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Person Sync Integration Point -->
<weblogic-enterprise-bean>
    <ejb-name>OUMDM2PersonSyncRequest</ejb-name>
    <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
   </pool>
    <destination-jndi-name>jms/LocalOUMDM2PersonSyncRequest</
destination-jndi-name>
    <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
 </message-driven-descriptor>
</weblogic-enterprise-bean>
```

```
<!—SA Sync Integration Point -->
<weblogic-enterprise-bean>
    <ejb-name>OUMDM2SASyncRequest</ejb-name>
    <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
  </pool>
    <destination-jndi-name>jms/LocalOUMDM2SASyncRequest</
destination-jndi-name>
    <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
    </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-SA Relationship Sync Integration Point -->
<weblogic-enterprise-bean>
<ejb-name>OUMDM2SARelationshipSyncRequest</ejb-name>
<message-driven-descriptor>
<pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/LocalOUMDM2SARelationshipSyncRequest</
destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
</message-driven-descriptor>
</weblogic-enterprise-bean>
<!—SP-Meter History Integration Point -->
<weblogic-enterprise-bean>
    <ejb-name>OUMDM2SPMeterHistSyncRequest</ejb-name>
    <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
   </pool>
    <destination-jndi-name>jms/LocalOUMDM2SPMeterHistSyncRequest</
destination-jndi-name>
    <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
    </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-- SP Sync Integration Point -->
<weblogic-enterprise-bean>
    <ejb-name>OUMDM2SPSyncRequest</ejb-name>
    <message-driven-descriptor>
 <pool>
    <max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
 </pool>
 <destination-jndi-name>jms/LocalOUMDM2SPSyncRequest</destination-
jndi-name>
 <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Meter Read Sync Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2MeterReadSyncRequest</ejb-name>
   <message-driven-descriptor>
 <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
```

```
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
 </pool>
 <destination-jndi-name>jms/LocalOUMDM2MeterReadSyncRequest</
destination-jndi-name>
 <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
   </message-driven-descriptor>
</weblogic-enterprise-bean>
<!—Dynamic Option Sync Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2DynamicOptSyncRequest</ejb-name>
   <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
  </pool>
  <destination-jndi-name>jms/LocalOUMDM2DynamicOptSyncRequest</
destination-jndi-name>
  <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
    </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-Dynamic Option Event Sync Integration Point -->
<weblogic-enterprise-bean>
   <ejb-name>OUMDM2DynamicOptEvtSyncRequest</ejb-name>
   <message-driven-descriptor>
  <pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
  </pool>
  <destination-jndi-name>jms/LocalOUMDM2DynamicOptEvtSyncRequest</
destination-jndi-name>
  <connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
  </message-driven-descriptor>
</weblogic-enterprise-bean>
<!-Bill Cycle Sync Request Integration Point -->
<weblogic-enterprise-bean>
<ejb-name>OUMDM2BillCycleSyncRequest</ejb-name>
<message-driven-descriptor>
<pool>
<max-beans-in-free-pool>5</max-beans-in-free-pool>
<initial-beans-in-free-pool>1</initial-beans-in-free-pool>
</pool>
<destination-jndi-name>jms/
LocalOUMDM2InboundBillCycleSyncRequest</destination-jndi-name>
<connection-factory-jndi-name>jms/
LocalOUCCB2OUMDM2ConnectionFactory</connection-factory-jndi-name>
</message-driven-descriptor>
</weblogic-enterprise-bean>
```

c. Example: cm_config.xml.jms.include / cm_config.xml.win.jms.include

```
<jms-system-resource>
   <name>CCB2IntegrationExampleModule</name>
   <target>myserver</target>
   <sub-deployment>
 <name>CCB2IntegrationExample</name>
 <target>myserver</target>
   </sub-deployment>
```

```
   <descriptor-file-name>jms/Module-for-CCB-integration-example-1-
jms.xml</descriptor-file-name>
</jms-system-resource>
```

Oracle Utilities Meter Data Management Outbound Message Configuration

This section describes the following configuration needed for Oracle Utilities Meter Data Management to send messages out to the integration layer.

- JNDI Server
- JMS Queue
- JMS Connection
- Message Sender
- Outbound Message Type
- External System

Note: The following Outbound Message Configurations: JNDI Server, JMS Queue and JMS Connection setup are NOT needed when using the Integration JMS Wrapper processes to send messages to the integration. Proceed to Message Sender , Outbound Message Type and External System configuration.

For new installation and existing implementations that want to use the JMS Wrapper Services instead of the queues, follow the instructions above. Existing implementations that has already done the outbound message configuration to send messages to queues can just leave the old setup as is. These configuration will just be ignored and not used.

JNDI Server

Create a new JNDI server which points to the Integration SOA server to communicate with the integration layer.

1. Navigate to the **JNDI** portal under the **Admin** menu.
2. Enter the **JNDI** server name.
   Example: *CCB_JNDI*
3. Enter the **JNDI** server description.
   Example: MDM-CCB Integration server.
4. Enter the **Provider URL** in the format:
   t3//<SOA Server>: <SOA_ManagedServer_Port>.
   Example: t3*://soaserver.us.oracle.com:8002*
5. Enter the **Initial Context Factory** details.
   Example: **weblogic.jndi.WLInitialContextFactor**

JMS Queue

Create a new JMS Queue for each integration queue where Oracle Utilities Meter Data Management sends messages.

1. Navigate to the **JMS Queue** portal under the **Admin** menu.
2. Enter the following:
   - **JMS Queue –** Queue name in Oracle Utilities Meter Data Management.
   - **Description** – Queue description
   - **Queue Name** – JNDI name of the queue on the Integration server. Example: jms/OUMDM2SPSyncResponse
   - **Target Client Flag** – *JMS*
   - **JNDI Server** – Select the JNDI server created for integration.

     Note: Only define the queues that Oracle Utilities Meter Data Management will be publishing or writing messages to.

Example JMS Queue Setup

Contact Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
ConSyncRes	Contact Sync Response	jms/OUMDM2 PersonSyncResponse	JMS	CCB_JNDI

Device Configuration Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
DCSyncRes	Device Configuration Sync Response	jms/OUMDM2 MeterConfigSyncResponse	JMS	CCB_JNDI

Device Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
DevSyncRes	Device Sync Response	jms/OUMDM2 MeterSyncResponse	JMS	CCB_JNDI

Install Event Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
IESyncRes	Install Event Sync Response	jms/OUMDM2S PMeterHistSyncResponse	JMS	CCB_JNDI

SP Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
SPSyncRes	Service Point Sync Response	jms/OUMDM2 SPSyncResponse	JMS	CCB_JNDI

Usage Subscription Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
USSyncRes	Usage Subscription Sync Response	jms/OUMDM2 SASyncResponse	JMS	CCB_JNDI

Usage Subscription Relationship Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
USRelSyncRes	Usage Subscription Relationship Sync Response	jms/OUMDM2SARelationship SyncResponse	JMS	CCB_JNDI

Dynamic Option Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
DynOptSyncRes	Dynamic Option Sync Response	jms/OUMDM2 DynamicOptSyncResponse	JMS	CCB_JNDI

Dynamic Option Event Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
DynOpESyncRes	Dynamic Option Event Sync Response	jms/OUMDM2 DynamicOptEvtSyncResponse	JMS	CCB_JNDI

Batch BD Response Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
BatchBDRes	Batch Bill Determinant Response	jms/OUMDM2 BatchBDResponse	JMS	CCB_JNDI

Online BD Response Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
OnlineBDRes	Online Bill Determinant Response	jms/OUMDM2 OnlineBDResponse	JMS	CCB_JNDI

Replacement Read / Subsequent Correction Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
ReplReadReq	Replacement Read Request	jms/OUMDM2 ReplReadRequest	JMS	CCB_JNDI

Meter Read Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
MtrRdSyncRes	Initial Measurement Data Sync Response	jms/OUMDM2 MeterReadSyncResponse	JMS	CCB_JNDI

Bill Cycle Synchronization Integration Process

JMS Queue	Description	Queue Name	Target Client	JNDI Server
BillCycSyncRes	Bill Cycle Sync Response	jms/OUMDM2 BillCycleSyncResponse	JMS	CCB_JNDI

JMS Connection

Create a new JMS Connection used to connect to the integration queues.

1. Navigate to the **JMS Connection** portal under the **Admin** menu.
2. Enter the following:

- **JMS Connection** – Connection name in Oracle Utilities Meter Data Management.
- **Description** – Connection description
- **JNDI Server** – Select the JNDI server created for this integration (as described in the JNDI Server section).
- **JNDI ConnectionFactory –** JNDI name of the connection factory on the integration server.

Example JMS Connection Setup

JMS Connection	Description	JNDI Server	JNDI Connection Factory
CCB2_CF	MDM CCB Integration Connection	CCB_JNDI	jms/OUCCB2OUMDM2 ConnectionFactory

Message Sender

This section focuses on the message sender.

- Message Sender to Invoke Integration Asynchronous Processes
- Message Sender to Invoke Integration Synchronous Services

Message Sender to Invoke Integration Asynchronous Processes

If Oracle Utilities Meter Data Management is writing to the integration queues, create a Message Sender for each outbound queue. Refer to the Message Sender for Each Outbound Queue setup below.

> **Note that** Message Sender for Each JMS Wrapper Service Configuration is not needed.

If Oracle Utilities Meter Data Management is calling the integration JMS Wrapper services, create a Message Sender for each JMS Wrapper service. Refer to the Message Sender for Each Integration JMS Wrapper Service setup below.

> **Note that** CCB-MDM Patch 26532407 must be installed to use the Integration JMS Wrapper Services. Message Sender for each outbound queue Configuration is not needed.

Message Sender for Each Outbound Queue

Create a new real time Message Sender (to communicate with the integration layer) for each Oracle Utilities Meter Data Management outbound integration queue.

1. Navigate to the **Message Sender** portal under the **Admin** menu.
2. Enter a unique Message Sender and its description.
3. Populate the following values:
   - **Message Sender** – Sender name in Oracle Utilities Meter Data Management.
   - **Description** – Sender description
   - **Invocation Type –** *Real-time*
   - **Message Class** – RTJMSQSNDR (Realtime JMS Queue Sender)

- **Active** - Select the checkbox.
- **MSG Encoding** – *UTF-8 message encoding*
- **JMS Connection** – JMS Connection created for integration.
- **JMS Queue** – JMS Queue created for the Oracle Meter Data Management outbound queue.

4. Select the Context tab and set values for the following context types:
   - **JMS Message Type (Bytes(Y)/Text(N)) –** *N*
   - **JMS User Name** – User for the SOA server to be accessed.
   - **JMS User Password** – Password for the SOA server to be accessed.

Message Sender for Each Integration JMS Wrapper Service

Create a real time Message Sender configured to communicate with the integration JMS wrapper service.

1. Navigate to the Message Sender portal under the **Admin** menu.
2. Enter a unique Message Sender and its description.
3. Populate the following values:
   - **Message Sender** – Sender name in Oracle Utilities Customer Care and Billing.
   - **Description** – Sender description
   - **Invocation Type –** *Real-time*
   - **Message Class** – *SOAPSNDR (SOAP Sender)*
   - **Active** - Select the checkbox.
   - **MSG Encoding** – *UTF-8 message encoding*
4. Select the Context tab and set values for the following context types:
   - HTTP Header - SOAPAction:"process"
   - HTTP Login User - User ID to access Integration BPEL process
   - HTTP Password - Password to access Integration BPEL process
   - HTTP Method (POST/GET) - POST
   - HTTP Timeout - 60
   - HTTP Transport Method - SendReceive
   - HTTP URL 1 - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL.

Example Message Sender For Outbound Queue Setup

Contact Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-CSACK	Contact Sync Response Sender to CCB	CCB2_CF	ConSyncRes

Device Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-DVCSACK	Device Sync Response Sender to CCB	CCB2_CF	DevSyncRes

Device Configuration Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-DCSACK	Device Configuration Sync Response Sender to CCB	CCB2_CF	DCSyncRes

Install Event Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-IESACK	Install Event Sync Response Sender to CCB	CCB2_CF	IESyncRes

Service Point Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-SPSACK	Service Point Sync Response Sender to CCB	CCB2_CF	SPSyncRes

Usage Subscription Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-USSACK	Usage Subscription Sync Response Sender to CCB	CCB2_CF	USSyncRes

Usage Subscription Relationship Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-USRACK	Usage Subscription Relationship Sync Response Sender to CCB	CCB2_CF	USRelSyncRes

Dynamic Option Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-DYOACK	Dynamic Option Sync Response Sender to CCB	CCB2_CF	DyOptSyncRes

Dynamic Option Event Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-DOEACK	Dynamic Option Event Sync Response Sender to CCB	CCB2_CF	DyOpESyncRes

BD Response (Batch BD Request) Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-BBD	Bill Determinants for Batch Request JMS Queue Sender to CCB	CCB2_CF	BatchBDRes

BD Response (Online BD Request) Integration Process

Message Sender	Description	JMS ConnectionJMS Queue	JMS Queue
DM-OBD	Bill Determinants for Online Request JMS Queue Sender to CCB	CCB2_CF	OnlineBDRes

Replacement Reads / Subsequent Correction Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-SC	Bill Determinants Subsequent Correction Notification JMS Queue Sender to CCB	CCB2_CF	ReplReadReq

Meter Read Synchronization Integration Process

Message Sender	Description	JMS Connection	JMS Queue
DM-MRSACK	Meter Read Sync Response Sender to CCB	CCB2_CF	MtrRdSyncRes

Bill Cycle Synchronization Integration Process

JMS Queue	Description	JMS Connection	JMS Queue
DM-BCACK	Bill Cycle Sync Response Sender to CCB	CCB2_CF	BillCycSyncRes

Example Message Sender Setup For Integration JMS Wrapper Services

Contact Sync Response JMS Write Service

Message Sender	Description	HTTP URL
ConSynRspJW	Contact Sync Response JMS Write Wrapper Service	http:// soa_host:soa_managerServer_Port/soa-infra/services/ CCB2-MDM2/ OUMDM2OUCCB2PersonSyncRespJMSWriteSvc/ OUMDM2OUCCB2PersonSyncRespJMSWriteSvc_client_ep

Service Point (SP) Sync Response JMS Write Service

Message Sender	Description	HTTP URL
SPSynRspJW	SP Sync Response JMS Write Wrapper Service	http://intenv:8001/soa-infra/services/CCB2-MDM2/ OUMDM2OUCCB2SPSyncRespJMSWriteSvc/ OUMDM2OUCCB2SPSyncRespJMSWriteSvc_client_ep

Usage Subscription (US) Sync Response JMS Write Service

Message Sender	Description	HTTP URL
USSynRspJW	US Sync Response JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2SASyncRespJMSWriteSvc/OUMDM2OUCCB2SASyncRespJMSWriteSvc_client_ep

Usage Subscription (US) Relationship Sync Response JMS Write Service

Message Sender	Description	HTTP URL
USRelSynRspJW	US Relationship Sync Response JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2SARelationshipSyncRespJMSWriteSvc/OUMDM2OUCCB2SARelationshipSyncRespJMSWriteSvc_client_ep

Device Sync Response JMS Write Service

Message Sender	Description	HTTP URL
DvcSynRspJW	Device Sync Response JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2MeterSyncR espJMSWriteSvc/OUMDM2OUCCB2MeterSyncRespJMSWriteSvc_client_ep

Device Configuration Sync Response JMS Write Service

Message Sender	Description	HTTP URL
DvCfSynRspJW	Device Config Sync Response JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/ services/ CCB2-MDM2/OUMDM2OUCCB2MeterConfigSyncRespJMSWriteSvc/OUMDM2OUCCB2MeterConfigSyncRespJMSWriteSvc_client_ep

Install Event Sync Response JMS Write Service

Message Sender	Description	HTTP URL
IESynRspJW	Install Event Sync Response JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2SPMeterHistSyncRespJMSWriteSvc/OUMDM2OUCCB2SPMeterHistSyncRespJMSWriteSvc_client_ep

Batch BD Response JMS Write Service

Message Sender	Description	HTTP URL
BatchBDRspJW	BatchBDResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2BatchBDRespJMSWriteSvc/OUMDM2OUCCB2BatchBDRespJMSWriteSvc_client_ep

Online BD Response JMS Write Service

Message Sender	Description	HTTP URL
OnlineBDRspJW	OnlineBDResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2OnlineBDRespJMSWriteSvc/OUMDM2OUCCB2OnlineBDRespJMSWriteSvc_client_ep

Meter Read Sync Response JMS Write Service

Message Sender	Description	HTTP URL
MRSynRspJW	MeterReadSyncResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2MeterReadSyncRespJMSWriteSvc/OUMDM2OUCCB2MeterReadSyncRespJMSWriteSvc_client_ep

Replacement Read Request JMS Write Service

Message Sender	Description	HTTP URL
RRSynReqJW	ReplacementreadRequest JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2ReplReadReqJMSWriteSvc/OUMDM2OUCCB2ReplReadReqJMSWriteSvc_client_ep

Dynamic Option Sync Response JMS Write Service

Message Sender	Description	HTTP URL
DOPTSynRspJW	DynamicOption SyncResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2DynamicOptSyncRespJMSWriteSvc/OUMDM2OUCCB2DynamicOptSyncRespJMSWriteSvc_client_ep

Dynamic Option Event Sync Response JMS Write Service

Message Sender	Description	HTTP URL
DOEvSynRspJW	DynamicOptionEventSyncResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2DynamicOptEvtSyncRespJMSWriteSvc/OUMDM2OUCCB2DynamicOptEvtSyncRespJMSWriteSvc_client_ep

Bill Cycle Sync Response JMS Write Service

Message Sender	Description	HTTP URL
BCSynRspJW	BillCycleSyncResponse JMS Write Wrapper Service	http://soa_host:soa_managerServer_Port/soa-infra/services/CCB2-MDM2/OUMDM2OUCCB2BillCycleSyncRespJMSWriteSvc/OUMDM2OUCCB2BillCycleSyncRespJMSWriteSvc_client_ep

Note: The endpoint URL for the integration services can be obtained from the SOA EnterpriseManager. From the SOA folder, navigate to **Navigator > soa-infra > CCB2-MDM2** partition and select the composite application. At the top of the page, click the **Test** tab. The composite application's endpoint URL is shown there..

Message Sender to Invoke Integration Synchronous Services

Create a new Message Sender for each Integration Service being called.

1. Navigate to the Message Sender portal under the **Admin** menu.
2. Enter a unique Message Sender and its description.
3. Populate the following values:
   - **Message Sender** – Sender name in Oracle Utilities Customer Care and Billing. Example: BCCHGNOTIF
   - **Description** – Sender description
   - **Invocation Type –** *Real-time*
   - **Message Class** – RTHTTPSNDR (Real Time Sender to route messages via HTTP)
   - **Active** - Select the checkbox.
   - **MSG Encoding** – *UTF-8 message encoding*
4. Select the Context tab and set values for the following context types:
   - **HTTP Header** - SOAPAction:"process"
   - **HTTP Login User** - User ID to access Integration BPEL process
   - **HTTP Password** - Password to access Integration BPEL process
   - **HTTP Method (POST/GET)** - POST
   - **HTTP Timeout** - 60
   - **HTTP Transport Method** - SendReceive
   - **HTTP URL 1** - Set the URL to be accessed. If the URL value does not fit, use the additional HTTP URL types to set the complete URL.

Example Message Sender Setup For Integration Synchronous Service

Bill Cycle Change Notification Process

Message Sender	Description	HTTP URL
BCChgNotif	BillCycle Change Notification Sender	http://intenv:8001/soa-infra/services/CCB2-MDM2/OUMDM2OUCCBBillCycleChangeNotif EBF/BillCycleChangeNotificationService

Outbound Message Type

Create an Outbound Message Type for each Oracle Utilities Meter Data Management outbound message to send out.

1. Navigate to the **Outbound Message Type** portal under the **Admin** menu.
2. Enter an outbound message type, its description, and then the detailed description.
3. Select the Outbound Message business object created for the specific outbound queue.

Example Outbound Message Type Setup

Contact Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBCSACK	CCB Contact Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Device Configuration Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBDCSACK	CCB Device Configuration Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Device Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBDSACK	CCB Device Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Install Event Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBIESACK	CCB Install Event Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

SP Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBSPSACK	CCB SP Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

US Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBUSSACK	CCB US Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

US Relationship Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBUSRACK	CCB US Relationship Sync Acknowledgment Message	D1-OngoingSyncReqAckMsg

Dynamic Option Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBDYOACK	Dynamic Option Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Dynamic Option Event Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBDOEACK	Dynamic Option Event Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Bill CycleSynchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBBCACK	Bill Cycle Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Batch BD Response Integration Process

Outbound Message Type	Description	Business Object
DM-CCB-BBD	Usage Transaction Response for a Batch Usage Request	D2-UsageTranOutboundMesg

Online BD Response Integration Process

Outbound Message Type	Description	Business Object
DM-CCB-OBD	Usage Transaction Response for an Online Usage Request	D2-UsageTranOutboundMesg

Replacement Read / Subsequent Correction Notification Integration Process

Outbound Message Type	Description	Business Object
DM-CCB-SC	Usage Transaction Subsequent Correction Notification	D2-UsgTranSubCorrectOutbound

Meter Read Synchronization Integration Process

Outbound Message Type	Description	Business Object
DM-CCBMRSACK	CCB Meter Read Sync Acknowledgement Message	D1-OngoingSyncReqAckMsg

Bill Cycle Change Notification Integration Process

Outbound Message Type	Description	Business Object
DM-MCBCCHG	SP Bill Cycle Change Notification Message	D2-SPMsrmtCycleChangeOutMsg

External System

Create a new external system for the integration.

1. Navigate to the **External System** portal under the **Admin** menu.
2. Enter a unique name for the external system and its description.
   Example:
   Name = CI_CCB
   Description = Oracle Utilities Customer Care and Billing
3. Set the **Our Name in Their System** field to **Meter Data Management**.
4. Associate the outbound message types created to the external system. For each outbound message type, set the following:
   - **Outbound Message Type –** Set the outbound message type created for Oracle Utilities Meter Data Management outbound queue.
   - **Processing Method –** *Real-time*
   - **Message Sender** – Set the Message Sender created for the queue.
   - **Message XSL**
     - When sending to queues - Use *D1-MDMJMSQAddNamespace.xsl*
     - When invoking webservices - Use *CDxAddEnvelope-SOAP1-2.xsl*

     Note: When sending outbound messages through web services, Message XSL need to be populated when the Message Sender used for this outbound message type has a Message Class of *RTHTTPSNDR* (Real Time Sender to route messages via HTTP. Message Senders with Message Class of *SOAPSNDR* (Sender for real-time HTTP/SOAP messages do not need to populate the Message XSL to add the SOAP envelope.

If Oracle Utilities Meter Data Management sends JMS messages to the integration queues, use the message senders created for each outbound queue. See Message Sender for Each Outbound Queue for more information.

If Oracle Utilities Meter Data Management sends JMS messages to the integration JMS Wrapper service, use the message senders create for each JMS Wrapper service. See **Sample Message Sender for Each JMS Wrapper Service** for more details.

Example: External System – Oracle Utilities Customer Care and Billing

Outbound Message Type	Processing Method	Message Sender	Message XSL
DM-CCBCSACK	Real-time	DM-CCBCSACK or ConSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBDCSACK	Real-time	DM-CCBDCSACK or DvCfSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBDSACK	Real-time	DM-CCBDSACK or DvcSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBIESACK	Real-time	DM-CCBIESACK or IESynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBSPSACK	Real-time	DM-CCBSPSACK or SPSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBUSSACK	Real-time	DM-CCBUSSACK or USSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBUSRACK	Real-time	DM-CCBUSRACK or USRelSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBDYOACK	Real-time	DM-CCBDYOACK or DOPTSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBDOEACK	Real-time	DM-CCBDOEACK or DOEvSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBBCACK	Real-time	DM-CCBBCACK or BCSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCB-BBD	Real-time	DM-CCB-BBD or BatchBDRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCB-OBD	Real-time	DM-CCB-OBD or OnlineBDRspJW	D1-MDMJMSQAddNamespace.xsl
DM-CCB-SC	Real-time	DM-CCB-SC or RRSynReqJW	D1-MDMJMSQAddNamespace.xsl
DM-CCBMRSACK	Real-time	DM-CCBMRSACK or MRSynRspJW	D1-MDMJMSQAddNamespace.xsl
DM-SPBCCHG	Real-time	DM-BCCHGNTF	CDxAddEnvelope-SOAP1-2.xsl

For more information about configuration guidelines, refer to the Oracle Utilities Meter Data Management user documentation.

Setting up the Process Integration

The following sections describe how to configure integration pack to meet the requirements for 2-way integration. Configuration steps include setting the following:

- Setting Configuration Properties
- Setting Domain Value Maps for the Integration Layer
- Setting Error Handling for the Integration Layer

Setting Configuration Properties

Various configurations that apply to the entire integration and to specific integration processes are stored in the ConfigurationProperties.xml file located in MDS under the apps/CCB2-MDM2/AIAMetaData/config directory.

These configurations hold several configurable values that are picked up by the integration at runtime to:

- Set Default values to be used in the integration.
- Activate custom implemented extension points available inside the processes. By default these properties are set to false, not to invoke any of the extension points.
- Activate error handling.

  Note: Whenever the **ConfigurationProperties.xml** file is updated, the file must be reloaded to MDS for updates to be reflected in the applications or services that use the updated properties. You can perform the reload by restarting the SOA server.

The ConfigurationProperties.xml file contains two types of configuration:

- Module Configurations are the properties that are shared by multiple integration processes within the integration.
- Service Configurations are the properties that are used by a specific BPEL process.

Please refer to Appendix B for more information on how to configure the Configuration Properties File values.

Setting Domain Value Maps for the Integration Layer

Domain value maps (DVMs) are a standard feature of the Oracle SOA Suite which maps codes and other static values across applications.
Example: “US” and “USA”.

DVMs are static in nature, though Administrators can add additional maps as needed. Transactional business processes never update DVMs - they only read from them. They are stored in XML files and cached in memory at runtime.

Please refer to Appendix C: Domain Value Maps (DVMs) for a listing of the DVMs included for the integration.

To maintain information within the domain value maps:

1. Open a browser and access the SOA Composer application.
   Example: http://soa_host:soa_managerServer_Port/soa/composer/
2. Select the relevant DVM you wish to maintain from the Deployment View pane.
3. To edit the selected DVM, click the **Create Session** button in the top navigation bar.
4. Once the DVM has been edited, click **Save** in the navigation bar.
   This saves the DVM data for that session.
5. Click **Publish** after updating each DVM. This saves the DVM data in MDS.

Updating MDS

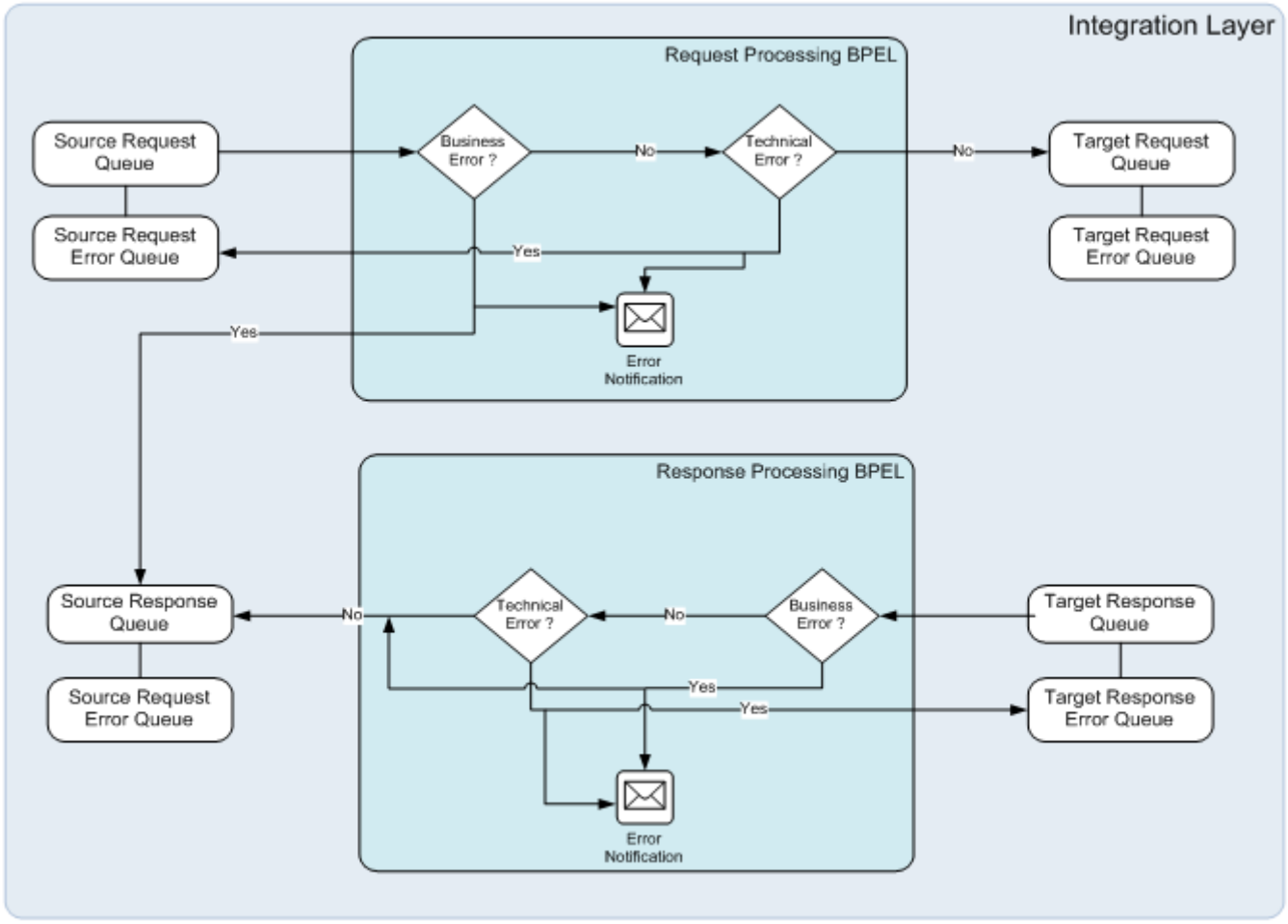
If new artifacts are created, if extensions or customizations are made on the artifacts, or if changes are made to the DVM /or the ConfigurationProperties.xml, you must upload the artifacts to the Oracle Metadata Services (MDS).

The Oracle Metadata Services (MDS) repository contains all the metadata and the contents are stored under <PRODUCT_HOME>/MDS-Artifacts. These are uploaded to <SOA-MDS > apps/CCB2-MDM2. This includes specific schemas, WSDLS, DVMs and ConfigurationProperties.xml.

> **For more information** about updating MDS, see the section "Deployment of MDS Artifacts" in the Installation Guide.

Setting Error Handling for the Integration Layer

Asynchronous Processes



Asynchronous Process - Error Handling

The integration includes two types of errors:

- **Business Errors** – Triggered when the DVM lookup values are not found or there is a transformation error in the integration layer. Business errors are sent back to the source application and can be re-tried from there.

- **Technical Errors** – Triggered when there are connectivity issues between queues. Technical errors are sent to the error queue and can be re-tried from integration layer.

S. No	Integration Process	Type of error	Action	Notification Type	Retry
A1	Master Data Sync – CCB originated request processing (i.e. SP Information Sync process)	Business error	Message is sent to CCB Response Queue. (i.e CCB SP Response Queue)	Email (optional) and CCB ToDo	Data correction in CCB
A2		Technical error	Message is rolled back to CCB Request Error Queue. (i.e CCB SP Request Error Queue)	Email (optional)	Administrator has to move the messages to CCB Request Queue from WebLogic Admin console. (i.e CCB SP Request Queue)
A3	Master Data Sync – MDM originated response processing (i.e. SP Information Sync process)	Business error	Message is sent to CCB Response Queue. (i.e CCB SP Response queue	Email (optional) and CCB ToDo	Data correction in CCB
A4		Technical error	Message is rolled back to MDM Response Error Queue. (i.e MDM SP Response Error Queue)	Email (optional)	Administrator has to move the messages to MDM Response Queue from WebLogic Admin console. (i.e MDM SP Response Queue)

This is applicable to the Person, SP, SA, Meter, Meter Configuration, and SP-Meter History Information Sync processes.

S. No	Integration Process	Type of error	Action	Notification Type	Retry
C1	Batch BD – CCB originated request processing	Business error	Message is sent to CCB Batch BD Response Queue.	Email (optional) and CCB ToDo	Data correction in CCB
C2		Technical error	Message is rolled back to CCB Batch BD Request Error Queue.	Email (optional)	Administrator has to move the messages to CCB Batch BD Request Queue from WebLogic Admin console.
C3	Batch BD – MDM originated response processing	Business error	Message is sent to CCB Batch BD Response Queue.	Email (optional) and CCB ToDo	Data correction in CCB
C4		Technical error	Message is rolled back to MDM Batch BD Response Error Queue.	Email (optional)	Administrator has to move the messages to MDM Batch BD Response Queue from WebLogic Admin console.

S. No	Integration Process	Type of error	Action	Notification Type	Retry
D1	Online BD – CCB originated request processing	Business error	Message is sent to CCB Online BD Response Queue.	Email (optional) and CCB ToDo	Data correction in CCB
D2		Technical error	Message is rolled back to CCB Online BD Request Error Queue.	Email (optional)	Administrator has to move the messages to CCB Online BD Request Queue from WebLogic Admin console.
D3	Online BD – MDM originated response processing	Business error	Message is sent to CCB Online BD Response Queue.	Email (optional) and CCB ToDo	Data correction in CCB
D4		Technical error	Message is rolled back to MDM Online BD Response Error Queue.	Email (optional)	Administrator has to move the messages to MDM Online BD Response Queue from WebLogic Admin console.
E1	Replacement Read – MDM originated request processing	Business error	Message is sent to MDM Replacement Read Response Queue.	Email (optional)	Data correction in MDM
E2		Technical error	Message is rolled back to MDM Replacement Read Request Error Queue.	Email (optional)	Administrator has to move the messages to MDM Replacement Read Request Queue from WebLogic Admin console.

To retry the technical error failure messages:

1. In the WebLogic console, navigate to Services → Messaging → JMS Modules.
2. Select CCB-MDM Integration JMS Module (CCB2MDM2JM) to display all queues related to this integration.
3. Select the appropriate error queue and click the Monitoring tab. This tab displays the details about messages in the queue in a table.
4. Select the checkbox in the details table and click **Show Messages**. This displays all the messages in the error queue.
5. Click **Move** and select **Move All**.
6. Select the CCB-MDM JMS (CCB2MDM2JS) server to move messages and then click **Next**.
7. Select the correct parent queue for the error queue from the dropdown and click **Finish**.
   This action moves all messages to the source queue, so that the integration layer processes all messages again.

Error Notification Setup

Enable email notification for the error handling module.

1. Log in to the Enterprise Manager console.
2. Expand SOA and then right-click SOA Infra. From the menu, click SOA Administration and then click Workflow Properties.
3. From the drop-down list, select EMAIL.
4. Enter the Email IDs in the From address field.

INTEGRATION_ERROR_STORE

The INTEGRATION_ERROR_STORE table is used to store all the error details for each message failure. The table is populated for each integration point based on the BusinessError.NotificationFlag and TechnicalError.NotificationFlag properties for each service in the ConfigurationProperties.xml file.

INTEGRATION_ERR_LOOKUP

The error handling module configuration is governed by the Integration_err_lookup table. This table contains processing instructions for each composite. The Error_Processing_Parent composite picks data for one composite and calls error_Processing_Detail for processing. The configuration in this table is used to process the error records stored in the INTEGRATION_ERROR_STORE table.

S. No.	Column Name	Description	Default/ Suggested values
1	LookUp_ID	Sequence ID of entry in this table. This is auto generated.	Auto generated
2	IP_Name	Name of the composite processed. Example: OUMDMOUCCBReplReadReqEBF	This column is pre-populated with the individual enterprise business process name. Do not modify. Modifying this value will break the code.
3	Processing_Status	Current status of processing must be one of the following: • HALTED (waiting for manual intervention), • NOT REQUIRED • ALIVE	Default: NOT REQUIRED In order to process the error records, this value must be set to ALIVE.
4	Run_Flag	Processing flag status, Y or N. Unread value = N, read value =Y	N
5	Next_Runtime	Next runtime when the error record should be processed for this composite.	Default: SYSDATE+200 This value needs to be set to the current date or past date to process the error records.

S. No.	Column Name	Description	Default/ Suggested values
6	Halt_For_Error	Allowed values are Y or N. When set to Y, manual intervention is required after one successful error record processing and any future errors for that composite will not be processed until some action is taken on that task. When set to N, processing continues without halting. Actions that can be performed on the human intervention task are: • ALIVE - This will resume the error processing for all unprocessed records in the INTEGRATION_ERROR_STORE table • ALIVE_FOR_FUTURE_PROCESSING-This will resume the error processing, only for future error records for the composite.	N
7	RunTime_Interval	Runtime interval after which the next error processing should be done. This value must be updated based on the business requirement. Setting fewer intervals may have impact on performance. Example : P0Y0M0DT0H5M0S Next processing is done after 5 minutes.	Default : P10Y0M0DT0H0M0S
8	Email_ID	EMAIL ID of the person who should be notified about the error by e-mail. To add multiple E-mail Ids, provide comma separated values. This value can be different or same for all the composites.	Default: email@email.com
9	Email_Content_Type	GENERIC – One Email is sent for all errors. No detail information is included. SINGLE – One Email is sent for all errors with details included in the attachment. MULTIPLE – Multiple Emails are sent and each email has information equal to the value specified in Error_Count_Per_Notification column. Values are case sensitive and must always be given in upper case.	Default: GENERIC

S. No.	Column Name	Description	Default/ Suggested values
10	Email_XSL	XSL to be applied for creating Email Content which includes subject/body and attachment. Look and feel can be modified here.	Default file is provided for all the composites and present under the xsl folder of composite. Example: xsl/ Transformation_Create_Email.xsl Copy this to the mds folder and enter the mds path in this column for additional configuration.
11	Error_Count_Per_Processing	A notification is sent after the number of records set here is processed. Example: If this is set to 50, then an email notification containing 50 records is sent after 50 records are created in the error store. For every 50 records an email notification is sent.	Default : 100
12	Email_Sent_For_First_Error	On initial install this is set to N. this value gets updated to Y or N while processing. This field does not need to be updated by the user.	Default: N
13	Email_Attachment_Location	Location where the Email attachment is created on the server. This value should point to the location/ folder where the attachment should be stored. This is used to create the attachment file in the following format. INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IP_Name + Date (in YYYYMMDDHH24MMSS)	
14	Email_Attachment_Flag	Y – Send Email with attachment. In this case, it is not mandatory to have Email_Attachment_Location specified. N – Send Email without attachment, but send the attachment location. In this case, Email_Attachment_Location has to be specified. ServerName +INTEGRATION_ERR_LOOKUP.Email_Attachment_Location + IntegrationPoint_Name + Date in YYYYMMDDHH24MMSS	N
15	Publish_Human_Task_Flag	Y – Publish human task N – Don't publish human task If Halt_For_Error value is set to Y and Publish_Human_Task_Flag is also Y, then human task is published and the user can take action from worklist application.	N
16	ID_Human_Task	User/ Group ID to which human task should be published in case Halt_For_Error is set to Y. This ID must be present in the WebLogic realm pointed by fusion middleware.	weblogic

S. No.	Column Name	Description	Default/ Suggested values
17	Last_Updated_Date	Last updated date time	SYSDATE
18	Purge_Error_Store_Flag	Y – Purge data N – No purge require The process PurgeIntegrationErrorStore is deployed when the flag, purge.process.deploy=true (in the deploy.properties file) is set to true during installation. If flag.purge.process = false, then value of this column Purge_Error_Store_Flag will always be N.	Default : N
19	Purge_Processing_Status_Flag	Y – Purge Processing in process N – Purge processing not happening The process PurgeIntegrationErrorStore is only deployed when the flag, purge.process.deploy=true (in the deploy.properties file) is set to true during installation. If flag.purge.process = false then value of this column Purge_Error_Store_Flag will always be N.	Default : N
20	Purge_Frequency	No of days after which data should be purged. This will be in picture format Example : P10Y0M0DT0H0M0S Next processing will be done after 10 years 0 months 0 days 0 hours 0 minutes and 0 seconds. This value has to be updated based on the business requirement. Setting fewer intervals may have impact on performance. Need to set this value as appropriate. Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	Default : P10Y0M0DT0H0M0S
21	Next_Purge_Date	Next purge date. Format: Next_Purge_date + Purge_Frequency Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	SYSDATE+100
22	Purge_File_Name	Directory name where the purge file should be stored. Applicable only when flag.purge.process = true in deploy.properties file during installation and the process PurgeIntegrationErrorStore ID deployed.	'location on server where purge record should be persisted'

To Customize Error Email Notifications for Individual Integration Points

The values can be directly updated in the INTEGRATION_ERR_LOOKUP table.

Alternatively, the composite can be used as:

1. Use the composite: UpdateIntegrationErrorLookupTable.
2. Open the following URL in a browser to get the screen that provides options to update the contents of table.
   http://<hostname>:<soa server port>/soa-infra/services/CCB2-MDM2/UpdateIntegrationErrorLookupTable/updateintegrationerrorlookuptablebpel_client_ep?

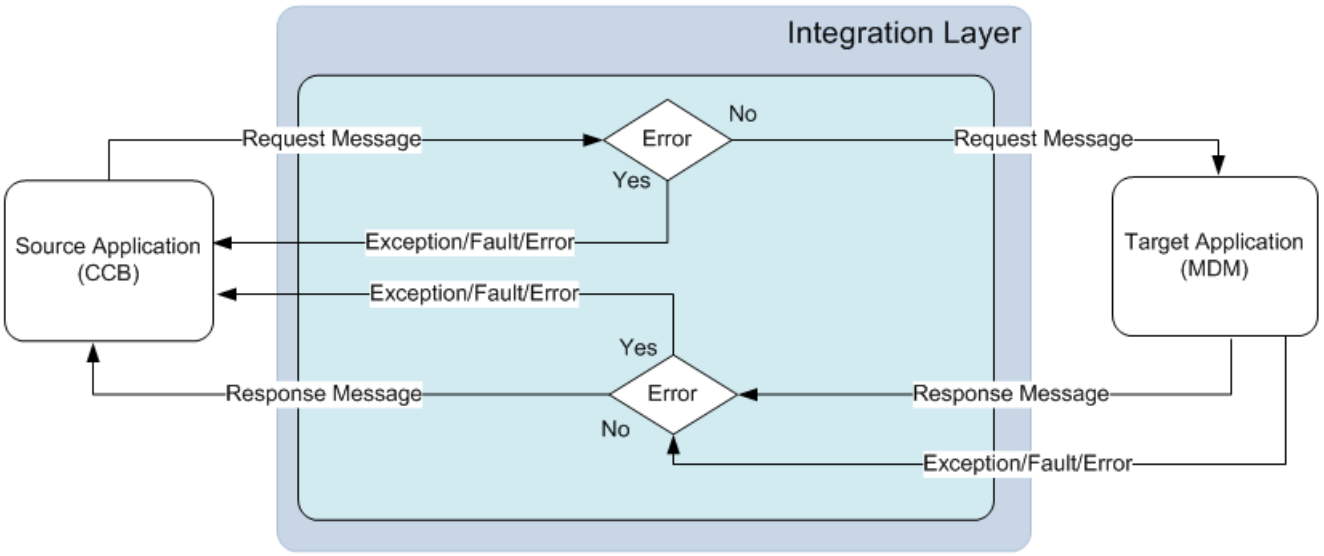
   a. Expand WS-Security and provide authentication information.
   This username and password are going to be same as that used to log in to WebLogic Enterprise Manager console.

   b. Expand the paylod section. This displays several editable text fields.
   Only the ipName field is mandatory and should be entered as one of the values from INTEGRATION_ERR_LOOKUP.IP_NAME field.

   By default all the checkboxes appearing next to the text fields are checked.

   c. Provide values in the text field. If you do not want to have a particular value updated, then uncheck the box.

Synchronous Processes



Synchronous Processing

Any exception or error thrown by the integration service is sent back to Oracle Utilities Customer Care and Billing as a SOAP Fault or exception which will change the outbound message status to be in 'Error'.

Integration service will also send back the exception or SOAP fault received from Oracle Utilities Meter Data Management to Oracle Utilities Customer Care and Billing. This will also change the outbound message status to be in 'Error'

No email notifications for Business and Technical errors will be sent out from the integration service.

Chapter 4

Monitoring and Troubleshooting

This section provides information on the following:

- Monitoring from Oracle Utilities Customer Care and Billing
- Monitoring from Oracle Utilities Meter Data Management
- Monitoring from the Integration
- Troubleshooting

Monitoring from Oracle Utilities Customer Care and Billing

This section provides information on the following:

- Oracle Utilities Customer Care and Billing Error Logs
- Oracle Utilities Customer Care and Billing Notifications
- Oracle Utilities Customer Care and Billing Connection Errors

Oracle Utilities Customer Care and Billing Error Logs

Errors related to the online integration invocation from Oracle Utilities Customer Care and Billing are stored in the CCB_ENVIRONMENT_NAME/logs/system folder.

Example: V24_V24020_CCB_SOA12C_CERT_LIN_ORA_WLS /logs/system

Errors related to batch integration invocation from Oracle Utilities Customer Care and Billing are stored in the $SPLOUTPUT/ CCB_ENVIRONMENT_NAME folder.

Example: /spl/sploutput/V24020_CCB_SOA12C_CERT_LIN_ORA_WLS

For more information about errors and notifications, see the Oracle Utilities Customer Care and Billing documentation.

Oracle Utilities Customer Care and Billing Notifications

When Oracle Utilities Customer Care and Billing sends a request message out to Oracle Utilities Meter Data Management, it expects a response back. It can get a positive response when the message is processed successfully or can get an error response when a

business error is encountered in the integration or from the target application (Oracle Utilities Meter Data Management).

When Oracle Utilities Customer Care and Billing receives the response message from the inbound Oracle Utilities Customer Care and Billing response queue, the message is parsed and converted to an XML document, check that the XML is valid and that the XML has a valid inbound service.

- If there is an error encountered while processing the message, EJBException is thrown causing the message to be rolled back to the corresponding Oracle Utilities Customer Care and Billing response error queue and a To Do entry is created, if configured.

  For example, if Oracle Utilities Customer Care and Billing receives a person sync response message from the Oracle Utilities Customer Care and Billing person sync response queue and an error is encountered, the message is moved to the Oracle Utilities Customer Care and Billing person sync response error queue.

- If the message is processed successfully, the Business Object or Business Service or Service Script (BO/BS/SS) defined on Inbound Service is invoked. If an application error is encountered inside the BO/BS/SS processing, the message is not rolled back to the error queue. Only a To Do entry is created, if configured. Otherwise, the error is seen only in the spl-service.log file.

The inbound service is invoked to process the response message.

Regardless of whether To-Do was set up or not, the errors are logged in spl-service.log file.

Setup To Do Entry for JMS Message Error

Message Options

Define To Do Type for Inbound JMS Message Errors Option. Use To Do Type F1-INJMS (Inbound JMS Message In Error). This To Do Type is delivered with the application. Implementation can define a custom To Do Type if needed.

Inbound Service

For every Inbound Service used to process the different Sync Response, Billing Determinant Response and Replacement Reads Request, the **Post Error** checkbox must be set to Yes.

Oracle Utilities Customer Care and Billing Connection Errors

Information about errors can be found in log files. For information about error logs and their respective folders, see the section Oracle Utilities Customer Care and Billing Error Logs.

Monitoring from Oracle Utilities Meter Data Management

This section provides information on the following:

- Oracle Meter Data Management Error Logs
- Oracle Utilities Meter Data Management Notifications
- Oracle Utilities Meter Data Management Connection Errors

Oracle Meter Data Management Error Logs

Errors related to the online integration invocation from Oracle Utilities Meter Data Management are stored in the MDM_ENVIRONMENT_NAME/system/logs folder.

Example: /V21020_MDM_SET13_DEV_LIN_WLS_ORA/logs/system

Errors related to batch integration invocation from Oracle Utilities Meter Data Management are stored in the $SPLOUTPUT/ MDM_ENVIRONMENT_NAME folder.

Example: /V21020_MDM_SET13_DEV_LIN_WLS_ORA/logs/system

> **For more information** about errors and notifications, see the Oracle Utilities Meter Data Management documentation.

Oracle Utilities Meter Data Management Notifications

When Oracle Utilities Meter Data Management receives a request message from Oracle Utilities Customer Care and Billing, it will send a response back to Oracle Utilities Customer Care and Billing. It can send a positive response when the message is processed successfully or can send an error response when a business error is encountered.

When Oracle Utilities Meter Data Management receives the request message from the inbound Oracle Utilities Meter Data Management request queue, the message is parsed and converted to an XML document, check that the XML is valid and check that the XML has a valid inbound service.

- If there is an error encountered while processing the message, EJBException is thrown causing the message to be rolled back to the corresponding Oracle Utilities Meter Data Management request error queue and a To Do entry is created, if configured.
  For example, if Oracle Utilities Meter Data Management receives a person sync request message from the Oracle Utilities Meter Data Management person sync request queue and an error is encountered, the message is moved to the Oracle Utilities Meter Data Management person sync request error queue.)
- If the message was processed successfully, the Business Object or Business Service or Service Script (BO/BS/SS) defined on Inbound Service is invoked. If an application error is encountered inside the BO/BS/SS processing, the message is not rolled back to the error queue. Only a To Do entry is created, if configured. Otherwise, the error is seen only in the spl-service.log file.

The inbound service is invoked to process the request message.

Regardless of whether To-Do was set up or not, the errors are logged in spl-service.log file.

Setup To Do Entry for JMS Message Error

Options

Define To Do Type for Inbound JMS Message Errors Option. Use To Do Type F1-INJMS (Inbound JMS Message In Error). This To Do Type is delivered with the application. Implementation can define a custom To Do Type if needed.

Inbound Service

For every Inbound Service used to process the different Sync Request and Billing Determinant Request, the **Post Error** checkbox must be set to Yes.

Oracle Utilities Meter Data Management Connection Errors

Information about errors can be found in log files. For information about error logs and their respective folders, see the section Oracle Utilities Meter Data Management Error Logs.

Monitoring from the Integration

Use any of the following to monitor the integration:

- Monitoring Using WebLogic SOA Enterprise Manager
- Monitoring Using WebLogic Logs
- Monitoring the Queues Using the WebLogic Console
- Data Purge

Monitoring Using WebLogic SOA Enterprise Manager

Perform the following steps to monitor through WebLogic SOA Enterprise Manager:

1. Log in to the WebLogic SOA Server Enterprise Manager, and then navigate to SOA → SOA-Infra → CCB2-MDM2.
   All composite processes deployed for integration are available under the partition CCB2-MDM2.
2. Select the appropriate process to list all the instances for the processes sorted by time of execution.
   The instances also have the request ID as part of the Flow instance name.
3. Click the appropriate process instance and it displays the flow for the process.
   The composite flow lists all activities in the process instance.

Monitoring Using WebLogic Logs

Log in to the machine where SOA server is installed. The SOA logs are stored in: <WebLogic installation folder>/user_projects/domains/<SOA Domain name>/

servers/<SOA Server name>/logs

Example: / Oracle/Middleware/Oracle_Home/user_projects/domains/soa_domain/servers/soa_server1/logs

Monitoring the Queues Using the WebLogic Console

1. Log in to the WebLogic Console, and then navigate to the Services → Messaging → JMS Modules.
   All queues used for the integration are available in the JMS Module **CCB2MDM2JM**.
2. Select the appropriate queue on the list and navigate to the **Monitor** tab.
   In this tab, the user can verify whether or not the message is stuck in the queue. The **Consumers Current** column indicates the number of consumers listening in the queue. Messages may be hung if there are no consumers listening to the queue. If the **Consumers Current** column is 0, it means no consumers are listening to the queue.
3. To check the message rolled back to the error queue, select the appropriate error queue on the list and navigate to the **Monitoring** tab.
   The user can see the message in this tab.

Data Purge

To maintain maximum system integrity, the Oracle Fusion Middleware database should be purged periodically.

Oracle SOA Suite 12c provides pre-tuned database profiles to automatically enable appropriate performance features, based on the expected data size. It also enables auto-purge to prevent bloating of the database.

For more information about purging refer to Oracle SOA suite 12c documentation.

http://docs.oracle.com/middleware/1213/soasuite/administer/soa-database-growth-manage.htm#SOAAG98235

Troubleshooting

The integration might experience connection, processing or messaging errors. This section provides common scenarios which can help you to troubleshoot errors, if any, and find possible solutions for:

- Asynchronous Processes
- Synchronous Processes

Asynchronous Processes

The source application is the one sending out the message and the target application is the one receiving the message.

Example: Oracle Utilities Customer Care and Billing is sending a SP sync request message to Oracle Utilities Meter Data Management, Oracle Utilities Customer Care and Billing is the source application and Oracle Utilities Meter Data Management is

the target application. The source queue is OUCCB2PersonSyncRequest and the target queue is OUMDM2PersonSyncRequest. The source error queue is OUCCB2PersonSyncRequestError and the target queue is OUMDM2PersonSyncRequestError.

Oracle Utilities Meter Data Management is sending a SP sync response message to Oracle Utilities Customer Care and Billing, Oracle Utilities Meter Data Management is the source application and Oracle Utilities Customer Care and Billing is the target application. The source queue is OUMDM2PersonSyncResponse and the target queue is OUCCB2PersonSyncResponse. The source error queue is OUMDM2PersonSyncResponseError and the target queue is OUCCB2PersonSyncResponseError.

Error 1: Source application sends out a message but the message does not reach the source queue.

To resolve this error, do the following:

- Navigate to the WebLogic Console to verify whether or not the message reached the source queue. Refer to the Monitoring the Queues Using the WebLogic Console section for more information
- Check the source application logs to see if any errors are encountered while trying to send the message out. Refer to Oracle Utilities Customer Care and Billing Error Logs or Oracle Meter Data Management Error Logs for more information on where to find the logs.
- Check the source application's Server Configuration to ensure they are configured correctly. Refer to Oracle Utilities Customer Care and Billing Outbound Message Configuration or Oracle Utilities Meter Data Management Outbound Message Configuration.

Error 2: Source application sends out a message but the message does not reach the target queue.

To resolve this error, do the following:

Refer to the Monitoring Using WebLogic SOA Enterprise Manager section for more information.

- Verify that the BPEL processes are running.
  If WebLogic SOA Enterprise Manager is not accessible or the BPEL processes cannot be seen found in the Weblogic SOA Enterprise Manger, restart the SOA managed server. It can be restarted from the WebLogic console.
  - If WebLogic SOA Enterprise Manager is accessible but the BPEL process is not active, activate or start up the process from the WebLogic SOA Enterprise Manager.
- If the BPEL processes are running, verify that the message has faulted or encountered an error.
  - If a technical error is encountered, the message is rolled back to the corresponding source error queue. Fix the error and move the message back to the source queue to retry.
  - From WebLogic SOA Enterprise Manager, check the appropriate process instance flow trace to see the error details.

- Check the logs.
  Refer to the Monitoring Using WebLogic Logs section for more information.

Error 3: Source application sends out a message, message successfully processed by the integration, but the message does not reach the target application.

To resolve this error, do the following:

- In Weblogic SOA Enterprise Manager, check the process to see if the message was successfully processed by the integration layer.

  Refer to the Monitoring Using WebLogic SOA Enterprise Manager section for more information.

- If a successful instance of the message was found in the WebLogic SOA Enterprise Manager, check the target queue to see if the message exists in the queue. Check the corresponding target queue of the process to see if there is a current or pending message stuck in the queue. The possible cause is that no consumers are listening to the target queue. Try restarting the target application.

  Refer to the Monitoring the Queues Using the WebLogic Console section for more information.

- If there are still no consumers listening to the target queue after bouncing the application, check the target application's JMS Configuration to make sure they are configured correctly. After changing the JMS configuration of the target application, restart the target application.
  Refer to Oracle Utilities Customer Care and Billing Inbound Message Configuration or Oracle Utilities Meter Data Management Inbound Message Configuration for more information

- Check the source application logs to see if any errors are encountered while trying to send the message out.

  Refer to the Oracle Utilities Customer Care and Billing Error Logs or Oracle Meter Data Management Error Logs sections for more information on where to find the logs.

- If no message is stuck in the target queue, check the target application logs to see if any errors are encountered while trying to process the message received.

  Refer to the Oracle Utilities Customer Care and Billing Error Logs or Oracle Meter Data Management Error Logs sections for more information on where to find the logs.

Synchronous Processes

The integration may experience issues with invoking the Oracle Utilities Meter Data Management web service. This section provides common scenarios which can help you troubleshoot errors and find possible solutions.

Error 1: Unable to invoke the webservice due to a PolicyEnforcement Exception or Invalid Security Policy attached to the Oracle Utilities Meter Data Management reference webservice.

This means the security policy attached to the composite process' Oracle Utilities Meter Data Management reference webservice is incorrect. Refer to the Security Policies section in the Installation Guide for more information.

To resolve this error, do the following:

1. Navigate to WebLogic SOA Server Enterprise Manager, and then navigate to SOA - SOA-Infra - CCB2-MDM2.partition.
2. Select the appropriate composite process in error.
3. Navigate to the **Dashboard** tab and click the Oracle Utilities Meter Data Management webservice reference.
4. Selcet the **Policy Configuration** tab to verify the security policy attached to the Oracle Utilities Meter Data Management web service.
5. Attach the correct security policy to the Oracle Utilities Meter Data Management reference webservice.

Error 2: Unable to invoke the webservice due to a 401 Unauthorized Error.

This means the service cannot be loaded because of an invalid user ID and/or password.

To resolve this error, do the following:

- Select the security policy name and click the **Override Policy Configuration** tab to check the csf-key linked to that policy.
- Check the define csf-key has the correct username and password defined.

1. Navigate to WebLogic SOA Server Enterprise Manager, and then navigate to SOA - SOA-Infra - CCB2-MDM2.partition.
2. Select the appropriate composite process in error.
3. Navigate to the Dashboard tab and click the Oracle Utilities Meter Data Management webservice reference.
4. Click the **Policy Configuration** tab to see the security policy attached to the Oracle Utilities Meter Data Management web service.
5. Select the security policy name and click the **Override Policy Configuration** tab to check the csf-key linked to that policy.
6. Check the csf-key defined. has the correct username and password defined.
7. Navigate to the security credential for the soa damian and verify the csf-key has the correct username and password defined.

   Refer to the Verifying the csf-key Generation section in the Installation Guide for more information.

Chapter 5

Customization Options

This section includes the following:

- Extension Methods
- Implementing Extension Points
- Implementing Custom Transformations
- Migrating Custom Components
- Customizing SOA Composite Applications

Extension Methods

The integration process allows extensibility of transaction messages using the following methods:

- Custom Extension Points
- Custom Transformations
- Customizable Scopes

Custom Extension Points

The integration layer defines an external call from each extension point which accepts the source/target XML as input and gives the source /target XML as output. The integration layer points to an abstract WSDL and can be plugged in by a concrete WSDL by the implementation team.

This helps the implementation to invoke any external web service and transform the respective XML.

Pre-Transformation Extension Point

The pre-transformation extension scope is invoked before the main transformation is executed. This transformation aids in converting the source XML that comes in as an input to the integration process and helps the implementation to invoke external web services and/or transform the input XML.

Post-Transformation Extension Point

The post-transformation extension scope is invoked after the main transformation is executed. This transformation aids in converting the target XML that comes in as an input

to the target queue and helps the implementation to invoke external web services and/or transform the output XML.

Refer to Implementing Extension Points for more instructions and examples.

Custom Transformations

The custom transformations are used to map data to custom elements in the incoming and outgoing messages. If the incoming and outgoing messages have custom elements defined in the message; these custom elements would refer to a custom XML schema. The main transformation would invoke the custom transformation to map the fields.

Empty custom transformation and custom schemas are delivered with the product. The implementation team can add additional fields in the custom schema and map them using the custom transformations.

Using custom transformations allows the implementation to define and pass additional data from the source system to the target system.

Refer to Implementing Custom Transformations section for more instructions and examples.

Customizable Scopes

Along with the pre, post extension points this integration provides an option to customize the composite at specific scopes.

In order to customize a composite you have to login jdeveloper in Customization

Developer role.

You can only customize the composite.xml file, .bpel file (for Oracle BPEL Process Manager), .xsl map file, and .mplan file (for Oracle Mediator) when logged into Oracle JDeveloper with the Customization Developer role.

For ex: bpel can be customized at scopes which has "customizable='true'".

Refer to Customizing SOA Composite Applications for instructions on how to customize a composite.

Note: Refer to the SOA Documentation for more information: http://docs.oracle.com/middleware/12212/soasuite/develop/GUID-46083A5B-B61C-41BA-A9EE-5CEE758BC7C7.htm#SOASE85064.

Implementing Extension Points

Steps to implement extension points include:

1. Each process in the integration has a pre- and post-transformation extension point which can be used to invoke Web services and transform the payload.
2. The desired extension point can be triggered from the process by enabling it using the ConfigurationProperties.xml pre- and post-transformation extension flags as described in the Setting Configuration Properties section.

   Each process has its own concrete wsdl which is used to read the endpoint location

for the extension service.

These concrete wsdl files are located in MDS under the following directories:

- /apps/CCB2-MDM2/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUCCB2
- /apps/CCB2-MDM2/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUMDM2

3. Update the concrete wsdl file to define the binding and service details for the extension service to be called and move the concrete wsdl file to MDS according to the example below.
4. To move the updated concrete wsdl to MDS, update the appropriate wsdl in the product install home. The directories to put the concrete wsdl in product install home are the following:
   - $PRODUCT_HOME/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUCCB2
   - $PRODUCT_HOME/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ExtensionServiceLibrary/OUMDM2
5. Deploy the concrete wsdls to MDS by running the ant deploy command for Deploying MDS folder.

   For more information about the command to use to deploying to MDS, see the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management Release 12.1 Installation Guide, under Deploying MDS Folder section.
6. After deploying the files to MDS, restart the SOA server.
7. After restarting the SOA server, the extension point invokes the Web service in the concrete WSDL.

Sample WSDL File with Binding and Service Details

Example: To enable the extension points for OUCCB2OUMDM2SPSyncReqExtension, add the binding and service elements to the OUCCB2OUMDM2SPSyncReqExtensionConcrete.wsdl

```
<binding
name="OUCCB2OUMDM2SPSyncReqV1ExtensionServiceSOAP11Binding"
   type="ccbext:OUCCB2OUMDM2SPSyncReqV1ExtensionService">
   <soap:binding style="document"    transport="http://
schemas.xmlsoap.org/soap/http"/>
   <operation name="PreXformCCB2toMDM2">
  <soap:operation style="document"   soapAction="http://
xmlns.oracle.com/OUCCB2OUMDM2SPSyncReqEBF/
OUCCB2OUMDM2SPSyncReqExtension/V1/PreXformCCB2toMDM2"/>
  <input>
 <soap:body use="literal" parts="CCB2ToMDM2"/>
  </input>
  <output>
 <soap:body use="literal" parts="CCB2ToMDM2"/>
  </output>
  <fault name="fault">
 <soap:fault name="fault" use="literal"/>
  </fault>
   </operation>
   <operation name="PostXformCCB2toMDM2">
```

```
  <soap:operation style="document"
soapAction="http://xmlns.oracle.com/OUCCB2OUMDM2SPSyncReqEBF/
OUCCB2OUMDMS2PSyncReqExtension/V1/ PostXformCCB2toMDM2"/>
  <input>
 <soap:body use="literal" parts="MDM2Enqueue"/>
  </input>
  <output>
 <soap:body use="literal" parts="MDM2Enqueue"/>
  </output>
  <fault name="fault">
 <soap:fault name="fault" use="literal"/>
  </fault>
   </operation>
    </binding>
    <service name="OUCCB2OUMDM2SPSyncReqV1ExtensionService">
<!-- Port name must match the port name used for the Extension
service in the composite.xml of the process - ->
   <port name="OUCCB2OUMDM2SPSyncReqV1ExtensionService"

binding="ccbext:OUCCB2OUMDM2SPSyncReqV1ExtensionServiceSOAP11Bindi
ng">
  <soap:address location="<endpoint url of the Extension server>"/>
   </port>
    </service>
```

Note: The binding and service can be added easily using the Oracle Jdeveloper.

Implementing Custom Transformations

1. Each process in the integration has its own XSD file. The messages have custom elements which can be used to pass additional data from one application to another or vice versa. Refer to the message mappings to see the location of customElements in each message.
2. Each XSD has a corresponding CustomType xsd file in which the complexType elements for each customElements tag are defined.
3. Each process uses two XSD files, one for the Oracle Utilities Customer Care and Billing message and one for the Oracle Utilities Meter Data Management message.
4. To pass additional elements in the customElements tag, the corresponding complexType needs to be modified. Add the additional elements required in both complexType elements. For example, in the xsd for both edge applications.
5. Each process has a main transformation which invokes custom templates. Each main transformation file has a corresponding custom XSL and custom templates are defined in the custom XSL.
6. These custom templates are invoked at the location where each customElements tag is present.
7. The custom XSL can be modified to add transformation for the newly added elements in custom XSD files.
8. The custom XSD files are located in product install home under the following directories:
   - CCB2MDM2/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB2/V1/schemas

- CCB2MDM2/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUMDM2/V1/schemas

9. The custom XSL files are located in product install home under the directory: CCB2-MDM2/services/industry/Utilities/EBF/<Process Name>/xsl
10. After updating the XSD and XSL files in the product install home, update MDS using the ant deploy command for Deploying MDS folder.

    For more information about the command to use to deploying to MDS, see the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Meter Data Management Release 12.1 Installation Guide, under Deploying MDS Folder section.

11. After deploying the files to MDS, restart the SOA server.
12. After restarting the SOA server, the changes to the custom xsd and xsl will be reflected in the integration.

    Example: In the SA synchronization process, to pass sendDetails → finalSnapshot → customElements → distMethod element in Oracle Utilities Customer Care and Billing to SyncRequestDetails finalSnapshot → customElements → distributionMethod element in Oracle Utilities Meter Data Management, the following changes need to be done:

    In OUCCB2SASyncRequestCustomType.xsd, add the distMethod element to the schema. This xsd file is located in CCB2-MDM2/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB2/V1/schemas folder.

```
<xsd:complexType name="FinalSnapshotCustomType">
<xsd:sequence>
<xsd:element name="distMethod" type="xsd:string"/>
</xsd:sequence>
<xsd:complexType>
```

13. In OUMDMSASyncRequestCustomType.xsd, add the distributionMethod element in the schema. This xsd file is located in CCB2-MDM2/MDS-Artifacts/CCB2-MDM2/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUMDM2/V1/schemas folder.

```
<xsd:complexType name="FinalSnapshotCustomType">
<xsd:sequence>
<xsd:element name="distributionMethod" type="xsd:string"/>
</xsd:sequence>
<xsd:complexType>
```

14. Transformation XformOUCCB2SASyncReq_to_OUMDM2SASyncReq_Custom.xsl

```
  <xsl:template name="finalSnapshot-customElements">
  <!-- This template is use for Xformation of
  //finalSnapshot/customElements in Request Message-->
    <distributionMethod xmlns="http://xmlns.oracle.com/OUMDM2/
RequestMessage">
   <xsl:value-ofselect="/ns0:sendDetails/ns0:syncRequestDetails/
ns0:finalSnapshot/ns0:customElements/ns0:distMethod"/>
    </distributionMethod>
</xsl:template>
```

Migrating Custom Components

This section includes the following:

Migrating Custom Composites

All integration services provided with this integration pack have extension points available to extend the functionality using custom composites.

All custom extension composites can be migrated from 11g to 12c. Ensure you have a proper backup of the 11g process before doing the upgrade from 11g to 12c.

Open the 11g composite in Jdeveloper 12.1.3 and save the composite. The directory structure of the composite changes and some files are added and deleted.

Manual Changes to be made when migrating from 11g to 12c:

1. All the transformations currently are either in xsl folder or under the composite directory, should be moved to Transformations folder and all references in the .bpel file should be changed accordingly.
2. All the WSDL's should be moved to WSDLs folder manually.
3. .bpel should be moved to BPEL folder
4. All xsd's should be moved to a Schemas folder
5. All the adapter related files should be moved to Adapters folder
6. All human task related artifacts should be moved to HumanTasks folder
7. All the mediator artifacts should be moved to Mediators folder.

Ensure that there are no errors and deploy directly from JDev or using DeploUndeployUtility.xml file.

Perform the following steps to deploy individual composites using DeploUndeployUtility:

1. Execute the following commands in the Command prompt for Linux and Windows respectively:
   - Linux:

```
cd $PRODUCT_HOME/bin
ant -f DeployUndeployUtility.xml -DInstallProperties=$PRODUCT_HOME/
config/InstallProperties.xml DeployComposite
```

   - Windows:

```
cd %PRODUCT_HOME%\bin
ant -f DeployUndeployUtility.xml -
DInstallProperties=%PRODUCT_HOME%/config/InstallProperties.xml
DeployComposite
```

2. Validate the following parameters when prompted with default values during deployment. Press ENTER to use the default prompted value.
   - Composite Name: Name of the custom composite to be deployed to SOA server. This parameter does not have a default value.

- Composite folder location: The folder name should be an absolute path beginning with %PRODUCT_HOME%/services/industry/Utilities/<EBF/utility>.

For example: to deploy the composite from %PRODUCT_HOME%/services/industry/Utilities/EBF, then pass %PRODUCT_HOME%/services/industry/Utilities/EBF to this property.

The default value for this property is %PRODUCT_HOME%/services/ industry/Utilities/EBF, as most of the business-specific composites reside in this folder.

Note: make sure the custom composite is located on the server physical directory/PRODUCT_HOME where the integration is running.

- Partition Name: The SOA partition name to which the composite should be deployed.

For more information on deploying/undeploying individual comspoites refer to the Installation Guide, under Deploying/undeploying Individual Composites.

Note: It is not mandatory for customers to migrate their custom/extension composite from 11g to 12c. The 11g custom composite service can still be called by the 12c CCB-MDM2 flows.

Migrating Custom XSLs

Same Custom XSLs previously available in 11g are now available in 12c. In order to ensure that the source/target mapping feature is not lost, do not copy the XSL as is from 11g to 12c but instead manually merge those changes from the 11g version of XSL to 12c version of XSL. Redeploy the modified processes either from JDEV or using the DeploUndeployUtility file as specified above.

Customizing SOA Composite Applications

To implement custom SOA Composites, refer to section 52.4 Customizing the Customer Version in the SOA Documentation in http://docs.oracle.com/ middleware/12212/soasuite/develop/GUID-46083A5B-B61C-41BA-A9EE-5CEE758BC7C7.htm#SOASE85064.

This section provides a summary of the required steps:

1. Obtain the Composite Archive (SAR) file for the base composite that is to be customized. This SAR file may be obtained in one of a few ways:
   - If the composite has already been installed and deployed as part of a process integration pack (PIP), the composite project may be found under the CCB2-MDM2\services\industry\Utilities\EBF\... directory tree and within the project's deploy subdirectory you may find the SAR file.
   - If the composite has already been deployed, you can export the SAR from the server using EM console or WLST or Ant commands
   - Open the project in JDeveloper (default role) and deploy it to a SAR file
2. Open JDeveloper (default role) and create a new SOA application and then create a new SOA Project with an empty composite.

The SOA Project should be named with a distinguishing prefix (such as "XX") followed by the original project or composite name. For example: OUCCB2OUMDM2SAActivationBillCycleRequest

3. In the **Application Navigator** pane, click the project name to select it.
4. Select **File** > **Import**... from the main JDeveloper menu.
5. Choose **SOA Archive Into SOA Project**.
6. Browse for the SAR file obtained in step 1.
   The composite name automatically populates after selecting the SAR file. Verify that it is correct.
7. Select the **Import for Customization** checkbox, and click Finish. The project is now ready for customization.

   Note: If compilation errors occur (such as MDS-00054 : MDS Exception), verify that the adf-config.xml has the MDS database details (where CCB2-MDM2 integration is deployed).
8. Customization class jar "ugbucust.jar" must be added to your SOA composite project. This file is located in $PRODUCT_HOME/Customizations/ugucust.jar
9. The SOA Application in JDeveloper must be configured to use the customization class and layer
   - In the Applications window, expand Application Resources > Descriptors > ADF META_INF.
   - Open the adf-config.xml file and select the MDS tab.
   - Click the Add icon to add "UGBUCustomerExtensionCustomizationClass" customization class.
   - To add application-specific layer values, click the "Configure Design Time Customization Layer Values" link.
   - Add the snippet below to add "UGBUCustomizationLayer" value in CustomizationLayerValues.xml.

```
<cust-layers xmlns="http://xmlns.oracle.com/mds/dt">
<cust-layer name="UGBUCustomizationLayer" id-prefix="ugbuext">
<cust-layer-value value="UGBUCustomizationLayer" display-
name="UGBU Customer Extension"/>
</cust-layer>
</cust-layers>
```

10. Save all the changes.
11. From the **Tools** menu, select **Switch Roles** > **Customization Developer.**
12. Restart Oracle JDeveloper.
    The Customization Context dialog displays the available customization layers and layer values.
13. Select "UGBUCustomizationLayer" layer and value to customize.
14. Customize the BPEL process. You can make required changes to the composite and its BPEL components.

    Note: Only scopes that have been marked as customizable in BPEL will be editable. Non-editable activities appear greyed out.

After making the customizations, the project can be deployed to the SOA server and/or a SAR file.

Appendix A

Data Mapping

This section provides mapping details for each integration point, including:

Master Data Synchronization Processes

- Person Synchronization Process Mapping Details
- SP Information Synchronization Process Mapping Details
- SA Information Synchronization Process Mapping Details
- SA Relationship Information Synchronization Process Mapping Details
- Meter Information Synchronization Process Mapping Details
- Meter Configuration Information Synchronization Process Mapping Details
- SP-Meter History Information Synchronization Process Mapping Details
- Dynamic Options Synchronization Process Mapping Details
- Dynamic Options Event Synchronization Process Mapping Details
- Get Register Read High-Low Boundary Message Mapping Details

Billing Processes

- Batch Bill Determinants Synchronization Process Mapping Details
- Bill Cycle Synchronization Process Mapping Details
- SA Activation Bill Cycle Synchronization Mapping Details
- Online Bill Determinants Synchronization Process Mapping Details
- Replacement Reads Synchronization Process Mapping Details
- Get Register Read High-Low Boundary Message Mapping Details
- Get Usage Request Message Mapping Details

Customer Service Processes

- Usage Adjustment Request Message Mapping Details

Note: The elements highlighted in gray are mapped as indicated. Elements left in white are not mapped.

Master Data Synchronization Processes

Person Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Person Synchronization Request Mapping Details
- Person Synchronization Response Mapping Details

Refer to the Person Information Synchronization Integration Process description for processing details on this integration point.

Person Synchronization Request Mapping Details

CCB Person Request Message			MDM Contact Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	

CCB Person Request Message			MDM Contact Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
discardReason	sendDetails	Field				
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
personBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
contactType	initialSnapshot	Field	contactType	initialSnapshot	Field	OUCCB2_OUMDM2_ContactType
lifeSupportSensitiveLoad	initialSnapshot	Field	lifeSupportSensitiveLoad	initialSnapshot	Field	OUCCB2_OUMDM2_LifeSupportSensitiveLoad.dvm
customElements	initialSnapshot	Group	customElements	initialSnapshot	Group	
formattedElements	initialSnapshot	Group	formattedElements	initialSnapshot	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	

CCB Person Request Message			MDM Contact Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
contactType	finalSnapshot	Field	contactType	finalSnapshot	Field	OUCCB2_OUMDM2_ContactType
lifeSupportSensitiveLoad	finalSnapshot	Field	lifeSupportSensitiveLoad	finalSnapshot	Field	OUCCB2_OUMDM2_LifeSupportSensitiveLoad.dvm
customElements	finalSnapshot	Group	customElements	finalSnapshot	Group	
formattedElements	finalSnapshot	Group	formattedElements	finalSnapshot	Group	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2PersonBasedSnapshot CCB Data Area.

Person Synchronization Response Mapping Details

MDM Contact Sync Response Message			CCB Person Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exception Information	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exception InformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exception InformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode

MDM Contact Sync Response Message			CCB Person Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sequence	exception InformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exception InformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exception InformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

SP Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- SP Synchronization Request Mapping Details
- SP Synchronization Response Mapping Details

Refer to the SP Information Synchronization Integration Process description for processing details on this integration point.

SP Synchronization Request Mapping Details

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
spBO	sendDetails	Field				
premiseBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
spType	initialSnapshot	Field	spType	initialSnapshot	Field	OUCCB2_OUMDM2_SPType
spStatus	initialSnapshot	Field	boStatus	initialSnapshot	Field	OUCCB2_OUMDM2_SPStatus
spSourceStatus	initialSnapshot	Field	spSourceStatus	initialSnapshot	Field	OUCCB2_OUMDM2_SPSourceStatus
disconnectLocation	initialSnapshot	Field	disconnectLocation	initialSnapshot	Field	OUCCB2_OUMDM2_DisconnectLocation

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
measurementCycle	initialSnapshot	Field	measurementCycle	initialSnapshot	Field	OUCCB2_OUMDM2_MeasurementCycle
measurementCycleRoute	initialSnapshot	Field	measurementCycleRoute	initialSnapshot	Field	OUCCB2_OUMDM2_MeasurementCycleRoute
country	initialSnapshot	Field	country	initialSnapshot	Field	OUCCB2_OUMDM2_Country
lifeSupportSensitiveLoad	initialSnapshot	Field	lifeSupportSensitiveLoad	initialSnapshot	Field	OUCCB2_OUMDM2_LifeSupportSensitiveLoad
customElements	initialSnapshot	Group	customElements	initialSnapshot	Group	
formattedElements	initialSnapshot	Group	formattedElements	initialSnapshot	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	
spType	finalSnapshot	Field	spType	finalSnapshot	Field	OUCCB2_OUMDM2_SPType
spStatus	finalSnapshot	Field	boStatus	finalSnapshot	Field	OUCCB2_OUMDM2_SPStatus
spSourceStatus	finalSnapshot	Field	spSourceStatus	finalSnapshot	Field	OUCCB2_OUMDM2_SPSourceStatus
disconnectLocation	finalSnapshot	Field	disconnectLocation	finalSnapshot	Field	OUCCB2_OUMDM2_DisconnectLocation
measurementCycle	finalSnapshot	Field	measurementCycle	finalSnapshot	Field	OUCCB2_OUMDM2_MeasurementCycle
measurementCycleRoute	finalSnapshot	Field	measurementCycleRoute	finalSnapshot	Field	OUCCB2_OUMDM2_MeasurementCycleRoute
country	finalSnapshot	Field	country	finalSnapshot	Field	OUCCB2_OUMDM2_Country
lifeSupportSensitiveLoad	finalSnapshot	Field	lifeSupportSensitiveLoad	finalSnapshot	Field	OUCCB2_OUMDM2_LifeSupportSensitiveLoad
customElements	finalSnapshot	Group	customElements	finalSnapshot	Group	
formattedElements	finalSnapshot	Group	formattedElements	finalSnapshot	Group	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2SPBasedSnapshot CCB Data Area.

SP Synchronization Response Mapping Details

MDM SP Sync Response Message			CCB SP Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

SA Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- SA Synchronization Request Mapping Details
- SA Synchronization Response Mapping Details

Refer to the SA Information Synchronization Integration Process description for processing details on this integration point.

SA Synchronization Request Mapping Details

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
saBO	sendDetails	Field				
accountBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postscript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
cisDivision	initialSnapshot	Field	usType	initialSnapshot	Field	OUCCB2_OUMDM2_USType
saType	initialSnapshot	Field		initialSnapshot	Field	
saStatus	initialSnapshot	Field	boStatus	initialSnapshot	Field	OUCCB2_OUMDM2_SAStatus
customElements	initialSnapshot	Group	customElements	initialSnapshot	Group	
formattedElements	initialSnapshot	Group	formattedElements	initialSnapshot	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	

CCB SA Request Message			MDM US Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cisDivision	finalSnapshot	Field	usType	finalSnapshot	Field	OUCCB2_OUMDM2_USType
saType	finalSnapshot	Field		finalSnapshot	Field	
saStatus	finalSnapshot	Field	boStatus	finalSnapshot	Field	OUCCB2_OUMDM2_SAStatus
customElements	finalSnapshot	Group	customElements	finalSnapshot	Group	
formattedElements	finalSnapshot	Field	formattedElements	finalSnapshot	Field	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2SABasedSnapshot CCB Data Area.

SA Synchronization Response Mapping Details

MDM US Sync Response Message			CCB SA Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformation List	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformation List	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformation List	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformation List	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	

MDM US Sync Response Message			CCB SA Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
comments	exceptionInformation List	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformation List	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

SA Relationship Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- SA Relationship Information Synchronization Request Mapping Details
- SA Relationship Information Synchronization Response Mapping Details

Refer to the SA Information Synchronization Integration Process description for processing details on this integration point.

SA Relationship Information Synchronization Request Mapping Details

CCB SARelationship Request Message			MDM US Relationship Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D2-InboundUSMarket ParticipantSync		Outermost Tag	
			syncRequestId	D2-InboundUSMarket ParticipantSync	Field	
			bo	D2-InboundUSMarket ParticipantSync	Field	
			boStatus	D2-InboundUSMarket ParticipantSync	Field	
			createDateTime	D2-InboundUSMarket ParticipantSync	Field	
			statusDateTime	D2-InboundUSMarket ParticipantSync	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D2-InboundUSMarket ParticipantSync	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				

CCB SARelationship Request Message			MDM US Relationship Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sourceSystem	sendDetails	Field	externalSystem	D2-InboundUSMarket ParticipantSync	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D2-InboundUSMarket ParticipantSync	Field	
discardReason	sendDetails	Field				
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D2-InboundUSMarket ParticipantSync	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D2-InboundUSMarket ParticipantSync	Field	
pkValue2	sendDetails	Field	externalPkValue2	D2-InboundUSMarket ParticipantSync	Field	
pkValue3	sendDetails	Field	externalPkValue3	D2-InboundUSMarket ParticipantSync	Field	
pkValue4	sendDetails	Field	externalPkValue4	D2-InboundUSMarket ParticipantSync	Field	
pkValue5	sendDetails	Field	externalPkValue5	D2-InboundUSMarket ParticipantSync	Field	
syncRequestDetails	sendDetails	Field	syncRequestDetails	D2-InboundUSMarket ParticipantSync	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	syncRequestDetails	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	syncRequestDetails	Group	

Note: The elements stored inside the syncRequestDetails group are defined in C1-MDM2SARelSyncRequest CCB BO and D2-CommonSyncRequestUSMktPart MDM Data Area.

SA Relationship Information Synchronization Response Mapping Details

MDM US Relationship Sync Response Message			CCB SA Relationship Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformation List	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformation List	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformation List	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformation List	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformation List	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformation List	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

Meter Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Meter Synchronization Request Mapping Details
- Meter Synchronization Response Mapping Details

Refer to the Meter Information Synchronization Integration Process description for processing details on this integration point.

Meter Synchronization Request Mapping Details

CCB Meter Request Message			MDM Device Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
Bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB Meter Request Message			MDM Device Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
meterBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
deviceType	initialSnapshot	Field	deviceType	initialSnapshot	Field	OUCCB2_OUMDM2_DeviceType
meterStatus	initialSnapshot	Field	boStatus	initialSnapshot	Field	OUCCB2_OUMDM2_MeterStatus
manufacturer	initialSnapshot	Field	manufacturer	initialSnapshot	Field	OUCCB2_OUMDM2_Manufacturer
model	initialSnapshot	Field	model	initialSnapshot	Field	OUCCB2_OUMDM2_Model
customElements	initialSnapshot	Group	customElements	initialSnapshot	Group	

CCB Meter Request Message			MDM Device Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
formattedElements	initialSnapshot	Group	formattedElements	initialSnapshot	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	
deviceType	finalSnapshot	Field	deviceType	finalSnapshot	Field	OUCCB2_OUMDM2_DeviceType
meterStatus	finalSnapshot	Field	meterStatus	finalSnapshot	Field	OUCCB2_OUMDM2_MeterStatus
manufacturer	finalSnapshot	Field	manufacturer	finalSnapshot	Field	OUCCB2_OUMDM2_Manufacturer
model	finalSnapshot	Field	model	finalSnapshot	Field	OUCCB2_OUMDM2_Model
customElements	finalSnapshot	Group	customElements	finalSnapshot	Group	
formattedElements	finalSnapshot	Group	formattedElements	finalSnapshot	Group	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2MeterBasedSnapshot CCB Data Area.

Meter Synchronization Response Mapping Details

MDM Device Sync Response Message			CCB Meter Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	

MDM Device Sync Response Message			CCB Meter Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

Meter Configuration Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Meter Configuration Synchronization Request Mapping Details
- Meter Configuration Synchronization Response Mapping Details

Refer to the Meter Configuration Information Synchronization Integration Process description for processing details on this integration point.

Meter Configuration Synchronization Request Mapping Details

CCB Meter Config Request Message			MDM Device Config Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB Meter Config Request Message			MDM Device Config Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
meterConfigurationBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postscript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
deviceConfigurationInfo	initialSnapshot	Group	deviceConfigurationInfo	initialSnapshot	Group	
deviceConfigurationType	deviceConfigurationInfo	Field	deviceConfigurationType	deviceConfigurationInfo	Field	OUCCB2_OUMDM2_DeviceConfigType
deviceId	deviceConfigurationInfo	Field	deviceId	deviceConfigurationInfo	Field	
customElements	deviceConfigurationInfo	Group	customElements	deviceConfigurationInfo	Group	
formattedElements	deviceConfigurationInfo	Group	formattedElements	deviceConfigurationInfo	Group	
measuringComponentInfo	initialSnapshot	Group	measuringComponentInfo	initialSnapshot	Group	

CCB Meter Config Request Message			MDM Device Config Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
measuringComponentList	measuringComponentInfo	List	measuringComponentList	measuringComponentInfo	List	
registerId	measuringComponentInfo	Field	registerId	measuringComponent Info	Field	
howToUse	measuringComponentInfo	Field	howToUse	measuringComponent Info	Field	OUMDM2_HowToUse
readOutType	measuringComponentInfo	Field	readOutType	measuringComponent Info	Field	OUMDM2_ReadOutType
consumptiveSubtractive	measuringComponentInfo	Field	consumptiveSubtractive	measuringComponent Info	Field	OUMDM2_ConsumptiveSubtractive
serviceType	measuringComponentInfo	Field	serviceType	measuringComponent Info	Field	OUMDM2_MCServiceType
allowNegativeConsumption	measuringComponent Info	Field	allowNegativeConsumption	measuringComponent Info	Field	OUMDM2_NegativeConsumption
uom	measuringComponent Info	Field	uom	measuringComponent Info	Field	OUMDM2_UOM
tou	measuringComponent Info	Field	tou	measuringComponent Info	Field	OUMDM2_TOU
sqi	measuringComponent Info	Field	sqi	measuringComponent Info	Field	OUMDM2_SQI
intervalRegisterType	measuringComponent Info	Field	intervalScalar	measuringComponent Info	Field	
customElements	measuringComponentInfo	Group	customElements	measuringComponent Info	Group	
formattedElements	measuringComponentInfo	Group	formattedElements	measuringComponent Info	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	
deviceConfigurationInfo	finalSnapshot	Field	deviceConfigurationInfo	finalSnapshot	Field	
deviceConfigurationType	deviceConfigurationInfo	Field	deviceConfigurationType	deviceConfigurationInfo	Field	OUCCB2_OUMDM2_DeviceConfigType

CCB Meter Config Request Message			MDM Device Config Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
deviceId	deviceConfigurationInfo	Field	deviceId	deviceConfigurationInfo	Field	
customElements	deviceConfigurationInfo	Group	customElements	deviceConfigurationInfo	Group	
formattedElements	deviceConfigurationInfo	Group	formattedElements	deviceConfigurationInfo	Group	
measuringComponentInfo	initialSnapshot	Group	measuringComponentInfo	initialSnapshot	Group	
measuringComponentList	measuringComponentInfo	List	measuringComponentList	measuringComponentInfo	List	
registerId	measuringComponentInfo	Field	registerId	measuringComponentInfo	Field	
howToUse	measuringComponentInfo	Field	howToUse	measuringComponentInfo	Field	OUMDM2_HowToUse
readOutType	measuringComponentInfo	Field	readOutType	measuringComponentInfo	Field	OUMDM2_ReadOutType
consumptiveSubtractive	measuringComponentInfo	Field	consumptiveSubtractive	measuringComponentInfo	Field	OUMDM2_ConsumptiveSubtractive
serviceType	measuringComponentInfo	Field	serviceType	measuringComponentInfo	Field	OUMDM2_MCServiceType
allowNegativeConsumption	measuringComponentInfo	Field	allowNegativeConsumption	measuringComponentInfo	Field	OUMDM2_NegativeConsumption
uom	measuringComponentInfo	Field	uom	measuringComponentInfo	Field	OUMDM2_UOM
tou	measuringComponentInfo	Field	tou	measuringComponentInfo	Field	OUMDM2_TOU
sqi	measuringComponentInfo	Field	sqi	measuringComponentInfo	Field	OUMDM2_SQI
intervalRegisterType	measuringComponentInfo	Field	intervalScalar	measuringComponentInfo	Field	
customElements	measuringComponentInfo	Group	customElements	measuringComponentInfo	Group	

CCB Meter Config Request Message			MDM Device Config Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
formattedElements	measuringComponentInfo	Group	formattedElements	measuringComponentInfo	Group	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2MtrConfigBasedSnapshot CCB Data Area.

Meter Configuration Synchronization Response Mapping Details

MDM Device Config Sync Response Message			CCB Meter Config Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	

MDM Device Config Sync Response Message			CCB Meter Config Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

SP-Meter History Information Synchronization Process Mapping Details

This section provides data mapping details for the following:

- SP-Meter History Synchronization Request Mapping Details
- SP-Meter History Synchronization Response Mapping Details

Refer to the SP-Meter History Information Synchronization Integration Process description for processing details on this integration point.

SP-Meter History Synchronization Request Mapping Details

CCB SP-Meter History Request Message			MDM Install Event Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB SP-Meter History Request Message			MDM Install Event Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
soMeterHistoryBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
deviceConfigurationId	initialSnapshot	Field	deviceConfigurationId	initialSnapshot	Field	
customElements	initialSnapshot	Group	customElements	initialSnapshot	Group	
formattedElements	initialSnapshot	Group	formattedElements	initialSnapshot	Group	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	
deviceConfigurationId	finalSnapshot	Field	deviceConfigurationId	finalSnapshot	Field	
customElements	finalSnapshot	Group	customElements	finalSnapshot	Group	

CCB SP-Meter History Request Message			MDM Install Event Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
formattedElements	finalSnapshot	Group	formattedElements	finalSnapshot	Group	
			transformed	syncRequestDetails	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2SPMtrHistorySnapshot CCB Data Area.

SP-Meter History Synchronization Response Mapping Details

MDM Install Event Sync Response Message			CCB SP-Meter History Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	

MDM Install Event Sync Response Message			CCB SP-Meter History Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

Dynamic Options Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Dynamic Options Request Mapping Details
- Dynamic Options Response Mapping Details

Refer to the Contract Option/Dynamic Option Synchronization Integration Process description for processing details on this integration point.

Dynamic Options Request Mapping Details

CCB Contract Option Outbound Message Sync Request BO C1-MDM2ContractOptSyncRequest Outbound Message BO C1-MDM2ContrOptSyncReqOutMsg			**MDM Dynamic Option Request Message Service: D2-InboundDynamicOptionSync**			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM Mapping and Comments**
sendDetails		Outermost Tag	D2-InboundDynamicOptionSync		Outermost Tag	
			syncRequestId	D2-InboundDynamicOptionSync	Field	
			bo	D2-InboundDynamicOptionSync	Field	
			boStatus	D2-InboundDynamicOptionSync	Field	
			createDateTime	D2-InboundDynamicOptionSync	Field	
			statusDateTime	D2-InboundDynamicOptionSync	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D2-InboundDynamicOptionSync	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
syncRequired	sendDetails	Field				

CCB Contract Option Outbound Message Sync Request BO **C1-MDM2ContractOptSyncRequest** **Outbound Message BO** **C1-MDM2ContrOptSyncReqOutMsg**			**MDM Dynamic Option Request Message** **Service: D2-InboundDynamicOptionSync**			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM Mapping and Comments**
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D2-InboundDynamicOptionSync	Field	
mo	sendDetails	Field	targetMo	D2-InboundDynamicOptionSync	Field	DVM: OUCCB2_OUMDM2_MO CCB: OUCCB2_MO MDM: OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D2-InboundDynamicOptionSync	Field	
pkValue2	sendDetails	Field	externalPkValue2	D2-InboundDynamicOptionSync	Field	
pkValue3	sendDetails	Field	externalPkValue3	D2-InboundDynamicOptionSync	Field	
pkValue4	sendDetails	Field	externalPkValue4	D2-InboundDynamicOptionSync	Field	
pkValue5	sendDetails	Field	externalPkValue5	D2-InboundDynamicOptionSync	Field	
			productionPkValue	D2-InboundDynamicOptionSync	Field	
			exceptionInformation	D2-InboundDynamicOptionSync	Field	
			toDoRetry	D2-InboundDynamicOptionSync	Field	
			changeDateTime	D2-InboundDynamicOptionSync	Field	
			version	D2-InboundDynamicOptionSync	Field	
			targetBo	D2-InboundDynamicOptionSync	Field	
			clearExceptions	D2-InboundDynamicOptionSync	Field	
			relatedCompositeSyncId	D2-InboundDynamicOptionSync	Field	
			compositeSyncRequest	D2-InboundDynamicOptionSync	Field	

CCB Contract Option Outbound Message Sync Request BO **C1-MDM2ContractOptSyncRequest** **Outbound Message BO** **C1-MDM2ContrOptSyncReqOutMsg**			**MDM Dynamic Option Request Message** **Service: D2-InboundDynamicOptionSync**			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM Mapping and Comments**
			processData	D2-InboundDynamicOptionSync	Field	
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
discardReason	sendDetails	Field				
cancelReason	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D2-InboundDynamicOptionSync	Field	
version	sendDetails	Field				
externalSytem	sendDetails	Field				
externalIds	sendDetails	Group				
exceptionInfo	sendDetails	List				
contractOptionBO	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D2-InboundDynamicOptionSync	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	group move the initialSnapshot from CCB to MDM
dynamicOptionType	initialSnapshot	Field				
customElements	initialSnapshot	Field				
formattedElements	initialSnapshot	Field				

CCB Contract Option Outbound Message Sync Request BO C1-MDM2ContractOptSyncRequest Outbound Message BO C1-MDM2ContrOptSyncReqOutMsg			MDM Dynamic Option Request Message Service: D2-InboundDynamicOptionSync			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM Mapping and Comments**
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	group move the initialSnapshot from CCB to MDM
dynamicOptionType	finalSnapshot	Field				
customElements	finalSnapshot	Field				
formattedElements	finalSnapshot	Field				
			transformed	syncRequestDetails	Field	

Dynamic Options Response Mapping Details

MDM Dynamic Option Sync Response Message			CCB Dynamic Option Sync Response Message			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**Comments**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformation List	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformation List	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	

MDM Dynamic Option Sync Response Message			CCB Dynamic Option Sync Response Message			
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**Comments**
messageNumber	exceptionInformation List	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	DVM: OUCCB2_OUMDM2_ErrorCode MDM: OUMDM2_ErrorCode CCB: OUCCB2_ErrorCode
sequence	exceptionInformation List	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	Incremental number populated by Integration
comments	exceptionInformation List	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformation List	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameter Value	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Field	customElements	F1-UpdateAndTransitionSyncRequest	Field	

Dynamic Options Event Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Dynamic Options Event Request Mapping Details
- Dynamic Options Event Response Mapping Details

Refer to the Contract Option Event /Dynamic Option Event Synchronization Integration Process description for processing details on this integration point.

Dynamic Options Event Request Mapping Details

CCB Contract Option Outbound Message Sync Req BO C1-MDM2ContOptEventSyncRequest **Outbound Message BO C1-MDM2ContrOptEvSyncReqOutMsg**			**MDM Dynamic Option Request Message Service D2-InboundDynamicOptionEventSync**			**Comments**
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
sendDetails		OutermostTag	D2-InboundDynamicOptionEventSync		Outermost Tag	
			syncRequestId	D2-InboundDynamicOptionEventSync	Field	
			bo	D2-InboundDynamicOptionEventSync	Field	
			boStatus	D2-InboundDynamicOptionEventSync	Field	
			createDateTime	D2-InboundDynamicOptionEventSync	Field	
			statusDateTime	D2-InboundDynamicOptionEventSync	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D2-InboundDynamicOptionEventSync	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D2-InboundDynamicOptionEventSync	Field	

CCB Contract Option Outbound Message Sync Req BO C1-MDM2ContOptEventSyncRequest **Outbound Message BO C1-MDM2ContrOptEvSyncReqOutMsg**			**MDM Dynamic Option Request Message Service D2-InboundDynamicOptionEventSync**			**Comments**
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
mo	sendDetails	Field	targetMo	D2-InboundDynamicOptionEventSync	Field	DVM: OUCCB2_OUMDM2_MO CCB: OUCCB2_MO MDM: OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D2-InboundDynamicOptionEventSync	Field	
pkValue2	sendDetails	Field	externalPkValue2	D2-InboundDynamicOptionEventSync	Field	
pkValue3	sendDetails	Field	externalPkValue3	D2-InboundDynamicOptionEventSync	Field	
pkValue4	sendDetails	Field	externalPkValue4	D2-InboundDynamicOptionEventSync	Field	
pkValue5	sendDetails	Field	externalPkValue5	D2-InboundDynamicOptionEventSync	Field	
			productionPkValue	D2-InboundDynamicOptionEventSync	Field	
			exception Information	D2-InboundDynamicOptionEventSync	Field	
			toDoRetry	D2-InboundDynamicOptionEventSync	Field	
			changeDateTime	D2-InboundDynamicOptionEventSync	Field	
			version	D2-InboundDynamicOptionEventSync	Field	
			targetBo	D2-InboundDynamicOptionEventSync	Field	
			clearExceptions	D2-InboundDynamicOptionEventSync	Field	
			relatedComposite SyncId	D2-InboundDynamicOptionEventSync	Field	
			compositeSync Request	D2-InboundDynamicOptionEventSync	Field	

CCB Contract Option Outbound Message Sync Req BO C1-MDM2ContOptEventSyncRequest **Outbound Message BO C1-MDM2ContrOptEvSyncReqOutMsg**			**MDM Dynamic Option Request Message Service D2-InboundDynamicOptionEventSync**			**Comments**
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
			processData	D2-InboundDynamicOptionEventSync	Field	
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
discardReason	sendDetails	Field				
cancelReason	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D2-InboundDynamicOptionEventSync	Field	
version	sendDetails	Field				
externalSytem	sendDetails	Field				
externalIds	sendDetails	Group				
exceptionInfo	sendDetails	List				
contractOptionEventBO	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D2-InboundDynamicOptionEventSync	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	group move the initialSnapshot from CCB to MDM
customElements	initialSnapshot	Field				
formattedElements	initialSnapshot	Field				
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	group move the finalSnapshot from CCB to MDM
customElements	finalSnapshot	Field				
formattedElements	finalSnapshot	Field				
			transformed	syncRequestDetails	Field	

Dynamic Options Event Response Mapping Details

MDM Dynamic Option Sync Response Message			CCB Dynamic Option Sync Response Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
sendDetails		OutermostTag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	DVM: OUCCB2_OUMDM2_ErrorCode MDM: OUMDM2_ErrorCode CCB: OUCCB2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	Incremental number populated by Integration
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Field	customElements	F1-UpdateAndTransitionSyncRequest	Field	

Scalar Meter Reads Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Scalar Meter Reads Request Mapping Details
- Scalar Meter Reads Synchronization Response Mapping Details

Refer to the Scalar Meter Read Sync Integration Process description for processing details on this integration point.

Scalar Meter Reads Request Mapping Details

CCB Meter Reads Request Message			MDM Meter Reads Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D1-SyncRequestInbound		Outermost Tag	
			syncRequestId	D1-SyncRequestInbound	Field	
			bo	D1-SyncRequestInbound	Field	
			boStatus	D1-SyncRequestInbound	Field	
			createDateTime	D1-SyncRequestInbound	Field	
			statusDateTime	D1-SyncRequestInbound	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D1-SyncRequestInbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
version	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D1-SyncRequestInbound	Field	
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				
initialLoad	sendDetails	Field	initialLoad	D1-SyncRequestInbound	Field	
discardReason	sendDetails	Field				

CCB Meter Reads Request Message			MDM Meter Reads Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
cancelReason	sendDetails	Field				
mo	sendDetails	Field	targetMo	D1-SyncRequestInbound	Field	OUCCB2_OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D1-SyncRequestInbound	Field	
pkValue2	sendDetails	Field	externalPkValue2	D1-SyncRequestInbound	Field	
pkValue3	sendDetails	Field	externalPkValue3	D1-SyncRequestInbound	Field	
pkValue4	sendDetails	Field	externalPkValue4	D1-SyncRequestInbound	Field	
pkValue5	sendDetails	Field	externalPkValue5	D1-SyncRequestInbound	Field	
			productionPkValue	D1-SyncRequestInbound	Field	
			version	D1-SyncRequestInbound	Field	
			relatedCompositeSyncId	D1-SyncRequestInbound	Field	
			clearExceptions	D1-SyncRequestInbound	Field	
			targetBo	D1-SyncRequestInbound	Field	
meterReadBO	sendDetails	Field				
snapshotDA	sendDetails	Field				
postScript	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D1-SyncRequestInbound	Group	
			original	syncRequestDetails	Group	
initialSnapshot	syncRequestDetails	Group	initialSnapshot	original	Group	
meterReadInfo	initialSnapshot	Group	scalarReadInfo	initialSnapshot	Group	
meterReadId	meterReadInfo	Field	scalarReadExternalId	scalarReadInfo	Field	
deviceConfigurationExternalId	meterReadInfo	Field	deviceConfigurationExternalId	scalarReadInfo	Field	
readDateTime	meterReadInfo	Field	measurementDateTime	scalarReadInfo	Field	
useOnBill	meterReadInfo	Field	doNotUse	scalarReadInfo	Field	
customElements	meterReadInfo	Field	customElements	scalarReadInfo	Field	

CCB Meter Reads Request Message			MDM Meter Reads Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
formattedElements	meterReadInfo	Field	formattedElements	scalarReadInfo	Field	
registerReadInfo	initialSnapshot	Group	measurements	initialSnapshot	Group	
registerReadList	registerReadInfo	Group	measurementList	measurements	Group	
registerReadId	registerReadList	Field	measurementExternalId	measurementList	Field	
measuringComponentExternalId	registerReadList	Field	measuringComponentExternalId	measurementList	Field	
reading	registerReadList	Field	measurement	measurementList	Field	
readType	registerReadList	Field	measurementCondition	measurementList	Field	OUCCB2_OUMDM2_ReadType
customElements	registerReadList	Field	customElements	measurementList	Field	
formattedElements	registerReadList	Field	formattedElements	measurementList	Field	
finalSnapshot	syncRequestDetails	Group	finalSnapshot	original	Group	
meterReadInfo	finalSnapshot	Group	scalarReadInfo	finalSnapshot	Group	
meterReadId	meterReadInfo	Field	scalarReadExternalId	scalarReadInfo	Field	
deviceConfigurationExternalId	meterReadInfo	Field	deviceConfigurationExternalId	scalarReadInfo	Field	
readDateTime	meterReadInfo	Field	measurementDateTime	scalarReadInfo	Field	
useOnBill	meterReadInfo	Field	doNotUse	scalarReadInfo	Field	
customElements	meterReadInfo	Field	customElements	scalarReadInfo	Field	
formattedElements	meterReadInfo	Field	formattedElements	scalarReadInfo	Field	
registerReadInfo	finalSnapshot	Group	measurements	finalSnapshot	Group	
registerReadList	registerReadInfo	Group	measurementList	measurements	Group	
registerReadId	registerReadList	Field	measurementExternalId	measurementList	Field	
measuringComponentExternalId	registerReadList	Field	measuringComponentExternalId	measurementList	Field	
reading	registerReadList	Field	measurement	measurementList	Field	

CCB Meter Reads Request Message			MDM Meter Reads Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
readType	registerReadList	Field	measurementCondition	measurementList	Field	OUCCB2_OUMDM2_ReadType
customElements	registerReadList	Field	customElements	measurementList	Field	
formattedElements	registerReadList	Field	formattedElements	measurementList	Field	

Note: The elements stored inside the formatted elements group are defined in the C1-MDM2MRBasedSnapshot CCB Data Area.

Scalar Meter Reads Synchronization Response Mapping Details

MDM Meter Reads Sync Response Message			CCB Meter Reads Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	OUCCB2_OUMDM2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	

MDM Meter Reads Sync Response Message			CCB Meter Reads Sync Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Group	customElements	F1-UpdateAndTransitionSyncRequest	Group	

Billing Processes

Batch Bill Determinants Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Batch Bill Determinants Request Mapping Details
- Batch Bill Determinants Response Mapping Details

Refer to the Batch Bill Determinants Integration Process description for processing details on this integration point.

Batch Bill Determinants Request Mapping Details

CCB Batch BD Request Message			MDM Batch BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D2-UsageTransactionRequestInbound		Outermost Tag	
usageId	sendDetails	Field	externalId	D2-UsageTransactionRequest Inbound	Field	
previousUsageId	sendDetails	Field	previousUsageId	D2-UsageTransactionRequest Inbound	Field	
saId	sendDetails	Field	usExternalId	D2-UsageTransactionRequest Inbound	Field	
			usageId	D2-UsageTransactionRequest Inbound	Field	
			bo	D2-UsageTransactionRequest Inbound	Field	
			boStatus	D2-UsageTransactionRequest Inbound	Field	
			statusReason	D2-UsageTransactionRequest Inbound		
			createDateTime	D2-UsageTransactionRequest Inbound	Field	

CCB Batch BD Request Message			MDM Batch BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			updateStatusDateTime	D2-UsageTransactionRequest Inbound	Field	
			usId	D2-UsageTransactionRequest Inbound	Field	
			usageGroup	D2-UsageTransactionRequest Inbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
			comments	D2-UsageTransactionRequest Inbound	Field	
			measurementCycle	D2-UsageTransactionRequest Inbound	Field	
			measurementCycleRoute	D2-UsageTransactionRequest Inbound	Field	
			scheduledSelectionDate	D2-UsageTransactionRequest Inbound	Field	
			isTraceOn	D2-UsageTransactionRequest Inbound	Field	
intervalProcessing	sendDetails	Group	intervalMC	D2-UsageTransactionRequest Inbound	Group	
startDateTime	intervalProcessing	Field	startDateTime	intervalMC	Field	
endDateTimeFrom	intervalProcessing	Field	endDateTimeFrom	intervalMC	Field	
endDateTimeTo	intervalProcessing	Field	endDateTimeTo	intervalMC	Field	
customElements	intervalProcessing	Field				
scalarProcessing	sendDetails	Group	scalarMC	D2-UsageTransactionRequest Inbound	Group	

CCB Batch BD Request Message			MDM Batch BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
startDateTime	scalarProcessing	Field	startDateTime	scalarMC	Field	
endDateTime	scalarProcessing	Field	endDateTimeFrom	scalarMC	Field	
			endDateTimeTo	scalarMC	Field	
billingOption	scalarProcessing	Field	endRangeOption	scalarMC	Field	OUCCB2_OUMDM2_BillingOption
minDaysOffset	scalarProcessing	Field	minDaysOffset	scalarMC	Field	
maxDaysOffset	scalarProcessing	Field	maxDaysOffset	scalarMC	Field	
allowEstimate	scalarProcessing	Field	allowEstimate	scalarMC	Field	OUCCB2_OUMDM2_AllowEstimat
estimateDate	scalarProcessing	Field	estimateDate	scalarMC	Field	
customElements	scalarProcessing	Field				
billSegmentId	sendDetails	Field				
version	sendDetails	Field	version	D2-UsageTransactionRequest Inbound		
			dateBreaks	D2-UsageTransactionRequest Inbound	Group	
dateBreaks	sendDetails	List	dateBreaksList	dateBreaks	List	
breakDateTime	dateBreaks	Field	dateBreak	dateBreaksList	Field	
billCondition	sendDetails	Field	billCondition	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_BillConditio
retryInfo	sendDetails	Group				
automatedretry	retryInfo	Field	automatedretry	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_AutomatedRetry
retryUntilDateTime	retryInfo	Field	retryUntilDateTime	D2-UsageTransactionRequest Inbound	Field	
billCycle	sendDetails	Field				
windowStartDate	sendDetails	Field				
billModeInfo	sendDetails	Group				

CCB Batch BD Request Message			MDM Batch BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
billMode	billModeInfo	Field	requestMode	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_BillMode
			deferCalculation	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_BillMode
customElements	sendDetails	Group	customElements	D2-UsageTransactionRequest Inbound	Group	

Batch Bill Determinants Response Mapping Details

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	C1UpdateUsageRequest		Outermost Tag	
usId	sendDetails	Field				
usageGroup	sendDetails	Field				
externalId	sendDetails	Field	usageId	C1UpdateUsageRequest	Field	
usageId	sendDetails	Field	externalReferenceId	C1UpdateUsageRequest	Field	
			usageperiod	C1UpdateUsageRequest	Group	
startDateTime	sendDetails	Field	startDateTime	usageperiod	Field	
endDateTime	sendDetails	Field	endDateTime	usageperiod	Field	
			customElements	usageperiod	Group	
scalarMC	sendDetails	Group	scalarProcessing	C1UpdateUsageRequest	Group	
isEstimate	scalarMC	Field	isEstimate	scalarProcessing	Field	OUMDM2_OUCCB2_IsEstimate
startDateTime	scalarMC	Field				

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
endDateTimeFrom	scalarMC	Field				
endDateTimeTo	scalarMC	Field				
endRangeOption	scalarMC	Field				
minDaysOffset	scalarMC	Field				
maxDaysOffset	scalarMC	Field				
allowEstimate	scalarMC	Field				
estimateDate	scalarMC	Field				
summaryUsagePeriods	sendDetails	Group				
summaryUsagePeriodsList	summaryUsagePeriods	List	spUsagePeriod	C1UpdateUsageRequest	List	
startDateTime	summaryUsagePeriodsList	Field	startDateTime	spUsagePeriod	Field	
endDateTime	summaryUsagePeriodsList	Field	endDateTime	spUsagePeriod	Field	
spSQs	summaryUsagePeriodsList	Group				
spSQsList	spSQs	List	serviceQty	spUsagePeriod	List	
spSQsequence	spSQsList	Field	seq	serviceQty	Field	
spId	spSQsList	Field	spId	serviceQty	Field	
uom	spSQsList	Field	uom	serviceQty	Field	OUMDM2_OUCCB2_UOM
tou	spSQsList	Field	tou	serviceQty	Field	OUMDM2_OUCCB2_TOU
sqi	spSQsList	Field	sqi	serviceQty	Field	OUMDM2_OUCCB2_SQI
quantity	spSQsList	Field	qty	serviceQty	Field	
estimationIndicator	spSQsList	Field	estimationIndicator	serviceQty	Field	OUMDM2_OUCCB2_EstimationIndicator
highlightDateTimes	spSQsList	Group	highlightDateTimes	serviceQty	Group	
highlightDateTimesList	highlightDateTimes	List	highlightDateTimesList	highlightDateTimes	List	
sequence	highlightDateTimesList	Field	seq	highlightDateTimesList	Field	
highlightDateTime	highlightDateTimesList	Field	highlightDateTime	highlightDateTimesList	Field	

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
highlightType	highlightDateTimesList	Field	highlightType	highlightDateTimesList	Field	OUMDM2_OUCCB2_HighlightType
highlightEstimationIndicator	highlightDateTimesList	Field	highlightEstimationIndicator	highlightDateTimesList	Field	OUMDM2_OUCCB2_EstimationIndicator
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
			customElements	spUsagePeriod	Group	
			usagePeriods	C1UpdateUsageRequest	List	
startDateTime	summaryUsagePeriodsList	Field	startDateTime	usagePeriods	Field	
endDateTime	summaryUsagePeriodsList	Field	endDateTime	usagePeriods	Field	
standardStartDateTime	summaryUsagePeriodsList	Field	standardStartDateTime	usagePeriods	Field	
standardEndtDateTime	summaryUsagePeriodsList	Field	standardEndtDateTime	usagePeriods	Field	
usageType	summaryUsagePeriodsList	Field	usageRequestType	usagePeriods	Field	OUMDM2_OUCCB2_UsageType
SQs	summaryUsagePeriodsList	Group				
SQsList	SQs	List	serviceQty	usagePeriods	List	
sqSequence	SQsList	Field	seq	serviceQty	Field	
uom	SQsList	Field	uom	serviceQty	Field	OUMDM2_OUCCB2_UOM
tou	SQsList	Field	tou	serviceQty	Field	OUMDM2_OUCCB2_TOU
sqi	SQsList	Field	sqi	serviceQty	Field	OUMDM2_OUCCB2_SQI
quantity	SQsList	Field	qty	serviceQty	Field	
secondsPerInterval	SQsList	Field	spi	serviceQty	Field	
intervals	SQsList	Group	intervals	serviceQty	Group	
mL	intervals	List	iL	intervals	List	
s	mL	Field	s	iL	Field	
dt	mL	Field				
q	mL	Field	q	iL	Field	

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
c	mL	Field	c	iL	Field	
highlightDateTimes	SQsList	Group	highlightDateTimes	serviceQty	Group	
highlightDateTimesList	highlightDateTimes	List	highlightDateTimesList	highlightDateTimes	List	
sequence	highlightDateTimesList	Field	seq	highlightDateTimesList	Field	
highlightDateTime	highlightDateTimesList	Field	highlightDateTime	highlightDateTimesList	Field	
highlightType	highlightDateTimesList	Field	highlightType	highlightDateTimesList	Field	OUMDM2_OUCCB2_HighlightType
highlightEstimationIndicator	highlightDateTimesList	Field	highlightEstimationIndicator	highlightDateTimesList	Field	OUMDM2_OUCCB2_EstimationIndicator
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
items	summaryUsagePeriodsList	Group	itemDetails	usagePeriods	Group	
itemsList	items	List	itemDetailsList	itemDetails	List	
itemSeq	itemsList	Field	seq	itemDetailsList	Field	
itemId	itemsList	Field	itemId	itemDetailsList		
itemType	itemsList	Field	itemType	itemDetailsList	Field	OUMDM2_OUCCB2_ ItemType
itemCount	itemsList	Field	itemCount	itemDetailsList	Field	
startDateTime	itemsList	Field	startDateTime	itemDetailsList	Field	
endDateTime	itemsList	Field	endDateTime	itemDetailsList	Field	
dailyServiceQuantity	itemsList	Field	qty	itemDetailsList	Field	
uom	itemsList	Field	uom	itemDetailsList	Field	
			customElements	usagePeriods	Group	
spItems	summaryUsagePeriodsList	Group	spItemsPeriod	C1UpdateUsageRequest	Group	
spItemsList	spItems	List	spItemsList	spItemsPeriod	List	
itemSeq	spItemsList	Field	itemSeq	spItemsList		

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			itemId	spItemsList		
itemType	spItemsList	Field	itemType	spItemsList		OUMDM2_OUCCB2_ ItemType
itemCount	spItemsList	Field	itemCount	spItemsList		
startDateTime	spItemsList	Field	startDateTime	spItemsList		
endDateTime	spItemsList	Field	endDateTime	spItemsList		
quantity	spItemsList	Field	quantity	spItemsList		
uom	spItemsList	Field	uom	spItemsList		
spId	spItemsList	Field	spId	spItemsList		
customElements	summaryUsagePeriodsList	Group	customElements	spItemsList		
SPs	summaryUsagePeriodsList	Group	SPs		Group	
SPsList	SPs	List	SPsList	SPs	List	
spId	SPsList	Field	spId	SPsList	Field	
externalPremiseId	SPsList	Field	premId	SPsList	Field	
market	SPsList	Field	market	SPsList	Field	
device	SPsList	Group	deviceGroup	SPsList	Group	
deviceList	deviceGroup	List	deviceList	deviceGroup	List	
sequence	deviceList	Field	seq	deviceList	Field	
badgeNumber	deviceList	Field	badgeNumber	deviceList	Field	
serialNumber	deviceList	Field	serialNumber	deviceList	Field	
fromDateTime	deviceList	Field	fromDateTime	deviceList	Field	
toDateTime	deviceList	Field	toDateTime	deviceList	Field	
scalarDetailsList	scalarDetails	List	reads		List	
sequence	scalarDetailsList	Field	readSeq	reads	Field	
spId	scalarDetailsList	Field	spId	reads	Field	

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
uom	scalarDetailsList	Field	uom	reads	Field	OUMDM2_OUCCB2_UOM
tou	scalarDetailsList	Field	tou	reads	Field	OUMDM2_OUCCB2_TOU
sqi	scalarDetailsList	Field	sqi	reads	Field	OUMDM2_OUCCB2_SQI
measuringComponentId	scalarDetailsList	Field				
startDateTime	scalarDetailsList	Field	startDateTime	reads	Field	
startMeasurement	scalarDetailsList	Field	startReading	reads	Field	
endDateTime	scalarDetailsList	Field	endDateTime	reads	Field	
endMeasurement	scalarDetailsList	Field	endReading	reads	Field	
quantity	scalarDetailsList	Field	measuredQty	reads	Field	
finalUom	scalarDetailsList	Field	finalUom	reads	Field	OUMDM2_OUCCB2_UOM
finalTou	scalarDetailsList	Field	finalTou	reads	Field	OUMDM2_OUCCB2_TOU
finalSqi	scalarDetailsList	Field	finalSqi	reads	Field	OUMDM2_OUCCB2_SQI
finalQuantity	scalarDetailsList	Field	finalQty	reads	Field	
spHowToUse	scalarDetailsList	Field	spHowToUse	reads	Field	
mcHowToUse	scalarDetailsList	Field	regHowToUse	reads	Field	
measuresPeakQuantity	scalarDetailsList	Field	measuresPeakQuantity	reads	Field	
appliedMultiplier	scalarDetailsList	Field	constant	reads	Field	
usePercent	scalarDetailsList	Field	usePercent	reads	Field	
badgeNumber	scalarDetailsList	Field	badgeNumber	reads	Field	
serialNumber	scalarDetailsList	Field	serialNumber	reads	Field	
startEstimationIndicator	scalarDetailsList	Field	startReadEstimationIndicator	reads	Field	OUMDM2_OUCCB2_EstimationIndicator
endEstimationIndicator	scalarDetailsList	Field	endReadEstimationIndicator	reads	Field	OUMDM2_OUCCB2_EstimationIndicator
usageGroup	scalarDetailsList	Field				
usageRule	scalarDetailsList	Field				

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
customElements	scalarDetailsList	Group	customElements	reads	Group	
exceptions	sendDetails	Group				
exceptionsList	exceptions	List	exceptionInfo	C1UpdateUsageRequest	List	
sequence	exceptionsList	Field	sequence	exceptionInfo	Field	
usageGroup	exceptionsList	Field				
usageRule	exceptionsList	Field				
exceptionType	exceptionsList	Field				
exceptionSeverity	exceptionsList	Field				
toDoType	exceptionsList	Field				
toDoRole	exceptionsList	Field				
messageCategory	exceptionsList	Field	messageCategory	exceptionInfo	Field	
messageNumber	exceptionsList	Field	messageNumber	exceptionInfo	Field	
comments	exceptionsList	Field	comments	exceptionInfo	Field	
messageParameters	exceptionsList	Group				
messageParametersList	messageParameters	List	messageParameters	exceptionInfo	List	
sequence	messageParametersList	Field	parameterSequence	messageParametersList	Field	
parameter	messageParametersList	Field	messageParameterValue	messageParametersList	Field	
parameterType	messageParametersList	Field				
skipDetails	sendDetails	Group	saSkipInfo	C1UpdateUsageRequest	Group	
skip	skipDetails	Field	skipSA	saSkipInfo	Field	OUMDM2_OUCCB2_SkipSA
skipReason	skipDetails	Field	skipReason	saSkipInfo	Field	OUMDM2_OUCCB2_SkipReason
nextScheduledReadDate	skipDetails	Field	nextScheduledReadDate	saSkipInfo	Field	
usagePeriods	sendDetails	Group				
usagePeriodsList	usagePeriods	List				

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sequence	usagePeriodsList	Field				
startDateTime	usagePeriodsList	Field				
endDateTime	usagePeriodsList	Field				
usageType	usagePeriodsList	Field				
SQs	usagePeriodsList	List				
SQsList	SQs	Field				
sqSequence	SQsList	Field				
sqType	SQsList	Field				
uom	SQsList	Field				
tou	SQsList	Field				
sqi	SQsList	Field				
quantity	SQsList	Field				
spId	SQsList	Field				
measuringComponentId	SQsList	Field				
touMapId	SQsList	Field				
factor	SQsList	Field				
characteristicType	SQsList	Field				
characteristicValue	SQsList	Field				
usageGroup	SQsList	Field				
usageRule	SQsList	Field				
intervalData	SQsList	Field				
secondPerInterval	SQsList	Field				
shouldExtractIntervalData	SQsList	Field				
dataQualityAssessment	SQsList	Field				
sourceMeasurementQuality	SQsList	Group				

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sourceMeasurementQuality List	sourceMeasurementQuality	List				
s	sourceMeasurementQuality List	Field				
fc	sourceMeasurementQuality List	Field				
count	sourceMeasurementQuality List	Field				
summarizedQuantity	sourceMeasurementQuality List	Field				
highlightDateTimes	SQsList	Group				
highlightDateTimesList	highlightDateTimes	List				
sequence	highlightDateTimesList	Field				
highlightDateTime	highlightDateTimesList	Field				
highlightType	highlightDateTimesList	Field				
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
highlightEstimationIndicator	highlightDateTimesList	Field				
itemDetails	usagePeriodsList	Group				
itemDetailsList	itemDetails	List				
itemDetailsSeq	itemDetailsList	Field				
itemId	itemDetailsList					
itemType	itemDetailsList	Field				
itemCount	itemDetailsList	Field				
startDateTime	itemDetailsList	Field				
endDateTime	itemDetailsList	Field				
quantity	itemDetailsList	Field				

MDM Batch BD Response Message			CCB Batch BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
uom	itemDetailsList	Field				
customElements	sendDetails	Group	customElements	C1UpdateUsageRequest	Group	

Bill Cycle Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Bill Cycle Synchronization Request Mapping Details
- Bill Cycle Synchronization Response Mapping Details
- Bill Cycle Change Notification Mapping Details

Refer to the Bill Cycle Synchronization Related Processes description for processing details on this integration point.

Bill Cycle Synchronization Request Mapping Details

Data area that determines the fields inside the CCB formatted elements.

CCB Snapshot data area: C1-MDM2BillCycleBasedSnapshot

MDM Snapshot data area: D2-BillCycleSnapshot

CCB Bill Cycle Sync Request Message			MDM Bill Cycle Sync Request Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
sendDetails		Outermost Tag	D2-InboundBillCycleSyncRequest		Outermost Tag	
			syncRequestId	D2-InboundBillCycleSyncRequest	Field	
			bo	D2-InboundBillCycleSyncRequest	Field	
			boStatus	D2-InboundBillCycleSyncRequest	Field	
			createDateTime	D2-InboundBillCycleSyncRequest	Field	
			statusDateTime	D2-InboundBillCycleSyncRequest	Field	
syncRequestId	sendDetails	Field	externalReferenceId	D2-InboundBillCycleSyncRequest	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
syncRequired	sendDetails	Field				
forceSync	sendDetails	Field				

CCB Bill Cycle Sync Request Message			MDM Bill Cycle Sync Request Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
initialLoad	sendDetails	Field	initialLoad	D2-InboundBillCycleSyncRequest	Field	
mo	sendDetails	Field	targetMo	D2-InboundBillCycleSyncRequest	Field	DVM: OUCCB2_OUMDM2_MO CCB Column: OUCCB2_MO MDM Column: OUMDM2_MO
pkValue1	sendDetails	Field	externalPkValue1	D2-InboundBillCycleSyncRequest	Field	
pkValue2	sendDetails	Field	externalPkValue2	D2-InboundBillCycleSyncRequest	Field	
pkValue3	sendDetails	Field	externalPkValue3	D2-InboundBillCycleSyncRequest	Field	
pkValue4	sendDetails	Field	externalPkValue4	D2-InboundBillCycleSyncRequest	Field	
pkValue5	sendDetails	Field	externalPkValue5	D2-InboundBillCycleSyncRequest	Field	
			productionPkValue	D2-InboundBillCycleSyncRequest	Field	
			exceptionInformation	D2-InboundBillCycleSyncRequest	Field	
			toDoRetry	D2-InboundBillCycleSyncRequest	Field	
			changeDateTime	D2-InboundBillCycleSyncRequest	Field	
			version	D2-InboundBillCycleSyncRequest	Field	
			targetBo	D2-InboundBillCycleSyncRequest	Field	
			clearExceptions	D2-InboundBillCycleSyncRequest	Field	
			relatedCompositeSyncId	D2-InboundBillCycleSyncRequest	Field	
			compositeSyncRequest	D2-InboundBillCycleSyncRequest	Field	
			processData	D2-InboundBillCycleSyncRequest	Field	
snapshotDA	sendDetails	Field		D2-InboundBillCycleSyncRequest		
postScript	sendDetails	Field				
discardReason	sendDetails	Field				
cancelReason	sendDetails	Field				
sourceSystem	sendDetails	Field	externalSystem	D2-InboundBillCycleSyncRequest	Field	

CCB Bill Cycle Sync Request Message			MDM Bill Cycle Sync Request Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
version	sendDetails	Field				
externalSytem	sendDetails	Field				
externalIds	sendDetails	Group				
exceptionInfo	sendDetails	List				
billCycleBO	sendDetails	Field				
syncRequestDetails	sendDetails	Group	syncRequestDetails	D2-InboundBillCycleSyncRequest	Group	
initialSnapshot	syncRequestDetails	Group				
formattedElements	initialSnapshot	Group				
finalSnapshot	syncRequestDetails	Group				
formattedElements	finalSnapshot	Group	formattedElements	syncRequestDetails		Group move the formatted elements from CCB to MDM. Do not move field by field.
billCycle			billCycle			
description			description			These fields will not be seen in the schema.
billCycleSchedules			billCycleSchedules			They are defined in the respective CCB and MDM DAs.
billCycleScheduleList			billCycleScheduleList			
action			action			
windowStartDate			windowStartDate			
windowEndDate			windowEndDate			
estimateDate			estimateDate			

Bill Cycle Synchronization Response Mapping Details

MDM Bill Cycle Sync Response Message			CCB Dynamic Option Sync Response Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
sendDetails		Outermost Tag	F1-UpdateAndTransitionSyncRequest		Outermost Tag	
syncRequestId	sendDetails	Field				
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field	
exceptionInformation	sendDetails	Group				
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List	
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	DVM: OUCCB2_OUMDM2_ErrorCode MDM Column: OUMDM2_ErrorCode CCB Column: OUCCB2_ErrorCode
sequence	exceptionInformationList	Field	sequence	F1-UpdateAndTransitionSyncRequest	Field	Incremental number populated by Integration
comments	exceptionInformationList	Field	comments	F1-UpdateAndTransitionSyncRequest	Field	
messageParameters	exceptionInformationList	List	messageParameters	exceptionInfo	List	
parameterSequence	messageParameters	Field	parameterSequence	messageParameters	Field	

MDM Bill Cycle Sync Response Message			CCB Dynamic Option Sync Response Message			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
messageParameterType	messageParameters	Field				
messageParameterValue	messageParameters	Field	messageParameterValue	messageParameters	Field	
customElements	sendDetails	Field	customElements	F1-UpdateAndTransitionSyncRequest	Field	

Bill Cycle Change Notification Mapping Details

Refer to the Bill Cycle Change Notification Integration Process description for processing details on this integration point.

MDM Outbound Message BO : D2-SPMsrmtCycleChangeOutMsg			CCB Message Service C1-BillCycleUpdateNotification			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
			C1-BillCycleUpdateNotification		Outermost Tag	
sendDetails		Outermost Tag	messageDetails	C1-BillCycleUpdateNotification	Group	Group move MDM sendDetails to CCB messageDetails. Do not move field by field.
externalSPId	sendDetails	Field	externalSPId	messageDetails	Field	
externalBillCycle	sendDetails	Field	externalBillCycle	messageDetails	Field	

SA Activation Bill Cycle Synchronization Mapping Details

This section provides data mapping details for the following:

- SA Activation Bill Cycle Synchronization Request Mapping Details
- SA Activation Bill Cycle Synchronization Response Mapping Details

Refer to the SA Activation Bill Cycle Request Integration Process description for processing details on this integration point.

SA Activation Bill Cycle Synchronization Request Mapping Details

CCB Outbound Message BO C1-DetSPBillCycleOutMsg			MDM Message Service D2-DetermineBillCycleForSP			Comments
Element	**Parent**	**Type**	**Element**	**Parent Element**	**Type**	
Element			D2-DetermineBillCycleForSP		Outermost Tag	
sendDetails		Outermost Tag	messageDetails	D2-DetermineBillCycleForSP	Group	Group move CCB sendDetails to MDM messageDetails. Do not move field by field.
externalSPId		Field	externalSPId	messageDetails	Field	
sourceSystem		Field	sourceSystem	messageDetails	Field	
externalBillCycle		Field	externalBillCycle	messageDetails	Field	
remarks		Field	remarks	messageDetails	Field	

SA Activation Bill Cycle Synchronization Response Mapping Details

MDM Message Service D2-DetermineBillCycleForSP			CCB Outbound Message BO C1-DetSPBillCycleOutMsg			Comments
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	
D2-DetermineBillCycleForSP		Outermost Tag				
messageDetails	D2-DetermineBillCycleForSP	Group	sendDetails		Outermost Tag	Group move MDM messageDetails to CCB sendDetails. Do not move field by field.

externalSPId	messageDetails	Field	externalSPId	Field
sourceSystem	messageDetails	Field	sourceSystem	Field
externalBillCycle	messageDetails	Field	externalBillCycle	Field
remarks	messageDetails	Field	remarks	Field

Online Bill Determinants Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Online Bill Determinants Request Mapping Details
- Online Bill Determinants Response Mapping Details

Refer to the Online Bill Determinants Integration Process description for processing details on this integration point.

Online Bill Determinants Request Mapping Details

CCB Online BD Request Message			MDM Online BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	D2-UsageTransactionRequest Inbound		Outermost Tag	
usageId	sendDetails	Field	externalId	D2-UsageTransactionRequest Inbound	Field	
previousUsageId	sendDetails	Field	previousUsageId	D2-UsageTransactionRequest Inbound	Field	
saId	sendDetails	Field	usExternalId	D2-UsageTransactionRequest Inbound	Field	
			usageId	D2-UsageTransactionRequest Inbound	Field	
			bo	D2-UsageTransactionRequest Inbound	Field	
			boStatus	D2-UsageTransactionRequest Inbound	Field	
			statusReason	D2-UsageTransactionRequest Inbound		
			createDateTime	D2-UsageTransactionRequest Inbound	Field	
			updateStatusDateTime	D2-UsageTransactionRequest Inbound	Field	

CCB Online BD Request Message			MDM Online BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			usId	D2-UsageTransactionRequest Inbound	Field	
			usageGroup	D2-UsageTransactionRequest Inbound	Field	
bo	sendDetails	Field				
boStatus	sendDetails	Field				
createDateTime	sendDetails	Field				
statusDateTime	sendDetails	Field				
			comments	D2-UsageTransactionRequest Inbound	Field	
			measurementCycle	D2-UsageTransactionRequest Inbound	Field	
			measurementCycleRoute	D2-UsageTransactionRequest Inbound	Field	
			scheduledSelectionDate	D2-UsageTransactionRequest Inbound	Field	
			isTraceOn	D2-UsageTransactionRequest Inbound	Field	
intervalProcessing	sendDetails	Group	intervalMC	D2-UsageTransactionRequest Inbound	Group	
startDateTime	intervalProcessing	Field	startDateTime	intervalMC	Field	
endDateTimeFrom	intervalProcessing	Field	endDateTimeFrom	intervalMC	Field	
endDateTimeTo	intervalProcessing	Field	endDateTimeTo	intervalMC	Field	
customElements	intervalProcessing	Field				
scalarProcessing	sendDetails	Group	scalarMC	D2-UsageTransactionRequest Inbound	Group	
startDateTime	scalarProcessing	Field	startDateTime	scalarMC	Field	

CCB Online BD Request Message			MDM Online BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
endDateTime	scalarProcessing	Field	endDateTimeFrom	scalarMC	Field	
			endDateTimeTo	scalarMC	Field	
billingOption	scalarProcessing	Field	endRangeOption	scalarMC	Field	OUCCB2_OUMDM2_BillingOption
minDaysOffset	scalarProcessing	Field	minDaysOffset	scalarMC	Field	
maxDaysOffset	scalarProcessing	Field	maxDaysOffset	scalarMC	Field	
allowEstimate	scalarProcessing	Field	allowEstimate	scalarMC	Field	OUCCB2_OUMDM2_AllowEstimate
estimateDate	scalarProcessing	Field	estimateDate	scalarMC	Field	
customElements	scalarProcessing	Field				
billSegmentId	sendDetails	Field				
version	sendDetails	Field	version	D2-UsageTransactionRequest Inbound		
			dateBreaks	D2-UsageTransactionRequest Inbound	Group	
dateBreaks	sendDetails	List	dateBreaksList	dateBreaks	List	
breakDateTime	dateBreaks	Field	dateBreak	dateBreaksList	Field	
billCondition	sendDetails	Field	billCondition	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_BillConditio
retryInfo	sendDetails	Group				
automatedretry	retryInfo	Field	automatedretry	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_AutomatedRetry
retryUntilDateTime	retryInfo	Field	retryUntilDateTime	D2-UsageTransactionRequest Inbound	Field	
customElements	sendDetails	Group	customElements	D2-UsageTransactionRequest Inbound	Group	
billModeInfo	sendDetails	Group				

CCB Online BD Request Message			MDM Online BD Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
billMode	billModeInfo	Field	requestMode	D2-UsageTransactionRequest Inbound	Field	OUCCB2_OUMDM2_BillMode
customElements	sendDetails	Group				

Online Bill Determinants Response Mapping Details

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sendDetails		Outermost Tag	C1UpdateUsageRequest		Outermost Tag	
usId	sendDetails	Field				
usageGroup	sendDetails	Field				
externalId	sendDetails	Field	usageId	C1UpdateUsageRequest	Field	
usageId	sendDetails	Field	externalReferenceId	C1UpdateUsageRequest	Field	
			usageperiod	C1UpdateUsageRequest	Group	
startDateTime	sendDetails	Field	startDateTime	usageperiod	Field	
endDateTime	sendDetails	Field	endDateTime	usageperiod	Field	
			customElements	usageperiod	Group	
scalarMC	sendDetails	Group	scalarProcessing	C1UpdateUsageRequest	Group	
isEstimate	scalarMC	Field	isEstimate	scalarProcessing	Field	OUMDM2_OUCCB2_IsEstimate
startDateTime	scalarMC	Field				
endDateTimeFrom	scalarMC	Field				
endDateTimeTo	scalarMC	Field				
endRangeOption	scalarMC	Field				

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
minDaysOffset	scalarMC	Field				
maxDaysOffset	scalarMC	Field				
allowEstimate	scalarMC	Field				
estimateDate	scalarMC	Field				
summaryUsagePeriods	sendDetails	Group				
summaryUsagePeriodsList	summaryUsagePeriods	List	spUsagePeriod	C1UpdateUsageRequest	List	
startDateTime	summaryUsagePeriodsList	Field	startDateTime	spUsagePeriod	Field	
endDateTime	summaryUsagePeriodsList	Field	endDateTime	spUsagePeriod	Field	
spSQs	summaryUsagePeriodsList	Group				
spSQsList	spSQs	List	serviceQty	spUsagePeriod	List	
spSQsequence	spSQsList	Field	seq	serviceQty	Field	
spId	spSQsList	Field	spId	serviceQty	Field	
uom	spSQsList	Field	uom	serviceQty	Field	OUMDM2_OUCCB2_UOM
tou	spSQsList	Field	tou	serviceQty	Field	OUMDM2_OUCCB2_TOU
sqi	spSQsList	Field	sqi	serviceQty	Field	OUMDM2_OUCCB2_SQI
quantity	spSQsList	Field	qty	serviceQty	Field	
estimationIndicator	spSQsList	Field	estimationIndicator	serviceQty	Field	OUMDM2_OUCCB2_EstimationIndicator
highlightDateTimes	spSQsList	Group	highlightDateTimes	serviceQty	Group	
highlightDateTimesList	highlightDateTimes	List	highlightDateTimesList	highlightDateTimes	List	
sequence	highlightDateTimesList	Field	seq	highlightDateTimesList	Field	
highlightDateTime	highlightDateTimesList	Field	highlightDateTime	highlightDateTimesList	Field	
highlightType	highlightDateTimesList	Field	highlightType	highlightDateTimesList	Field	OUMDM2_OUCCB2_HighlightType

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
highlightEstimationIndicator	highlightDateTimesList	Field	highlightEstimationIndicator	highlightDateTimesList	Field	OUMDM2_OUCCB2_EstimationIndicator
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
			customElements	spUsagePeriod	Group	
			usagePeriods	C1UpdateUsageRequest	List	
startDateTime	summaryUsagePeriodsList		startDateTime	usagePeriods	Field	
endDateTime	summaryUsagePeriodsList		endDateTime	usagePeriods	Field	
usageType	summaryUsagePeriodsList		usageRequestType	usagePeriods	Field	OUMDM2_OUCCB2_UsageType
standardStartDateTime	summaryUsagePeriodsList	Field	standardStartDateTime	usagePeriods	Field	
standardEndtDateTime	summaryUsagePeriodsList	Field	standardEndtDateTime	usagePeriods	Field	
SQs	summaryUsagePeriodsList	Group				
SQsList	SQs	List	serviceQty	usagePeriods	List	
sqSequence	SQsList	Field	seq	serviceQty	Field	
uom	SQsList	Field	uom	serviceQty	Field	OUMDM2_OUCCB2_UOM
tou	SQsList	Field	tou	serviceQty	Field	OUMDM2_OUCCB2_TOU
sqi	SQsList	Field	sqi	serviceQty	Field	OUMDM2_OUCCB2_SQI
quantity	SQsList		qty	serviceQty	Field	
secondsPerInterval	SQsList	Field	spi	serviceQty	Field	
intervals	SQsList	Group	intervals	serviceQty	Group	
mL	intervals	List	iL	intervals	List	
s	mL	Field	s	iL	Field	
dt	mL	Field				

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
q	mL	Field	q	iL	Field	
c	mL	Field	c	iL	Field	
highlightDateTimes	SQsList	Group	highlightDateTimes	serviceQty	Group	
highlightDateTimesList	highlightDateTimes	List	highlightDateTimesList	highlightDateTimes	List	
sequence	highlightDateTimesList	Field	seq	highlightDateTimesList	Field	
highlightDateTime	highlightDateTimesList	Field	highlightDateTime	highlightDateTimesList	Field	
highlightType	highlightDateTimesList	Field	highlightType	highlightDateTimesList	Field	OUMDM2_OUCCB2_ HighlightType
highlightEstimationIndicator	highlightDateTimesList	Field	highlightEstimationIndicator	highlightDateTimesList	Field	OUMDM2_OUCCB2_ EstimationIndicator
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
items	summaryUsagePeriodsList	Group	itemDetails	usagePeriods	Group	
itemsList	items	List	itemDetailsList	itemDetails	List	
itemSeq	itemsList	Field	seq	itemDetailsList	Field	
itemId	itemsList		itemId	itemDetailsList		
itemType	itemsList	Field	itemType	itemDetailsList	Field	OUMDM2_OUCCB2_ ItemType
itemCount	itemsList	Field	itemCount	itemDetailsList	Field	
startDateTime	itemsList	Field	startDateTime	itemDetailsList	Field	
endDateTime	itemsList	Field	endDateTime	itemDetailsList	Field	
dailyServiceQuantity	itemsList	Field	qty	itemDetailsList	Field	
uom	itemsList	Field	uom	itemDetailsList	Field	
			customElements	usagePeriods	Group	
spItems	summaryUsagePeriodsList	Group	spItemsPeriod	C1UpdateUsageRequest	Group	
spItemsList	spItems	List	spItemsList	spItemsPeriod	List	

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
itemSeq	spItemsList	Field	itemSeq	spItemsList		
			itemId	spItemsList		
itemType	spItemsList	Field	itemType	spItemsList		OUMDM2_OUCCB2_ ItemType
itemCount	spItemsList	Field	itemCount	spItemsList		
startDateTime	spItemsList	Field	startDateTime	spItemsList		
endDateTime	spItemsList	Field	endDateTime	spItemsList		
quantity	spItemsList	Field	quantity	spItemsList		
uom	spItemsList	Field	uom	spItemsList		
spId	spItemsList	Field	spId	spItemsList		
customElements	summaryUsagePeriodsList	Group	customElements	spItemsList		
SPs	summaryUsagePeriodsList	Group	SPs		Group	
SPsList	SPs	List	SPsList	SPs	List	
spId	SPsList	Field	spId	SPsList	Field	
externalPremiseId	SPsList	Field	premId	SPsList	Field	
market	SPsList	Field	market	SPsList	Field	
device	SPsList	Group	deviceGroup	SPsList	Group	
deviceList	deviceGroup	List	deviceList	deviceGroup	List	
sequence	deviceList	Field	seq	deviceList	Field	
badgeNumber	deviceList	Field	badgeNumber	deviceList	Field	
serialNumber	deviceList	Field	serialNumber	deviceList	Field	
fromDateTime	deviceList	Field	fromDateTime	deviceList	Field	
toDateTime	deviceList	Field	toDateTime	deviceList	Field	
scalarDetails	sendDetails	Group				
scalarDetailsList	scalarDetails	List	reads		List	

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
sequence	scalarDetailsList	Field	readSeq	reads	Field	
spId	scalarDetailsList	Field	spId	reads	Field	
uom	scalarDetailsList	Field	uom	reads	Field	OUMDM2_OUCCB2_UOM
tou	scalarDetailsList	Field	tou	reads	Field	OUMDM2_OUCCB2_TOU
sqi	scalarDetailsList	Field	sqi	reads	Field	OUMDM2_OUCCB2_SQI
measuringComponentId	scalarDetailsList	Field				
startDateTime	scalarDetailsList	Field	startDateTime	reads	Field	
startMeasurement	scalarDetailsList	Field	startReading	reads	Field	
endDateTime	scalarDetailsList	Field	endDateTime	reads	Field	
endMeasurement	scalarDetailsList	Field	endReading	reads	Field	
quantity	scalarDetailsList	Field	measuredQty	reads	Field	
finalUom	scalarDetailsList	Field	finalUom	reads	Field	OUMDM2_OUCCB2_UOM
finalTou	scalarDetailsList	Field	finalTou	reads	Field	OUMDM2_OUCCB2_TOU
finalSqi	scalarDetailsList	Field	finalSqi	reads	Field	OUMDM2_OUCCB2_SQI
finalQuantity	scalarDetailsList	Field	finalQty	reads	Field	
spHowToUse	scalarDetailsList	Field	spHowToUse	reads	Field	
mcHowToUse	scalarDetailsList	Field	regHowToUse	reads	Field	
measuresPeakQuantity	scalarDetailsList	Field	measuresPeakQuantity	reads	Field	
appliedMultiplier	scalarDetailsList	Field	constant	reads	Field	
usePercent	scalarDetailsList	Field	usePercent	reads	Field	
badgeNumber	scalarDetailsList	Field	badgeNumber	reads	Field	
serialNumber	scalarDetailsList	Field	serialNumber	reads	Field	
startEstimationIndicator	scalarDetailsList	Field	startReadEstimationIndicator	reads	Field	OUMDM2_OUCCB2_ EstimationIndicator
endEstimationIndicator	scalarDetailsList	Field	endReadEstimationIndicator	reads	Field	OUMDM2_OUCCB2_ EstimationIndicator

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
usageGroup	scalarDetailsList	Field				
usageRule	scalarDetailsList	Field				
customElements	scalarDetailsList	Group	customElements	reads	Group	
exceptions	sendDetails	Group				
exceptionsList	exceptions	List	exceptionInfo	C1UpdateUsageRequest	List	
sequence	exceptionsList	Field	sequence	exceptionInfo	Field	
usageGroup	exceptionsList	Field				
usageRule	exceptionsList	Field				
exceptionType	exceptionsList	Field				
exceptionSeverity	exceptionsList	Field				
toDoType	exceptionsList	Field				
toDoRole	exceptionsList	Field				
messageCategory	exceptionsList	Field	messageCategory	exceptionInfo	Field	
messageNumber	exceptionsList	Field	messageNumber	exceptionInfo	Field	
comments	exceptionsList	Field	comments	exceptionInfo	Field	
messageParameters	exceptionsList	Group				
messageParametersList	messageParameters	List	messageParameters	exceptionInfo	List	
sequence	messageParametersList	Field	parameterSequence	messageParametersList	Field	
parameter	messageParametersList	Field	messageParameterValue	messageParametersList	Field	
parameterType	messageParametersList	Field				
skipDetails	sendDetails	Group	saSkipInfo	C1UpdateUsageRequest	Group	
skip	skipDetails	Field	skipSA	saSkipInfo	Field	OUMDM2_OUCCB2_SkipSA
skipReason	skipDetails	Field	skipReason	saSkipInfo	Field	OUMDM2_OUCCB2_SkipReason
nextScheduledReadDate	skipDetails	Field	nextScheduledReadDate	saSkipInfo	Field	

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
usagePeriods	sendDetails	Group				
usagePeriodsList	usagePeriods	List				
sequence	usagePeriodsList	Field				
startDateTime	usagePeriodsList	Field				
endDateTime	usagePeriodsList	Field				
usageType	usagePeriodsList	Field				
SQs	usagePeriodsList	List				
SQsList	SQs	Field				
sqSequence	SQsList	Field				
sqType	SQsList	Field				
uom	SQsList	Field				
tou	SQsList	Field				
sqi	SQsList	Field				
quantity	SQsList	Field				
spId	SQsList	Field				
measuringComponentId	SQsList	Field				
touMapId	SQsList	Field				
factor	SQsList	Field				
characteristicType	SQsList	Field				
characteristicValue	SQsList	Field				
usageGroup	SQsList	Field				
usageRule	SQsList	Field				
intervalData	SQsList	Field				
secondPerInterval	SQsList	Field				
shouldExtractIntervalData	SQsList	Field				

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
dataQualityAssessment	SQsList	Field				
sourceMeasurementQuality	SQsList	Group				
sourceMeasurementQualityList	sourceMeasurementQuality	List				
s	sourceMeasurementQualityList	Field				
fc	sourceMeasurementQualityList	Field				
count	sourceMeasurementQualityList	Field				
summarizedQuantity	sourceMeasurementQualityList	Field				
highlightDateTimes	SQsList	Group				
highlightDateTimesList	highlightDateTimes	List				
sequence	highlightDateTimesList	Field				
highlightDateTime	highlightDateTimesList	Field				
highlightType	highlightDateTimesList	Field				
highlightCondition	highlightDateTimesList	Field				
highlightDerivedCondition	highlightDateTimesList	Field				
highlightEstimationIndicator	highlightDateTimesList	Field				
itemDetails	usagePeriodsList	Group				
itemDetailsList	itemDetails	List				
itemDetailsSeq	itemDetailsList	Field				
itemId	itemDetailsList					
itemType	itemDetailsList	Field				
itemCount	itemDetailsList	Field				
startDateTime	itemDetailsList	Field				
endDateTime	itemDetailsList	Field				
quantity	itemDetailsList	Field				
uom	itemDetailsList	Field				

MDM Online BD Response Message			CCB Online BD Response Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
customElements	sendDetails	Group	customElements	C1UpdateUsageRequest	Group	

Replacement Reads Synchronization Process Mapping Details

This section provides data mapping details for the following:

- Replacement Reads Request Mapping Details

Refer to the Replacement Reads Integration Process description for processing details on this integration point.

Replacement Reads Request Mapping Details

MDM Replacement Read Request Message			CCB Replacement Read Request Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
sendDetails		Outermost Tag	C1-DetAcctCreateCorrectedReadOCBG		Outermost Tag
			replacementRead	C1-DetAcctCreateCorrectedReadOCBG	Group
usageId			usageId	replacementRead	Field
externalId	sendDetails	Field	externalReferenceId	replacementRead	Field
customElements	sendDetails	Group	customElements	replacementRead	Group

Get Register Read High-Low Boundary Message Mapping Details

Refer to the Get Register Read High-Low Boundaries Integration Process description for processing details on this integration point.

CCB Message			MDM Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
		Outermost Tag	D2-DetermineEstimatedAndHighLowScalarReadings		Outermost Tag
sendDetails		Group	input	D2-DetermineEstimatedAndHighLowScalarReadings	Group
registerId	sendDetails	Field	externalMeasuringComponentId	input	Field
			measuringComponentId	input	Field
readDateTime	sendDetails	Field	msrmtDateTime	input	Field
customElements	sendDetails		customElements	input	Field
responseDetails		Group	output	D2-DetermineEstimatedAndHighLowScalarReadings	Group
estimatedRegisterReading	responseDetails	Field	estimatedReading	output	Field
lowBoundaryRegisterReading	responseDetails	Field	lowBoundaryReading	output	Field
highBoundaryRegisterReading	responseDetails	Field	highBoundaryReading	output	Field
			previousReadingDttm	output	Field
			previousReading	output	Field
			estimatedConsumption	output	Field
			lowBoundaryConsumption	output	Field
			highBoundaryConsumption	output	Field
			exceptions	output	Group
exceptionInfo	responseDetails	List	exceptionsList	exceptions	List
sequence	exceptions	Field	sequence	exceptionsList	Field
messageCategory	exceptions	Field	messageCategory	exceptionsList	Field
messageNumber	exceptions	Field	messageNumber	exceptionsList	Field

CCB Message			MDM Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
comments	exceptions	Field	messageInfo	exceptionsList	Field
			messageParameters	exceptionsList	Group
messageParameters	exceptions	List	messageParametersList	messageParameters	List
parameterSequence	messageParameters	Field	Sequence	messageParametersList	Field
messageParameterValue	messageParameters	Field	Parameter	messageParametersList	Field
			parameterType	messageParametersList	Field
customElements	responseDetails	Group	customElements	output	Group

Get Usage Request Message Mapping Details

Refer to the Get Usage Request Integration Process description for processing details on this integration point.

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
requestDetails		Outermost Tag	D2-CalculateUsage MultipleRequests		Outermost Tag	
usageCalculationCalType	requestDetails	Field	usageRequestMode			OUCCB2_OUMDM2_UsageRequestMode
mode	requestDetails	Field	mode	D2-CalculateUsage MultipleRequests	Field	
language*	requestDetails	Field				
			requests	D2-CalculateUsage MultipleRequests	Group	
request	requestDetails	List	requestsList	requests	List	
			usId	requestsList	Field	
saId	request	Field	externalId	requestsList	Field	
rateSchedule	request	Field	usageGroupExternalId	requestsList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
rateScheduleSeq	request	Field	usageGroupExternalIdSeq	requestsList	Field	
			usageGroup	requestsList	Field	
billCondition	request	Field	billCondition	requestsList	Field	
intervalProcessing	request	Group	intervalMC	requestsList	Group	
startDateTime	intervalProcessing	Field	startDateTime	intervalMC	Field	
endDateTimeFrom	intervalProcessing	Field	endDateTimeFrom**	intervalMC	Field	
endDateTimeTo	intervalProcessing	Field	endDateTimeTo**	intervalMC	Field	
customElements	intervalProcessing	Group				
scalarProcessing	request	Group	scalarMC	requestsList	Group	
startDateTime	scalarProcessing	Field	startDateTime	scalarMC	Field	
endDateTime	scalarProcessing	Field	endDateTimeFrom	scalarMC	Field	
			endDateTimeTo	scalarMC	Field	
billingOption	scalarProcessing	Field	endRangeOption	scalarMC	Field	OUCCB2_OUMDM2_BillingOption
minDaysOffset	scalarProcessing	Field	minDaysOffset	scalarMC	Field	
maxDaysOffset	scalarProcessing	Field	maxDaysOffset	scalarMC	Field	
allowEstimate	scalarProcessing	Field	allowEstimate	scalarMC	Field	OUCCB2_OUMDM2_AllowEstimate
estimateDate	scalarProcessing	Field	estimateDate	scalarMC	Field	
customElements	scalarProcessing	Group				
			dateBreaks	requestsList	Group	
dateBreaks	request	List	dateBreaksList	dateBreaks	List	
breakDateTime	dateBreaks	Field	dateBreak	dateBreaksList	Field	
hypotheticalCalculation	request	Group	hypotheticalCalculation	requestsList	Group	
usageAdjustments	hypotheticalCalculation	List	usageAdjustments	hypotheticalCalculation	List	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
usageAdjustmentFactor	usageAdjustments	Field	usageAdjustmentFactor	usageAdjustments	Field	
value	usageAdjustments	Field	value	usageAdjustments	Field	
customElements	request	Group				
			customElements	requestsList	Group	
responseDetails		Outermost Tag				
			responses	D2-CalculateUsage MultipleRequests	Group	
response	responseDetails	List	responsesList	responses	List	
saId	response	Field	externalId	responsesList	Field	
rateSchedule	response	Field	usageGroupExternalId	responsesList	Field	
rateScheduleSeq	response	Field	usageGroupExternalId Seq	responsesList	Field	
usagePeriod	response	Group				
startDateTime	usagePeriod	Field	startDateTime	responsesList	Field	
endDateTime	usagePeriod	Field	endDateTime	responsesList	Field	
customElements	usagePeriod	Group				
isSkipped	response	Field	skipped	responsesList	Field	
skipReasonDescription	response	Field	skipReasonDescription	responsesList	Field	
			skipReason	responsesList	Field	
			summaryUsagePeriods	responsesList	Group	
usagePeriods	response	List	summaryUsagePeriods List	summaryUsagePeriods	List	
			sequence	summaryUsagePeriodsList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
startDateTime	usagePeriods	Field	startDateTime	summaryUsagePeriodsList	Field	
endtDateTime	usagePeriods	Field	endDateTime	summaryUsagePeriodsList	Field	
standardStartDateTime	usagePeriods	Field	standardStartDateTime	summaryUsagePeriodsList	Field	
standardEndtDateTime	usagePeriods	Field	standardEndtDateTime	summaryUsagePeriodsList	Field	
usageRequestType	usagePeriods	Field	usageType	summaryUsagePeriodsList	Field	OUMDM2_OUCCB2_UsageType
			SQs	summaryUsagePeriodsList	Group	
serviceQty	usagePeriods	List	SQsList	SQs	List	
seq	serviceQty	Field	sqSequence	SQsList	Field	
uom	serviceQty	Field	uom	SQsList	Field	OUMDM2_OUCCB2_UOM
tou	serviceQty	Field	tou	SQsList	Field	OUMDM2_OUCCB2_TOU
sqi	serviceQty	Field	sqi	SQsList	Field	OUMDM2_OUCCB2_SQI
qty	serviceQty	Field	quantity	SQsList	Field	
spi	serviceQty	Field	secondsPerInterval	SQsList		
intervals	serviceQty	Group	intervals	SQsList	Group	
iL	intervals	List	mL	Intervals	List	
s	iL	Field	s	mL	Field	
q	iL	Field	q	mL	Field	
c	iL	Field	c	mL	Field	
			dt	mL	Field	
			highlightDateTimes	SQsList	Group	
			highlightDateTimesList	highlightDateTimes	List	
			sequence	highlightDateTimesList	Field	
			highlightDateTime	highlightDateTimesList	Field	
			highlightType	highlightDateTimesList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			highlightCondition	highlightDateTimesList	Field	
			highlightDerived Condition	highlightDateTimesList	Field	
			highlightEstimation Indicator	highlightDateTimesList	Field	
customElements	usagePeriods	Group				
spUsagePeriod	response	List	summaryUsagePeriods List	summaryUsagePeriods	List	
startDateTime	spUsagePeriod	Field	startDateTime	summaryUsagePeriodsList	Field	
endDateTime	spUsagePeriod	Field	endDateTime	summaryUsagePeriodsList	Field	
			spSQs	summaryUsagePeriodsList	Group	
serviceQty	spUsagePeriod	List	spSQsList	spSQs	List	
seq	serviceQty	Field	spSQsequence	spSQsList	Field	
spId	serviceQty	Field	spId	spSQsList	Field	
uom	serviceQty	Field	uom	spSQsList	Field	OUMDM2_OUCCB2_UOM
tou	serviceQty	Field	tou	spSQsList	Field	OUMDM2_OUCCB2_TOU
sqi	serviceQty	Field	sqi	spSQsList	Field	OUMDM2_OUCCB2_SQI
qty	serviceQty	Field	quantity	spSQsList	Field	
			highlightDateTimes	spSQsList	Group	
			highlightDateTimesList	highlightDateTimes	List	
			sequence	highlightDateTimesList	Field	
			highlightDateTime	highlightDateTimesList	Field	
			highlightType	highlightDateTimesList	Field	
			highlightCondition	highlightDateTimesList	Field	
			highlightDerived Condition	highlightDateTimesList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			highlightEstimation Indicator	highlightDateTimesList	Field	
customElements	spUsagePeriod	Group				
			SPs	summaryUsagePeriodsList	Group	
			SPsList	SPs	List	
			sequence	SPsList	Field	
			spId	SPsList	Field	
			externalPremiseId	SPsList	Field	
			market	SPsList	Field	
			Device	SPsList	Group	
			deviceList	device	List	
			Sequence	deviceList	Field	
			badgeNumber	deviceList	Field	
			serialNumber	deviceList	Field	
			fromDateTime	deviceList	Field	
			toDateTime	deviceList	Field	
			items	summaryUsagePeriodsList	Group	
			itemsList	items	List	
			itemSeq	itemsList	Field	
			itemType	itemsList	Field	
			itemCount	itemsList	Field	
			startDateTime	itemsList	Field	
			endDateTime	itemsList	Field	
			dailyServiceQuantity	itemsList	Field	
			uom	itemsList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			spItems	summaryUsagePeriodsList	Group	
			spItemsList	spItems	List	
			itemSeq	spItemsList	Field	
			itemType	spItemsList	Field	
			itemCount	spItemsList	Field	
			startDateTime	spItemsList	Field	
			endDateTime	spItemsList	Field	
			quantity	spItemsList	Field	
			uom	spItemsList	Field	
			spId	spItemsList	Field	
			customElements	summaryUsagePeriodsList	Group	
scalarProcessing	response	Group	scalarDetails	responsesList	Group	
isEstimate	scalarProcessing	Field	isEstimate	scalarDetails	Field	OUMDM2_OUCCB2_IsEstimate
reads	response	List	scalarDetailsList	scalarDetails	List	
readSeq	reads	Field	sequence	scalarDetailsList	Field	
spId	reads	Field	spId	scalarDetailsList	Field	
startReadDateTime	reads	Field	startDateTime	scalarDetailsList	Field	
endReadDateTime	reads	Field	endDateTime	scalarDetailsList	Field	
uom	reads	Field	uom	scalarDetailsList	Field	OUMDM2_OUCCB2_UOM
tou	reads	Field	tou	scalarDetailsList	Field	OUMDM2_OUCCB2_TOU
sqi	reads	Field	sqi	scalarDetailsList	Field	OUMDM2_OUCCB2_SQI
startReading	reads	Field	startMeasurement	scalarDetailsList	Field	
endReading	reads	Field	endMeasurement	scalarDetailsList	Field	
measuredQty	reads	Field	quantity	scalarDetailsList	Field	
finalQty	reads	Field	finalQuantity		Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
finalUom	reads	Field	finalUom	scalarDetailsList	Field	
finalTou	reads	Field	finalTou	scalarDetailsList	Field	
finalSqi	reads	Field	finalSqi	scalarDetailsList	Field	
sphowToUse	reads	Field	spHowToUse	scalarDetailsList	Field	OUMDM2_OUCCB2_SPHowToUse
reghowToUse	reads	Field	mcHowToUse	scalarDetailsList	Field	
constant	reads	Field	appliedMultiplier	scalarDetailsList	Field	
measuresPeakQuantity	reads	Field	measuresPeakQuantity	scalarDetailsList	Field	OUMDM2_OUCCB2_MeasuresPeakQuantity
usePercent	reads	Field	usePercent	scalarDetailsList	Field	
			startMeasurement Condition	scalarDetailsList	Field	
			startEstimationIndicator	scalarDetailsList	Field	
			endMeasurement Condition	scalarDetailsList	Field	
			endEstimationIndicator	scalarDetailsList	Field	
			measurementCondition	scalarDetailsList	Field	
			customElements	scalarDetailsList	Group	
customElements	reads	Group				
			exceptions	responsesList	Group	
exceptionInfo	response	List	exceptionsList	exceptions	List	
sequence	exceptionInfo	Field	sequence	exceptionsList	Field	
messageCategory***	exceptionInfo	Field				
messageNumber***	exceptionInfo	Field				
			messageCategory	exceptionsList	Field	
			messageNumber	exceptionsList	Field	
comments	exceptionInfo	Field	comments	exceptionsList	Field	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			messageParameters	exceptionsList	Group	
messageParameters	exceptionInfo	List	messageParametersList	messageParameters	List	
parameterSequence	messageParameters	Field	sequence	messageParametersList	Field	
messageParameter Value	messageParameters	Field	parameter	messageParametersList	Field	
			parameterType	messageParametersList	Field	
customElements	response	Group				
			customElements	responsesList	Group	

NOTES:

* Language coming from Oracle Utilities Customer Care and Billing is passed to Oracle Utilities Meter Data Management through the SOAP Header when invoking the Oracle Utilities Meter Data Management service.

** MDM //scalarMC/endDateTimeFrom and //scalarMC/endDateTimeTo are populated accordingly:

- //scalarMC/endDateTimeFrom - concatenate CCB endDateTime

(/requestDetails/request/scalarProcessing/endDateTime) and 12am (-00.00.00)

- //scalarMC/endDateTimeTo - concatenate CCB endDateTime

(/requestDetails/request/scalarProcessing/endDateTime) and 11:59pm (-23.59.59)

*** CCB Message Category and Message Number are obtained form the Configuration Properties file, CCB2.Generic.MessageCategory and CCB2.Generic.MessageNumber respectively.

Get Usage Request Message Mapping Details

Refer to the Usage Adjustment Request Integration Process description for processing details on this integration point.

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			D2-UsageTransactionUpdate Inbound		Outermost Tag	
input		Outermost Tag	input	D2-UsageTransactionUpdate Inbound	Field	
externalSystem	input	Field	externalSystem	input	Field	
usageTransactions	input	Group	usageTransactions	input	Group	
usageTransactionList	usageTransactions	List	usageTransactionList	usageTransactions	List	
externalId	usageTransactionList	Field	externalId	usageTransactionList	Field	
usedOnBill	usageTransactionList	Field	usedOnBill	usageTransactionList	Field	
linkedToFrozenBillSegment	usageTransactionList	Field	linkedToFrozenBillSegment	usageTransactionList	Field	

Usage Transaction Info Update Request Message Mapping Details

Refer to the Usage Transaction Info Update Integration Process description for processing details on this integration point.

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
			D2-UsageTransactionUpdate Inbound		Outermost Tag	
input		Outermost Tag	input	D2-UsageTransactionUpdate Inbound	Field	
externalSystem	input	Field	externalSystem	input	Field	
usageTransactions	input	Group	usageTransactions	input	Group	
usageTransactionList	usageTransactions	List	usageTransactionList	usageTransactions	List	

CCB Usage Request Message			MDM Usage Request Message			DVM Mapping
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**	**DVM**
externalId	usageTransactionList	Field	externalId	usageTransactionList	Field	
usedOnBill	usageTransactionList	Field	usedOnBill	usageTransactionList	Field	
linkedToFrozenBill Segment	usageTransactionList	Field	linkedToFrozenBillSegment	usageTransactionList	Field	

Customer Service Processes

Usage Adjustment Request Message Mapping Details

Refer to the Usage Adjustment Request Integration Process description for processing details on this integration point

CCB Usage Adjustment Message			MDM Usage Adjustment Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
requestDetails		Outermost Tag	WX-UsageAdjustmentRetrieval		Outermost Tag
			head	WX-UsageAdjustment Retrieval	Group
			action	head	Field
			key1	head	Group
			name	key1	Field
			value	key1	Field
			key2	head	Group
			name	key2	Field
			value	key2	Field
			key3	head	Group
			name	key3	Field
			value	key3	Field
			key4	head	Group
			name	key4	Field
			value	key4	Field
			key5	head	Group
			name	key5	Field
			value	key5	Field
			webUserId	head	Field

CCB Usage Adjustment Message			MDM Usage Adjustment Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
			emailAddress	head	Field
			ipAddress	head	Field
language*	requestDetails	Field			
referenceDateTime	requestDetails	Field			
serviceAgreements	requestDetails	List	usList	head	List
			usId	usList	Field
saId	serviceAgreements	Field	externalId	usList	Field
rates	serviceAgreements	List	ratesList	usList	List
rateSchedule	rates	Field	rateSchedule	ratesList	Field
customElements	serviceAgreements	Group	customElements	usList	Group
customElements	requestDetails	Group	customElements	head	Group
responseDetails		Outermost Tag			
			mainData	WX-UsageAdjustment Retrieval	Group
results	responseDetails	List	outputList	mainData	List
saId	results	Field	externalId	outputList	Field
rates	results	List	ratesList	outputList	List
rateSchedule	rates	Field	rateSchedule	ratesList	Field
usageAdjustments	rates	List	usageAdjustmentsList	ratesList	List
usageAdjustmentFactor	usageAdjustments	Field	usageAdjustmentFactor	usageAdjustmentsList	Field
description	usageAdjustments	Field	description	usageAdjustmentsList	Field
detailedDescription	usageAdjustments	Field	detailedDescription	usageAdjustmentsList	Field
externalReferenceId	usageAdjustments	Field	externalReferenceId	usageAdjustmentsList	Field
valuesList	usageAdjustments	Group	values	usageAdjustmentsList	Group
value	valuesList	List	valuesList	values	List

CCB Usage Adjustment Message			MDM Usage Adjustment Message		
Element	**Parent Element**	**Type**	**Element**	**Parent Element**	**Type**
value	value	Field	value	valuesList	Field
valueDescription	value	Field	valueDescription	valuesList	Field
externalReferenceId	value	Field	externalReferenceId	valuesList	Field
customElements	value	Group	customElements	valuesList	Group
customElements	usageAdjustments	Group	customElements	usageAdjustmentsList	Group
isSkipped	rates	Field	skipped	ratesList	Field
skipReasonDescription	rates	Field	skipReasonDescription	ratesList	Field
			skipReason	ratesList	Field
customElements	rates	Group	customElements	ratesList	Group
customElements	results	Group	customElements	outputList	Group
errorInformation	responseDetails	Group	errorInformation	responseDetails	Group
isInError	errorInformation	Field	isInError	errorInformation	Field
errorReference	errorInformation	Group	errorReference	errorInformation	Group
category	errorReference	Field	messageCategory	errorReference	Field
number	errorReference	Field	messageNumber	errorReference	Field
errorMessage	errorInformation	Field	errorMessage	errorInformation	Field
customElements	responseDetails	Group	customElements	rmainData	Group

NOTES:

* Language coming from Oracle Utilities Customer Care and Billing is passed to Oracle Utilities Meter Data Management through the SOAP Header when invoking the Oracle Utilities Meter Data Management service.

Appendix B

Configuration Properties File

This section lists the configurations stored in the ConfigurationProperties.xml This file is stored in the Metadata Service (MDS) in this location <PRODUCT.HOME>/MDS-Artifacts/CCB2-MDM2/config/.

For information on creating modifying configuration properties refer to the Setting Configuration Properties section in Chapter 3: Configuration Guidelines.

Module Configurations

Module Configurations have application level properties which are used by all the SOA composites.

Note: When the DVM lookup value is not found for a DVM, DVM flags signal if an error is triggered. If the value is set to "true", the integration layer triggers a DVM exception to the initiating application. If the value is set to "false", the integration does not trigger any exception and it passes the source application value as the default value to the target application.

Module Name	Default	Description
CCB.Generic.MessageCategory	11017	This is the message category that the integration layer uses for Oracle Utilities Customer Care and Billing error messages.
CCB.GenericBusinessException.MessageNumber	11001	This is the message number that the integration layer uses for generic Oracle Utilities Customer Care and Billing errors.
CCB.GenericDVMException.MessageNumber	11401	This is the message number that the integration layer uses for DVM errors.
SOA-INFRA.AuditLevel	ON	This property needs to be set to OFF if the Audit Level is set to OFF for the BPEL processes. If the setting is OFF, then error handling does not use the composite and component instance IDs to log the error message.
ErrorHandling.GenericEmailID		This property is used to set the administrator email ID for the errorhandling process to send out an email if a critical failure occurs where even the Errorhandling process fails.
DVM.OUCCB2_OUMDM2_MO.ThrowException	false	Flag for OUCCB2_OUMDM2_MO DVM.
DVM.OUCCB2_OUMDM2_ContactType.ThrowException	false	Flag for OUCCB2_OUMDM2_ContactType DVM.
DVM.OUCCB2_OUMDM2_Country.ThrowException	false	Flag for OUCCB2_OUMDM2_Country DVM.

Module Name	Default	Description
DVM.OUCCB2_OUMDM2_DisconnectLocation.Throw Exception	false	Flag for OUCCB2_OUMDM2_DisconnectLocation DVM.
DVM.OUCCB2_OUMDM2_MeasurementCycle.Throw Exception	false	Flag for OUCCB2_OUMDM2_MeasurementCycle DVM.
DVM.OUCCB2_OUMDM2_MeasurementCycleRoute.Throw Exception	false	Flag for OUCCB2_OUMDM2_MeasurementCycleRoute DVM.
DVM.OUCCB2_OUMDM2_SPSourceStatus.ThrowException	false	Flag for OUCCB2_OUMDM2_SPSourceStatus DVM.
DVM.OUCCB2_OUMDM2_SPStatus.ThrowException	false	Flag for OUCCB2_OUMDM2_SPStatus DVM.
DVM.OUCCB2_OUMDM2_SPType.ThrowException	false	Flag for OUCCB2_OUMDM2_SPType DVM.
DVM.OUCCB2_OUMDM2_LifeSupportSensitiveLoad .ThrowException	false	Flag for OUCCB2_OUMDM2_LifeSupportSensitiveLoad DVM.
DVM.OUCCB2_OUMDM2_USType.ThrowException	false	Flag for OUCCB2_OUMDM2_USType DVM.
DVM.OUCCB2_OUMDM2_SAStatus.ThrowException	false	Flag for OUCCB2_OUMDM2_SAStatus DVM.
DVM.OUCCB2_OUMDM2_DeviceType.ThrowException	false	Flag for OUCCB2_OUMDM2_DeviceType DVM.
DVM.OUCCB2_OUMDM2_MeterStatus.ThrowException	false	Flag for OUCCB2_OUMDM2_MeterStatus DVM.
DVM.OUCCB2_OUMDM2_Manufacturer.ThrowException	false	Flag for OUCCB2_OUMDM2_Manufacturer DVM.
DVM.OUCCB2_OUMDM2_Model.ThrowException	false	Flag for OUCCB2_OUMDM2_Model DVM.
DVM.OUCCB2_OUMDM2_DeviceConfigType.Throw Exception	false	Flag for OUCCB2_OUMDM2_DeviceConfigType DVM.
DVM.OUCCB2_OUMDM2_HowToUse.ThrowException	false	Flag for OUCCB2_OUMDM2_HowToUse DVM.
DVM.OUCCB2_OUMDM2_ReadOutType.ThrowException	false	Flag for OUCCB2_OUMDM2_ReadOutType DVM.
DVM.OUCCB2_OUMDM2_ConsumptiveSubtractive.Throw Exception	false	Flag for OUCCB2_OUMDM2_ConsumptiveSubtractive DVM.
DVM.OUCCB2_OUMDM2_MCServiceType.ThrowException	false	Flag for OUCCB2_OUMDM2_MCServiceType DVM.
DVM.OUCCB2_OUMDM2 _NegativeConsumption.ThrowException	false	Flag for OUCCB2_OUMDM2_NegativeConsumption DVM.
DVM.OUCCB2_OUMDM2_BillCondition.ThrowException	false	Flag for OUCCB2_OUMDM2_BillCondition DVM.
DVM.OUCCB2_OUMDM2_AllowEstimate.ThrowException	false	Flag for OUCCB2_OUMDM2_AllowEstimate DVM.
DVM.OUCCB2_OUMDM2_BillingOption.ThrowException	false	Flag for OUCCB2_OUMDM2_BillingOption DVM.

Module Name	Default	Description
DVM.OUCCB2_OUMDM2_BillMode.ThrowException	false	Flag for OUCCB2_OUMDM2_BillMode DVM.
DVM.OUCCB2_OUMDM2_AutomatedRetry.ThrowException	false	Flag for OUCCB2_OUMDM2_AutomatedRetry DVM.
DVM.OUMDM2_OUCCB2_IsEstimate.ThrowException	false	Flag for OUMDM2_OUCCB2_IsEstimate DVM.
DVM.OUMDM2_OUCCB2_UOM.ThrowException	false	Flag for OUMDM2_OUCCB2_UOM DVM.
DVM.OUMDM2_OUCCB2_TOU.ThrowException	false	Flag for OUMDM2_OUCCB2_TOU DVM.
DVM.OUMDM2_OUCCB2_SQI.ThrowException	false	Flag for OUMDM2_OUCCB2_SQI DVM.
DVM.OUMDM2_OUCCB2_UsageType.ThrowException	false	Flag for OUMDM2_OUCCB2_UsageType DVM.
DVM.OUMDM2_OUCCB2_MeasuresPeakQuantity.Throw Exception	false	Flag for OUMDM2_OUCCB2_MeasuresPeakQuantity DVM.
DVM.OUMDM2_OUCCB2_SPHowToUse.ThrowException	false	Flag for OUMDM2_OUCCB2_SPHowToUse DVM.
DVM.OUMDM2_OUCCB2_SkipSA.ThrowException	false	Flag for OUMDM2_OUCCB2_SkipSA DVM.
DVM.OUMDM2_OUCCB2_SkipReason.ThrowException	false	Flag for OUMDM2_OUCCB2_SkipReason DVM.
DVM.OUCCB2_OUMDM2_ReadType.ThrowException	false	Flag for OUCCB2_OUMDM2_ReadType DVM.
DVM.OUMDM2_OUCCB2_Estimation Indicator.ThrowException	false	OUMDM2_OUCCB2_EstimationIndicator.dvm
DVM.OUMDM2_OUCCB2_HighlightType.ThrowException	false	OUMDM2_OUCCB2_HighlightType.dvm
DVM.OUMDM2_OUCCB2_ItemType.ThrowException	false	OUMDM2_OUCCB2_ItemType.dvm

Service Configurations

Service Configuration properties are specific to SOA composites. These are used to make changes in specific composite behavior.

Service Name	Property Name	Default / Shipped Value	Description
All of the service names in the configuration properties file will have these two property names to control email notifications on errors.	BusinessError.NotificationFlag	false	If set to true, business error notification is sent via Email.
	TechnicalError.NotificationFlag	false	If set to true, technical error notification is sent via Email.
Person Information Synchronization Integration Process			
OUCCB2OUMDM2PersonSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXform CCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2PersonSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
SP Information Synchronization Integration Process			
OUCCB2OUMDM2SPSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2SPSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value	Description
SA Information Synchronization Integration Process			
OUCCB2OUMDM2SASyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2SASyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
SA Relationship Information Synchronization Integration Process			
OUCCB2OUMDM2SARelationshipSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2SARelationshipSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
Meter Information Synchronization Integration Process			
OUCCB2OUMDM2MeterSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2MeterSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.

Service Name	Property Name	Default / Shipped Value	Description
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
SP-Meter History Information Synchronization Integration Process			
OUCCB2OUMDM2SPMeterHistSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2SPMeterHistSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
Meter Configuration Information Synchronization Integration Process			
OUCCB2OUMDM2MeterConfigSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
	MDM2.Inverval.Flag	D1IN	Flag for Interval meter
	MDM2.Scalar.Flag	D1SC	Flag for Scalar meter
OUMDM2OUCCB2MeterConfigSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value	Description
Batch Bill Determinants Integration Process			
OUCCB2OUMDM2BatchBDReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2BatchBDRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
Online Bill Determinants Integration Process			
OUCCB2OUMDM2OnlineBDReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2OnlineBDRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
Replacement Reads Integration Process			
OUMDM2OUCCB2ReplReadReqEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.

Service Name	Property Name	Default / Shipped Value	Description
Scalar Meter Read Sync Integration Process			
OUCCB2OUMDM2MeterReadSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUMDM2OUCCB2MeterReadSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
Get Register Read High-Low Boundaries Integration Process			
OUCCB2OUMDM2HighLowReadReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCB2toMDM2	false	If set to true, the post transformation extension service is invoked before invoking MDM.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service for Resposne is invoked.
	Extension.PostXformMDM2toCCB2	false	If set to true, the post transformation extension service for Response is invoked.
	MDM2.DetermineHighLowReads.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-DetermineEstimatedAndHighLowScalarReadings	This value is the MDM Service Determine High/Low Reads endpoint URL.
Get Usage Request Integration Process			
OUCCB2OUMDM2SSUsageReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID.

Service Name	Property Name	Default / Shipped Value	Description
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service for the request message is invoked.
	Extension.PostXformCCB2toMDM2	false	If set to true, the post transformation extension service for the request message is invoked.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service for the response message is invoked.
	Extension.PostXformMDM2toCCB2	false	If set to true, the post transformation extension service for the response message is invoked.
	MDM2.D2CalculateUsage MultipleRequest.Endpoint.URL	@mdm_protocol:// @mdm_host:@mdm_port/@mdm_ctx1/D2-CalculateUsageMultiple Requests	This value is the MDM Service Calculate Usage Calculate Usage Multiple Request Endpoint URL. During install, the MDM edge application information is tokenized to point to the correct MDM server being used.
Usage Adjustment Request Integration Process			
OUCCB2OUMDM2SSUsageAdjustmentReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service for the request message is invoked.
	Extension.PostXformCCB2toMDM2	false	If set to true, the post transformation extension service for the request message is invoked.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service for the response message is invoked.
	Extension.PostXformMDM2toCCB2	false	If set to true, the post transformation extension service for the response message is invoked.
	MDM2.WX-UsageAdjustmentRetrieval.Endpoint.URL	@mdm_protocol:// @mdm_host:@mdm_port/@mdm_ctx1/D2-UsageAdjustment Retrieval	This value is the MDM Service WX-UsageAdjustmentRetrieval Endpoint URL. During install, the MDM edge application information is tokenized to point to the correct MDM server being used.
Contract Option Event /Dynamic Option Event Synchronization Integration Process			
OUCCB2OUMDM2DynamicOptEvtSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID

Service Name	Property Name	Default / Shipped Value	Description
	Override.Request	false	If set to true, the override request transformation is executed.
Contract Option/Dynamic Option Synchronization Integration Process			
OUMDM2OUCCB2DynamicOptEvtSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID
	Override.Request	false	If set to true, the override request transformation is executed.
Bill Cycle Synchronization Integration Process			
OUCCB2OUMDM2BillCycleSyncReqEBF	Default.SystemID	OU_CCB2_01	Initiating system ID
	Extension.PreXform CCB2toMDM2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformToMDM2	false	If set to true, the post transformation extension service is invoked.
OUCCB2OUMDM2BillCycleSyncRespEBF	Default.SystemID	OU_MDM2_01	Initiating system ID.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformtoCCB2	false	If set to true, the post transformation extension service is invoked.
SA Activation Bill Cycle Request Integration Process			
OUCCB2OUMDM2SAActivationBillCycleRequestEBF	Default.SystemID	OU_CCB2_01	Initiating system ID
	Extension.PreXformCCB2toMDM2	false	If set to true, the pre transformation extension service for the request message is invoked.
	Extension.PostXformCCB2toMDM2	false	If set to true, the post transformation extension service for the request message is invoked.
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service for the request message is invoked.
	Extension.PostXformMDM2toCCB2	false	If set to true, the post transformation extension service for the response message is invoked.

Service Name	Property Name	Default / Shipped Value	Description
	MDM2.D2-DetermineBillCycleForSP.EndpointURL	@mdm_protocol:// @mdm_host: @mdm_port/ @mdm_ctx1 /D2-UsageAdjustment Retrieval	This value is the MDM Service D2-DetermineBillCycleForSP Endpoint URL. During install, the MDM edge application information is tokenized to point to the correct MDM server being used.
Bill Cycle Change Notification Integration Process			
OUMDM2OUCCBBillCycleChangeNotifEBF	Default.SystemID	OU_MDM2_01	Initiating system ID
	Extension.PreXformMDM2toCCB2	false	If set to true, the pre transformation extension service for the request message is invoked.
	Extension.PostXformMDM2toCCB2	false	If set to true, the post transformation extension service for the response message is invoked.
	CCB2.C1BillCycleUpdateNotification.Endpoint.URL	@ccb_protocol:// @ccb_host@ccb_port/ @ccb_ctx1/C1-BillCycleUpdateNotification	This value is the CCB Service Bill Cycle UpdateNotification Endpoint URL. During install, the CCB edge application information is tokenized to point to the correct CCB server being used.
Usage Transaction Info Update Integration Process			
OUCCB2OUMDM2UpdateUTInfoEBF	Default.SystemID	OU_CCB2_01	Initiating system ID
	MDM2.DetermineUpdateUTInfo.EndpointURL	@mdm_protocol:// @mdm_host:@mdm_port/ @mdm_ctx1/D2-UsageTransactionUpdateInbound	This value is the MDM Usage Transaction Request Inbound Endpoint URL. During install, the MDM edge application information is tokenized to point to the correct MDM server being used.

Appendix C

Domain Value Maps (DVMs)

The following table lists the DVMs included for the integration.

For information on creating DVMs refer to the "Setting Domain Value Maps for the Integration Layer" section in Chapter 3: Configuration Guidelines.

For more information about on working with DVMs, see the section "Working with Domain Value Maps" in Oracle Fusion Middleware Developing SOA Applications with Oracle SOA Suite documentation.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_ErrorCode	All	Transforms the Oracle Utilities Meter Data Management Message Category and Message number to the Oracle Utilities Customer Care and Billing Message Category and message number. This helps the implementation layer to map specific message numbers to specific error codes, and thus provide more user-friendly error messages in Oracle Utilities Customer Care and Billing. The Message Category and message number are stored in the same DVM column but separated by "!' symbol.	OUCCB2_ErrorCode - This is a combination of CCB Message Category and Message Number separated by "!". OUMDM2_ErrorCode - This is a combination of MDM Message Category and Message Number separated by "!". **Note**: If nothing is defined in the Error Code DVM table or no equivalent CCB Error Code lookup value exists in the DVM table for the provided MDM Error Code, the integration passes the CCB Generic Message Category and CCB Generic Business Exception Message Number defined in the Configuration properties file in the response message.
OUCCB2_OUMDM2_MO	All	Transform the CCB Maintenance Object name to MDM Maintenance Object name.	Maps the Oracle Utilities Customer Care and Billing Maintenance Object value to corresponding Oracle Utilities Meter Data Management Maintenance Object value. OUCCB2_MO - This is a valid maintenance object defined in CCB. OUMDM2_MO - This is a valid maintenance object defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_ContactType	Person Sync	Transform the CCB Contact type to MDM Contact Type.	Maps the Oracle Utilities Customer Care and Billing Contact Type value to corresponding Oracle Utilities Meter Data Management Contact type value. OUCCB2_ContactType - This is a valid Contact Type defined in CCB. OUMDM2_ContactType - This is a valid Contact Type defined in MDM.
OUCCB2_OUMDM2_Country	SP Sync	Transform the Country code from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing country code to corresponding Oracle Utilities Meter Data Management Country code. OUCCB2_CountryCode - This is a valid country code defined in CCB. OUMDM2_Country Code - This is a valid country code defined in MDM.
OUCCB2_OUMDM2_DisconnectLocation	SP Sync	Transform Disconnect location code from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing Disconnect Location to corresponding Oracle Utilities Meter Data Management Disconnect Location. OUCCB2_DisconnectLocation - This is a valid Disconnect Location defined in CCB. OUMDM2_DisconnectLocation - This is a valid Disconnect Location defined in MDM.
OUCCB2_OUMDM2_MeasurementCycle	SP Sync	Transform measurement cycle code from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing Measurement Cycle to corresponding Oracle Utilities Meter Data Management Measurement Cycle. OUCCB2_MeasurementCycle - This is a valid Measurement Cycle defined in CCB. OUMDM2_MeasurementCycle - This is a valid Measurement Cycle defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_MeasurementCycleRoute	SP Sync	Transform measurement cycle route code from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing Measurement Cycle Route to corresponding Oracle Utilities Meter Data Management Measurement Cycle Route. OUCCB2_MeasurementCycleRoute - This is a valid Measurement Cycle Route defined in CCB. OUMDM2_MeasurementCycleRoute - This is a valid Measurement Cycle Route defined in MDM.
OUCCB2_OUMDM2_SPSourceStatus	SP Sync	Transform SP Source status from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing SP Source Status to corresponding Oracle Utilities Meter Data Management SP Source Status. OUCCB2_SPSourceStatus - This is a valid SP Source Status defined in CCB. OUMDM2_SPSourceStatus - This is a valid SP Source Status defined in MDM.
OUCCB2_OUMDM2_SPStatus	SP Sync	Transform SP status from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing SP Status to corresponding Oracle Utilities Meter Data Management SP Status. OUCCB2_SPStatus - This is a valid SP Status defined in CCB. OUMDM2_SPStatus - This is a valid SP Status defined in MDM.
OUCCB2_OUMDM2_SPType	SP Sync	Transform SP Type from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing SP Type to corresponding Oracle Utilities Meter Data Management SP Type. OUCCB2_SPType - This is a valid SP Type defined in CCB. OUMDM2_SPType - This is a valid SP Type defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_LifeSupportSensitive Load	SP Sync	Transform life support sensitive load to enter code from CCB to MDM format and vice versa.	Maps the Oracle Utilities Customer Care and Billing LifeSupportSensitiveLoad flag to corresponding Oracle Utilities Meter Data Management LifeSupportSensitiveLoad flag. OUCCB2_LifeSupportSensitiveLoad - This is a valid LifeSupportSensitiveLoad flag defined in CCB. OUMDM2_LifeSupportSensitiveLoad - This is a valid LifeSupportSensitiveLoad flag defined in MDM.
OUCCB2_OUMDM2_USType	SA Sync	Transform CCB SA type and CIS Division combination to MDM US type and vice versa. In the CCB column, the SA Type and CIS Division are both entered with "!" symbol as the separator.	Maps the Oracle Utilities Customer Care and Billing CIS Division and SA Type to corresponding Oracle Utilities Meter Data Management Usage Subscription type. OUCCB2_CISDivision_SAType - This is a valid CIS Division and SA Type combination defined in CCB separated by "!". OUMDM2_USType - This is a valid Usage Subscription type defined in MDM.
OUCCB2_OUMDM2_SAStatus	SA Sync	Transform CCB SA status to MDM Usage subscription status and vice versa.	Maps the Oracle Utilities Customer Care and Billing SA Status to corresponding Oracle Utilities Meter Data Management US Status. OUCCB2_SAStatus - This is a valid SA Status defined in CCB. OUMDM2_USStatus - This is a valid US Status defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_DeviceType	Meter Sync	Transform CCB Meter type to MDM Device type and vice versa.	This DVM is used by the integration layer to map Oracle Utilities Customer Care and Billing Device Type to corresponding Oracle Utilities Meter Data Management Device Type. OUCCB2_DeviceType - This is a valid Device Type defined in CCB. OUMDM2_DeviceType - This is a valid Device Type defined in MDM.
OUCCB2_OUMDM2_MeterStatus	Meter Sync	Transform CCB Meter status to MDM Device status and vice versa.	This DVM is used by the integration layer to map Oracle Utilities Customer Care and Billing Meter Status to corresponding Oracle Utilities Meter Data Management Device Status. OUCCB2_MeterStatus - This is a valid Meter Status defined in CCB. OUMDM2_DeviceStatus - This is a valid Device status defined in MDM.
OUCCB2_OUMDM2_Manufacturer	Meter Sync	Transform CCB Manufacturer to MDM Manufacturer and vice versa.	This DVM is used by the integration layer to map Oracle Utilities Customer Care and Billing Manufacturer code to corresponding Oracle Utilities Meter Data Management Manufacturer code. OUCCB2_Manufacturer - This is a valid Manufacturer code defined in CCB. OUMDM2_Manufacturer - This is a valid Manufacturer code defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_Model	Meter Sync	Transform CCB Model to MDM Model and vice versa.	Maps the CCB Model code to corresponding Oracle Utilities Meter Data Management Model code. OUCCB2_Model - This is a valid Model code defined in CCB. OUMDM2_Model - This is a valid Model code defined in MDM.
OUCCB2_OUMDM2_DeviceConfigType	Meter Configuration Sync	Transform CCB Meter Config type to MDM Device Config type and vice versa.	Maps the CCB Device Config Type code to corresponding Oracle Utilities Meter Data Management Device Config Type code. OUCCB2_DeviceConfigType - This is a valid Device Config Type code defined in CCB. OUMDM2_DeviceConfigType - This is a valid Device Config Type code defined in MDM.
OUCCB2_OUMDM2_HowToUse	Meter Configuration Sync	Transform CCB How to use flag to MDM How to use flag and vice versa.	Maps the CCB HowToUse flag to corresponding Oracle Utilities Meter Data Management HowToUse flag. OUCCB2_HowToUse - This is a valid HowToUse flag defined in CCB. OUMDM2_HowToUse - This is a valid HowToUse flag defined in MDM.
OUCCB2_OUMDM2_ReadOutType	Meter Configuration Sync	Transform CCB Read out type to MDM Read out type and vice versa.	Maps the CCB Read Out Type code to corresponding Oracle Utilities Meter Data Management Read Out Type code. OUCCB2_ReadOutType - This is a valid Read Out Type code defined in CCB. OUMDM2_ReadOutType - This is a valid Read Out Type code defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_ConsumptiveSubtractive	Meter Configuration Sync	Transform CCB Consumptive Subtractive flag to MDM Consumptive Subtractive flag and vice versa.	Maps the CCB ConsumptiveSubtractive flag to corresponding Oracle Utilities Meter Data Management ConsumptiveSubtractive flag. OUCCB2_ConsumptiveSubtractive - This is a valid ConsumptiveSubtractive flag defined in CCB. OUMDM2_ConsumptiveSubtractive - This is a valid ConsumptiveSubtractive flag defined in MDM.
OUCCB2_OUMDM2_MCServiceType	Meter Configuration Sync	Transform CCB Measuring component service type to MDM Measuring component service type and vice versa.	Maps the CCB Measuring Component Service Type code to corresponding Oracle Utilities Meter Data Management Measuring Component Service Type code. OUCCB2_MCServiceType - This is a valid Measuring Component Service Type code defined in CCB. OUMDM2_MCServiceType - This is a valid Measuring Component Service Type code defined in MDM.
OUCCB2_OUMDM2_NegativeConsumption	Meter Configuration Sync	Transform CCB negative consumption flag to MDM negative consumption flag and vice versa.	Maps the CCB NegativeConsumption flag to corresponding Oracle Utilities Meter Data Management NegativeConsumption flag. OUCCB2_NegativeConsumption - This is a valid NegativeConsumption flag defined in CCB. OUMDM2_NegativeConsumption - This is a valid NegativeConsumption flag defined in MDM.
OUCCB2_OUMDM2_BillCondition	Batch BD, Online BD and Get Usage Request	Transform CCB Bill Condition to MDM Bill Condition and vice versa.	Maps the CCB BillCondition flag to corresponding Oracle Utilities Meter Data Management BillCondition flag. OUCCB2_BillCondition - This is a valid BillCondition flag defined in CCB. OUMDM2_BillCondition - This is a valid BillCondition flag defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_AllowEstimate	Batch BD, Online BD and Get Usage Request	Transform CCB Allow Estimate to MDM Allow Estimate and vice versa.	Maps the CCB AllowEstimate flag to corresponding Oracle Utilities Meter Data Management AllowEstimate flag. OUCCB2_AllowEstimate - This is a valid AllowEstimate flag defined in CCB. OUMDM2_AllowEstimate - This is a valid AllowEstimate flag defined in MDM.
OUCCB2_OUMDM2_BillingOption	Batch BD and Online BD	Transform CCB Billing Option to MDM Billing Option and vice versa.	Maps the CCB BillingOption flag to corresponding Oracle Utilities Meter Data Management BillingOption flag. OUCCB2_BillingOption - This is a valid BillingOption flag defined in CCB. OUMDM2_BillingOption - This is a valid BillingOption flag defined in MDM.
OUCCB2_OUMDM2_BillMode	Batch BD and Online BD	Transform CCB Bill Mode to MDM Bill Mode and vice versa.	Maps the CCB BillMode flag to corresponding Oracle Utilities Meter Data Management BillMode flag. OUCCB2_BillMode - This is a valid BillMode flag defined in CCB. OUMDM2_BillMode - This is a valid BillMode flag defined in MDM.
OUCCB2_OUMDM2_AutomatedRetry	Batch BD	Transform CCB Automated Retry to MDM Automated Retry and vice versa.	Maps the CCB AutomatedRetry flag to corresponding Oracle Utilities Meter Data Management AutomatedRetry flag. OUCCB2_AutomatedRetry - This is a valid AutomatedRetry flag defined in CCB. OUMDM2_AutomatedRetry - This is a valid AutomatedRetry flag defined in MDM.

DVM	Integration Points	Description	CCB/MDM Values
OUCCB2_OUMDM2_UsageRequestMode	Get Usage Request	Transform CCB Usage Calculation Call Type flag to MDM Usage Request Mode flag.	Maps the CCB Usage Calculation Call Type flag (usageCalculationCalType) to the corresponding Oracle Utilities Meter Data Management Usage Request Mode flag (usageRequestMode). OUCCB2_UsageReqMode - This is a valid Usage Calculation Call Type defined in CCB. OUMDM2_UsageReqMode - This is a valid Usage Request Mode defined in MDM.
OUMDM2_OUCCB2_IsEstimate	Batch BD, Online BD and Get Usage Request	Transform MDM Is Estimate flag to CCB Is Estimate flag and vice versa.	Maps the MDM Is Estimate flag to corresponding Oracle Utilities Customer Care and Billing Is Estimate flag. OUMDM2_ IsEstimate - This is a valid Is Estimate flag defined in MDM. OUCCB2_ IsEstimate - This is a valid Is Estimate flag defined in CCB.
OUMDM2_OUCCB2_UOM	Meter Configuration Sync, Batch BD, Online BD and Get Usage Request	Transform CCB UOM to MDM UOM and vice versa.	Maps the MDM UOM to corresponding Oracle Utilities Customer Care and Billing UOM. OUMDM2_UOM - This is a valid UOM defined in MDM. OUCCB2_UOM - This is a valid UOM defined in CCB.
OUMDM2_OUCCB2_TOU	Meter Configuration Sync, Batch BD, Online BD and Get Usage	Transform CCB TOU to MDM TOU and vice versa.	Maps the MDM TOU to corresponding Oracle Utilities Customer Care and Billing TOU. OUMDM2_TOU - This is a valid TOU defined in MDM. OUCCB2_TOU - This is a valid TOU defined in CCB.
OUMDM2_OUCCB2_SQI	Meter Configuration Sync, Batch BD, Online BD and Get Usage	Transform CCB SQI to MDM SQI and vice versa.	Maps the MDM SQI to corresponding Oracle Utilities Customer Care and Billing SQI. OUMDM2_SQI - This is a valid SQI defined in MDM. OUCCB2_SQI - This is a valid SQI defined in CCB.

DVM	Integration Points	Description	CCB/MDM Values
OUMDM2_OUCCB2_UsageType	Batch BD, Online BD and Get Usage Request	Transform the MDM usage type to CCB usage type. Example: Interval, Scalar, etc.	Maps the MDM usage type to corresponding Oracle Utilities Customer Care and Billing usage type. OUMDM2_UsageType - This is a valid Usage type defined in MDM. OUCCB2_UsageType - This is a valid Usage type defined in CCB.
OUMDM2_OUCCB2_SPHowToUse	Batch BD, Online BD and Get Usage Request	Transform MDM SP How to Use flag to CCB SP How to Use Flag and vice versa	Maps the MDM SP How To USe to corresponding Oracle Utilities Customer Care and Billing SP How To Use. OUMDM2_SPHowToUse - This is a valid TOU defined in MDM. OUCCB2_ SPHowToUse - This is a valid TOU defined in CCB.
OUMDM2_OUCCB2_MeasuresPeakQuantity	Batch BD, Online BD and Get Usage Request	Transform MDM Measures Peak Quantity flag to CCB Measures Peak Quantity flag and vice versa	Maps the MDM Measures Peak Quantity to corresponding Oracle Utilities Customer Care and Billing Measures Peak Quantity. OUMDM2_MeasuresPeakQuantity - This is a valid SQI defined in MDM. OUCCB2_ MeasuresPeakQuantity - This is a valid SQI defined in CCB.
OUMDM2_OUCCB2_SkipSA	Batch BD	Transform MDM Skip flag to CCB Skip SA flag	Maps the MDM Skip element to the corresponding Oracle Utilities Customer Care and Billing Skip SA element. OUMDM2_Skip - This is a valid Skip flag defined in MDM. OUCCB2_ Skip - This is a valid Skip SA value defined in CCB. The values are true or false.

DVM	Integration Points	Description	CCB/MDM Values
OUMDM2_OUCCB2_Skipreason	Batch BD	Transform MDM Skip Reason flag to CCB Skip Reason flag.	Maps the MDM Skip Reason element to the corresponding Oracle Utilities Customer Care and Billing Skip Reason element. OUMDM2_SkipReason - This is a valid Skip Reason defined in MDM. OUCCB2_ SkipReason - This is a valid Skip Reason defined in CCB.
OUCCB2_ OUMDM2_ReadType	Scalar Meter Read	Transform CCB Read Type flag to MDM Measurement Condition.	Maps the CCB ReadType flag to corresponding Oracle Utilities Meter Data Management MeasurementCondition flag. OUCCB2_ReadType - This is a valid Read Type defined in CCB. OUMDM2_ ReadType - This is a valid Measurement Condition defined in MDM.
OUMDM2_OUCCB2_HighlightType	Batch BD and Online BD	Transform MDM Highlight Type to CCB Highlight Type	Maps the MDM Highlight Type element to the corresponding Oracle Utilities Customer Care and Billing Highlight Type element. OUMDM2_HighlightType - This is a valid Highlight Type defined in MDM. OUCCB2_HighlightType - This is a valid Highlight Type defined in CCB.

DVM	Integration Points	Description	CCB/MDM Values
OUMDM2_OUCCB2_EstimationIndicator	Batch BD and Online BD	Transform MDM Estimation Indicator to CCB Estimation Indicator	Maps the MDM Estimation Indicator element to the corresponding Oracle Utilities Customer Care and Billing Estimation Indicator element. OUMDM2_EstimationIndicator - This is a valid Estimation Indicator defined in MDM. OUCCB2_EstimationIndicator - This is a valid Estimation Indicator defined in CCB.
OUMDM2_OUCCB2_ItemType	Batch BD and Online BD	Transform MDM Item type to CCB Item type	Maps the MDM Item type element to the corresponding Oracle Utilities Customer Care and Billing Item type element. OUMDM2_ItemType - This is a valid Item Type defined in MDM. OUCCB2_ItemType - This is a valid Item Type defined in CCB.

Appendix D

JMS Wrapper Configuration Properties File

This appendix lists configurations stored in the JMSWrapperConfigurationProperties.xml. The file is stored in the Metadata Service (MDS) in <PRODUCT.HOME>/MDS-Artifacts/CCB2-MDM2/config/ folder.

- Service Configurations

  For information on creating/modifying the JMS Wrapper configuration properties refer to the Setting Configuration Properties for JMS Wrapper Processes section in Chapter 3: Configuration Guidelines.

Service Configurations

Service Configuration properties are specific to SOA composites and are used to modify specific composite behavior.

Note: The Endpoint URL tokenization is done during installation.The MDM edge application and CCB edge application information is tokenized to point to the accurate MDM and CCB servers being used.

CCB-MDM Patch 30437765 must be installed for Person, SP, SA, Meter and Meter History Sync Request Read processes to invoke the MDM MO-Specific sync services. If this patch is not applied, these sync read flows will invoke the generic sync request service (D1-SyncRequestInbound).

Service Name	Property Name	Default/Shipped Value	Description
Use for Person			
OUCCB2OUMDM2PersonSyncReqJMS ReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/ D1-SyncRequestInboundContact	The MDM Endpoint URL for Sync Request Inbound Contact.
OUMDM2OUCCB2PersonSyncRespJMS ReadSvc	OUCCB2.F1-UpdateAndTransitionSync Request.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.

Service Name	Property Name	Default/Shipped Value	Description
Use for SP Sync			
OUCCB2OUMDM2SPSyncReq JMSReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D1-SyncRequestInboundSP	The MDM Endpoint URL for D1 Sync Request Inbound SP.
OUMDM2OUCCB2SPSyncResp JMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for SA Sync			
OUCCB2OUMDM2SASyncReq JMSReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-SyncRequestInboundUS	The MDM Endpoint URL for Sync Request Inbound US.
OUMDM2OUCCB2SASyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Meter Sync			
OUCCB2OUMDM2MeterSyncReq JMSReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D1-SyncRequestInboundDevice	The MDM Endpoint URL for Sync Request Inbound Device.
OUMDM2OUCB2MeterSyncResp JMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for SP-Meter History Sync			
OUCCB2OUMDM2SPMeterHistSyncReq JMSReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D1-SyncRequestInboundInstallEvent	The MDM Endpoint URL for D1 Sync Request Inbound Install Event.
OUMDM2OUCCB2SPMeterHistSyncResp JMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Meter Configuration Sync			
OUCCB2OUMDM2MeterConfigSyncReq JMSReadSvc	OUMDM2.D1-SyncRequestInboundComposite.Endpoint.URL	mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D1-SyncRequestInboundComposite	The MDM Endpoint URL for D1 Sync Request Inbound Composite.

Service Name	Property Name	Default/Shipped Value	Description
OUMDM2OUCCB2MeterConfigSyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Batch BD Sync			
OUCCB2OUMDM2BatchBDReqJMSReadSvc	OUMDM2.D2-UsageTransactionRequestInbound.Endpoint.URL	mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-UsageTransactionRequestInbound	The MDM Endpoint URL for D2 Usage Transaction Request Inbound.
OUMDM2OUCCB2BatchBDRespJMSReadSvc	OUCCB2.C1UpdateUsageRequest.Endpoint.URL	@ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/C1UpdateUsageRequest	The CCB Endpoint URL for C1 Update Usage Request.
Use for Online BD Sync			
OUMDM2OUCCB2OnlineBDRespJMSReadSvc	OUMDM2.D2-UsageTransactionRequestInbound.Endpoint.URL	mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-UsageTransactionRequestInbound	The MDM Endpoint URL for D2 Usage Transaction Request Inbound.
OUMDM2OUCCB2OnlineBDRespJMSReadSvc	OUCCB2.C1UpdateUsageRequest.Endpoint.URL	@ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/C1UpdateUsageRequest	The CCB Endpoint URL for C1 Update Usage Request.
Use for Replacement Read Sync			
OUMDM2OUCCB2ReplReadReqJMSReadSvc	OUCCB2.C1-DetAcctCreateCorrectedReadOCBG.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/C1-DetAcctCreateCorrectedReadOCBG	The CCB Endpoint URL for C1 Create Corrected Read.
Use for Meter Read Sync			
OUCCB2OUMDM2MeterReadSyncReqJMSReadSvc	OUMDM2.D1-SyncRequestInbound.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D1-SyncRequestInbound	The MDM Endpoint URL for D1 SyncRequest Inbound.
OUMDM2OUCCB2MeterReadSyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Contract Option Sync			
OUCCB2OUMDM2DynamincOptSyncReqJMSReadSvc	OUMDM2.D2-InboundDynamicOptionSync.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-InboundDynamicOptionSync	The MDM Endpoint URL for D2 Inbound Dynamic Option Sync.

Service Name	Property Name	Default/Shipped Value	Description
OUMDM2OUCCB2DynamincOptSyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Contract Option Event Sync			
OUCCB2OUMDM2DynamincOptEvtSyncReqJMSReadSvc	OUMDM2.D2-InboundDynamicOptionEventSync.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-InboundDynamicOptionEventSync	The MDM Endpoint URL for D2 Inbound Dynamic Option Event Sync.
OUMDM2OUCCB2DynamincOptEvtSyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.
Use for Bill Cycle Sync			
OUCCB2OUMDM2BillCycleSyncReqJMSReadSvc	OUMDM2.D2-InboundBillCycleSyncRequest.Endpoint.URL	@mdm_protocol://@mdm_host:@mdm_port/@mdm_ctx1/D2-InboundBillCycleSyncRequest	The MDM Endpoint URL for D2 Inbound Bill Cycle Sync.
OUMDM2OUCCB2BillCycleSyncRespJMSReadSvc	OUCCB2.F1-UpdateAndTransitionSyncRequest.Endpoint.URL	ccb_protocol://@ccb_host:@ccb_port/@ccb_ctx1/F1-UpdateAndTransitionSyncRequest	The CCB Endpoint URL for F1 Update and Transition Sync.