Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management

Release 2.1.0 Service Pack 3

Implementation Guide

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Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management Implementation Guide, Release 2.1.0 Service Pack 3

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Contents

Implementation Guide

Preface

Audience

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

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Part 1

Understanding the Integration

This section provides an overview of the participating applications and information regarding the business processes addressed by the integration.

The section contains the following chapters:

- Introduction
- Understanding the Integration Process

Chapter 1

Introduction

This document provides configuration and administration information for the integration between Oracle Utilities Customer Care and Billing (CCB) and Oracle Utilities Service Order Management (SOM).

The overview includes the following:

- Additional Resources
- Abbreviations
- Prerequisites
- About the Integration Product
- Supported Business Processes

1.1 Additional Resources

The following additional resources are available:

Resource	Location
Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management Release 2.1.0 Service Pack 3 Installation Guide	Same folder as this document, with the distribution for this product
Oracle Utilities Smart Grid Gateway Release 2.1.0 Service Pack 3 Release Notes	Refer to Oracle Utilities Service Order Management documentation located on the Oracle Software Delivery Cloud or on Oracle Technology Network: https://edelivery.oracle.com/ http://www.oracle.com/technetwork/documentation

Resource	Location
Oracle Utilities Service Order Management Release 2.1.0 Service Pack 3 Documentation	Refer to Oracle Utilities Service Order Management documentation located on the Oracle Software Delivery Cloud or on Oracle Technology Network: https://edelivery.oracle.com/ http://www.oracle.com/technetwork/documentation
Oracle Utilities Customer Care and Billing Documentation Release v2.4.0.3 or later Oracle Utilities Customer Care and Billing Documentation Release v2.5.0	Refer to Oracle Utilities Customer Care and Billing documentation located on the Oracle Software Delivery Cloud or on Oracle Technology Network: https://edelivery.oracle.com/ http://www.oracle.com/technetwork/documentation

Note: The latest versions of these documents are available on Oracle Technology Network at:
http://www.oracle.com/technetwork/index.html

1.2 Abbreviations

The following abbreviations are used in this document:

- SOM - Service Order Management
- CCB - Customer Care and Billing
- DDL - Data Definition Language
- MDS - Metadata Store
- AIA - Application Integration Architecture
- EBF - Enterprise Business Flow
- SOA - Service-Oriented Architecture
- DVM - Domain Value Map
- BPEL - Business Process Execution Language
- FA - Field Activity
- SR - Service Request
- SP - Service Point
- FA- Field Activity

1.3 Prerequisites

All participating applications (namely Oracle Utilities Service Order Management, Oracle Utilities Customer Care and Billing, and Service-Oriented Architecture) must be installed, set up, and working properly.

1.4 About the Integration Product

This section provides general information about the functionality and processing of the Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management.

1.4.1 About the Products

The following Oracle Utilities products are involved in the integration:

- Oracle Utilities Customer Care and Billing
- Oracle Utilities Service Order Management

1.4.2 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 are person, account, premise, service agreement, and service point. These objects hold the demographic, geographic, and financial information about a company's customers and properties. Related to these objects are the processes that they manage, such as bills, payments, meter readings, and field activities.

This integration supports Oracle Utilities Customer Care and Billing v2.4.0 Service Pack 3 or later, as well as v2.5.0.

1.4.3 Oracle Utilities Service Order Management

Oracle Utilities Service Order Management supports centralized orchestration and management of service requests in the smart grid. Service requests include the set of processes involved when changing or checking the status of the (metered) utility service. These are generated from customer requests or collections, meter data actions, maintenance operations, or by ad-hoc field crew tasks.

Oracle Utilities applications, such as Oracle Utilities Customer Care and Billing, Oracle Utilities Meter Data Management, and Oracle Utilities Operational Device Management generate service requests and the smart grid is leveraged to handle them in Oracle Utilities Service Order Management. Oracle Utilities Service Order Management provides insight into the progress of in-flight processes, which helps end users identify issues with individual transactions, and assists analysts of the application in improving service order processing efficiency.

Historically, the service requests were handled in Customer Information System, which had information about service points and meters, and were integrated with a workforce management system. Oracle Utilities Service Order Management is a common platform for all the Oracle Utility applications to initiate and receive updates related to all work activities at customer service points

1.5 Supported Business Processes

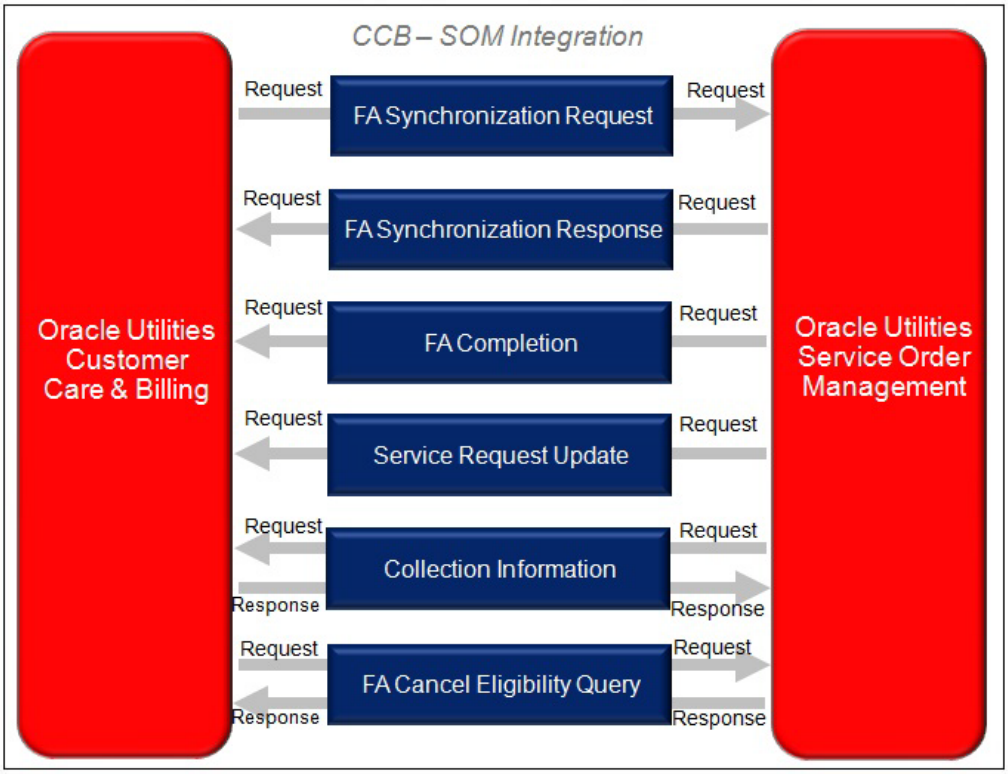
In this integration, Oracle Utilities Service Order Management orchestrates the processes necessary to create, update, and complete the service orders initiated by events, including start/stop services and collection processing.

All the integration points, except Cancel FA, are initiated by Oracle Utilities Service Order Management.

The following list summarizes the functionality included in the integration:

- **FA Synchronization**: This business process synchronizes the field activities from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management. It is implemented in the Oracle Utilities Customer Care and Billing FA Synchronization Request integration point.
- **FA Completion**: For activities that are handled in Oracle Utilities Customer Care and Billing, Oracle Utilities Service Order Management sends a success/failure response to Oracle Utilities Customer Care and Billing. For the pass thru activities that are not handled in Oracle Utilities Service Order Management, Oracle Utilities Service Order Management sends the completion message from Oracle Utilities Mobile Workforce Management to Oracle Utilities Customer Care and Billing. It is implemented in the Oracle Utilities Service Order Management FA Completion integration point.
- **SR Update Request/ FA Customer Contact**: Customer contacts may need to be created as part of completion for activities handled in Oracle Utilities Service Order Management. Oracle Utilities Service Order Management sends a message to Oracle Utilities Customer Care and Billing to create a customer contact. It is implemented in the Oracle Utilities Service Order Management Service Request Update integration point.
- **Appointment Notifications**: Oracle Utilities Service Order Management communicates to Oracle Utilities Customer Care and Billing if an appointment was booked. It is implemented in the Oracle Utilities Service Order Management Service Request Update integration point.
- **Missed Appointment**: Oracle Utilities Service Order Management communicates to Oracle Utilities Customer Care and Billing if an appointment was missed. It is implemented in the Oracle Utilities Service Order Management Service Request Update integration point.
- **Collection Information:** Oracle Utilities Service Order Management requests the collection information from Oracle Utilities Customer Care and Billing and passes it to Oracle Utilities Mobile Workforce Management. It is implemented in the Oracle Utilities Service Order Management Collection Information integration point.
- **Cancel FA**: Before attempting to cancel a Oracle Utilities Service Order Management orchestrated FA in Oracle Utilities Customer Care and Billing, a real-time service call to Oracle Utilities Service Order Management is made to determine if the FA is cancellable. It is implemented in Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query integration point.

The data process between the Oracle Utilities Customer Care and Billing and Oracle Utilities Service Order Management systems is illustrated below:



Oracle Utilities Customer Care and Billing - Oracle Utilities Service Order Management Integration Processes

Chapter 2

Understanding the Integration Process

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

2.1 Technical Overview

This direct integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Service Order Management uses the end-to-end integration processes.

The technical processes include the following:

- The integration comprises three different integration patterns, namely:
  - Asynchronous messages using queues on both the edge applications
  - Asynchronous messages using queue on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing.
  - Synchronous outbound messages on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing.
- Both Oracle Utilities Customer Care and Billing and Oracle Utilities Service Order Management interact with the integration layer using queues and web services.
- The integration layer is made up of BPEL composites deployed on the SOA Suite.

  Note: The data translations are handled by Domain Value Maps (DVMs) in the integration layer. The integration processes can be customized to extend the business processes, if needed.

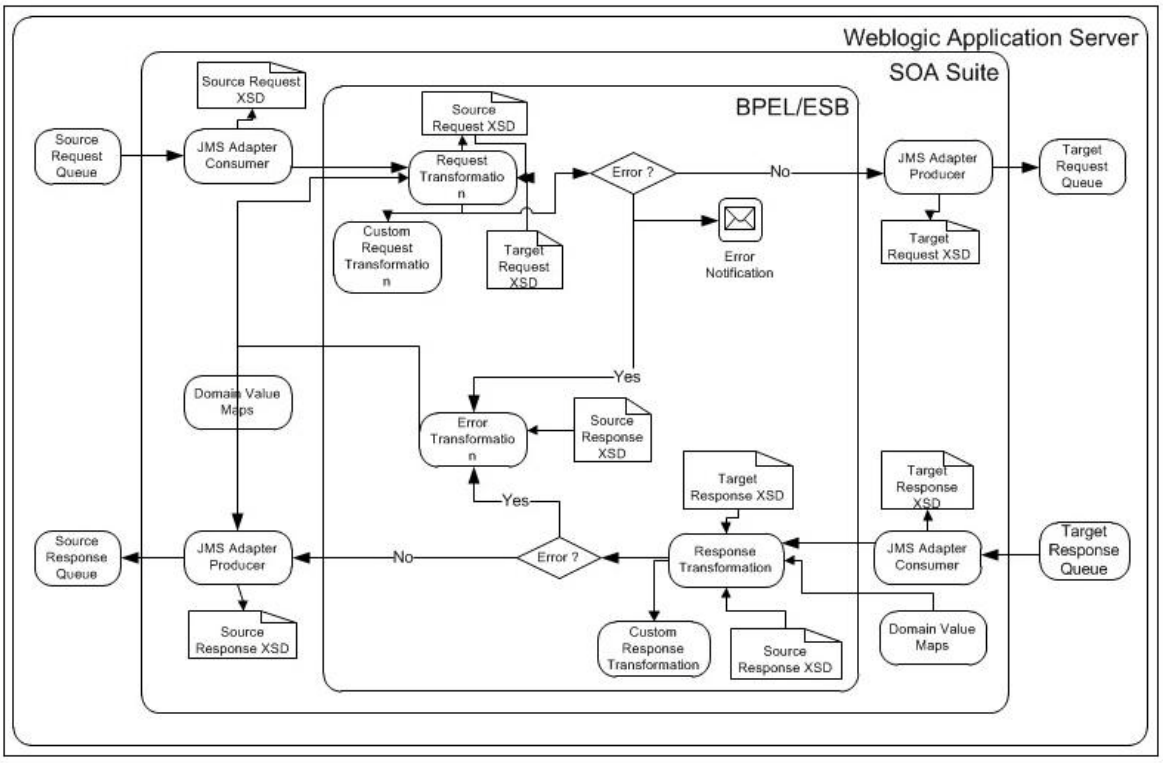
Asynchronous messages using queues on both the edge applications

The process uses queues on both Oracle Utilities Customer Care and Billing and Oracle Utilities Service Order Management. The pattern is used in Oracle Utilities Customer

Care and Billing FA Synchronization Request and Oracle Utilities Service Order Management FA Synchronization Response integration processes.

The process is as follows:

1. Oracle Utilities Customer Care and Billing adds the request message to the source request queue.
2. The integration process consumes the message and transforms it into the Oracle Utilities Service Order Management format using xsl. DVMs are used for data translations.
3. The transformed message is put into a target request queue for Oracle Utilities Service Order Management to consume.
4. For any business errors during the transformation, a business fault is thrown in the integration layer. For any remote/technical errors, a technical fault is thrown in the integration layer.
5. Optional E-mail notifications are sent for business and technical errors.

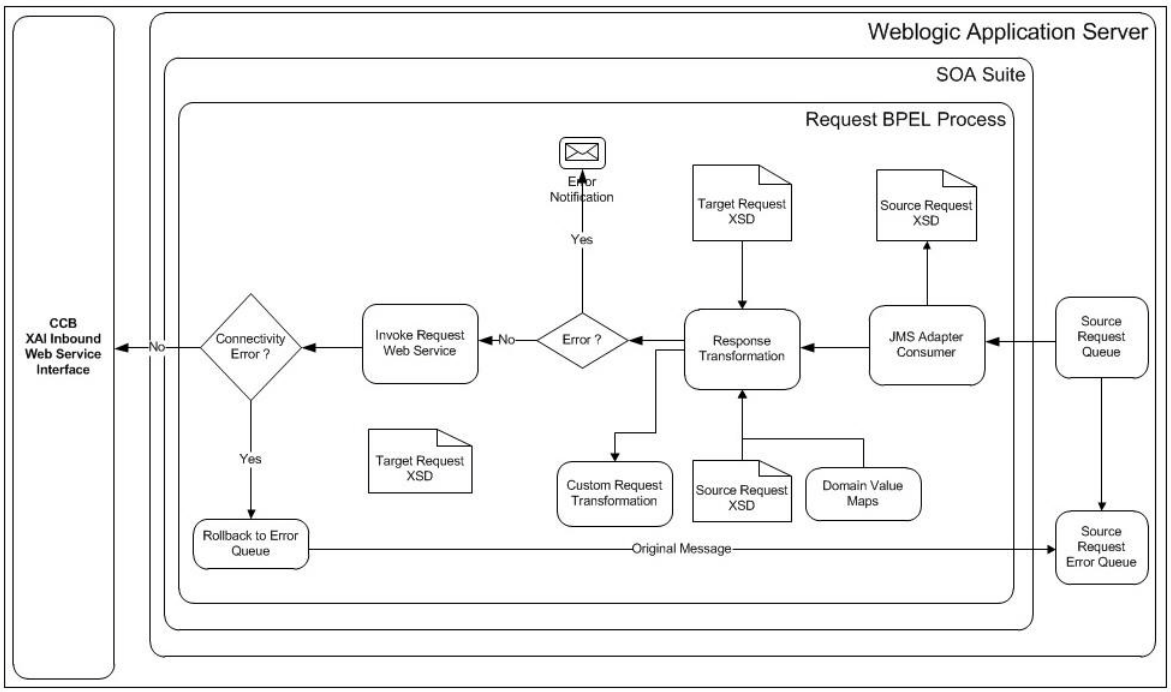


Asynchronous messages using queue on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing

The process uses queues on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing. This pattern is used in the Oracle Utilities Service Order Management Service Request Update and Oracle Utilities Service Order Management FA Completion integration processes.

The process is as follows:

1. Oracle Utilities Service Order Management adds request message to the Oracle Utilities Service Order Management request queue.
2. Integration process consumes the message and transforms it into the Oracle Utilities Customer Care and Billing format using xsl. DVMs are used for data translations.
3. The transformed message is sent to Oracle Utilities Customer Care and Billing by invoking the XAI Inbound web service.
4. For any business error, a business fault is thrown. For any technical errors, the messages are roll backed into the Oracle Utilities Service Order Management Request Error Queue. These messages can be resent from the integration layer to Oracle Utilities Customer Care and Billing.
5. Optional E-mail notifications are sent for business and technical errors.



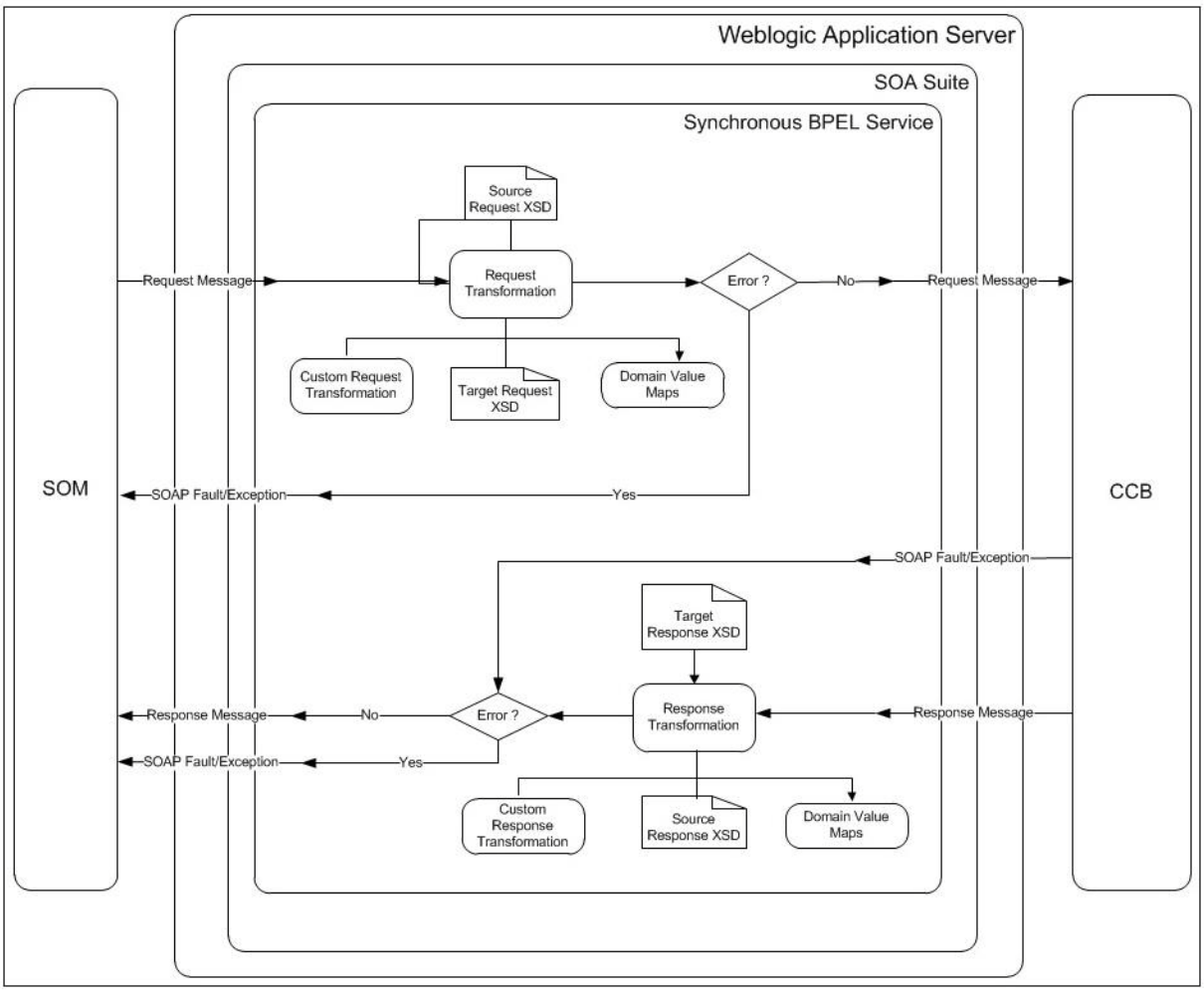
Synchronous outbound messages on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing

The process uses an outbound message on Oracle Utilities Service Order Management and XAI inbound web service on Oracle Utilities Customer Care and Billing. This pattern is used in Oracle Utilities Service Order Management Collection Information and Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query integration processes.

The process is as follows:

1. Oracle Utilities Service Order Management invokes the integration process to send request messages to Oracle Utilities Customer Care and Billing.
2. The integration process transforms messages from the Oracle Utilities Service Order Management format into the Oracle Utilities Customer Care and Billing format using xsl. DVMs are used for data translations.

3. The transformed messages are sent to Oracle Utilities Customer Care and Billing by invoking the XAI Inbound web service.
4. For any transformation error, a fault message is sent back to Oracle Utilities Service Order Management.
5. Oracle Utilities Customer Care and Billing XAI Inbound Service responds with a message in the Oracle Utilities Customer Care and Billing format.
6. The integration process transforms the message from Oracle Utilities Customer Care and Billing format into the Oracle Utilities Service Order Management format using xsl. DVMs are used for data translations.
7. The response message is sent back to Oracle Utilities Service Order Management synchronously.
8. Optional E-mail notifications are sent for business and technical failures.



Extensibility Options

The integration processes offer the following extension scopes:

- Pre-transformation extension scope
- Pre-invoke extension scope
- Post-invoke extension scope
- Post-transformation extension scope
- Custom transformations
  - Request custom transformation
  - Response custom transformation
- Override transformations
  - Request override transformation
  - Response override transformation

2.2 Integration Points

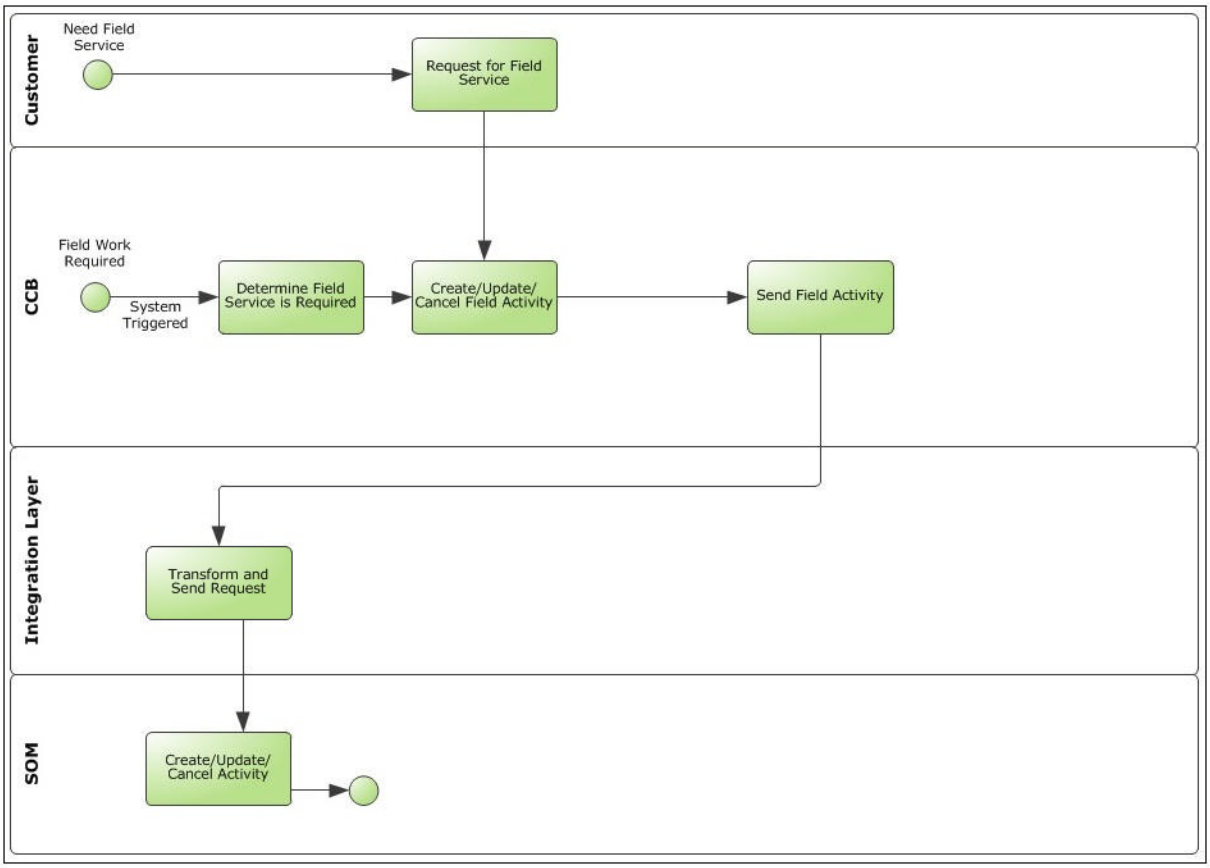
The integration supports the following business processes:

- Oracle Utilities Customer Care and Billing FA Synchronization Request
- Oracle Utilities Service Order Management FA Synchronization Response
- Oracle Utilities Service Order Management FA Completion
- Oracle Utilities Service Order Management Service Request Update
- Oracle Utilities Service Order Management Collection Information
- Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query

2.2.1 Oracle Utilities Customer Care and Billing FA Synchronization Request

Oracle Utilities Customer Care and Billing sends create/update/cancel field activity request messages to Oracle Utilities Service Order Management which create the corresponding service request orchestrators in Oracle Utilities Service Order Management and creates/updates/cancels an activity. Oracle Utilities Service Order Management sends the response back to Oracle Utilities Customer Care and Billing later using the FA Synchronization Response integration point. Oracle Utilities Customer Care and Billing sends the syncRequestId, premise details, and person details.

The following diagram provides a graphical representation of the FA Synchronization Request process:



2.2.1.1 Business Processing

The FA Synchronization Request process includes the following activities:

1. Oracle Utilities Customer Care and Billing adds the field activity sync request message to the Oracle Utilities Customer Care and Billing field activity request queue.
2. The integration CCBSOMFASyncReqEBF consumes the message from CCBFASyncRequest JMS queue and transforms it into the Oracle Utilities Service Order Management format.
3. The transformed message is put into the SOMFASyncRequest JMS queue for Oracle Utilities Service Order Management to consume.
4. For any transformation errors, a business fault is thrown by the integration process.
5. If the process fails to send messages to the SOMFASyncRequest JMS queue, the integration process retries thrice, and then a technical fault is thrown in the integration process.
6. The e-mail notification is sent to the users by the integration based on the error notification flag configuration value.

2.2.1.2 Technical Details

This section provides details of the composites and JMS queues used for the FA Synchronization Request integration point.

Composites

Composite Name	Description
CCBSOMFASyncReqEBF	Receives the FA sync request message from the Oracle Utilities Customer Care and Billing queue and adds the transformed message into the Oracle Utilities Service Order Management queue.

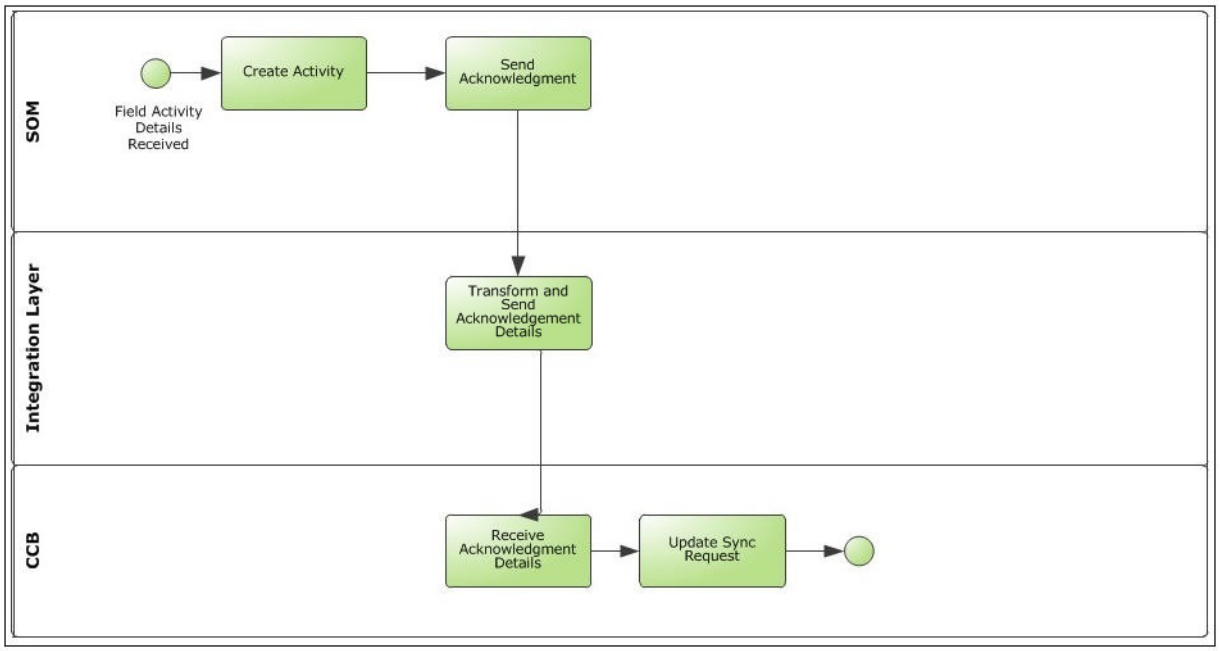
JMS Queues

Queue Name	Description
CCBFASyncRequest	Oracle Utilities Customer Care and Billing FA Sync Request queue used by the integration to read the Oracle Utilities Customer Care and Billing FA Sync request messages.
CCBFASyncRequestError	Error queue for the CCBFASyncRequest queue
SOMFASyncRequest	Oracle Utilities Service Order Management FA Sync Request queue used by the integration to add transformed FA Sync request messages.
SOMFASyncRequestError	Error Queue for the SOMFASyncRequest queue

2.2.2 Oracle Utilities Service Order Management FA Synchronization Response

Oracle Utilities Service Order Management sends the create/update/cancel field activity response messages to Oracle Utilities Customer Care and Billing. Oracle Utilities Service Order Management sends the activity ID and externalReferenceId in the input.

The following diagram provides a graphical representation of the FA Synchronization Response process:



2.2.2.1 Business Processing

The FA Synchronization Response process includes the following activities:

1. Oracle Utilities Service Order Management adds the field activity sync response message to the Oracle Utilities Service Order Management response queue.
2. Integration SOMCCBFASyncRespEBF consumes the message from the SOMFASyncResponse JMS queue and transforms it into the Oracle Utilities Customer Care and Billing format.
3. The transformed message is put in the CCBFASyncResponse JMS queue for Oracle Utilities Customer Care and Billing to consume.
4. For any transformation errors, a business fault is thrown by the integration process.
5. If the process fails to send messages to the CCBFASyncResponse JMS queue, the integration process retries thrice, and then a technical fault is thrown in the integration process.
6. The e-mail notification is sent by the integration to the users based on the error notification flag configuration value.

2.2.2.2 Technical Details

This section provides details of the composites and JMS queues used for the FA Synchronization Response integration point.

Composites

Composite Name	Description
SOMCCBFASyncRespEBF	Receives the FA sync response message from the Oracle Utilities Service Order Management queue and adds the transformed message into the Oracle Utilities Customer Care and Billing queue.

JMS Queues

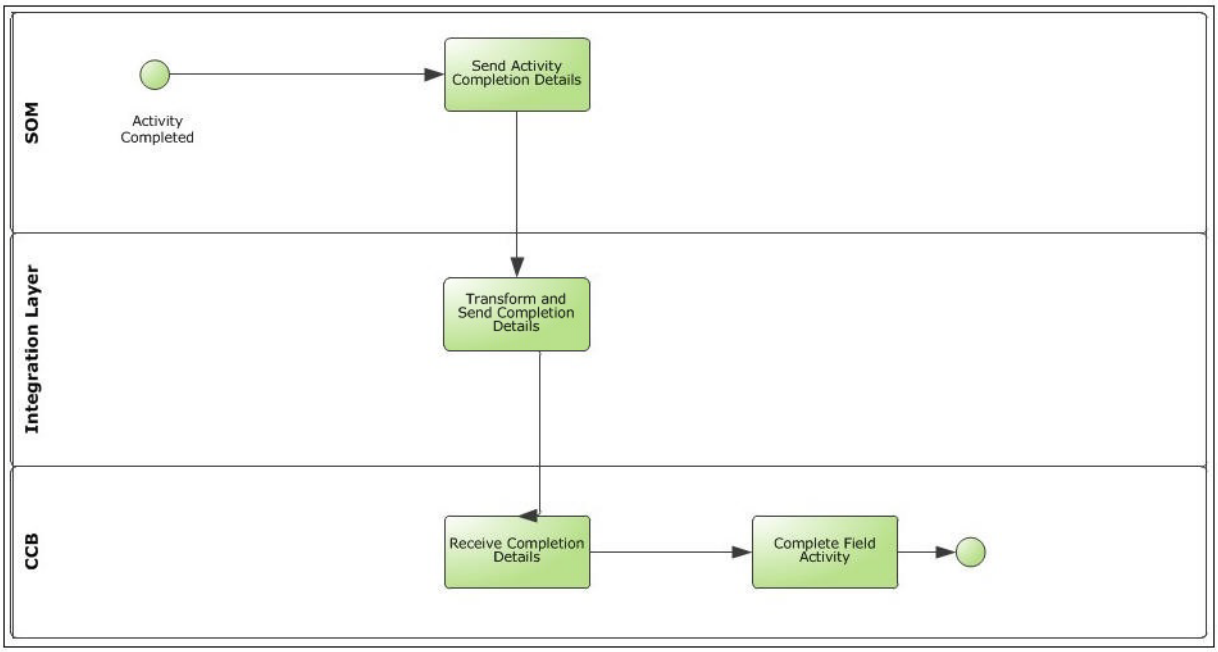
Queue Name	Description
SOMFASyncResponse	Oracle Utilities Service Order Management FA sync response queue used by the integration layer to read the incoming messages from Oracle Utilities Service Order Management.
SOMFASyncResponseError	Error queue for the SOMFASyncResponse queue
CCBFASyncResponse	Oracle Utilities Customer Care and Billing FA sync response queue used by the integration layer to add transformed FA sync response messages.
CCBFASyncResponseError	Error queue for the CCBFASyncResponse queue

2.2.3 Oracle Utilities Service Order Management FA Completion

FA Completion is a Oracle Utilities Service Order Management initiated integration process. In this process, Oracle Utilities Service Order Management sends the field activity completion message to Oracle Utilities Customer Care and Billing. For Non-Pass Thru activities, Oracle Utilities Service Order Management sends only success/failure response. For Pass-Thru activities, the entire field activity completion details are sent to Oracle Utilities Customer Care and Billing.

The Oracle Utilities Service Order Management input includes activity ID, SR CompletionInformation, and address information.

The following diagram provides a graphical representation of the FA Completion process:



2.2.3.1 Business Processing

The FA Completion process includes the following activities:

1. Oracle Utilities Service Order Management adds the field activity completion request message to the Oracle Utilities Service Order Management request queue.
2. Integration SOMCCBFACompletionReqEBF consumes the message from the SOMFACompletionRequest JMS queue and transforms it into the Oracle Utilities Customer Care and Billing format.
3. The transformed message is sent to Oracle Utilities Customer Care and Billing by invoking the **C1FACompletionServiceRequest** XAI inbound service > **C1FACompletionServiceRequest** operation.
4. For any errors in Oracle Utilities Customer Care and Billing while processing the request sent by Oracle Utilities Service Order Management, a business fault is thrown by the integration process.
5. In case of connectivity issues/remote faults, the integration process retries thrice, and then a technical fault is thrown in the integration process if the connection is not restored.
6. The e-mail notification is sent by the integration to the users based on the error notification flag configuration value.

2.2.3.2 Technical Details

This section provides details of the composites, JMS queues, and Oracle Utilities Customer Care and Billing services used for the FA Completion integration point.

Composites

Composite Name	Description
SOMCCBFACompletionReqEBF	Reads the FA completion request message from the Oracle Utilities Service Order Management queue and sends the transformed message to the Oracle Utilities Customer Care and Billing XAI inbound service.

JMS Queues

Queue Name	Description
SOMFACompletionRequest	Oracle Utilities Service Order Management FA Completion request queue used by the integration to read the field activity completion request messages from Oracle Utilities Service Order Management.
SOMFACompletionRequestError	Error queue for the SOMFACompletionRequest queue

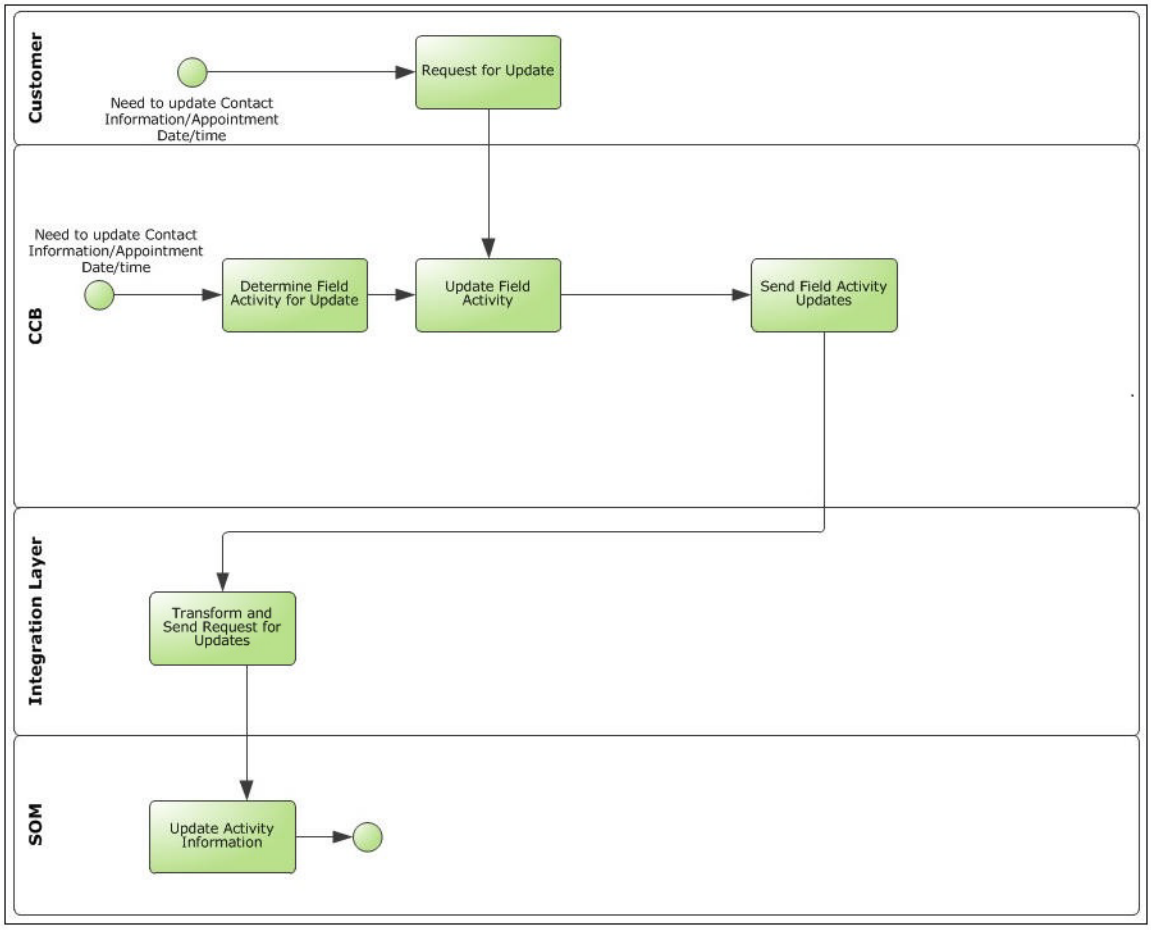
Oracle Utilities Customer Care and Billing Services

Service Name	Operation Name	Description
C1FACompletionService Request	C1FACompletion ServiceRequest	Used to complete the field activities managed by Oracle Utilities Service Order Management. It creates either a FA Completion Sync Request or FA Completion Task.

2.2.4 Oracle Utilities Service Order Management Service Request Update

Service Request Update is an Oracle Utilities Service Order Management initiated integration process used to accept Customer Contact/Appointment Notification or Missed Appointment message sent by Oracle Utilities Service Order Management. The Oracle Utilities Service Order Management input includes activity ID, FA ID, and address.

The following diagram shows a graphical representation of the Service Request Update process:



2.2.4.1 Business Processing

The Service Request Update process includes the following activities:

1. Oracle Utilities Service Order Management adds the request message to the Oracle Utilities Service Order Management Request queue.
2. Integration SOMCCBSRUpdateReqEBF consumes the message from the SOMSRUpdateRequest JMS queue and transforms it into the Oracle Utilities Customer Care and Billing format.
3. The transformed message is sent to Oracle Utilities Customer Care and Billing by invoking the **C1-ServiceRequestUpdateRequest** XAI inbound service > C1-**ServiceRequestUpdateRequest** operation.
4. For any error in Oracle Utilities Customer Care and Billing while processing the request sent by Oracle Utilities Service Order Management, a business fault is thrown by the integration process.
5. In case of connectivity issues/remote faults, the integration process retries thrice, and then a technical fault is thrown in the integration process if the connection is not restored.

6. The e-mail notification is sent by the integration to the users based on the error notification flag configuration value.

2.2.4.2 Technical Details

This section provides details of the composites, JMS queues, and Oracle Utilities Customer Care and Billing services used for the FA Request Update integration point.

Composites

Composite Name	Description
SOMCCBSRUpdateReqEBF	Receives the SR update request message from the Oracle Utilities Service Order Management queue and transforms it into the Oracle Utilities Customer Care and Billing format.

JMS Queues

Queue Name	Description
SOMSRUpdateRequest	Oracle Utilities Service Order Management SR Update Request queue used by integration to read Oracle Utilities Service Order Management Request messages.
SOMSRUpdateRequestError	Error queue for the SOMSRUpdateRequest queue

Oracle Utilities Customer Care and Billing Services

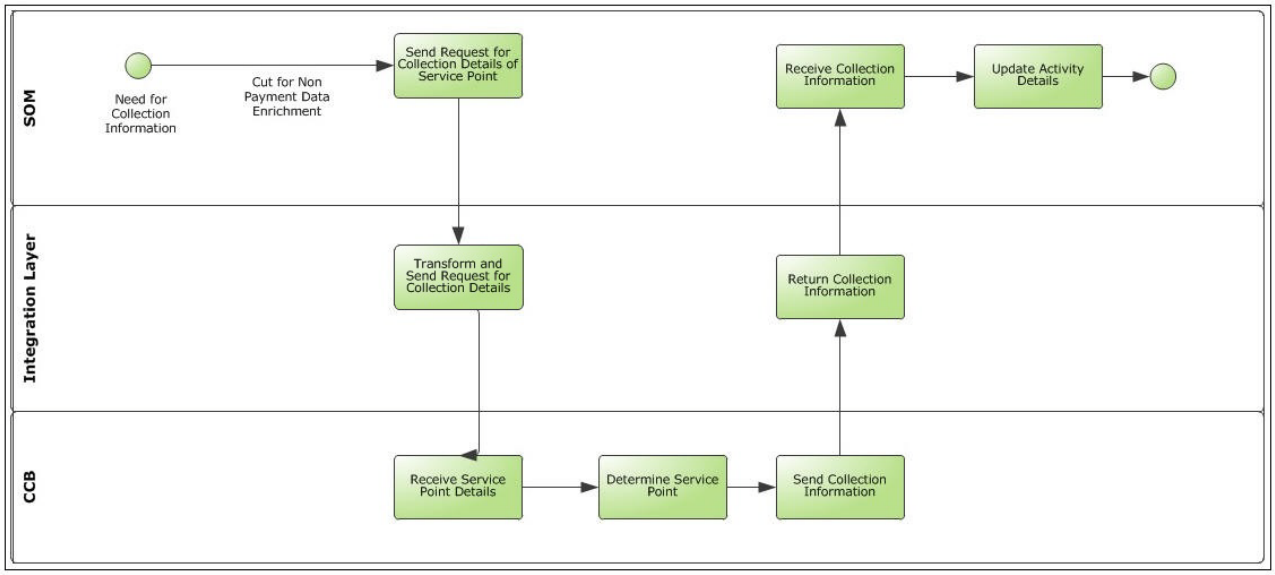
Service Name	Operation Name	Description
C1-ServiceRequest UpdateRequest	C1-ServiceRequest UpdateRequest	Used to perform the following requests from Oracle Utilities Service Order Management: • Create Customer Contact • Appointment Notification • Missed Appointment Notification • Field Activity Remarks

2.2.5 Oracle Utilities Service Order Management Collection Information

Collection Information is a Oracle Utilities Service Order Management initiated integration process used to accept the request for Collection Information message sent by Oracle Utilities Service Order Management and return the Collection Information from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management. After a field activity sync request is sent from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management, FA is created in Oracle Utilities Service Order Management and Oracle Utilities Service Order Management

requests Oracle Utilities Customer Care and Billing for the service point's collection information by sending the service point ID for which Oracle Utilities Customer Care and Billing sends the respective person's collection details to Oracle Utilities Service Order Management.

The following diagram provides a graphical representation of the process:



2.2.5.1 Business Processing

The Collection Information process includes the following activities:

1. Oracle Utilities Service Order Management sends request message to the integration layer by invoking a web service in the integration layer.
2. The SOMCCBCollectionInfoEBF process transforms the request message from Oracle Utilities Service Order Management to the request message format in Oracle Utilities Customer Care and Billing and invokes the **C1-ServiceRequestFinancialInfo** XAI inbound web service > **C1-ServiceRequestFinancialInfo** operation.
3. Oracle Utilities Customer Care and Billing sends the success or failure response to the integration that is transformed and sent to Oracle Utilities Service Order Management.
4. In case of connectivity issues/remote faults, the integration process retries thrice. The error response message is sent back to Oracle Utilities Service Order Management and a technical fault is thrown in the integration process if the connection is not restored.
5. For any errors in Oracle Utilities Customer Care and Billing in processing the request sent by Oracle Utilities Service Order Management, a business fault is thrown by the integration process.
6. The e-mail notification is sent by the integration to the users based on the error notification flag configuration value.

2.2.5.2 Technical Details

This section provides the details of the composites and Oracle Utilities Customer Care and Billing services used for the Collection Information integration point.

Composites

Composite Name	Description
SOMCCBCollectionInfoEBF	Receives the collection information request message from Oracle Utilities Service Order Management and sends the transformed message to Oracle Utilities Customer Care and Billing

Oracle Utilities Customer Care and Billing Services

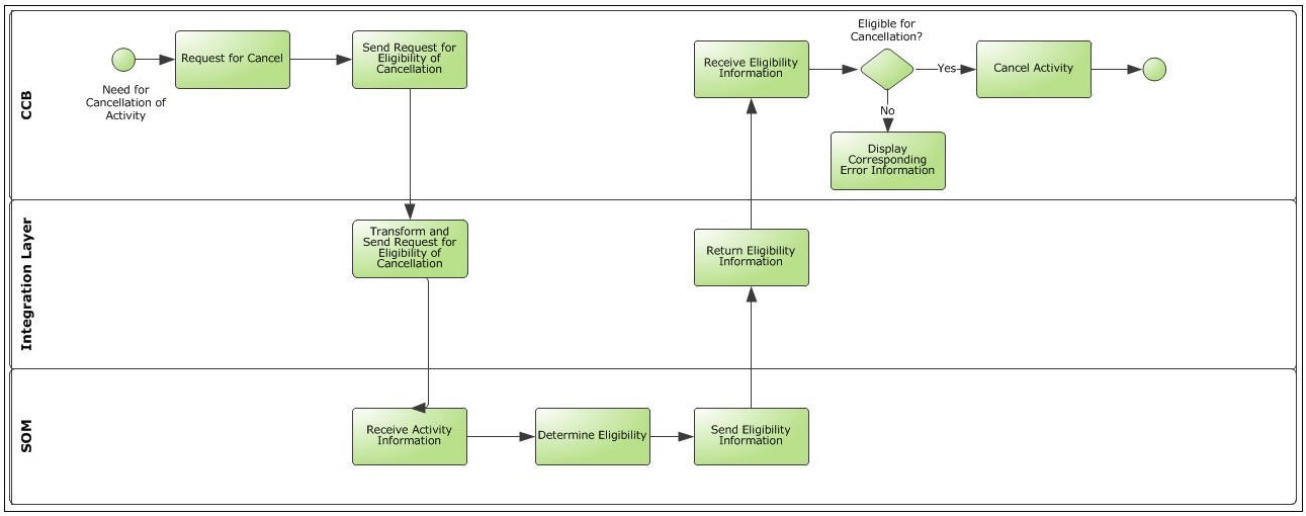
Service Name	Operation Name	Description
C1-ServiceRequest FinancialInfo	C1-ServiceRequest FinancialInfo	Used to retrieve the financial details - current and payoff balance, arrears buckets, last six payments, etc., for an account.

2.2.6 Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query

FA Cancel Eligibility Query is a Oracle Utilities Customer Care and Billing initiated integration process that checks for the field activity cancel eligibility in Oracle Utilities Customer Care and Billing.

Before attempting to cancel a field activity in Oracle Utilities Customer Care and Billing, a real-time service call to Oracle Utilities Service Order Management is made to determine if the FA is cancellable. Service response include Cancellable, Non-Cancellable, and Undetermined. The Undetermined scenario can mean that the FA has been dispatched, but there is still a chance for successful cancellation. In this case, a warning is thrown, and when the user confirms, the Oracle Utilities Customer Care and Billing FA is cancelled.

The following diagram provides a graphical representation of this process:



2.2.6.1 Business Processing

The FA Cancel Eligibility Query process includes the following activities:

1. Oracle Utilities Customer Care and Billing sends the field activity cancel ability check request message to the integration layer by invoking a web service in the integration layer.
2. The CCBSOMCancelFAEligibilityQueryReqEBF process transforms the request message from Oracle Utilities Customer Care and Billing to the request message format in Oracle Utilities Service Order Management and invokes the **D1-TestFACancellability** XAI inbound web service > **D1-TestFACancellability** operation.
3. Oracle Utilities Service Order Management sends the success or failure response to the integration that is transformed and sent to Oracle Utilities Customer Care and Billing.
4. In case of connectivity issues/remote faults, integration process retries thrice. The error response message is sent back to Oracle Utilities Customer Care and Billing and a technical fault is thrown in the integration process if the connection is not restored.
5. If there is any error in Oracle Utilities Service Order Management while processing the request sent by Oracle Utilities Customer Care and Billing, the error response message is sent back to Oracle Utilities Customer Care and Billing and a business fault is thrown by the integration process.
6. The e-mail notification is sent by the integration to the users based on the error notification flag configuration value.

2.2.6.2 Technical Details

This section provides details of the composites and Oracle Utilities Service Order Management services used for the Cancel Eligibility Query integration point.

Composites

Composite Name	Description
CCBSOMCancelFAEligibility QueryReqEBF	Receives the FA cancel eligibility request from Oracle Utilities Customer Care and Billing and sends the transformed message to Oracle Utilities Service Order Management

Oracle Utilities Service Order Management Services

Service Name	Operation Name	Description
D1-TestFACancellability	D1-TestFACancellability	Invoked by the integration layer to determine the cancellability of an orchestration or specific field activity.

Part 2

Implementing the Integration Product

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

The section contains the following chapters:

- Configuring the Integration
- Monitoring and Troubleshooting
- Customization Options

Chapter 3

Configuring the Integration

This section provides details about the configuration settings required for the integration, and also discusses the following in detail:

- Integration Configuration Checklist
- Data Synchronization
- Setting Up Oracle Utilities Customer Care and Billing
- Setting Up Oracle Utilities Service Order Management
- Setting Up Process Integration

3.1 Integration Configuration Checklist

In order to implement the integration between Oracle Utilities Customer Care and Billing and Oracle Utilities Service Order Management, the respective applications need to be configured. For complete details, see the following sections:

- Oracle Utilities Customer Care and Billing Configuration Checklist
- Oracle Utilities Service Order Management Configuration Checklist
- Integration Product Configuration Checklist

  Note: See the product documentation for Oracle Utilities Customer Care and Billing or Oracle Utilities Service Order Management for the configuration information.

3.1.1 Oracle Utilities Customer Care and Billing Configuration Checklist

Complete the administrative data setup as needed to implement the integration. See the Setting Up Oracle Utilities Customer Care and Billing section for more details.

3.1.2 Oracle Utilities Service Order Management Configuration Checklist

Complete the administrative data setup as needed to implement the integration. See the Setting Up Oracle Utilities Service Order Management section for more details.

3.1.3 Integration Product Configuration Checklist

In the integration layer, configure the system properties in the configuration properties file and the Domain Value Maps (DVMs).

- Setting Configuration Properties for the Integration Layer: Set the system properties in the ConfigurationProperties.xml file.
- Setting Domain Value Maps for the Integration Layer: Set the Domain Value Maps to map the codes and other static values across applications.

3.2 Data Synchronization

Oracle Utilities Customer Care and Billing manages the customer (person), account (service agreement), and service point details. And, the person, service point (SP), and service agreement (SA) details from Oracle Utilities Customer Care and Billing need to be synchronized in Oracle Utilities Service Order Management for the integration to work.

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

3.3 Setting Up Oracle Utilities Customer Care and Billing

This section describes the procedure to configure Oracle Utilities Customer Care and Billing to meet the requirements for this integration.

Setting up Oracle Utilities Customer Care and Billing includes the following:

- Configuring Admin Data Tables
- Configuring System Data Tables
- Oracle Utilities Customer Care and Billing JMS Configuration
- Oracle Utilities Customer Care and Billing XAI Configuration

For more information on configuring and working with Oracle Utilities Customer Care and Billing, see the Oracle Utilities Customer Care and Billing standard documentation.

Note: 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.

3.3.1 Configuring Admin Data Tables

The table below shows the unique setup data required to configure the system for this integration.

Column	Description	Navigation	Guideline	Corresponding DVM
Country	Creates the required country code in Oracle Utilities Customer Care and Billing. Use the **Main** page 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 defined.	Admin > C > Country	Create the country codes	CCB_SOM_Country
Disconnect Location	Creates the required Disconnect Location codes in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match the values in the DVM indicated. When a service point is disconnected from the supply source, a disconnect location must be specified. This location defines where service was severed.	Admin > D > Disconnect Location	Define the disconnect location codes	CCB_SOM_ DisconnectLocation
FA Cancel Reason	Creates the required FA cancel reason in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match values in the DVM indicated. One must also be selected as the system default value for Service Order Management	Admin > F> Fieldwork Cancel Reason	Define FA cancel reason	CCB_SOM_FACancel Reason
FA Type	Creates the required FA types in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match the values in the DVM indicated. They should be defined with no FA steps, non-dispatchable and fieldwork orchestration is Oracle Utilities Service Order Management.	Admin > F> Field Activity Type	Create FA types	CCB_SOM_FAType

Column	Description	Navigation	Guideline	Corresponding DVM
Remark Code	Creates the required remark code in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match values in the DVM indicated.	Admin > Remark Code	Define the code for remarks	CCB_SOM_ RemarkCode
Service Instructions	Creates the required service instructions in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match values in the DVM indicated.	Admin > Meter Read Instruction	Define service instructions	CCB_SOM_ ServiceInstructions
Service Warnings	Creates the required service instructions in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match values in the DVM indicated.	Admin > Meter Read Warning	Define service warnings	CCB_SOM_ ServiceWarnings

3.3.1.1 Master Configuration

On the **Oracle Utilities Customer Care and Billing Integration Master Configuration** page, click **Add** to configure the external communication, service order management task, and contact information.

External Communication

This information is used by Oracle Utilities Customer Care and Billing to communicate with Oracle Utilities Service Order Management.

For example: The **Field Activity** portal displays the service request overview containing the corresponding Oracle Utilities Service Order Management activity, as well as any related activities. The External System and Outbound Message Type defined in this section are used to request this information.

The Request Type identifies the various data requests that can be made to an external system. The External System and Outbound Message Type are used to create the outbound message for the data request.

Service Order Management Tasks

Use the Service Task Type to support service order management requests, such as appointment booking and confirmation, missed appointment notification, customer contact creation, field activity remarks creation, and others. Also, it is used to create an instance of a service task.

Contact Information

Define the phone types to be used to retrieve the contact information to be included in the information sent to Oracle Utilities Service Order Management as part of sending the FA Sync Request.

Note: [External System] denotes the name of the master configuration which is configurable by the user. The field values also can be configured in the implementation:

Navigation	Field	Sample Value
Admin > **M** > **Master Configuration** > [External System] > **Master Configuration Details** zone		
	External Communication > Request Type • Field Activity Information • Field Activity Cancellability	External Communication > Outbound Message Type • SOM (Integration) - FA Information OB Message • SOM (Integration) - FA Cancellability OB Message
	Service Order Management Task > Service Order Management Task • Appointment Notification • Customer Contact	Service Order Management Task > Service Task Type • SOM (Integration) - Appointment Notification • SOM (Integration) - Create Customer Contact
	Contact Information	FA contact information that includes Main Phone Type for Person, Business, and Cell Phone Type
	Field Activity Type Profile Overview	Defaults according to your business requirements. For example: start activity

3.3.2 Configuring System Data Tables

To use the system data tables, configure the following:

- Business Objects
- BO Algorithms
- Lookups

3.3.2.1 Business Objects

The table below lists the business objects to be configured in Oracle Utilities Customer Care and Billing.

Business Object	Description
C1-ServiceRequestFieldActivity	Specified as Business Object to Read in FA Synch Request's (C1-FASyncRequest) business object option and is used to capture initial and final FA snapshot to be synced to Oracle Utilities Service Order Management. The data area - C1-ServiceRequestFieldActivity, included in this business object may be extended by implementation, with additional FA attributes, as required.
C1-SOMFieldActivity	Captures the field activity information of pass thru pick-up order instantiated during the processing of Field Activity Completion Task.
C1-FieldActivityRemarkTask	Processes the field activity remark request from Oracle Utilities Service Order Management.
C1-FieldActivityRemarkTaskType	Captures the information to use in create field activity remark task processing.
C1-ServiceRequestIntegration	Captures the configuration required by the integration.
C1-FASyncRequest	Defines the behavior of an outbound FA sync request to Oracle Utilities Service Order Management. Configure the Outbound Message Type to create the outbound sync request. The base package includes BO C1-FASyncReqOutMsg for the Oracle Utilities Service Order Management FA Sync. See **Defining Outbound Message Types** in the user documentation for more information.
C1-ServiceRequestTask	Holds the common schema elements and life cycle of the Oracle Utilities Service Order Management flows, such as appointment notification, missed appointment, and customer contact creation.
C1-ServiceRequestTaskType	Used as a parent service task type BO for service order management related task type BOs (i.e. appointment notification, missed appointment and customer contact creation requests).
C1-NotifyAppointmentTask	Processes the appointment booking request and confirmation from Oracle Utilities Service Order Management.
C1-NotifyAppointmentTaskType	Captures the information to use in the appointment notification processing.
C1-NotifyMissedAppointmentTask	Contains the actions and processes to be executed when Oracle Utilities Customer Care and Billing receives a missed appointment notification from Oracle Utilities Service Order Management.

Business Object	Description
C1-NotifyMissedApptTaskType	Captures the information to be used in the missed appointment processing.
C1-CreateCustomerContactTask	Processes the customer contact creation request from Oracle Utilities Service Order Management.
C1-CreateCustContactTaskType	Captures the information used in creating customer contact when processing the service task.
C1-FACompletionTask	Created by the field activity completion inbound service and captures the completion information from the service, used to complete a field activity.
C1-FACompletionTaskType	Captures the attributes used in field activity completion task processing.
C1-FASyncReqOutMsg	Contains the elements necessary to build a sync request outbound message. Define this business object on the outbound message type your implementation configures for the MDM FA sync.
C1-ServiceRequestOutMsg	Requests the field activity tree information from Oracle Utilities Service Order Management. The information is displayed on the **Field Activity** portal.
C1-DeviceOverviewOutMsg	Requests the device information from Oracle Utilities Service Order Management. The information retrieved is displayed on the **Service Point** portal.
C1-DeviceConfigOutMsg	Requests the device configuration information from Oracle Utilities Service Order Management. The information retrieved is displayed on the **Control Central Premise Information** zone.
C1-FAInfoOutMsg	Requests the field activity information from Oracle Utilities Service Order Management. The information retrieved is concatenated to Oracle Utilities Customer Care and Billing field activity information.
C1-FACancellabilityOutMsg	Contains the request sent to Oracle Utilities Service Order Management to determine if the field activity can be cancelled.
C1-PremiseSOMActivityOutMsg	Retrieves the premise's activities from Service Order Management. The information retrieved is displayed on the Control Central Account Information and Premise portal zones.

3.3.2.2 BO Algorithms

The table below describes the BO algorithms for the integration.

BO Algorithm Type	Description
C1-CAPFASSI (Capture FA-Based Initial Snapshot)	Builds the initial snapshot for the FA Sync Request. At first, the FA type's fieldwork orchestration is interrogated to verify is sync is needed. Algorithm terminates if FA to be synced is not managed by Service Order Management. The read BO, snapshot data area and post script are obtained from the FA sync request's BO options. This entire set of information is captured in the snapshot data area. Post script on BO option allows implementations to perform further manipulation on the data if necessary. Also see the service script C1-ConMDM2En called by this algorithm to build the snapshot. It is a generic script that can be used if only one "read" BO is used to build the data and the snapshot data area does not need any further manipulation prior to the execution of the post script. Once the algorithm has determined the values above, it stores them in the sync request schema so that the same values may be used later in building the final snapshot. See algorithm type C1-CAPFASSF.
C1-CAPFASSF (Capture FA Final Snapshot)	Builds the final snapshot of FA Sync Request. To accomplish this, it uses values stored in the sync request as determined by the algorithm that built the initial snapshot. See C1-CAPFASSI for more information. Also see the generic service script C1-ConMDM2En called by this algorithm to build the snapshot.
C1-FA-PDTSY (Check If Related Non-Final Syncs Exist for the FA)	Checks existence of non-final FA related sync requests such as SA and SP. It ensures that related sync requests are completed before sending over the FA sync request.
C1-FASYNCELG (Wait For Related Sync To Complete)	Checks the eligibility of the FA sync request. Request is discarded due to the following conditions: • FA to be synched has been completed • FA to be synched has been cancelled with cancel reason indicating Oracle Utilities Service Order Management initiated cancellation. • FA to be synched has been cancelled but the FA has not yet been synced over to Oracle Utilities Service Order Management. Log entry will be created to indicate that synchronization is not required if the FA sync request is discarded.
C1-ADDLFAINF (Capture Additional FA Information)	Populates the FA Information with the following: • Service agreements and event type list from FA's SA/ SP • Aaddress details from SP's premise • SP's service point type

BO Algorithm Type	Description
C1-GETGEOLL (Retrieve Latitude/Longitude Geographic Value	Retrieves the geographic value that holds the concatenated latitude and longitude information from the FA's service point, using the feature configuration's schema constant option for geographic type. If not available from the SP, the value is obtained from the SP's premise. If a geographic value is available, it is split its components - latitude and longitude and stamped on the FA sync request.
C1-CAPFACINF (Capture FA Contact Information)	Sends the contact information of the person linked to a Field Activity. In a back-to-back situation, specify if the contact information of the person linked to the stop or to the start should be sent. • If value is "ST" (Start): Contact information for the first person retrieved that is linked to the activity with activity type of start will be sent • If value is "SP" (Stop): Contact information for the first person retrieved that is linked to the activity with activity type of stop will be sent • If not provided or blank: Contact information for the first person retrieved that is linked to the activity will be sent
C1-TRANSFASP (Transition Related FA From SP Sync)	Retrieves FA sync request related to the SP sync request and auto-transitions them.
C1-TRANSFASA (Transition Related FA From SA Sync)	Retrieves FA sync request related to the SA sync request and auto-transitions them.
C1-NTFYAPPT (Process Appointment Notification)	Processes the following appointment notifications received from Oracle Utilities Service Order Management: • Appointment Needed: This request type creates a to do entry using the to do type specified in the appointment notification service task type. The to do entry is stamped with the FA Id that required an appointment. • Appointment Scheduled: This request type finds all outstanding to do entries associated with the FA that required an appointment and completes them.
C1-MISSEDAPP (Process Missed Appointment Notification)	Creates an adjustment using the adjustment type specified in the service task's type, against the SA associated with the FA's SP.
C1-CREATECC (Create Customer Contact)	Creates customer contact, initiated by Service Order Management for the main person associated with FA's service point, using customer class obtained from feature configuration's schema constants option and customer contact type obtained from the service task type.
C1-SRTSKINFO (Service Order Management Task Information)	Formats service order management service task information that appears throughout the system. Info String format is service task type description, BO status description, Customer name, Create date/time

BO Algorithm Type	Description
C1-CREFASOM (FA Completion - Create FA)	Creates a field activity using the service point, field activity type and field activity date time stamped on the FA completion service task. It applies to non-Customer Care & Billing owned field activities (pick-up orders) that are initiated by the fieldwork system with the completion information routed to Customer Care & Billing by Service Order Management. The field activity to be created also has to be a "pass thru" - as identified by the population of the srCompletionMessage node of the service task. The newly created FA is stamped on the service task.
C1-FACUPDMST (FA Completion - Update Master Data)	Updates the following master data: SP, item and meter and customer contact. It applies to non-Customer Care & Billing owned field activities (pick-up orders) that are initiated by the fieldwork system with the completion information routed to Oracle Utilities Customer Care and Billing by Oracle Utilities Service Order Management. Master data update information is obtained from the srCompletionMessage node of the service task. After the master data updates, the field activity steps are completed via field activity upload process. To do entry will also be created for crew messages specified in the completion details - with to do type obtained from the service task type.
C1-CREFAADJT (FA Completion - Create Adjustment And/Or To Do)	Creates an adjustment and/or to do for field activity completion. It applies to non-Customer Care & Billing owned field activities (pick-up orders), that are initiated by the fieldwork system with the completion information routed to Customer Care & Billing by Service Order Management. The adjustment type is obtained from the Service Task Type using the field activity type stamped on the service task. If the adjustment type cannot be identified or if the field activity type is not included in the mapping, adjustment will not be created. Adjustment's service agreement is obtained from the service point stamped on the service task. If a billable service agreement cannot be identified from the service point, the service task transitions to error. To do type used in the to do creation is also obtained from the service task type. This algorithm is applicable only if field activity is not stamped on the service task.

3.3.2.3 Lookups

To configure the lookups, follow these steps:

1. On the **Admin** menu, navigate to **L** > **Lookup**.

2. Enter the **Field Name** (from the table below), and then enter the respective values.

Column	Description	Field Name	Guideline	Corresponding DVM
App Request	System delivered values. The codes defined here must exactly match the values in the DVM indicated.	C1_APPT_REQ_TYPE_FLG	Create the appointment request type	CCB_SOM_ApptRequestType
Completion Action Code	Creates the required completion action's code in Oracle Utilities Customer Care and Billing. The codes defined here must exactly match the values in the DVM indicated.	C1_SVC_REQ_COMP_ACT_FLG	Create completion action's code	CCB_SOM_Completion ActionCode
FA Status	System delivered values. The codes defined here must exactly match the values in the DVM indicated.	FA_STATUS_FLG	Define FA status	CCB_SOM_FAStatus
FA Check CancelAbility	System delivered values. The codes defined here must exactly match values in the DVM indicated.	C1_FA_CANCELLABILITY_FLG	Create FA check cancelability code	CCB_SOM_FA_CHECKCANCELLABILITY
SASPFAEventTy	System delivered values. The codes defined here must exactly match values in the DVM indicated.	SA_SP_FA_TYPE_FLG		CCB_SOM_SASPFA EventType
Update Event Type	System delivered values. The codes defined here must exactly match values in the DVM indicated.	C1_SVC_REQ_UPD_FLG	Define update event type	CCB_SOM_UpdateEventType
Service Request Cancel Reason	Configures the corresponding values from the Oracle Utilities Customer Care and Billing Field Activity Cancel Reason table.	C1_SVC_REQ_CAN_RSN_FLG	Service Request Cancel Reason	

3.3.3 Oracle Utilities Customer Care and Billing JMS Configuration

This section describes the JMS configuration to be done in the Oracle Utilities Customer Care and Billing WebLogic server and in the Oracle Utilities Customer Care and Billing deployment XML files. Configure the JMS to receive JMS messages from the integration layer.

- WebLogic Server JMS Configuration
- Configuration File Changes

3.3.3.1 WebLogic Server JMS Configuration

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

For example: http://CCB_HOST:7001/console

JMS Module

To 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: CCBSOMIntegrationModule

Foreign Server

To 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: CCBSOMForeignServer
   - **JNDI Initial Context Factory** – *weblogic.jndi.WLInitialContextFactory*
   - **JNDI Connection URL** – Add the URL for the Integration SOA server.
     Example: t3://SOA_HOST: SOA_PORT_NO
   - **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.
     A destination is created for each integration point.
5. Under the **Foreign** server, create a **Remote Connection Factory**.
   See example below.
   - **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

FA Sync Response

Destination Name	Local JNDI Name	Remote JNDI Name
CCBFASyncResponse	jms/CCB-SOM/ LocalCCBFASyncResponse	jms/CCB-SOM/ CCBFASyncResponse

Remote Connection Factory

Destination Name	Local JNDI Name	Remote JNDI Name
CCBSOMCF	jms/CCB-SOM/ LocalCCBSOMCF	jms/CCB-SOM/CCBSOMCF

3.3.3.2 Configuration File Changes

Configuring Message Driven Beans (MDB)

It is recommended that you use the Oracle Utilities Customer Care and Billing 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 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.
- **Extending existing templates:** For Oracle Utilities Customer Care and Billing version 2.4.0.3 or later, 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 integration:** To enable your changes for integration with Oracle Utilities Service Order 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.

Create an MDB to Receive Messages

To create an MDB to receive messages from the Oracle Utilities Customer Care and Billing inbound queue:

1. Create an 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, ensure the changes are done 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 an MDB for each Oracle Utilities Service Order Management inbound queue to receive messages and invoke the Oracle Utilities Service Order 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

   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.

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

        For example:

```
<message-driven>
     <description>MDB for CCBFASyncResponse</description>
     <display-name>CCBFASyncResponse</display-name>
     <ejb-name>CCBFASyncResponse</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>
```

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

        For example:

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

```
        </security-role>
        <container-transaction>
            <method>
                <ejb-name>CCBFASyncResponse</ejb-name>
                <method-name>onMessage</method-name>
            </method>
            <trans-attribute>NotSupported</trans-attribute>
        </container-transaction>
</assembly-descriptor>
```

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 are as follows:

- <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.

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

For example:

```
<weblogic-enterprise-bean>
<ejb-name>CCBFASyncResponse</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/LocalCCBFASyncResponse</destination-jndi-name>
<connection-factory-jndi-name>jms/LocalCCBSOMCF</connection-factory-jndi-
name>
</message-driven-descriptor>
</weblogic-enterprise-bean>
```

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

For example:

```
<jms-system-resource>
       <name>CCBSOMJMSModule</name>
       <target>myserver</target>
       <sub-deployment>
         <name>SOMIntegrationTest</name>
         <target>myserver</target>
       </sub-deployment>
       <descriptor-file-name>jms/Module-for-testing-SOM-integration-
jms.xml</descriptor-file-name>
     </jms-system-resource>
```

3.3.4 Oracle Utilities Customer Care and Billing XAI Configuration

This section describes the requirements for configuring XAI in Oracle Utilities Customer Care and Billing.

3.3.4.1 XAI JNDI Server

To create a new XAI JNDI server pointing to the integration SOA server:

1. In the **Admin** menu, navigate to **XAI JNDI Server**.
2. Enter the XAI JNDI server name.
   Example: CCBSR_*JNDI*
3. Enter the XAI JNDI server description
   Example: *CCB-SOM*
4. Enter the Provider URL in the t3//SOA_HOST: SOA_PORT_NO format.
5. Enter the Initial Context Factory.
   Example: *weblogic.jndi.WLInitialContextFactory*

3.3.4.2 XAI JMS Queue

To create a new XAI JMS queue for each integration queue where Oracle Utilities Customer Care and Billing sends messages:

1. In the **Admin** menu, navigate to **X** > **XAI JMS Queue**.
2. Enter the following:
   - **XAI 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/CCB-SOM/CCBFASyncRequest*
   - **Target Client Flag** – *JMS*
   - **XAI JNDI Server** – Select the XAI JNDI server created for integration.

     Note: Define those queues only where Oracle Utilities Customer Care and Billing publishes or writes messages.

Example JMS Queue Setup

FA Sync Request

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
FASyncReq	CCBFASyncRequest CCB-SOM Integration	jms/CCB-SOM/CCBFASyncRequest	JMS	CCBSR_JNDI

3.3.4.3 XAI JMS Connection

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

1. In the **Admin** menu, navigate to **X** > **XAI JMS Connection**.
2. Enter the following:
   - **XAI JMS Connection –** Connection name in Oracle Utilities Customer Care and Billing
   - **Description –** Connection description
   - **XAI JNDI Server** – Select the XAI JNDI server created for this integration (as described in XAI JNDI Server).
   - **JNDI ConnectionFactory** – JNDI name of the connection factory on the Integration server.
     Example: jms/CCB-SOM/CCBSOMCF

XAI JMS Connection	Description	XAI JNDI Server	JNDI Connection Factory
CCBSOM_CF	CCB-SOM Integration Connection Factory	CCBSR_JNDI	jms/CCB-SOM/ CCBSOMCF

3.3.4.4 XAI Sender

Create a new XAI Sender for each Oracle Utilities Customer Care and Billing outbound integration queue.

XAI Sender for Each Outbound Queue

To create a real-time XAI sender configured to communicate with the integration layer:

1. In the **Admin** menu, navigate to **X** > **XAI Sender**.
2. Enter a unique XAI sender and its description.
3. Populate the following values:
   - **XAI Sender –** Sender name in Oracle Utilities Customer Care and Billing
   - **Description** – Sender description
   - **Invocation Type** – *Real-time*
   - **XAI Class –** *RTJMSQSNDR* (Messages routed via JMS queue real-time)
   - **Active** - Select the check box.
   - **MSG Encoding** – *UTF-8 message encoding*
   - **XAI JMS Connection –** XAI JMS connection created for the integration.
   - **XAI JMS Queue** – XAI JMS queue created for the Oracle Utilities Customer Care and Billing outbound queue.
4. On the **Context** tab, set the 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.

Example XAI Sender Setup

SOMDEVICECON

XAI Sender	Description	HTTP URL
SOMDEVICECON	SOM - XAI Sender for CCB-SOM Integration - Device Config	http://SOM_HOST:SOM_PORT_NO/contextroot/XAIApp /xaiserver/D1-ExternalSPDeviceDetails

SOMDEVICEOVW

XAI Sender	Description	HTTP URL
SOMDEVICEOVW	SOM - XAI Sender for CCB-SOM Integration - Device Overview	http://SOM_HOST:SOM_PORT_NO/contextroot/XAIApp /xaiserver/D1-ExternalDeviceConfigurationTree

SOMFACAN

XAI Sender	Description	HTTP URL
SOMFACAN	XAI Sender for CCB-SOM FA Cancellability	http://SOA_HOST:SOA_PORT_NO/soa-infra/services/CCB-SOM/CCBSOMCancelFAEligibilityQueryReqEBF/CCBSOMCancelFAEligibilityQueryReqBPEL_Client_ep

SOMFAINFO

XAI Sender	Description	HTTP URL
SOMFAINFO	XAI Sender for CCB-SOM FA Information	http://SOM_HOST:SOM_PORT_NO/contextroot/XAIApp/xaiserver/D1-ExternalFAInfo

SOMSROVERVW

XAI Sender	Description	HTTP URL
SOMSROVERVW	SOM - XAI Sender for CCB-SOM Integration - SOM Overview	http://SOM_HOST:SOM_PORT_NO/contextroot/XAIApp/xaiserver/D1-ExternalActivityTree

SOMPREMOVRVW

XAI Sender	Description	HTTP URL
SOMPREMOVRVW	SOM - XAI Sender for CCB-SOM Integration - Premise Activity Overview	http://SOM_HOST:SOM_PORT_NO/contextroot/XAIApp /xaiserver/D1-PremisesActivities

3.3.4.5 Outbound Message Type

To create a new outbound message type for each Oracle Utilities Customer Care and Billing outbound integration queue:

1. In the **Admin** menu, navigate to **O** > **Outbound Message Type**.
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

Outbound Message Type Name	Description	Business Object
SOM_DCONQRY	SOM (Integration) - Device Configuration OB Message	C1-DeviceConfigOutMsg (Device Configuration Outbound Message
SOM_DVCEQRY	SOM (Integration) - Device Query OB Message	C1-DeviceOverviewOutMsg (Device Overview Outbound Message)
SOM_FACAN	SOM (Integration) - FA Cancellability OB Message	C1-DeviceOverviewOutMsg (Device Overview Outbound Message)
SOM_FAINFO	SOM (Integration) - FA Information OB Message	C1-FAInfoOutMsg (Activity Information Outbound Message)
SOM_FASYNC	SOM (Integration) - FASyncReq OB Message	C1-FASyncReqOutMsg (FA Sync Request Outbound Message)
SOM_SREQEURY	SOM (Integration) - SR Query OB Message	C1-ServiceRequestOutMsg (Service Order Management Overview Outbound Message)
SOM_SREPREMQRY	SOM (Integration) - Premise Activity Query OB Message	C1-PremiseSOMActivityOutMsg (Premise Activity Overview Outbound Message)

3.3.4.6 External System

To create a new external system for the integration:

1. In the **Admin** menu, navigate to **E** > **External System**.
2. Enter a unique external system and description.
   Example: Name = SOM, Description = CCB-SOM

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 queue.
   - **Processing Method** – *Real-time*
   - **XAI Sender** – Set the XAI sender created for the queue.
   - **Message XSL** - *C1SRDeviceConfigRequest.xsl*

Example: External System – *SOM*

Outbound Message Type	Processing Method	XAI Sender	Message XSL	Response XSL
SOM_DVCEQRY	Real-time	SOMDEVICEOVW	C1SRDeviceInfoRequest.xsl	C1SRDeviceInfoResponse.xsl
SOM_DCONQRY	Real-time	SOMDEVICECON	C1SRDeviceConfigRequest.xsl	C1SRDeviceConfigResponse.xsl
SOM_FACAN	Real-time	SOMFACAN	CDxAddEnvelope-SOAP1-2.xsl	C1-CCBRemoveEnvEnvelopeAndNamespace.xsl
SOM_FACOM	Real-time	SOMFACOM	C1SRPremisesActivitiesRequest.xsl	C1SRPremisesActivitiesResponse.xsl
SOM_FAINFO	Real-time	SOMFAINFO	C1SRFAInfoRequest.xsl	C1SRFAInfoResponse.xsl
SOM_SREQEURY	Real-time	SOMSROVERVW	C1SRActivityInfoRequest.xsl	C1SRActivityInfoResponse.xsl

For more information about configuration guidelines, see the Oracle Utilities Customer Care and Billing documentation.

3.4 Setting Up Oracle Utilities Service Order Management

This section describes the procedure to configure Oracle Utilities Service Order Management to meet the requirements for the integration.

Setting up Oracle Utilities Service Order Management includes the following:

- Configuring Admin Data Tables
- Configuring System Data Tables
- Oracle Utilities Service Order Management XAI Configuration

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.

3.4.1 Configuring Admin Data Tables

This section describes the Admin tables required for configuring your system for the integration.

> **For more information** about configuring Oracle Utilities Service Order Management, see the *Oracle Utilities Service Order Management User's Guide*.

The table below shows the unique setup data required to configure the system for this integration.

Column	Description	Navigation	Guideline	Corresponding DVM
Manufacturer	Create a Manufacturer code in Oracle Utilities Service Order Management.	Admin > Manufacturer	Create a Manufacturer code	CCB_SOM_ Manufacturer
Device Configuration Type	Create a Device Configuration Type in Oracle Utilities Service Order Management.	Admin > Device Configuration Type	Create a Device Configuration Type	CCB_SOM_Meter ConfigurationType
TOU	Create the required TOU in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	Admin > Time Of Use	Create the required Time Of Use	CCB_SOM_TOU
UOM	Create the required UOM in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	Admin >Unit of Measure	Create the required Unit of Measure	CCB_SOM_UOM

3.4.1.1 Master Configuration

The master configurations are pre-populated with the information that is necessary to support the base objects included in the data sync.

> **Note**: [External System] denotes the name of the master configuration which is configurable by the user. The field values also can be configured in the implementation.

Navigation	Field	Sample Value
Admin > M > Master Configuration > [External System] > Master Configuration Details zone		

Navigation	Field	Sample Value
	CIS External Requester	CCB External Application - Used in Integration
	Default Appointment Handling System	CCB External Application - Used in Integration
	Completion Event Exception Handling: • To Do Type • To Do Role • Maximum Retries • Retry Frequency • Completion Event Expiration Days	 • Activity To Do Type • System Default Role • Maximum Retries 4 • Retry Frequency: 00:05:00 • Completion Event Expiration Days10
	FA Cancellable Script	Determine FA Cancellability • Canceled - Cancellable • Completed - Not Cancellable • Declined - Cancellable • Dispatched - Cancellable • Enroute - Not Cancellable • Error - Cancellable • On Hold - Cancellable • Started - Not Cancellable • Queued for Dispatch - Not Cancellable • Scheduled - Cancellable • Suspended - Cancellable
	Life Support/ Sensitive Load Option	Allow Cut Service

3.4.2 Configuring System Data Tables

To use the system data tables, configure the following:

- Business Objects
- Lookups and Extendable Lookups

3.4.2.1 Business Objects

The table below lists the business objects to be configured in Oracle Utilities Service Order Management.

Business Object Name	Description
D1-EnableService	This business object handles requests for enablement of service for a particular service point. In the "Are SP and Device Ready?" state, it will first execute any Customer-Device Compatibility algorithm defined on the Enable Service Activity Type. If your organization has specific criteria that should prevent the enablement from happening without review (for example, a meter exchange might be necessary), you would define these criteria via the Customer-Device Compatibility algorithm. If incompatibility is detected, a Service Order Resolution activity will be created. This activity type can be overridden via algorithm parameters. Next, the BO logic checks the state of the service point, and if required, creates the corresponding activities to bring the state of the service point such that service is available. This could involve issuing field work to connect service at the service point, install a meter, and ensure the meter is turned on. If the meter is a smart meter, the activity can create the appropriate smart meter commands to commission and connect the meter. If the smart meter is not yet enabled for commands, an alternative field task will be created. The configuration for these activities can be found in the soft parameters of the "Connect SP and Install Device" and "Connect Device" algorithms. If it determines that the desired state of the service point is achieved, it will also ensure that corresponding measurements exist so that the service can be billed from the date/time at which service started. If the request came from an external system, it will then send a response message indicating it was successful in enabling service. If the request is discarded, it will send a response message indicating it was unsuccessful to the external system. Note that if the cause of it being discarded was initiated by the external system no response message will be sent.

Business Object Name	Description
D1-DisableService	This business object handles requests for disablement of service for a particular service point. In the 'Are SP and Device Ready' state, it will check the state of the service point and if required creates the corresponding activities to bring the state of the service point such that service is cut. If it determines that the desired state of the service point is achieved, it will also ensure that corresponding measurements exists so that the service can be final billed. If the requests came from an external system, it will then send a response message indicating it was successful in disabling service. If it is discarded, it will send a response message indicating it was unsuccessful to the external system. Note that if the cause of it being discarded was initiated by the external system no response message will be sent.
D1-UpdateOrchestration	This business object handles requests for updates to an existing enablement or disablement orchestration and their specific field activities. The available fields to update are: • Comments • Instructions • Start Date Time • Appointment Start Date Time • Appointment End Date Time Depending on the status of the specific activity either direct updates will be made to the activities and communications within Oracle Utilities Service Order Management or an outbound communication will be sent to the field work system to request an update of the specific activity fields that have been changed. Once that update to the field work system is confirmed as successful this BO will also update the enable or disable orchestration as well. If the updates are not successful the BO will be discarded. When it is discarded, it will send a response message to the requester indicating the update was unsuccessful.

Business Object Name	Description
D1-CancelOrchestration	This business object handles requests to cancel an existing enablement or disablement orchestration and their specific field activities. Depending on the status of the specific activity, it will either discard the activity or an outbound communication will be sent to the field work system to request a cancel of the specific activity. Once the cancel to the field work system is confirmed as successful this BO will also cancel the enable or disable orchestration as well. If the cancel is not successful the BO will be discarded. When it is discarded, it will send a response message to the requester indicating the cancel was unsuccessful.
D1-ExchangeMeter	This activity orchestration business object handles requests for exchanging the meter for a particular service point. By default, the new meter will be left in the same on/off state as the previously installed meter. This can be overridden by changing the Connect New Device flag value either at request time or manually. A decommissioning command will be created for the old meter if it is a smart meter, based on a configuration parameter on the Meter Exchange Activity Type. The field task type of the meter exchange field activity is defined via soft parameters for algorithm Create Meter Exchange Field Activity. If there are different business reasons for your organization's meter exchanges that need to result in different types of work, the field task type can be conditionally overridden by setting up the following: • **Device Install Business Role** - Enumerates business roles for meter exchanges, such as smart meter roll-out, program enrollment, etc. • **Meter Exchange Mapping** - Maps the requested types of activity (this is stored in BO element FAType) to Device Install Business Roles. • **Processing Method** - Defines a processing method for External Activity Type Mapping for the Service Provider representing the requesting system, and link the Meter Exchange Mapping BO to it. • **Meter Exchange Orchestration Type** - The activity type can be configured to associate a Device Install Business Role to a field task type.

Business Object Name	Description
D1-BackToBackService	This business object handles requests for back to back - disablement and enablement of service for a particular service point. In the "Are SP and Device Ready?" state, it will first execute any Customer-Device Compatibility algorithm defined on the Enable Service Activity Type. If your organization has specific criteria that should prevent the enablement from happening without review (for example, a meter exchange might be necessary), you would define these criteria via the Customer-Device Compatibility algorithm. If incompatibility is detected, a Service Order Resolution activity will be created. This activity type can be overridden via algorithm parameters. Next, the BO logic checks if the device installed on the service point is connected. If not and the installed device is a manual meter, a field activity is dispatched to turn on the device. If device installed on the service point supports remote disconnect and reconnect connect, command requests will be issued to turn-off and turn-on the device on the move-out and move-in dates. This applies only if the vacant period is within the remote off/on threshold days specified on the back to back activity type. Once the desired state of the service point is achieved, it will also ensure that corresponding measurements exist for both move-in and move-out to ensure that the service can be billed. If the request came from an external system, it will then send a response message indicating it was successful in disabling and enabling the service. If the request is discarded, it will send a response message indicating it was unsuccessful to the external system. Note that if the cause of it being discarded was initiated by the external system no response message will be sent.

Business Object Name	Description
D1-CutServiceForNonPayment	This business object handles cut service requests for a service point due to non-payment. In the 'Are SP and Device Ready' state, it will check the state of the service point and if required creates the corresponding activities to bring the state of the service point such that service is cut. Once the desired state of the service point is achieved, it will also ensure that corresponding measurements exist for cut service. If the request came from an external system, it will then send a response message indicating it was successful in cutting the service. If the request is discarded, it will send a response message indicating it was unsuccessful to the external system. Note that if the cause of it being discarded was initiated by the external system no response message will be sent. In addition to common request orchestration elements, this business object also includes an attribute that allows the user to override rules - such as seasonal and life support restrictions, determined at the time when BO is instantiated. Cut service request transitions to "Validation Error" state if any cut service restriction, set in the Service Order Master Configuration, is violated. This feature will be available only while the BO has not passed the "Validate" state. The business object also captures the customer's financial information - collection details and payment history. This information is populated at the time the cut service field task is dispatched to the fieldwork system.
D1-ReconnectForPayment	This business object handles requests for enablement of service for a particular service point due to payment. In the 'Are SP and Device Ready' state, it will check the state of the service point and if required creates the corresponding activities to bring the state of the service point such that service is enabled. If the requests came from an external system, it will then send a response message indicating it was successful in reconnecting the service. If it is discarded, it will send a response message indicating it was unsuccessful to the external system. Note that if the cause of it being discarded was initiated by the external system no response message will be sent.

Business Object Name	Description
D1-FieldActivity	This business object represents a specific field work task. It can be created from an orchestration activity (such as Enable Service), directly (online or via external service call to this business object), or via service script Field Activity Inbound Synchronous/Asynchronous Request. The activity is validated as follows: • The field work system that should receive the request can be identified successfully. • The field work site is supplied. • No duplicate or conflicting field task has been issued for the site. Any validation error transitions the request to its 'Validation Error' state and it remains in that state until the error is fixed or until the request expires. After validating the request, field work task is evaluated if appointment is needed. If required, a notification is sent to the appropriate external system (either the requesting system or an appointment-subscribing system) to schedule it with the customer. The activity then creates an outbound communication, and awaits an inbound communication response from the field work system. If the field work system indicates successful task completion, completion events associated with the field task type are created and executed, the request transitions to its 'Completed' state and the orchestrating request is nudged to determine the next task. If the field work system indicates task cancellation, the request transitions to its 'Cancelled' state, any cancellation completion events associated with the field task type are created and executed, and the orchestrating request is nudged to its 'Error' state.
D1-DeviceCommission	This business object orchestrates the communications for the process of commissioning a device. This process can differ significantly between AMI (head-end) systems, so the life cycle of this business object is meant to accommodate those differences by driving successive communications to the head-end system. Based on processing method configuration (see Service Provider), this BO can produce the following communications: • AMI Device Identifier request • Device Commissioning request • Device Commissioning Verification request

Business Object Name	Description
D1-DeviceDecommission	This business object issues a communication that decommissions a device. For the AMI vendors that are supported with Smart Grid Gateway adapter products, the decommissioning process requires only a single communication, defined via the Device Decommissioning processing method for the head-end system Service Provider. The communication produced by this activity can vary for the different vendors, but it typically involves an update to the head-end system database rather than a communication that must reach the meter. Decommissioning typically serves to inform the head-end system that no communications should be expected for the associated meter from that point onward. If communication will eventually be resumed from that device, the device would need to be commissioned again. This command may be part of the process of removing or retiring a meter, or may be used in the process of replacing communication network hardware as a notification of a temporary communications stoppage.
D1-RemoteConnect	This business object produces multiple communications depending upon head-end system functionality. Based on processing method configuration (see Service Provider), this BO can produce the below communications in the following sequence: • Load Check request • Scalar On-Demand Read request • Remote Connect request If any of the above processing methods is not configured for a given head-end system (via Service Provider), the command activity will skip creating that communication.
D1-RemoteDisconnect	This business object orchestrates the communications for the process of connecting a device. The life cycle of this business object can produce multiple communications to complete the disconnect, depending upon head-end system functionality. Based on processing method configuration for the head-end system Service Provider, this BO can produce the below communications in the following sequence: • Remote Disconnect request • Scalar On-Demand Read request

Business Object Name	Description
D1-OnDemandReadScalar	This command activity business object issues a communication that requests a scalar on-demand read for the point in time of the request, or as of the effective date/time. An on-demand read typically requires only a single communication, defined for this command via the On-Demand Read (Scalar) processing method for the head-end system Service Provider. This command activity has several options that affect its execution. • The command can be used to request either initial or final measurements based on the input Measurement Requested flag. • The command can retrieve measurement data already existing in the system (useful if Meter Data Management is installed, and the command is requested from an outside system with no knowledge of measurement data), or can produce a request for new measurement data, via the Should Use Existing Measurements flag. • The command can send the on-demand read data to the requesting system and/or to measurement subscribing applications based on the Measurement Destination flag.
D1-OnDemandReadInterval	This command activity business object issues a communication that requests an interval on-demand read for a range of time defined on the request. This command business object produces a single communication (typically, the on-demand read is not a multi-message process), defined for this command via the On-Demand Read (Interval) processing method for the head-end system Service Provider. This command activity has several options that affect its execution. • The command can be used to request either initial or final measurements based on the input Measurement Requested flag. • The command can retrieve measurement data already existing in the system (useful if Meter Data Management is installed, and the command is requested from an outside system with no knowledge of measurement data), or can produce a request for new measurement data, via the Should Use Existing Measurements flag. • The command can send the on-demand read data to the requesting system and/or to measurement subscribing applications based on the Measurement Destination flag.

Business Object Name	Description
D1-FieldActivityOBComm	This business object creates a field activity outbound message to be sent to Oracle Utilities Mobile Workforce Management. Based upon the specific field task type that is to be performed, it will gather the appropriate supporting information to be sent along with the message to Oracle Utilities Mobile Workforce Management. The additional information is retrieved via service scripts that can be configured for each field task type (refer to the processing scripts section within the Field Task Type extendable lookup). The outbound message BO to use in sending the message is configured via the Field Activity processing method for the service provider corresponding to Oracle Utilities Mobile Workforce Management. When field completion response is returned via an inbound communication (see the Field Activity Inbound Communication business object) and successfully processed, the outbound communication is then completed, transitioning the field activity that had originally created it. This business object also supports time-out, as well as automated retry in case of an error. When this business object is discarded, it transitions the field activity that had originally created it into an exception status (generally an error state).
D1-FieldActivityIBComm	This inbound communication contains the data structure and processing logic for field work completion information from Oracle Utilities Mobile Workforce Management. The inbound communication is responsible for determining the outbound communication that originated the request, as well as the associated field activity. Additional logic maps the Oracle Utilities Mobile Workforce Management-formatted information from the Response Detail section into the internal Completion Detail section. Based on the activity's field task type (refer to the Field Task Type extendable lookup), the inbound communication then creates completion events - which could differ depending upon whether the activity was completed or canceled by Oracle Utilities Mobile Workforce Management. If any completion event required for the field task type is not created successfully, the inbound communication transitions to an error state for troubleshooting. If any completion event is not required for the field task type, no error is thrown if it isn't successfully created. The inbound communication also processes field activity remarks included in the completion details, creating completion events as needed based on the configuration of the Field Activity Remark Type extendable lookup. Upon successful creation of the required completion events, the inbound communication then updates the outbound communication with the event date/time - representing the point at which work was completed - and transitions the outbound communication to continue with its processing.

3.4.2.2 Lookups and Extendable Lookups

To configure lookups in Oracle Utilities Service Order Management:

1. On the **Admin** menu, navigate to **L** > **Lookup**.
2. Enter the **Field Name** from the list below, and then enter the respective values.

Column	Description	Navigation	Guideline	Corresponding DVM
Appt Request Type	Create the required appointment in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM	D1_APPT_REQ_TYPE_FLG	Create the Appointment Request Type	CCB_SOM_ApptRequestType
Action Code	Create the Action Code in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	SVC_REQ_COMP_ACT_FLG	Create the Completion Action Code	CCB_SOM_CompletionActionCode
Disconnect Location	Create the Disconnect Location in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	DISCONN_LOC_FLG	Create the Disconnect Location	CCB_SOM_Disconnect Location
FA Status	Create the FA Status in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1_SR_STATUS_FLG	Create the FA Status	CCB_SOM_FAStatus
Event Type	Create the required Event Type in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated	SA_EVENT_TYPE	Create the required Event Type	CCB_SOM_SASPFA EventType

To configure extendable lookups in Oracle Utilities Service Order Management:

1. On the **Admin** menu, navigate to **E** > **Extendable Lookup**.
2. Enter the **Business Object** from the list below, and then enter the respective values.

Column	Description	Business Object	Guideline	Corresponding DVM
Field Task Type	Creates the required Field Task Type in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1-FieldTaskType Lookup	Create the Field Task Type	CCB_SOM_FAType

Column	Description	Business Object	Guideline	Corresponding DVM
Meter Location	Creates the required Meter Location in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1-DeviceLocation Lookup	Create a Meter Location	CCB_SOM_ MeterLocation
Remark Code	Creates the required Remark Code in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1-FARemarkType Lookup	Create the required Remark Code	CCB_SOM_ RemarkCode
Service Instructions	Creates the required Service Instructions in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1-FARemarkType Lookup	Create the required Service Instructions	CCB_SOM_ Service Instructions
Service Warnings	Creates the required Service Warnings in Oracle Utilities Service Order Management. The codes defined here must exactly match values in the DVM indicated.	D1-ServiceWarnings	Create the required Service Warnings	CCB_SOM_ ServiceWarnings

3.4.3 Oracle Utilities Service Order Management XAI Configuration

This section describes the requirements for configuring XAI in Oracle Utilities Service Order Management.

3.4.3.1 Oracle Utilities Service Order Management - Oracle Utilities Customer Care and Billing Integration

XAI JNDI Server

To create a new XAI JNDI server pointing to the Integration SOA server to communicate with the integration layer:

1. In the **Admin** menu, navigate to **X** > **XAI JNDI Server**.
2. Enter the XAI JNDI server name.
   Example: CCB_*JNDI*
3. Enter the XAI JNDI server description
   Example: *CCB Integration Server*
4. Enter the **Provider URL** in the t3//<SOA_HOST>:<SOA_PORT_NO> format**.**
5. Enter the **Initial Context Factory**.
   Example: *weblogic.jndi.WLInitialContextFactory*

XAI JMS Queue

To create a new XAI JMS queue for each integration queue:

1. In the **Admin** menu, navigate to **XAI JMS Queue**.
2. Enter the following:
   - **XAI JMS Queue –** Queue name in Oracle Utilities Service Order Management
   - **Description** – Queue description
   - **Queue Name** – JNDI name of the queue on the integration server. Example: *jms/CCB-SOM/SOMFACompletionRequest*
   - **Target Client Flag** – *JMS*
   - **XAI JNDI Server** – Select the XAI JNDI server created for integration.

     Note: Define those queues only where Oracle Utilities Service Order Management publishes or writes messages.

Example JMS Queue Setup

FA Sync Response

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
FASyncResp	SOM FA Sync Response to Oracle Utilities Customer Care and Billing Integration	jms/CCB-SOM/ SOMFASyncResponse	JMS	CCBSR_JNDI

FA Completion Request

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
FACompReq	SOM FA Completion Request to Oracle Utilities Customer Care and Billing Integration	jms/CCB-SOM/ SOMFACompletion Request	JMS	CCB_JNDI

Update Request

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
SRUpdateReq	SOM SR Update Request	jms/CCB-SOM/ SOMSRUpdate Request	JMS	CCB_JNDI

SUB Completion Request

XAI JMS Queue	Description	Queue Name	Target Client Flag	XAI JNDI Server
SubCompReq	SOM SUBCompletion Request to Oracle Utilities Customer Care and Billing Integration	jms/CCB-SOM/ SOMFACompletion Subscription	JMS	CCB_JNDI

XAI JMS Connection

To create a new XAI JMS connection used to connect to the integration queues:

1. In the **Admin** menu, navigate to **X** > **XAI JMS Connection**.
2. Enter the following:
   - **XAI JMS Connection –** Connection name in Oracle Utilities Service Order Management
   - **Description –** Connection description
   - **XAI JNDI Server** – Select the XAI JNDI server created for this integration (as described in XAI JNDI Server).
   - **JNDI ConnectionFactory** – JNDI name of the connection factory on the Integration server.

XAI JMS Connection	Description	XAI JNDI Server	JNDI Connection Factory
CCBSOM_CF	CCB-SOM Integration Connection Factory	CCB_JNDI	jms/CCB-SOM/ CCBSOMCF

XAI Sender

To create a new XAI Sender for each Oracle Utilities Service Order Management outbound integration queue:

1. In the **Admin** menu, navigate to **X** > **XAI Sender**.
2. Enter a unique XAI sender and its description.
3. Populate the following values:
   - **XAI Sender –** Sender name in Oracle Utilities Service Order Management
   - **Description** – Sender description
   - I**nvocation Type** – *Real-time*
   - **XAI Class –** *RTJMSQSNDR* (Real-time JMS Queue Sender)
   - **Active** - Select the check box.
   - **MSG Encoding** – *UTF-8 message encoding*
   - **XAI JMS Connection –** XAI JMS connection created for the integration.
   - **XAI JMS Queue** – XAI JMS queue created for the Oracle Utilities Customer Care and Billing outbound queue.

4. On the **Context** tab, set the 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.

Example XAI Sender Setup

SR Update Request

XAI Sender	Description	XAI JMS Connection	XAI JMS Queue
SRUpdateReq	Sender to SOMSRUpdateRequest queue in Integration Server	CCBSOM_CF	SRUpdateReq

SR-COLLDATA

XAI Sender	Description	HTTP URL
SR-COLLDATA	SR-Collection Details	http://SOA_HOST:SOA_PORT_NO/soa-infra/services/CCB-SOM/SOMCCBCollectionInfoEBF/somccbcollectioninfoebf_client_ep

FA Completion Request

XAI Sender	Description	XAI JMS Connection	XAI JMS Queue
FACompReq	Sender to SOMFACompletionReque queue in Integration Server	CCBSOM_CF	FACompReq

FA Sync Response

XAI Sender	Description	XAI JMS Connection	XAI JMS Queue
FASyncResp	Sender to SOMFASyncResponse queue in Integration Server	CCBSOM_CF	FASyncResp

FA Sync Request

XAI Sender	Description	XAI JMS Connection	XAI JMS Queue
FASyncReq	Sender to CCBFASyncRequest CCB-SOM Integration	CCBSOM_CF	FASyncReq

Outbound Message Type

To create a new outbound message type for each Oracle Utilities Service Order Management outbound integration queue:

1. In the **Admin** menu, navigate to **O** > **Outbound Message Type**.
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

Outbound Message Type Name	Description	Business Object
CNTRESMSG2	CCB2 Contact Response Outbound Message	D1-OngoingSyncReqAckMsg
DVCNFRESMSG2	CCB2 Device Configuration Response Outbound Message	D1-OngoingSyncReqAckMsg
DVCRESMSG2	CCB2 Device Response Outbound Message	D1-OngoingSyncReqAckMsg
INEVTRESMSG2	CCB2 Install Event Response Outbound Message	D1-OngoingSyncReqAckMsg
SOM-UNPICCCB	Send Unrelated PickUp Subp to Oracle Utilities Customer Care and Billing	D1-SendSuccessRespOutboundMsg
SPRESMSG2	CCB2 SP Response Outbound Message	D1-OngoingSyncReqAckMsg
SR-ACTRMKS	SR-Send Activity Remarks	D1-SendFARmkTypMsg
SR-COLLDATA	SR-Collection Details	D1-OutboundMessage
SR-CUSTCON	SR-Customer Contact	D1-FACustomerContactMsg
SR-MISSAPT	SR-Missed Appointment	D1-SendMissedAppointment
SR-SAPPTRESP	SR-Send Appointment Response to External Requester	D1-SendApptRespOutboundMsg
SR-SFAILRESP	SR-Send Fail Response to External Requester	D1-SendFailRespOutboundMsg
SR-SNEGACK	SR-Send Negative Acknowledgement to External Requester	D1-FASyncReqAckMsg
SR-SPOSACK	SR-Send Positive Acknowledgement to External Requester	D1-FASyncReqAckMsg
SR-SSUCCRESP	SR-Send Success Response to External Requester	D1-SendSuccessRespOutboundMsg
USRESMSG2	CCB2 Usage Subscription Response Outbound Message	D1-OngoingSyncReqAckMsg

External System

To create a new external system for the integration:

1. In the **Admin** menu, navigate to **E** > **External System**.
2. Enter a unique external system and description.
   Example: Name = CCB, Description = CCB External System - Used in Integration
3. Set the **Our Name in Their System** field to **MDM**.
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 queue.
   - **Processing Method** – *Real-time*
   - **XAI Sender** – Set the XAI sender created for the queue.
   - **Message XSL** - *D1-MDMJMSQAddNamespace.xsl*

Example: External System – Oracle Utilities Service Order Management

Outbound Message Type	Processing Method	XAI Sender	Message XSL
SOM-UNPICCCB	Real-time	SOM-SubUnRel	D1-ServiceRequestJMSQAddNamespace.xsl
SR-ACTRMKS	Real-time	SRUpdateReq	D1-ServiceRequestJMSQAddNamespace.xsl
SR-COLLDATA	Real-time	SR-COLLDATA	D1-ServiceRequestRequest.xsl
SR-CUSTCON	Real-time	SRUpdateReq	D1-ServiceRequestJMSQAddNamespace.xsl
SR-MISSAPT	Real-time	SRUpdateReq	D1-ServiceRequestJMSQAddNamespace.xsl
SR-SFAILRESP	Real-time	FACompReq	D1-ServiceRequestJMSQAddNamespace.xsl
SR-SNEGACK	Real-time	FASyncResp	D1-ServiceRequestJMSQAddNamespace.xsl
SR-SPOSACK	Real-time	FASyncResp	D1-ServiceRequestJMSQAddNamespace.xsl
SR-SSUCCRESP	Real-time	FACompReq	D1-ServiceRequestJMSQAddNamespace.xsl

For more information about configuration guidelines, see the Oracle Utilities Service Order Management documentation.

3.4.3.2 Oracle Utilities Service Order Management - Oracle Utilities Smart Grid Gateway Integration

XAI Sender

To create a new XAI Sender for each integration service being called:

1. In the **Admin** menu, navigate to **X** > **XAI Sender**.
2. Enter a unique XAI sender and its description.
3. Populate the following values:
   - **XAI Sender –** Sender name in Oracle Utilities Customer Care and Billing
     For example: REGHILOW

- **Description** – Sender description
- I**nvocation Type** – *Real-time*
- **XAI Class –** *RTHTTPSNDR* (Sender routes messages via HTTP real-time)
- **Active** - Select the check box.
- **MSG Encoding** – *UTF-8 message encoding*

4. On the **Context** tab, set the values for the following context types:
   - **HTTP Header** - SOAPAction:"process"
   - **HTTP Login User** - User ID to access SGG BPEL process
   - **HTTP Password** - Password to access SGG 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 XAI Sender Setup

SOM_D8_COMMS

XAI Sender	Description	HTTP URL
SOM_D8_COMMS	SOM_D8_COMMS	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/CommissionDecommission/CommissionDecommissionService

SOM D8 CONN

XAI Sender	Description	HTTP URL
SOM_D8_Connect	SOM_D8_Connect	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/ConnectDisconnect/ConnectDisconnectService

SOM D8 DCONN

XAI Sender	Description	HTTP URL
SOM_D8_DCONN	SOM_D8_Disconnect	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/ConnectDisconnect/ConnectDisconnectService

OM D8 DECOM

XAI Sender	Description	HTTP URL
SOM_D8_DECOM	SOM_D8_Decommission	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/CommissionDecommission/CommissionDecommissionService

SOM_D8_LOADM

XAI Sender	Description	HTTP URL
SOM_D8_LOADM	SOM_D8_Read Disconnect State By Meters	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/ConnectDisconnect/ReadDisconnectStateByMetersService

SOM_D8_LOADV

XAI Sender	Description	HTTP URL
SOM_D8_LOADV	SOM_D8_Detect Load Side Voltage By Meter	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/ConnectDisconnect/DetectLoadSideVoltageByMeterService

SOM_D8_ONDSC

XAI Sender	Description	HTTP URL
SOM_D8_ONDSC	SOM_D8_Ondemand Read	http://SGG_SOA_HOST:SGG_SOA_PORT_NO/soa-infra/services/Itron/OnDemandRead/OnDemandReadService

Outbound Message Type

To create a new outbound message type for each Oracle Utilities Service Order Management outbound integration queue:

1. In the **Admin** menu, navigate to **O** > **Outbound Message Type**.
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

Outbound Message Type Name	Description	Business Object
SOM_D8_COMMS	SOM_D8_Commission	D1-OutboundMessage
SOM_D8_CONN	SOM_D8_Connect	D1-OutboundMessage
SOM_D8_DCONN	SOM_D8_Disconnect	D1-OutboundMessage
SOM_D8_DECOM	SOM_D8_Decommission	D1-OutboundMessage
SOM_D8_LOADM	SOM_D8_Read Disconnect State By Meters	D1-OutboundMessage
SOM_D8_LOADV	SOM_D8_Detect Load Side Voltage By Meter	D1-OutboundMessage
SOM_D8_ONDSC	SOM_D8_Ondemand Scalar	D1-OutboundMessage

External System

To create a new external system for the integration:

1. In the **Admin** menu, navigate to **E** > **External System**.
2. Enter a unique external system and description.
   Example: Name = SOM_D8_ITRON_EXTERNAL SYSTEM
   Description = SOM_D8_ITRON_External System
3. Set the **Our Name in Their System** field to **SOM_ITRON**.
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 Service Order Management outbound queue.
   - **Processing Method** – *Real-time*
   - **XAI Sender** – Set the XAI sender created for the queue.
   - **Message XSL** - *D8-Request.xsl*

Example: External System – Oracle Utilities Service Order Management

Outbound Message Type	Processing Method	XAI Sender	Message XSL
SOM_D8_COMMS	Real-time	SOM_D8_Commission	D8-Request.xsl
SOM_D8_CONN	Real-time	SOM_D8_Connect	D8-Request.xsl
SOM_D8_DCONN	Real-time	SOM_D8_Disconnect	D8-Request.xsl
SOM_D8_DECOM	Real-time	SOM_D8_Decommission	D8-Request.xsl
SOM_D8_LOADM	Real-time	SOM_D8_Read Disconnect State By Meters	D8-Request.xsl
SOM_D8_LOADV	Real-time	SOM_D8_Detect Load Side Voltage By Meter	D8-Request.xsl
SOM_D8_ONDSC	Real-time	SOM_D8_Ondemand Read	D8-Request.xsl

3.5 Setting Up 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 for the Integration Layer
- Setting System Properties for the Integration Layer

3.5.1 Setting Configuration Properties for the Integration Layer

The ConfigurationProperties.xml file contains properties that can be defaulted in the integration. It also contains flags to enable extension points within the integration.

The ConfigurationProperties.xml file is located in MDS under the apps/CCB-SOM/AIAMetaData/config directory.

> **Note:** Whenever the ConfigurationProperties.xml file is updated, it must be reloaded so that the update is reflected in applications or services, which use these updated properties. Reload the ConfigurationProperties.xml file by restarting the server.

This section describes the following sets of configuration properties:

- Module Configuration: The properties shared by multiple composites within this integration.
- Service Configuration: The properties used by a specific composite.

3.5.1.1 Module Configuration

Module configuration has application level properties used by all SOA composites.

Property Name	Default/ Shipped Value	Description
SOA-INFRA.AuditLevel	OFF	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	ABC@oracle.com	Sets the administrator email ID for the errorhandling process to send out an email in case of a critical failure where even the Errorhandling process fails.
SR.Generic.MessageCategory	11017	The message category that the integration layer uses for Oracle Utilities Service Order Management error messages.
SR.GenericBusinessException.MessageNumber	11001	The message number that the integration layer uses for generic Oracle Utilities Service Order Management error messages.
CCB.Generic.MessageCategory	11114	The message category that the integration layer uses for Oracle Utilities Customer Care and Billing error messages.

Property Name	Default/ Shipped Value	Description
CCB.GenericBusinessException. MessageNumber	11001	The message number that the integration layer uses for generic Oracle Utilities Customer Care and Billing errors.
SR.MessageCategoryNumber. Separator	:	The separator that the integration layer uses for generic Oracle Utilities Service Order Management message category.
CCB.MessageCategoryNumber. Separator	:	The separator that the integration layer uses for generic Oracle Utilities Customer Care and Billing message category.

3.5.1.2 Service Configuration

The service configuration properties are specific to the SOA composites. These are used to make changes in a specific composite behavior.

Service Name	Property Name	Default Value	Description
CCBSOMFASyncReqEBF			
	Extension.PreXformCCBToSOM	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformCCBToSOM	false	If set to true, the post transformation extension service is invoked.
	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.
	Override.Request	false	If set to 'true', the override request transformation is executed.
CCBSOMFASyncRespEBF			
	Extension.PreXformSOMToCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformSOMToCCB	false	If set to true, the post transformation extension service is invoked.
	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.
	Override.Response	false	If set to true, the respective transformation file will be overriden.
SOMCCBFACompletionReqEBF			

Service Name	Property Name	Default Value	Description
	Extension.PreXformSRToCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformSRToCCB	false	If set to true, the post transformation extension service is invoked.
	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.
	CCB.FACompletionService.EndPoint	http://CCB_HOST:CCB_PORT_NO/CONTEXT_ROOT/XAIApp/xaiserver/C1FACompletionServiceRequest	Endpoint for the FA Completion service in Oracle Utilities Customer Care and Billing.
	CCB.FACompletionService.ServiceName	http://ouaf.oracle.com/spl/XAIXapp/xaiserver/C1FACompletionServiceRequest}C1FACompletionServiceRequestService	Service name for the FA Completion service in Oracle Utilities Customer Care and Billing.
	CCB.FACompletionService.PortType	C1FACompletionServiceRequestPort	Port type for the FA Completion service in Oracle Utilities Customer Care and Billing.
	Override.Request	false	If set to true, the respective transformation file will be overriden.
SOMCCBSRUpdateReqEBF			
	Extension.PreXformSOMToCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformSOMToCCB	false	If set to true, the post transformation extension service is invoked.
	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.

Service Name	Property Name	Default Value	Description
	CCB.SRUpdateService.EndPoint	http://CCB_HOST:CCB_PORT_NO/CONTEXT_ROOT/XAIApp/xaiserver/C1-ServiceRequestUpdateRequest	Endpoint for SR Update service in Oracle Utilities Customer Care and Billing.
	CCB.SRUpdateService.ServiceName	http://ouaf.oracle.com/spl/XAIXapp/xaiserver/C1-ServiceRequestUpdateRequest}C1-ServiceRequestUpdateRequestService	Service name for the SR Update service in Oracle Utilities Customer Care and Billing.
	CCB.SRUpdateService.PortType	C1-ServiceRequestUpdateRequestPort	Port type for the SR Update service in Oracle Utilities Customer Care and Billing.
	Override.Request	false	If set to true, the respective transformation file will be overriden.
SOMCCBCollectionInfoEBF			
	Extension.PreXformSOMtoCCB	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostXformSOMtoCCB	false	If set to true, the post transformation extension service is invoked.
	Extension.PreXformCCBtoSOM	false	If set to true, business error notification is sent via Email.
	Extension.PostXformCCBtoSOM	false	If set to true, technical error notification is sent via Email.
	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.
	CCB.CCBCollectionInfoService.EndPoint	http://CCB_HOST:CCB_PORT_NO/CONTEXT_ROOT/XAIApp/xaiserver/C1-ServiceRequestFinancialInfo	Endpoint for Collection Info service in Oracle Utilities Customer Care and Billing.

Service Name	Property Name	Default Value	Description
	CCB.CCBCollectionInfoService.ServiceName	http://ouaf.oracle.com/spl/XAIXapp/xaiserver/C1-ServiceRequestFinancialInfo}C1-ServiceRequestFinancialInfoService	Service name for the Collection Info service in Oracle Utilities Customer Care and Billing.
	CCB.CCBCollectionInfoService.PortType	C1-ServiceRequestFinancialInfoPort	Port type for the Collection Info service in Oracle Utilities Customer Care and Billing.
	Override.Response	false	If set to true, the respective transformation file will be overriden.
CCBSOMCancelFAEligibilityQueryReqEBF			
	Extension.PreXformCCBToSOM	false	If set to true, the pre transformation extension service is invoked.
	Extension.PreInvokeSOM	false	If set to true, the pre transformation extension service is invoked.
	Extension.PostInvokeSOM	false	If set to true, the post transformation extension service is invoked.
	Extension.PostXformSOMToCCB	false	If set to true, the post transformation extension service is invoked.
	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.
	SOM.CEService.EndPoint	http://SOM_HOST:SOM_PORT_NO/CONTEXT_ROOT/XAIApp/xaiserver/D1-TestFACancellability	Endpoint for the Cancel Eligibility service in Oracle Utilities Service Order Management.
	SOM.CEService.ServiceName	http://ouaf.oracle.com/spl/XAIXapp/xaiserver/D1-TestFACancellability}D1-TestFACancellabilityService	Service name for the Cancel Eligibility service in Oracle Utilities Service Order Management.
	SOM.CEService.PortType	D1-TestFACancellabilityPort	Port type for the Cancel Eligibility service in Oracle Utilities Service Order Management.

Service Name	Property Name	Default Value	Description
	Override.Request	false	If set to true, the respective transformation file will be overriden.
	Override.Response	false	If set to true, the respective transformation file will be overriden.

3.5.2 Setting Domain Value Maps for the Integration Layer

The Domain Value Maps (DVMs) are the standard features of the Oracle SOA Suite. They map codes and other static values across applications.

For example: Different types of country codes configured in each of the applications can be mapped using a DVM. The country code for USA can be "US" in one application and map to "USA" in the other application.

The DVMs are static in nature, though administrators can add additional values as needed.

Transactional business processes never update the DVMs; instead, they only read from DVMs. DVMs are stored in the XML files and cached in the memory at run-time.

To Maintain Information within Domain Value Maps

1. Open a browser and access the SOA Composer application (http://SOA_HOST:SOA_PORT_NO/soa/composer/).
2. On the SOA Composer, select **Open** from the drop-down list and select **Open DVM**.

   The list of all DVM files in the MDS repository is displayed.
3. Select the relevant DVM you wish to maintain.
4. Edit the selected DVM by clicking the **Edit** button in the top navigation bar for editing DVM.
5. Once the DVM is edited, click **Save** in the navigation bar. This saves the DVM data for that session.
6. Click **Commit** after updating each DVM. This saves the DVM data in the MDS repository.

The DVMs for the integration are listed below.

DVMs	Integration Points	Description
CCB_MWM_CustomerContactType	FA Completion Service Request Update	Maps the Oracle Utilities Customer Care and Billing customer contact type to Oracle Utilities Mobile Workforce Management customer contact type
CCB_MWM_RemarksCode	FA Completion	
CCB_SOM_ApptRequestType	Service Request Update	Maps the appointment request type from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management.

DVMs	Integration Points	Description
CCB_SOM_CompletionActionCode	FA Completion	Maps the FA completion action code from Oracle Utilities Service Order Management to Oracle Utilities Customer Care and Billing
CCB_SOM_Country	FA Synchronization Request	Maps the country code from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_DisconnectLocation	FA Completion	Maps the device's disconnect location from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_FACancelReason	FA Synchronization Request	Maps the field activity cancel reason from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_FAStatus	FA Synchronization Request	Maps the field activity status from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_FAType	FA Synchronization Request FA Completion	Maps the field activity type from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_FA_ CHECKCANCELLABILITY	FA Cancel Eligibility Query	Maps the field activity cancel ability code from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_ItemStatus	FA Completion	Maps the Oracle Utilities Customer Care and Billing item status to Oracle Utilities Service Order Management item status
CCB_SOM_Manufacturer	FA Completion	Maps the manufacturer from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_MeterConfigurationType	FA Completion	Maps the meter configuration type from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_MeterLocation	FA Completion	Maps the meter location from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_MeterStatus	FA Completion	Maps the meter status from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_Model	FA Completion	Maps the model from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_RemarkCode	Service Request Update	

DVMs	Integration Points	Description
CCB_SOM_SASPFAEventType	FA Synchronization Request	Maps the FA event type from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_ServiceInstructions	FA Completion	Maps the service instructions from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_ServiceWarnings	FA Completion	Maps the service warnings from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_SRCompletionActionCode	FA Completion	Maps the service request completion action code from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management and vice versa
CCB_SOM_StockLocation	FA Completion	Maps the stock location from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_TOU	FA Completion	Maps the time of use from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_TypeCode_UseReadingOnBill	FA Completion Request	
CCB_SOM_UOM	FA Completion	Maps the unit of measure from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_UpdateEventType	Service Request Update	Maps the update event type form Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management
CCB_SOM_Worker	FA Completion	Maps the worker from Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management

CCB_SOM_ApptRequestType

This DVM is used to map the appointment request type in Oracle Utilities Customer Care and Billing to the appointment request type in Oracle Utilities Service Order Management.

CCB_ApptRequestType	SOM_ApptRequestType
Appointment request type in Oracle Utilities Customer Care and Billing Example: C1AN	Appointment request type in Oracle Utilities Service Order Management Example: D1AN

CCB_SOM_CompletionActionCode
This DVM is used to map the field activity completion action code in Oracle Utilities Customer Care and Billing to the completion action code in Oracle Utilities Service Order Management.

CCB_CompletionActionCode	SOM_CompletionActionCode
Completion action code in Oracle Utilities Customer Care and Billing Example: CANC	Completion action code in Oracle Utilities Service Order Management Example: D1CN

CCB_SOM_Country
This DVM is used to map the country code in Oracle Utilities Customer Care and Billing to the country code in Oracle Utilities Service Order Management.

CCB_Country	SOM_Country
Country code in Oracle Utilities Customer Care and Billing Example: USA	Country code in Oracle Utilities Service Order Management Example: US

CCB_SOM_DisconnectLocation
This DVM maps the device disconnect location in Oracle Utilities Customer Care and Billing to Oracle Utilities Service Order Management.

CCB_DisconnectLocation	SOM_DisconnectLocation
Disconnect location in Oracle Utilities Customer Care and Billing Example: DSCN	Disconnect location in Oracle Utilities Service Order Management Example:D1SR

CCB_SOM_FACancelReason
This DVM is used to map the field activity cancel reason in Oracle Utilities Customer Care and Billing to the cancel reason in Oracle Utilities Service Order Management.

CCB_FA_Cancel_Reason	SOM_FA_Cancel_Reason
Field activity cancel reason in Oracle Utilities Customer Care and Billing Example: C1FC	Field activity cancel reason in Oracle Utilities Service Order Management Example: D1-Undeteremined

CCB_SOM_FAStatus
This DVM is used to map the field activity status in Oracle Utilities Customer Care and Billing to the activity status in Oracle Utilities Service Order Management.

CCB_STATUS	SOM_STATUS
Field activity status in Oracle Utilities Customer Care and Billing Example: P	Field activity status in Oracle Utilities Service Order Management Example: D1PN

CCB_SOM_FAType
This DVM maps the field activity type in Oracle Utilities Customer Care and Billing to the task type in Oracle Utilities Service Order Management..

CCB_FAType	SOM_ExtActivityType	SOM_FieldTaskType
Field activity type in Oracle Utilities Customer Care and Billing Example: FA-TTREE	External activity type in Oracle Utilities Service Order Management Example: FieldActivity	Field task type in Oracle Utilities Service Order Management Example: D1-TrimTree

CCB_SOM_FA_CHECKCANCELLABILITY
This DVM is used to map the field activity cancellability code in Oracle Utilities Customer Care and Billing to the cancellability code in Oracle Utilities Service Order Management.

SOM_FA_CancellabilityCode	CCB_FA_CancellabilityCode
Cancellability code in Oracle Utilities Service Order Management Example: D1CN	Cancellability code in Oracle Utilities Customer Care and Billing Example: C1CN

CCB_SOM_ItemStatus
This dvm is used to map the item status in Oracle Utilities Customer Care and Billing to the item status in Oracle Utilities Service Order Management.

CCB_ItemStatus	SOM_ItemStatus
Item status in Oracle Utilities Customer Care and Billing Example: LEFT	Item status in Oracle Utilities Service Order Management Example: GARG

CCB_SOM_Manufacturer
This DVM is used to map the manufacturer in Oracle Utilities Customer Care and Billing to the manufacturer in Oracle Utilities Service Order Management.

CCB_Manufacturer	SOM_Manufacturer
Manufacturer in Oracle Utilities Customer Care and Billing Example: GE	Manufacturer in Oracle Utilities Service Order Management Example: GD_SR_Elster

CCB_SOM_MeterConfigurationType
This DVM is used to map the meter configuration type in Oracle Utilities Customer Care and Billing to the meter configuration type in Oracle Utilities Service Order Management.

CCB_MeterConfigurationType	SOM_MeterConfigurationType
Meter configuration type in Oracle Utilities Customer Care and Billing Example: E-DFLT	Meter configuration type in Oracle Utilities Service Order Management Example: LEFT

CCB_SOM_MeterLocation
This dvm is used to map the meter location in Oracle Utilities Customer Care and Billing to the meter location in Oracle Utilities Service Order Management.

CCB_MeterLocation	SOM_MeterLocation
Meter location in Oracle Utilities Customer Care and Billing Example: LEFT	Meter location in Oracle Utilities Service Order Management Example: LEFT

CCB_SOM_MeterStatus
This DVM is used to map the meter status in Oracle Utilities Customer Care and Billing to the meter status Oracle Utilities Service Order Management.

CCB_MeterStatus	SOM_MeterStatus
Meter status in Oracle Utilities Customer Care and Billing Example: A	Meter status in Oracle Utilities Service Order Management Example: ACTIVE

CCB_SOM_Model
This DVM is used to map the model in Oracle Utilities Customer Care and Billing to the model in Oracle Utilities Service Order Management.

CCB_Model	SOM_Model
Model in Oracle Utilities Customer Care and Billing Example: E-1	Model in Oracle Utilities Service Order Management Example: GD_SR_Elster

CCB_SOM_RemarkCode
This DVM is used to map the remark code in Oracle Utilities Customer Care and Billing to the remark code in Oracle Utilities Service Order Management.

CCB_RemarkCode	SOM_RemarkCode
Remark code in Oracle Utilities Customer Care and Billing Example: HIGH BILL	Remark code in Oracle Utilities Service Order Management Example: SOMHBC

CCB_SOM_SASPFAEventType
This DVM is used to map the field activity event type in Oracle Utilities Customer Care and Billing to the field activity event type in Oracle Utilities Service Order Management.

CCB_EventType	SOM_EventType
Event type in Oracle Utilities Customer Care and Billing Example: SP	Event type in Oracle Utilities Service Order Management Example: D1SP

CCB_SOM_ServiceInstructions
This dvm is sued to map the service instruction from Oracle Utilities Customer Care and Billing to the service instructions in Oracle Utilities Service Order Management.

CCB_ServiceInstructions	SOM_ServiceInstructions
Service instruction in Oracle Utilities Customer Care and Billing Example: LRC	Service instruction in Oracle Utilities Service Order Management Example: LRC

CCB_SOM_ServiceWarnings
This DVM is used to map the service warnings from Oracle Utilities Customer Care and Billing to service warnings in Oracle Utilities Service Order Management.

CCB_ServiceWarnings	SOM_ServiceWarnings
Service warnings in Oracle Utilities Customer Care and Billing Example: DANG	Service warnings in Oracle Utilities Service Order Management

CCB_SOM_SRCompletionActionCode
This DVM is used to map the service request completion action code in Oracle Utilities Customer Care and Billing to the action code in Oracle Utilities Service Order Management.

CCB_SRCompletionActionCode	SOM_SRCompletionActionCode
Service request completion action code in Oracle Utilities Customer Care and Billing Example: C1CP	Service request completion action code in Oracle Utilities Service Order Management Example: D1CP

CCB_SOM_StockLocation
This DVM is used to map the stock location from Oracle Utilities Customer Care and Billing to stock location in Oracle Utilities Service Order Management.

CCB_StockLocation	SOM_StockLocation
Stock location in Oracle Utilities Customer Care and Billing Example: SF MAIN	Stock location in Oracle Utilities Service Order Management Example: SF MAIN

CCB_SOM_TOU
This DVM is used to map the time of use in Oracle Utilities Customer Care and Billing to the time of use in Oracle Utilities Service Order Management..

CCB_TOU	SOM_TOU
Time of use in Oracle Utilities Customer Care and Billing Example: ON	Time of use in Oracle Utilities Service Order Management Example: ON

CCB_SOM_TypeCode_UseReadingOnBill
This DVM is used to map the Field activity type in Oracle Utilities Customer Care and Billing with UseReadingOnbill in Oracle Utilities Customer Care and Billing.

CCB_FAType	CCB_UseReadingOnBill
Field activity type in Oracle Utilities Customer Care and Billing Example: FA-START	UseReadingOnbill in Oracle Utilities Customer Care and Billing Example: TRUE

CCB_SOM_UOM
This DVM is used to map the unit of measure in Oracle Utilities Customer Care and Billing to unit of measure in Oracle Utilities Service Order Management.

CCB_UOM	SOM_UOM
Unit of measure in Oracle Utilities Customer Care and Billing Example: KW	Unit of measure in Oracle Utilities Service Order Management Example: KW

CCB_SOM_UpdateEventType
This DVM is used to map the update event type in Oracle Utilities Customer Care and Billing to the update event type in Oracle Utilities Service Order Management.

CCB_EventType	SOM_EventType
Event type in Oracle Utilities Customer Care and Billing Example: C1AN	Event type in Oracle Utilities Service Order Management Example: D1AN

CCB_SOM_Worker
This DVM is used to map the worker in Oracle Utilities Customer Care and Billing to the worker in Oracle Utilities Service Order Management.

CCB_Worker	SOM_Worker
Worker in Oracle Utilities Customer Care and Billing Example: CCB_CREW	Worker in Oracle Utilities Service Order Management Example: SOM_CREW

Chapter 4

Monitoring and Troubleshooting

This chapter discusses the following in detail:

- Monitoring from Oracle Utilities Customer Care and Billing
- Monitoring from Oracle Utilities Service Order Management
- Monitoring from the Integration
- Troubleshooting

4.1 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

4.1.1 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 $SPLEBASE/system/logs folder where SPLEBASE is the location where the application is installed.

For example: //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 where SPLOUTPUT location is used for storing batch log files and output from batch jobs.

For example: //sploutput/ V24020_CCB_SOA12C_CERT_LIN_ORA_WLS

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

4.1.2 Oracle Utilities Customer Care and Billing Notifications

When Oracle Utilities Customer Care and Billing sends a request message out to Oracle Utilities Service Order 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 Service Order 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, checked that the XML is valid and that the XML has a valid XAI inbound service.

- If there is an error encountered which processing the message, EJBException will be 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 an FA sync response message from the Oracle Utilities Customer Care and Billing FA sync response queue and an error is encountered, the message is moved to the Oracle Utilities Customer Care and Billing FA sync response error queue.

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

The XAI 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.

4.1.2.1 Setup To Do Entry for JMS Message Error

XAI Options

Define the To Do Type for Inbound JMS Message Errors XAI Option and use 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.

XAI Inbound Service

For every XAI Inbound Service used to process the FA Sync Response, the **Post Error** check box must be set to Yes.

4.1.3 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.

4.2 Monitoring from Oracle Utilities Service Order Management

This section describes in detail the following:

- Oracle Utilities Service Order Management Error Logs
- Oracle Utilities Service Order Management Notifications
- Oracle Utilities Service Order Management Connection Errors

4.2.1 Oracle Utilities Service Order Management Error Logs

Many times a **Log** tab appears on the errored object, such as Activities and Communications. It contains the significant events that have occurred since the object was created. These events include related objects, such as outbound messages, or error messages such as, explanations of missing configuration. More serious errors are very easy to detect when manually advancing BO life cycle states by pressing the appropriate button on an errored activity. It should fail again in a similar way, but adding information to the user log. This log is accessible when "?utilities=true&debug=true&tools=true" is included in the URL and by clicking **Show User Log** at the top of the page.

Sometimes, it is necessary to use Oracle Enterprise Manager to check the status of a SOA service (for instance when an activity does not complete in a reasonable time). More details can be seen by navigating to the appropriate composite and viewing the trace of the problematic instance.

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

4.2.2 Oracle Utilities Service Order Management Notifications

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

- If an error is encountered while processing the message, an EJBException is thrown causing the message to be rolled back to the corresponding Oracle Utilities Service Order Management request error queue. A To Do entry is created, if already configured.
  For example: If Oracle Utilities Service Order Management receives a person sync request message from the Oracle Utilities Service Order Management person sync request queue and an error is encountered, the message is moved to the Oracle Utilities Service Order 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 XAI 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. Else, the error is only recorded in the spl-service.log file.

The XAI 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.

4.2.2.1 Setup To Do Entry for JMS message error

XAI Options

Define To Do Type for Inbound JMS Message Errors XAI 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.

XAI Inbound Service

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

4.2.3 Oracle Utilities Service Order Management Connection Errors

Information about errors can be found in the log files.

For information about error logs and their respective folders, see Oracle Utilities Service Order Management Error Logs.

4.3 Monitoring from the Integration

This section describes the utilities used (any of these) to monitor the integration.

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

4.3.1 Monitoring Using WebLogic SOA Enterprise Manager

To monitor the integration using WebLogic SOA Enterprise Manager, follow these steps:

1. Login to the WebLogic SOA Server Enterprise Manager console, and then navigate to **SOA** > **soa-Infra** > **CCB-SOM**.

   All composite processes deployed for the integration are available under the partition CCB-SOM.

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 display name.

3. Click the appropriate process instance and it displays the process.

   The composite process lists all activities in the process instance.

4.3.2 Monitoring Using the WebLogic Logs

To monitor using the WebLogic logs, follow these steps:

1. Login to the machine where the SOA Server is installed.
2. Navigate to where the SOA logs are stored. They are in: <Weblogic installation folder>/user_projects/domains/<SOA Domain name>/servers/<managed server name>/logs.

   For example: /slot/ems1234/oracle/Middleware/user_projects/domains/soa_domain/servers/soa_server1/logs

4.3.3 Monitoring the Queues Using the WebLogic Console

To monitor the queues using the WebLogic console, follow these steps:

1. Login to the WebLogic console, and then go to the Services → Messaging → JMS Modules.
   All queues used for the integration are available in the JMS Module **CCBSOMJMSModule**.
2. Select the appropriate queue on the list and go to the **Monitoring** tab.
3. On the **Monitoring** tab, check if the message is stuck in the queue because there are no consumers listening to the queue and check how many consumers are listening to the queue. If the Consumers Current column is 0, it means no consumers are listening to the queue.
4. To check the message rolled back to the error queue, select the appropriate error queue on the list and go to the **Monitoring** tab. Look for the appropriate message.

4.3.4 Data Purge

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

> **For more information** about how to complete this task, refer to the note in Doc ID 815896.1, "SOA11g Purge Scripts," on https://support.oracle.com.

4.4 Troubleshooting

At times, Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management might experience errors or issues with connection, processing, or sending or receiving messages. Following are the common scenarios which help you to troubleshoot the error, if any, and find possible solutions.

The source application send out the message and the target application receives the message.

For example: When Oracle Utilities Customer Care and Billing sends an FA sync request message to Oracle Utilities Service Order Management, Oracle Utilities Customer Care and Billing is the source application and Oracle Utilities Service Order Management is the target application. The source queue is CCBFASyncRequest and the target queue is SOMFASyncRequestt. The source error queue is CCBFASyncRequestError and the target queue is SOMFASyncRequestError.

If Oracle Utilities Service Order Management sends an FA sync response message to Oracle Utilities Customer Care and Billing, then Oracle Utilities Service Order Management is the source application and Oracle Utilities Customer Care and Billing is the target application. The source queue is SOMFASyncResponse and the target queue is CCBFASyncResponse. The source error queue is SOMFASyncResponseError and the target queue is CCBFASyncResponseError.

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

On the WebLogic console, check if the message reached the source queue. See Monitoring the Queues Using the WebLogic Console for more information.

To resolve this error, follow these steps:

1. Check the source application logs to see if any errors are encountered while trying to send out the message. See Oracle Utilities Customer Care and Billing Error Logs or Oracle Utilities Service Order Management Error Logs for more information about where to find the logs.
2. Check the source application's XAI configuration to ensure they are configured as required. See Oracle Utilities Customer Care and Billing XAI Configuration or Oracle Utilities Service Order Management XAI Configuration.

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

To resolve this error, follow these steps:

1. Verify that the BPEL processes are running. See Monitoring Using WebLogic SOA Enterprise Manager for more information.
   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.
2. 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.
3. If the BPEL processes are running, check if the message has faulted or encountered an error.
   a. From WebLogic SOA Enterprise Manager, check the appropriate process instance flow trace to see the error details.
   b. Check the logs.
      See Monitoring Using WebLogic Logs 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:

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

See Monitoring Using WebLogic SOA Enterprise Manager section for more information.

2. 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.

3. 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.

   See Oracle Utilities Customer Care and Billing JMS Configuration for more information.

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

   See Oracle Utilities Customer Care and Billing Error Logs or Oracle Utilities Service Order Management Error Logs for more information on where to find the logs.

5. 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.

   See the Oracle Utilities Customer Care and Billing Error Logs or Oracle Utilities Service Order Management Error Logs sections for more information on where to find the logs.

At times, the integration might experience errors or issues with connection, processing, or sending or receiving messages to the CCBSOMCancelFAEligibilityQueryReqEBF composite. Following are the common scenarios which help to troubleshoot error, if any, and find possible solutions.

Possible Error Scenario	Resolution
Oracle Utilities Oracle Utilities Customer Care and Billing is unable to connect to the integration layer	Verify whether the integration composite endpoint URLs are configured in Oracle Utilities Customer Care and Billing. Verify whether the integration layer is running, the SOA composite is deployed and it is accepting the requests. Perform the following steps: 1. Check the SOA composite process to find out where the failure occurred. 2. Verify whether or not the Oracle Utilities Service Order Management credentials are properly configured in the integration layer by logging into the enterprise manager console. a. Navigate to **Weblogic domain**> **<Domain Name>**. b. Right-click the **<Domain Name>** and select **Security** > **Credentials**. c. Under the credential map oracle.wsm.security, select the key **CCB- SOM_SOM**. d. Verify whether or not the user and password for Oracle Utilities Service Order Managementare correct. 5. Check whether the Oracle Utilities Service Order Management WSDL (<Property name="SOM.CEService.EndPoint">http://<somHost>:<somPort>/ouaf/XAIApp/xaiserver/D1-TestFACancellability</Property>) is properly configured in the ConfigurationProperties.xml at: CCB-SOM/MDS-Artifacts/CCB-SOM/AIAMetaData/config 6. Verify whether the Oracle Utilities Service Order Management environment is up and running. 7. Verify whether the Oracle Utilities Service Order Management service policies are attached in the integration composite.

Chapter 5

Customization Options

This chapter provides information on the various methods that can be used to extend or customize the integration, including:

- Extension Methods

5.1 Extension Methods

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

- Pre-Transformation Extension Scope
- Pre-Invoke Extension Scope
- Post-Invoke Extension Scope
- Post-Transformation Extension Scope
- Custom Transformations
  - Request custom transformation
  - Response custom transformation
- Override Transformations
  - Request override transformation
  - Response override transformation

Implementers can add/implement their logic in these custom scopes of a specific composite once they login to Jdeveloper with the Customization Developer Role.

5.1.1 Pre-Transformation Extension Scope

The pre-transformation extension scope is invoked before the request 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.

5.1.2 Pre-Invoke Extension Scope

The pre-invoke extension scope is invoked after 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.

5.1.3 Post-Invoke Extension Scope

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

5.1.4 Post-Transformation Extension Scope

The post-transformation extension scope is invoked after the response 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.

5.1.5 Custom Transformations

The custom transformations are used to add data to the message in the incoming and outgoing messages.

Custom transformations named “XX_Custom.xsl” are shipped with the product, which will add the new data mappings to the main transformations.

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

5.1.6 Override Transformations

The override transformations are used to override the message in the incoming and outgoing messages.

Override transformations named "XX_ Override.xsl" is shipped with the product, which sends the output derived from the main transformations.

Using override transformations enables the implementation to pass any data from source system to the target system.

> **Note**: For more details on customization, refer to http://docs.tpu.ru/docs/oracle/en/fmw/11.1.1.6.0/dev.1111/e10224/bp_customize.htm.

5.1.7 Implementing Extension Points

To implement the extension points, follow these steps:

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 for the Integration Layer section.

3. Each process has its own concrete wsdl used to read the endpoint location for the extension service. These concrete wsdl files are located in MDS under the following directories:

   "CCB-SOM/AIAMetaData/AIAComponents/ExtensionServiceLibrary

4. Update the concrete wsdl file to update the binding and service details for the extension service to be called and move the concrete wsdl file to MDS.

5. 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 as follows:

   - $PRODUCT_HOME/MDS-Artifacts/CCB-SOM/AIAMetaData/AIAComponents/ExtensionServiceLibrary

6. Deploy the concrete wsdls to MDS by running the ant deploy command for deploying the MDS folder.

   For more information about the command to use to deploying to MDS, see the **Deploying MDS Folder** section in *Oracle Utilities Customer Care and Billing Integration to Oracle Utilities Service Order Management* Release 2.1.0 Service Pack 3 *Installation Guide*.

7. After deploying the files to MDS, restart the SOA server.

8. After restarting the SOA server, the extension point invokes the web service in the concrete WSDL.

5.1.8 Sample WSDL File with Binding and Service Details

To invoke the extension points for any integration process, enable the extension flags in the ConfigurationProperties.xml file and add/update the binding and service details in the respective integration process' ExtensionConcrete wsdl.

For example: To enable the extension points for SOMCCBFACompletionReqExtension, add the binding and service elements to the SOMCCBFACompletionReqExtensionConcrete.wsdl.

```
<binding name="SOMCCBFACompletionReqExtensionAbstractServiceBinding"
type="tns:SOMCCBFACompletionReqExtensionAbstractService">
<soap:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
<operation name="PreXform">
<soap:operation style="document"
soapAction="http://xmlns.oracle.com/SOMCCBFACompletionReqEBF/
SOMCCBFACompletionReqExtension/PreXform"/>
<input>
<soap:body use="literal" parts="sendDetails"/>
</input>
<output>
<soap:body use="literal" parts="sendDetails"/>
</output>
<fault name="fault">
<soap:fault name="fault" use="literal"/>
</fault>
</operation>
<operation name="PostXform">
<soap:operation style="document"
soapAction="http://xmlns.oracle.com/SOMCCBFACompletionReqEBF/
SOMCCBFACompletionReqExtension/PostXform"/>
<input>
<soap:body use="literal" parts="C1FACompletionServiceRequest"/>
</input>
<output>
<soap:body use="literal" parts="C1FACompletionServiceRequest"/>
</output>
<fault name="fault">
<soap:fault name="fault" use="literal"/>
</fault>
```

```
</operation>
</binding>
<service name="SOMCCBFACompletionReqExtensionAbstractService">
<port name="SOMCCBFACompletionReqExtensionAbstractServicePort"
binding="tns:SOMCCBFACompletionReqExtensionAbstractServiceBinding">
<soap:address location="endpoint url of the extension service "/>
</port>
</service>
```

Note: The binding and service can be added easily using the Oracle Jdeveloper 11g.

5.1.9 Implementing Custom Transformations

To implement the custom transformations, follow these steps:

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. See the message mappings for 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 Service Order 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 (xsd for both the 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:
   - CCB-SOM/MDS-Artifacts/CCB-SOM/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUCCB/V1/schemas
   - CCB-SOM/MDS-Artifacts/CCB-SOM/AIAMetaData/AIAComponents/ApplicationObjectLibrary/OUSOM/V2/schemas
9. The custom XSL files are located in product install home under the directory: CCB-SOM/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 the MDS folder.

    For more information about the command to use to deploying to MDS, see the **Deploying MDS Folder** section in *Oracle Utilities Customer Care and BillingIntegration to Oracle Utilities Service Order Management Release 2.1.0 Service Pack 3 Installation Guide*.
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.

Appendix A

Data Mapping

This section provides mapping details for each of integration points mentioned below:

- FA Synchronization Request
- FA Synchronization Response
- Collection Information
- FA Cancel Eligibility Query
- FA Completion
- Service Request Update

FA Synchronization Request

This section provides data mapping details for the field activity synchronization request.

Oracle Utilities Customer Care and Billing FA Sync Request Mapping			Oracle Utilities Service Order Management FA Sync Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing Column**	**Oracle Utilities Service Order Management Column**
sendDetails		OutermostTag	D1-FARequestAsynchronous		OutermostTag			
			request		Group			
			relatedActivityId	Request	Field			
syncRequestId	sendDetails	Field	externalReferenceId	Request	Field			
sourceSystem	sendDetails	Field	sourceSystem	Request	Field			
syncRequestDetails	sendDetails	Group						
initialSnapshot	syncRequestDetails	Group						
finalSnapshot	syncRequestDetails	Group						
faType	initialSnapshot	Field	externalActTypeIdentifier	Request	Field	CCB_SOM_FAType.dvm	CCB_FAType	SOM_ExtActivityType
faType	initialSnapshot	Field	fieldTaskType	Request	Field	CCB_SOM_FAType.dvm	CCB_FAType	SOM_FieldTaskType
faStatus	initialSnapshot	Field	somStatus	Request	Field	CCB_SOM_FAStatus.dvm	CCB_Status	SOM_Status
customElements	finalSnapshot	Field	customElements	Request	Group			
formattedElements	finalSnapshot	Field	externalActivityElement	Request	Group			
saList	sendDetails	Group	saList	Request	Group			
saId	saList	Field	saId	saList	Field			
premiseAddress	sendDetails	Group	addressConstituents	Request	Group			
country	premiseAddress	Field	country	addressConstituents	Field	CCB_SOM_Country.dvm	CCB_Country	SOM_Country
addressLine1	premiseAddress	Field	address1	addressConstituents	Field			
addressLine2	premiseAddress	Field	address2	addressConstituents	Field			

Oracle Utilities Customer Care and Billing FA Sync Request Mapping			Oracle Utilities Service Order Management FA Sync Request Mapping			DVM Mapping		
Element Name	Parent Element	Type	Element Name	Parent Element	Type	DVM	Oracle Utilities Customer Care and Billing Column	Oracle Utilities Service Order Management Column
addressLine3	premiseAddress	Field	address3	addressConstituents	Field			
addressLine4	premiseAddress	Field	address4	addressConstituents	Field			
houseType	premiseAddress	Field	houseType	addressConstituents	Field			
number1	premiseAddress	Field	number1	addressConstituents	Field			
number2	premiseAddress	Field	number2	addressConstituents	Field			
inCityLimit	premiseAddress	Field	inCityLimit	addressConstituents	Field			
city	premiseAddress	Field	city	addressConstituents	Field			
geographic	premiseAddress	Field	geographic	addressConstituents	Field			
county	premiseAddress	Field	county	addressConstituents	Field			
state	premiseAddress	Field	state	addressConstituents	Field			
postal	premiseAddress	Field	postal	addressConstituents	Field			
latitude	sendDetails/miscInfo	Field	geocodeLatitude	addressConstituents	Field			
longitude	sendDetails/miscInfo	Field	geocodeLongitude	addressConstituents	Field			
	/sendDetails/ syncRequestDetails/ saList	List	List	Request/saList				
saId	saList	Field	saId	saList	Field			
eventType	saList	Field	eventType	saList	Field	CCB_SOM_SASPFA EventType.dvm	CCB_EventType	SOM_EventType
	/sendDetails/ syncRequestDetails/ contactInformation			/request/ contactDetails				
personName	contactInformation	Field	contactName	contactDetails	Field			
mainPhone	contactInformation	Field	mainPhone	contactDetails	Field			
cellPhone	contactInformation	Field	cellPhone	contactDetails	Field			
accountId	contactInformation	Field	accountId	contactDetails	Field			

Oracle Utilities Customer Care and Billing FA Sync Request Mapping			Oracle Utilities Service Order Management FA Sync Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing Column**	**Oracle Utilities Service Order Management Column**
personId	contactInformation	Field	personId	contactDetails	Field			
faCancelReason	finalSnapshot	Field	cancelReasonCode	request	Field	CCB_SOM_FACancel Reason.dvm	CCB_FA_Cancel_ Reason	SOM_FA_Cancel_ Reason
spType	syncRequestDetails	Field	externalSPType	syncRequestDetails	Field			

FA Synchronization Response

This section provides data mapping details for the field activity synchronization response.

Oracle Utilities Service Order Management FA Sync Response Mapping			Oracle Utilities Customer Care and Billing FA Sync Response Mapping			DVM Mapping		
Element Name	Parent Element	Type	Element Name	Parent Element	Type	DVM	Oracle Utilities Customer Care and Billing System Column	Oracle Utilities Service Order Management Column
sendDetails		OutermostTag	F1-UpdateAndTransitionSyncRequest		OutermostTag			
externalReferenceId	sendDetails	Field	syncRequestId	F1-UpdateAndTransitionSyncRequest	Field			
exceptionInformation	sendDetails	Group						
exceptionInformationList	exceptionInformation	List	exceptionInfo	F1-UpdateAndTransitionSyncRequest	List			
messageCategory	exceptionInformationList	Field	messageCategory	F1-UpdateAndTransitionSyncRequest	Field	CCB_SOM_ErrorCode	CCB_ErrorCode	SOM_ErrorCode
messageNumber	exceptionInformationList	Field	messageNumber	F1-UpdateAndTransitionSyncRequest	Field	CCB_SOM_ErrorCode	CCB_ErrorCode	SOM_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			

Oracle Utilities Service Order Management FA Sync Response Mapping			Oracle Utilities Customer Care and Billing FA Sync Response Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
customElements	sendDetails	Field	customElements	F1-UpdateAndTransitionSyncRequest	Field			

Collection Information

This section includes the following:

- Collection Information Request
- Collection Information Response

Collection Information Request

The table shows the Oracle Utilities Service Order Management Collection Information Request mapping details for each integration point

Oracle Utilities Service Order Management Collection Information Request Mapping			Oracle Utilities Customer Care and Billing Collection Information Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing Column**	**Oracle Utilities Service Order Management Column**
			C1-ServiceRequest FinancialInfo		OutermostTag			
sendDetail		OutermostTag	input	C1-ServiceRequest FinancialInfo	Group			
			accountId	input	Field			
servicePointId		Field	spId	input	Field			
activityId		Field						

Collection Information Response

The table shows the Oracle Utilities Service Order Management Collection Information Response mapping details for each integration point.

Oracle Utilities Service Order Management Collection Information Response Mapping			Oracle Utilities Customer Care and Billing Collection Information Response Mapping			DVM Mapping		
Element Name	Parent Element	Type	Element Name	Parent Element	Type	DVM	Oracle Utilities Customer Care and BillingColumn	Oracle Utilities Service Order Management Column
responseDetail		OutermostTag	output	C1-ServiceRequestFinancialInfo	Group			
collectionDataDetails		Group	accountBalanceDetails	output	Group			
payoffAmount	collectionDataDetails	Field	payoffAmount	accountBalanceDetails	Field			
currentAmount	collectionDataDetails	Field	currentAmount	accountBalanceDetails	Field			
arrearsDataDetails	collectionDataDetails	Group	arrearsDetails	accountBalanceDetails	Group			
disputedAmount	arrearsDataDetails	Field	disputedAmount	arrearsDataDetails	Field			
newCharges	arrearsDataDetails	Field	newCharges	arrearsDataDetails	Field			
lessThanThirtyDaysAmount	arrearsDataDetails	Field	lessThanThirtyDaysAmount	arrearsDataDetails	Field			
thirtyDaysAmount	arrearsDataDetails	Field	thirtyDaysAmount	arrearsDataDetails	Field			
overSixtyDaysAmount	arrearsDataDetails	Field	overSixtyDaysAmount	arrearsDataDetails	Field			
paymentHistory	output	Group						
paymentHistoryList	paymentHistory	List	paymentHistoryList	output	List			
paymentExternalId	paymentHistoryList	Field	paymentId	paymentHistoryList	Field			
paymentDate	paymentHistoryList	Field	paymentDate	paymentHistoryList	Field			
paymentAmount	paymentHistoryList	Field	paymentAmount	paymentHistoryList	Field			
paymentCancellationReason	paymentHistoryList	Field	paymentCancellationReason	paymentHistoryList	Field			

FA Cancel Eligibility Query

This section includes the following:

FA Cancel Eligibility Query Request

The table shows the Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query Request mapping details for each integration point

Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query Request Mapping			Oracle Utilities Service Order Management FA Cancel Eligibility Query Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and BillingSystem Column**	**Oracle Utilities Service Order Management Column**
Input			D1-TestFACancellability					
requesterTransactionId	input	Field	requesterTransactionId	input	Field			
sourceSystem	input	Field	sourceSystem	input	Field			

FA Cancel Eligibility Query Response

The table shows the Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query Response mapping details for each integration point.

Oracle Utilities Customer Care and Billing FA Cancel Eligibility Query Response Mapping			Oracle Utilities Service Order Management FA Cancel Eligibility Query Response Mapping			DVM Mapping		
Element Name	Parent Element	Type	Element Name	Parent Element	Type	DVM	Oracle Utilities Customer Care and Billing Column	Oracle Utilities Service Order Management Column
D1-TestFACancellability								
cancellability	Output	Field	cancellability	Output	Field	CCB_SOM_FA_CHECK CANCELLABILITY.dvm	CCB_FA_CancellabilityCode	SOM_FA_Cancellability Code

FA Completion

This section provides data mapping details for the field activity completion request:

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
sendDetails		OutermostTag	C1FACompletionService Request		OutermostTag			
srCompletion Information	sendDetails	Group	srCompletion Information		Group			
FAId	srCompletion Information	Field	FAId	srCompletion Information	Field			
SRCompletionAction	srCompletion Information	Field	SRCompletionAction	srCompletion Information	Field	CCB_SOM_ SRCompletionAction Code.dvm	CCB_ SRCompletionAction Code	SOM_ CompletionAction Code
activityId	sendDetails		activityId	srCompletion Information				
message	sendDetails	Group	C1FACompletionExtSys Struct		Group			
			transactionType		Field			
			faultStyle		Field			
			C1FACompletionExtSysS tructService		Group			
			C1FACompletionExtSysS tructDetails		Group			
hostExternalId	message	Field	UploadFieldActivityID	C1FACompletionExtS ysStructDetails	Field			
hostExternalId			FieldActivityID					
completionStatus	message		FACompletionAction	C1FACompletionExtS ysStructDetails	Field	CCB_SOM_Completi onActionCode. dvm	CCB_Completion ActionCode	SOM_Completion ActionCode
completedByCrew	message		Workedby	C1FACompletionExtS ysStructDetails	Field	CCB_SOM_Worker. dvm	CCB_Worker	SOM_Worker

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
completionDateTime	message		WorkDateTime	C1FACompletionExtSysStructDetails	Field			
comments	message		LongDescription	C1FACompletionExtSysStructDetails	Field			
comments	message		Descr2542	C1FACompletionExtSysStructDetails	Field			
comments	message		ExtMsgRecd	C1FACompletionExtSysStructDetails	Field			
taskType			ExtFaTypeCode	C1FACompletionExtSysStructDetails				
completionInformation	message	Group						
remarkTypes	completion Information	Group	FAUploadRemarks	C1FACompletion ExtSysStructDetails	List			
remarkTypesList	remarkTypes	List	FAUploadRemarksRow	FAUploadRemarks	Field			
remarkType	remarkTypesList	Field	FieldActivityRemark	FAUploadRemarks Row	Field	CCB_MWM_ RemarksCode.dvm	CCB_RemarksCode	MWM_ RemarksCode
utilityCompletion Information	message	Group						
servicePoint CompletionDetails	message/ utilityCompletionInformation							
disconnectLocation	message/ utilityCompletionInformation/ servicePointCompletionDetails		DisconnectLocation	C1FACompletion ExtSysStructDetails	Field	CCB_SOM_ Disconnnect Location.dvm	CCB_ Disconnnect Location	SOM_ DisconnectLocation
existingDevice and newDevice	utilityCompletion Information							
meterCompletionDetails			MeterInfo	C1FACompletion ExtSysStructDetails	Group			

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
meterDataDetails	meterCompletion Details	Group	MeterInfoRow	MeterInfo	Field			
meterConfigurationType	meterCompletion Details	Field	MeterConfigurationType	MeterInfoRow	Field	CCB_SOM_ MeterConfiguration Type.dvm	CCB_Meter ConfigurationType	SOM_Meter ConfigurationType
badgeNumber	meterCompletion Details		BadgeNumber	MeterInfoRow	Field			
			InstallRemove MeterorItem	MeterInfoRow	Field			
deviceStatusLeft	meterCompletion Details		OnOffStatus	MeterInfoRow	Field	CCB_SOM_ MeterStatus.dvm	CCB_MeterStatus	SOM_MeterStatus
stockLocation	meterCompletion Details		StockLocation	MeterInfoRow	Field	CCB_SOM_ StockLocation.dvm	CCB_StockLocation	SOM_ StockLocation
meterConfigurationType	meterDataDetails		MeterConfigurationType	MeterInfoRow		CCB_SOM_Meter ConfigurationType. dvm	CCB_Meter ConfigurationType	SOM_Meter ConfigurationType
readingDateTime	sendDetails/message/ utilityCompletionInfor mation/newDevice/ meterCompletionDeta ils/ readingCompletionDet ails		ReadDateTime	MeterInfoRow	Field			
Value picked from dvm			UseOnBill	MeterInfoRow	Field	CCB_SOM_ TypeCode_ UseReadingOnBill. dvm	CCB_FAType	CCB_ UseReadingOnBill
DEFAULT SOURCE CODE			MeterReadSource	MeterInfoRow	Field			
readingCompletionDetail s/readingDetails/ readingDetailsList	meterCompletionDeta ils		Registers	MeterInfoRow	List			

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
			RegistersRow	Registers	Field			
readSequence			Seq	RegistersRow	Field			
unitOfMeasure			UnitofMeasure	RegistersRow	Field	CCB_SOM_UOM.dvm	CCB_UOM	SOM_UOM
timeOfUse			TimeofUse	RegistersRow	Field	CCB_SOM_TOU.dvm	CCB_TOU	SOM_TOU
			RegisterReading	RegistersRow	List			
			RegisterReadingRow	RegistersRow	Field			
readSequence			Seq	RegistersRow	Field			
overrideReading			ReadType	RegistersRow	Field			
reading			RegisterReading	RegistersRow	Field			
			ItemInfo		Group			
itemCompletionDetails/ itemDataDetails			ItemInfoRow		Field			
badgeNumber	itemCompletionDetails/itemDataDetails		BadgeNumber		Field			
deviceStatusLeft	itemCompletionDetails/itemDataDetails		OnOffStatus		Field	CCB_SOM_ ItemStatus.dvm	CCB_ItemStatus	SOM_ItemStatus
completionDateTime	message		DateReceived		Field			
completionDateTime			DateRetired					
stockLocation	itemCompletionDetails/itemDataDetails		StockLocation			CCB_SOM_ StockLocation.dvm	CCB_StockLocation	SOM_ StockLocation
DVM Mapped fields for updating SP, Meter and Item								
serviceInstructions	utilityCompletionInformation/ servicePointCompletionDetails/ servicePointData Details	Field	serviceInstructions	utilityCompletionInformation/ servicePointCompletionDetails/ servicePointData Details	Field	CCB_SOM_ Service Instructions.dvm	CCB_ ServiceInstructions	SOM_ ServiceInstructions

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
serviceWarnings	utilityCompletionInformation/servicePointCompletionDetails/servicePointDataDetails	Field	serviceWarnings	utilityCompletionInformation/servicePointCompletionDetails/servicePointDataDetails	Field	CCB_SOM_ServiceWarnings.dvm	CCB_ServiceWarnings	SOM_ServiceWarnings
Manufacturer	utilityCompletionInformation/existingDevice/meterCompletionDetails/meterDataDetails	Field	deviceManufacturer	utilityCompletionInformation/existingDevice/meterCompletionDetails/meterDataDetails	Field	CCB_SOM_Manufacturer.dvm	CCB_Manufacturer	SOM_Manufacturer
deviceManufacturer	utilityCompletionInformation/newDevice/meterCompletionDetails/meterDataDetails	Field	deviceManufacturer	utilityCompletionInformation/newDevice/meterCompletionDetails/meterDataDetails	Field	CCB_SOM_Manufacturer.dvm	CCB_Manufacturer	SOM_Manufacturer
deviceManufacturer	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	deviceManufacturer	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	CCB_SOM_Manufacturer.dvm	CCB_Manufacturer	SOM_Manufacturer
deviceManufacturer	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	deviceManufacturer	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	CCB_SOM_Manufacturer.dvm	CCB_Manufacturer	SOM_Manufacturer
deviceModel	utilityCompletionInformation/existingDevice/meterCompletionDetails/meterDataDetails	Field	deviceModel	utilityCompletionInformation/existingDevice/meterCompletionDetails/meterDataDetails	Field	CCB_SOM_Model.dvm	CCB_Model	SOM_Model
deviceModel	utilityCompletionInformation/newDevice/meterCompletionDetails/meterDataDetails	Field	deviceModel	utilityCompletionInformation/newDevice/meterCompletionDetails/meterDataDetails	Field	CCB_SOM_Model.dvm	CCB_Model	SOM_Model

Oracle Utilities Service Order Management FA Completion Request Mapping			Oracle Utilities Customer Care and Billing FA Completion Request Mapping			DVM Mapping		
Element Name	**Parent Element**	**Type**	**Element Name**	**Parent Element**	**Type**	**DVM**	**Oracle Utilities Customer Care and Billing System Column**	**Oracle Utilities Service Order Management Column**
deviceModel	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	deviceModel	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	CCB_SOM_Model.dvm	CCB_Model	SOM_Model
deviceModel	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	deviceModel	utilityCompletionInformation/newDevice/itemCompletionDetails/itemDataDetails	Field	CCB_SOM_Model.dvm	CCB_Model	SOM_Model
customerContactType	completionInformation/customerContactDetails	Field	customerContactType	completionInformation/customerContactDetails	Field	CCB_MWM_CustomerContactType.dvm	CCB_CustomerContactType	MWM_CustomerContactType

Service Request Update

This section provides data mapping details for the following service request update:

Oracle Utilities Service Order Management Service Request Update Request Mapping			Oracle Utilities Customer Care and Billing Service Request Update Request Mapping			DVM Mapping		
Element Name	Parent Element	Type	Element Name	Parent Element	Type	DVM	Oracle Utilities Customer Care and BillingSystem Column	Oracle Utilities Service Order Management Column
sendDetails		OutermostTag	C1-ServiceRequest UpdateRequest		OutermostTag			
personId		Field	personId		Field			
accountId			accountId		Field			
spId	sendDetails	Field	spId		Field			
faId	sendDetails	Field	faId		Field			
srUpdateEvent	sendDetails	Field	srUpdateEvent		Field	CCB_SOM_ UpdateEventType.dvm	CCB_EventType	SOM_ EventType
appointmentRequestType	sendDetails	Field	appointmentRequestType		Field	CCB_SOM_ ApptRequestType.dvm	CCB_ ApptRequestType	SOM_Appt RequestType
customerContactType	sendDetails	Field	customerContactType		Field	CCB_MWM_ CustomerContactType. dvm	CCB_Customer ContactType	MWM_ Customer ContactType
faRemarkType	sendDetails		faRemarkType			CCB_SOM_ RemarkCode.dvm	SOM_RemarkCode	CCB_ RemarkCode
comments	sendDetails	Field	comments		Field			
appointmentStartDateTime	sendDetails	Field	appointmentStartDate Time		Field			
appointmentEndDateTime	sendDetails	Field	appointmentEndDateTime		Field			
arrivalDateTime	sendDetails	Field	arrivalDateTime		Field			
missedApptStatusReason	sendDetails	Field	missedApptStatusReason		Field			