

**Oracle Utilities Operational Device
Management Integration to Oracle
Utilities Meter Data Management**

Configuration Guide

Release 23A

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Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management
Configuration Guide

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Preface

Welcome to the Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management Configuration Guide for release 23A.

This document focuses on the configuration and administration information for the integration between Oracle Utilities Operational Device Management and Oracle Utilities Operational Device Management using Oracle Integration Cloud.

The preface includes the following:

- [Audience](#)
- [Documentation and Resources](#)
- [Updates to Documentation](#)
- [Conventions](#)
- [Acronyms](#)

Audience

This document is intended for anyone implementing the Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management.

Documentation and Resources

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

Product Documentation

Resource	Location
Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management documentation	https://docs.oracle.com/en/industries/utilities/index.html
Oracle Integration Cloud Service documentation	https://docs.oracle.com/en/cloud/paas/integration-cloud-um/index.html

Additional Documentation

Resource	Location
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. Access the support site for the Edge Application Certification Matrix for Oracle Utilities products (Doc ID 1454143.1).
Oracle Technology Network (OTN) Latest versions of documents	http://www.oracle.com/technetwork/index.html
Oracle University for training opportunities	http://education.oracle.com/

Updates to Documentation

The complete Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management documentation set is available from Oracle Help Center at <https://docs.oracle.com/en/industries/energy-water/index.html>.

Visit [My Oracle Support](#) for additional and updated information about the product.

Documentation Accessibility

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

Access to Oracle Support

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

Conventions

The following text conventions are used in this document:

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

Acronyms

The following terms are used in this document:

Term	Expanded Form
ODM	Oracle Utilities Operational Device Management
MDM	Oracle Utilities Meter Data Management
C2M	Oracle Utilities Customer to Meter
ICS	Integration Cloud Service
OIC	Oracle Integration Cloud
MO	Maintenance Object
BO	Business Object
BPS	Business Process Script
IWS	Inbound Web Service

Chapter 1

Overview

This chapter provides an overview about the integration between Oracle Utilities Operational Device Management and Oracle Utilities Meter Data Management using Oracle Integration Cloud. It includes the following:

- [Prerequisites](#)
- [About the Integration Product](#)
- [Software Requirements](#)
- [Supported Business Processes](#)

Prerequisites

All participating applications (namely, Oracle Utilities Meter Data Management, Oracle Utilities Operational Device Management, Oracle Integration Cloud) and the pre-built integration packages from Oracle Market Place must be imported into Oracle Integration Cloud.

About the Integration Product

This section provides general information about the functionality and processing of Oracle Utilities Operational Device Management Integration to Oracle Utilities Meter Data Management.

Oracle Utilities Operational Device Management is an Oracle Utilities' solution offered in on-premises or cloud for maintaining the device information required for business.

Oracle Utilities Meter Data Management is an Oracle Utilities' solution offered in on-premises or cloud and drives the service points and associated contacts (along with installation/removal) to Oracle Utilities Operational Device Management.

The communication between these two applications happens via Oracle Integration Cloud using the pre-built integrations.

About the Products

This integration involves the following products:

- [Oracle Utilities Operational Device Management](#)
- [Oracle Utilities Meter Data Management](#)
- [Oracle Integration Cloud](#)

Oracle Utilities Operational Device Management

Oracle Utilities Operational Device Management provides the functionality to manage the receipt, installation, maintenance, tracking, and removal of large volumes of assets.

Oracle Utilities Meter Data Management

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

Oracle Integration Cloud

Oracle Integration Cloud is Oracle's integration platform as a service (iPaaS). It includes the following:

- An intuitive web-based integration designer for point-and-click integration between applications
- Rich monitoring dashboard providing real-time insight into transactions
- Runs on a mature runtime platform on Oracle Cloud

Software Requirements

This integration supports a combination of cloud and on-premises applications.

The following is a list of supported applications. You may choose any of these based on the requirement.

- Oracle Integration Cloud (OIC) v22.1.3 or above
- Oracle Utilities Operational Device Management v2.4.0.0 or above
- Oracle Utilities Meter Data Management v2.5.0.1/ Oracle Utilities Customer To Meter v2.9.0.1 or above
- Work and Asset Cloud Service (WACS) 22C or above
- Operational Device Cloud Service (ODCS) 22C or above
- Meter Solutions Cloud Service (MSCS) 22C or above

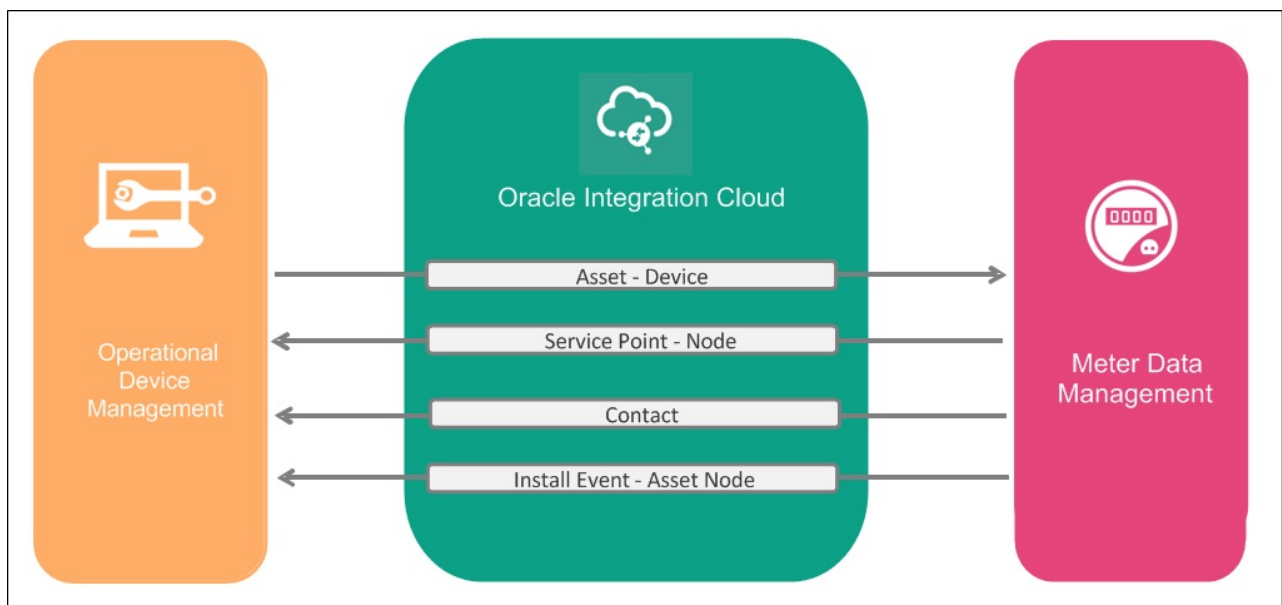
Supported Business Processes

This integration supports the following business processes:

- Asset - Device Synchronization
- Service Point - Node Synchronization
- Contact Synchronization
- Install Event - Asset Node Synchronization

Note: Only the Asset - Device Synchronization flow is initiated from Oracle Utilities Operational Device Management.

The following diagram provides a visual representation of this processing:



Chapter 2

Understanding the Integration Process

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

- [Technical Overview](#)
- [Integration Points](#)

Technical Overview

The technical aspects involved in Oracle Utilities Integration for Device Operations Using Oracle Integration Cloud are as follows:

- This is an integration between Oracle Utilities Operational Device Management and Oracle Utilities Meter Data Management.
- All end-to-end integration processes are synchronous.
- The integration layer is made up of integration processes deployed on Oracle Integration Cloud.
- Both Oracle Utilities Operational Device Management and Oracle Utilities Meter Data Management interact with the Oracle Integration Cloud using web services.
- Both Oracle Utilities Operational Device Management and Oracle Utilities Meter Data Management send messages using outbound message and receive messages using Inbound Web Services (IWS).
- Two Oracle Integration Cloud integration processes manage each integration point - one for request and one for response processing respectively.

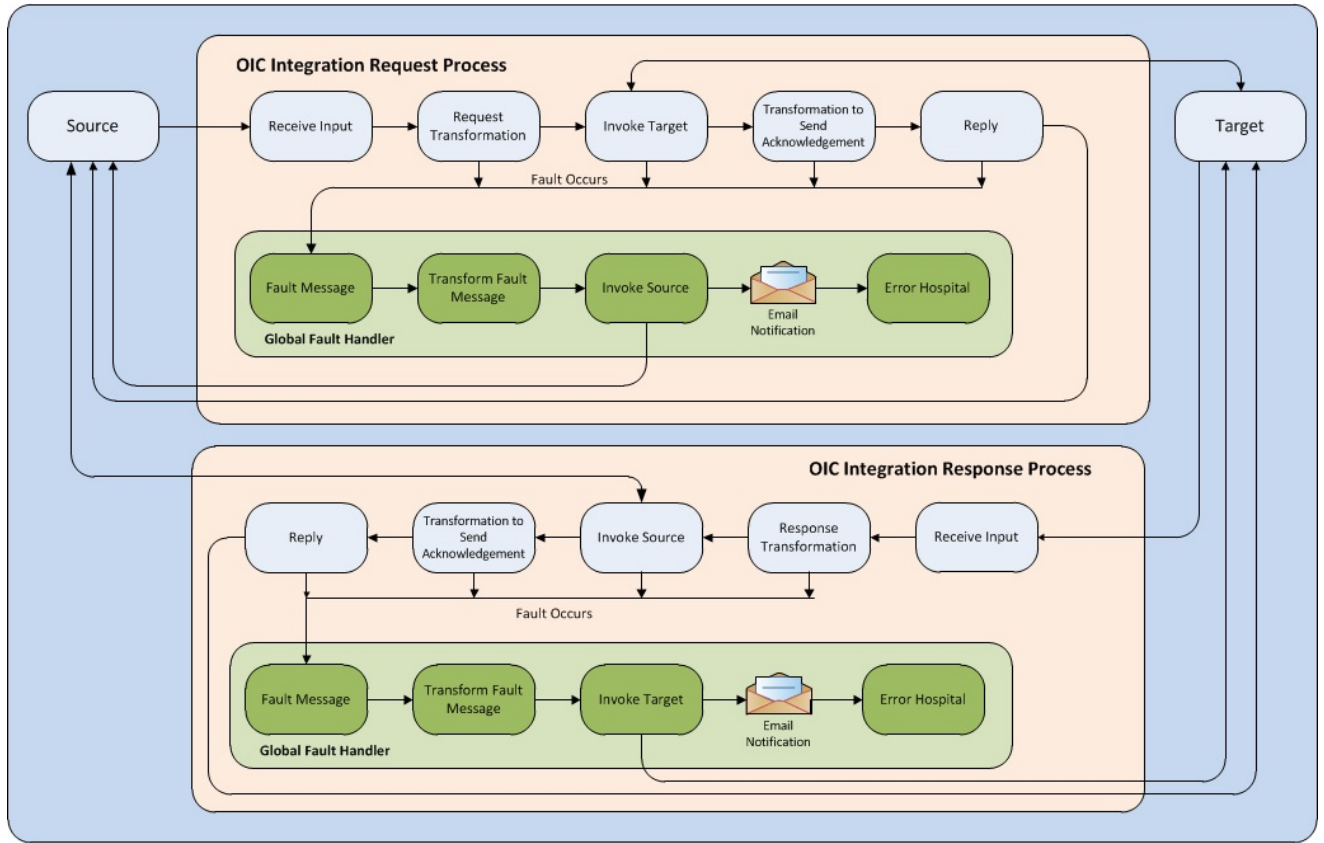
The **Request** integration process includes the following:

- Receives request message from the source application.
- Transforms message from the source to the target format. Lookups are used for data translations.
- Invokes target application using an IWS.
- Transforms the message (after invoking the target application) from the target format back to the source format. It sends back an acknowledgment as the application IWS called by Oracle Integration Cloud is a synchronous service.
- In case of any error, the global fault handler catches them and sends the transformed error message to the source application.
- An email notification will be sent to the respective users as configured.

The **Response** integration process includes the following:

- Receives response message from the target application.
- Transforms message from the target to the source format. Lookups are used for data translations.
- Invokes source applications using an IWS.
- Transforms the message (after invoking the target application) from the source to the target format. It is used to send back an acknowledgment as the invoking application IWS is a synchronous service.
- In case of any error, the global fault handler catches them and sends the transformed error messages to the target application.
- An email notification will be sent to the respective users as configured.

The following diagram provides a graphical representation of this processing.



Technical Flow Diagram

Integration Points

The integration scope supports the following business processes:

- Data synchronization of new devices from Oracle Utilities Operational Device Management to Oracle Utilities Meter Data Management.
- Data synchronization of service points and associated contacts from Oracle Utilities Meter Data Management to Oracle Utilities Operational Device Management
- Data synchronization of installations/removals from Oracle Utilities Meter Data Management to Oracle Utilities Operational Device Management.

The key integration points for this integration are as follows:

- [Asset - Device Synchronization](#)
- [Service Point - Node Synchronization](#)
- [Contact Synchronization](#)
- [Install Event - Asset Node Synchronization](#)

Note: The location information is stored as Node information in Oracle Utilities Operational Device Management. Asset Location information is stored as Asset Node information.

Master Data Synchronization Processes

The following integration processes are available in Oracle Utilities Integration for Device Operations Using Oracle Integration Cloud:

- Meter and component data are synchronized from Oracle Utilities Operational Device Management to Oracle Utilities Meter Data Management system.
- Contact, Service Point, and Install Event data are synchronized from Oracle Utilities Meter Data Management to Oracle Utilities Operational Device Management.
- The integration uses the sync request process to capture data changes and communicate or synchronize the data changes between the two systems by sending out a sync request message to the integration layer.
- The sync request process is implemented using business object technology; therefore, much of the business rules and processing logic are defined in the algorithms associated to the business objects used by the sync process.
- The Audit plug-in spot defined on the entity's Maintenance Object (MO) is used to detect changes in Oracle Utilities Meter Data Management data and to create sync requests. The Audit plug-in spot on the entity's business object (BO) is used to detect changes in Oracle Utilities Operational Device Management data and to create sync requests.

These two plug-ins work in the same way, except Oracle Utilities Operational Device Management tracks changes at a business object level. Since only a subset of Oracle Utilities Operational Device Management assets (meters and components) are synchronized to Oracle Utilities Meter Data Management, having the audit plug-in at business object level avoids the unnecessary creation of sync requests that will eventually be discarded.

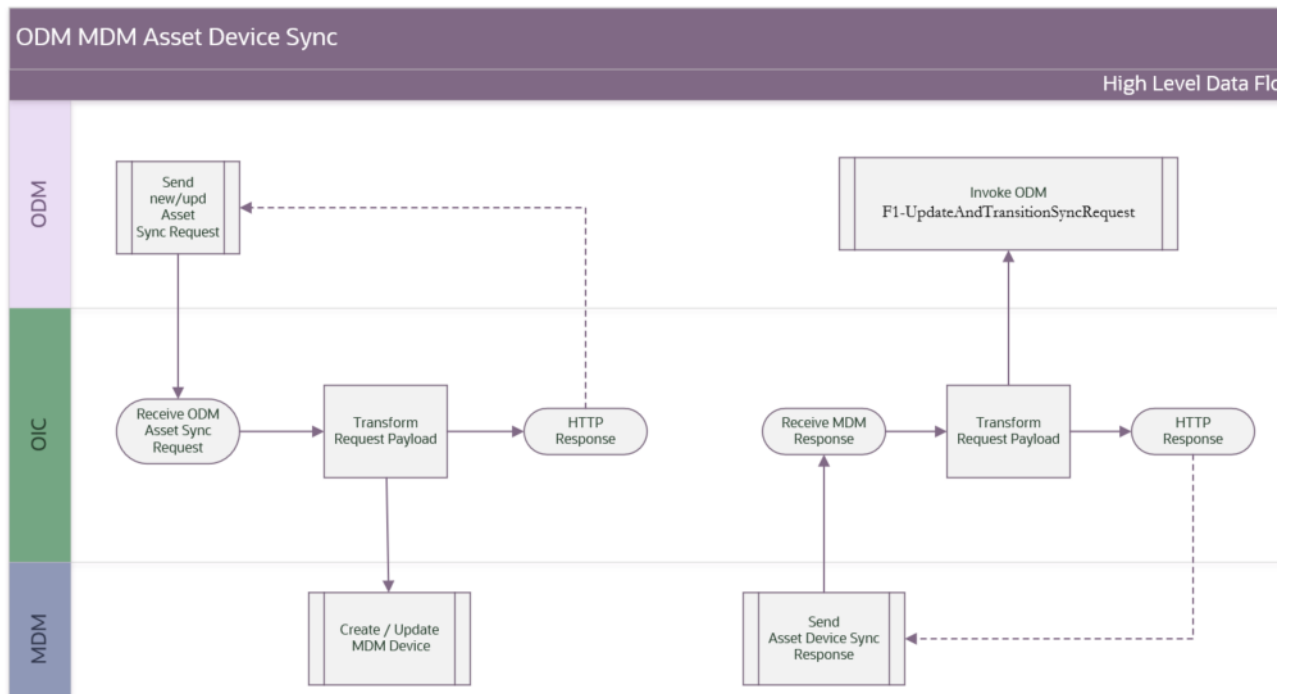
- The sync request life cycle captures the change in data, sends sync request message to the integration, and awaits an acknowledgment back from the external system - whether positive or negative. Timeouts and negative acknowledgment received from the external system results in the sync request being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

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

Asset - Device Synchronization

This process synchronizes the device details required by Oracle Utilities Meter Data Management from Oracle Utilities Operational Device Management.

The following diagram provides a graphical representation of this integration process.



Business Processing

The Asset - Device Sync *request* integration process includes the following activities:

1. Oracle Utilities Operational Device Management sends Asset sync information in the form of XML messages to Oracle Utilities Operational Device Management-Meter Data Management Asset Sync Req which is deployed on Oracle Integration Cloud.
2. The request integration process transforms asset request messages in the Oracle Utilities Operational Device Management format to Device messages in the Oracle Utilities Meter Data Management format and invokes D1-InboundDeviceSync inbound web service in Oracle Utilities Meter Data Management.
3. An immediate acknowledgment is sent to Oracle Utilities Operational Device Management.
4. Any errors are reported back to Oracle Utilities Operational Device Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT_ODMMDM_Email lookup.

The Asset - Device Sync *response* integration process includes the following activities:

1. After running the batch job in Oracle Utilities Meter Data Management, Device sync response in the form of XML messages are sent to the following integration process: Oracle Utilities Operational Device Management-Meter Data Management Asset Sync Response which is deployed on Oracle Integration Cloud.

2. The response integration process transforms the device response message in the Oracle Utilities Meter Data Management format to Asset message in the Oracle Utilities Operational Device Management format and invokes F1-UpdateAndTransitionSyncRequest inbound web service in Oracle Utilities Operational Device Management.
3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT_ODMMDM_Email lookup.

Technical Details

This section provides the integration process, as well as Oracle Utilities Meter Data Management and Oracle Utilities Operational Device Management inbound web services used for the Asset - Device Synchronization integration point.

Integration Flow Name	Description
Oracle Utilities Operational Device Management-Meter Data Management Asset Sync	Integration process that transforms Asset request from Oracle Utilities Operational Device Management to device in Oracle Utilities Meter Data Management
Oracle Utilities Operational Device Management-Meter Data Management Contact Sync Response	Integration process that transforms device response from Oracle Utilities Meter Data Management to Asset in Oracle Utilities Operational Device Management.

Integration Package Name	Description
outl.ba.odm_mdm.1.23.1000.par	Asset - Device Sync request and response flows (.iar) are included this package file (.par)

Oracle Utilities Meter Data Management Services

Web Service Catalog	Description
https://MDM_HOST:MDM_PORT/ouaf/webservices/builtin/ServiceCatalog?wsdl	Web service catalog including Oracle Utilities Meter Data Management business objects / IWS needed for Oracle Utilities Integration for Device Operations Using Oracle Integration Cloud.

Service Name	Description
D1-InboundDeviceSync	Invoked by the integration layer to instantiate sync requests whose information applies to only one maintenance object. It is mapped to the generic sync request business object, which uses the information in the seeder sync request master configuration (business object D1-SeederSyncMasterConfig) to derive the correct sync request to create.

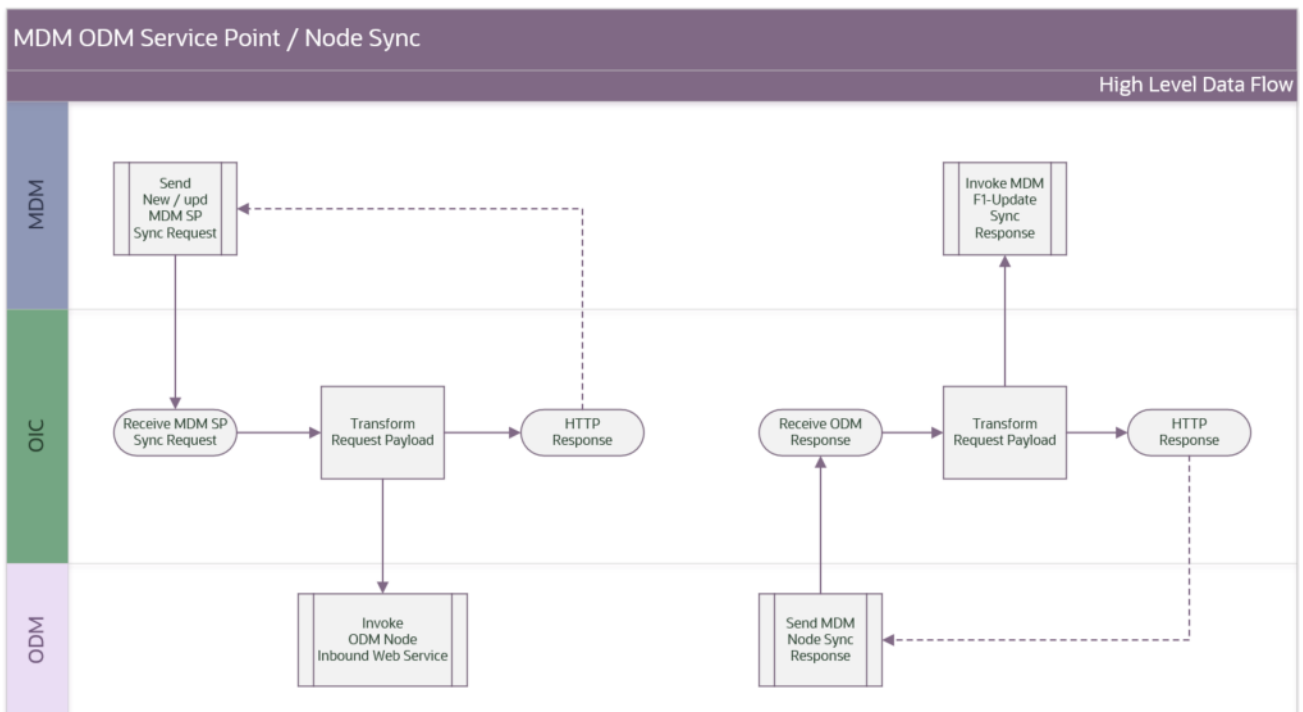
Oracle Utilities Operational Device Management Services

Service Name	Description
F1-UpdateAndTransitionSyncRequest	Updates a Transition Master Data Sync Request. This service is invoked by the integration layer to send sync response messages.

Service Point - Node Synchronization

This process synchronizes node/location details required by Oracle Utilities Operational Device Management from a service point in Oracle Utilities Meter Data Management.

The following diagram provides a graphical representation of this integration process.



Business Processing

The Service Point - Node Sync *request* integration process includes the following activities:

1. Oracle Utilities Meter Data Management sends the Service Point sync information in the form of XML messages to the service point sync request integration process Oracle Utilities Meter Data Management-Operational Device Management Service Point Sync which is deployed on Oracle Integration Cloud.
2. The request integration process transforms Service Point request messages in the Oracle Utilities Meter Data Management format to Node messages in the Oracle Utilities Operational Device Management format and invokes W1-SyncRequestInbound inbound web service in Oracle Utilities Operational Device Management.
3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODM_MDM_Email lookup.

The Service Point - Node Sync *response* integration process includes the following activities:

1. After running the batch job in Oracle Utilities Operational Device Management, Service Point - Node sync response in the form of XML messages are sent to the Node sync response integration process Oracle Utilities Operational Device Management-Meter Data Management Service Point Sync Response which is deployed on Oracle Integration Cloud.
2. The response integration process transforms the Node response message in the Oracle Utilities Operational Device Management format to Service Point message in the Oracle Utilities Meter Data Management format and invokes F1-UpdateAndTransitionSyncRequest inbound web service in Oracle Utilities Meter Data Management.
3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODM_MDM_Email lookup.

Note: The Location information is stored as Node information in Oracle Utilities Operational Device Management.

Technical Details

This section provides the integration process, as well as Oracle Utilities Meter Data Management and Oracle Utilities Operational Device Management inbound web services used for the Service Point - Node Synchronization integration point.

Integration Flow Name	Description
Oracle Utilities Meter Data Management-Operational Device Management Service Point Sync	Service Point - Node sync request integration process that transforms Service Point request from Oracle Utilities Meter Data Management to Asset Node Location in Oracle Utilities Operational Device Management.
Oracle Utilities Meter Data Management-Operational Device Management Service Point Sync Response	Service Point - Node sync response integration process that transforms Asset Node Location response from Oracle Utilities Operational Device Management to Service Point in Oracle Utilities Meter Data Management.

Oracle Utilities Operational Device Management Services

Integration Package Name	Description
outl.ba.odm_mdm.1.23.1000	Service Point - Node sync request and response flows (.iar) are included in this package file (.par)

Service Name	Description
W1-SyncRequestInbound	An inbound web service to process the sync request from integration layer.

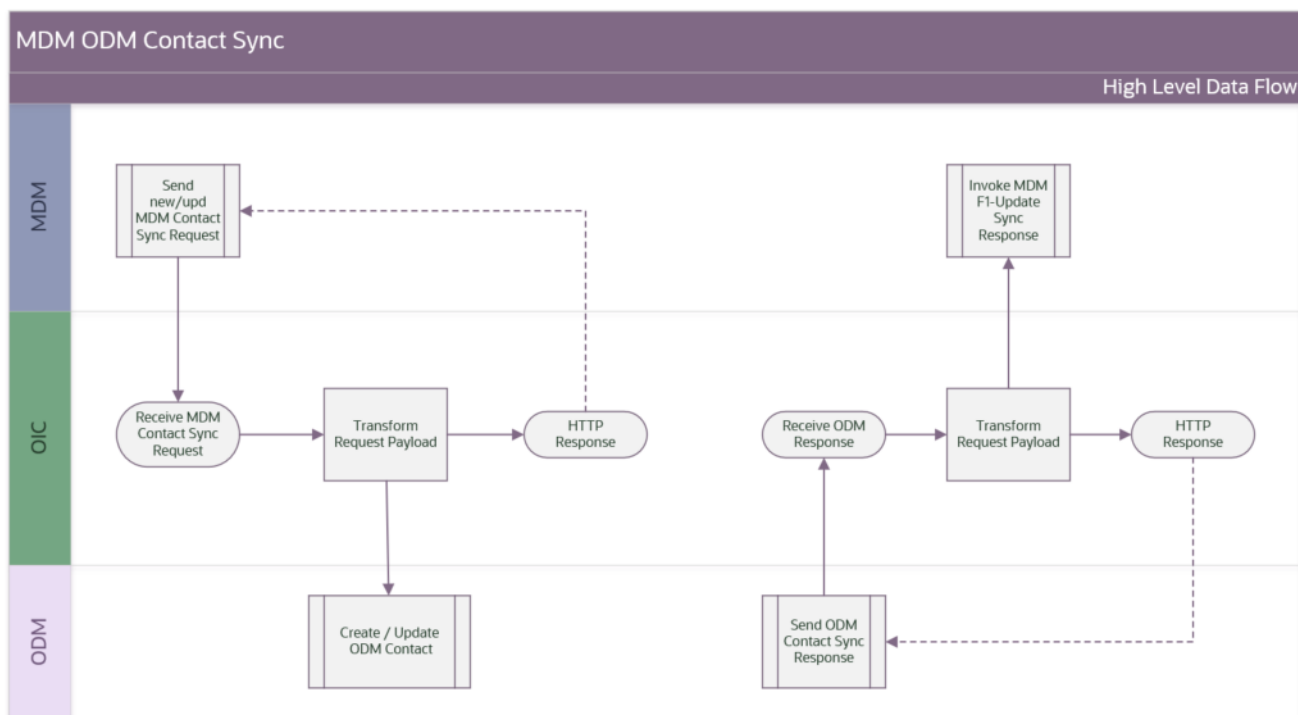
Oracle Utilities Meter Data Management Services

Service Name	Description
F1-UpdateAndTransitionSyncRequest	Updates a Transition Master Data Sync request. This inbound web service is invoked by the integration layer to send the sync response message.

Contact Synchronization

This process synchronizes the contact details needed by Oracle Utilities Operational Device Management from Oracle Utilities Meter Data Management.

Note: Only contacts associated with synchronized service points will be synchronized.



Business Processing

The Contact Sync *request* integration process includes the following activities:

1. Oracle Utilities Meter Data Management sends the Contact sync information in the form of XML messages to the Contact sync request integration process Oracle Utilities Meter Data Management-Operational Device Management Contact Sync which is deployed on Oracle Integration Cloud.
2. The request integration process transforms Contact request messages in the Oracle Utilities Meter Data Management format to Contact messages in the Oracle Utilities Operational Device Management format and invokes W1-SyncRequestInbound inbound web service in Oracle Utilities Operational Device Management.
3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODMMDM_Email lookup.

The Contact Sync *response* integration process includes the following activities:

1. After running the batch job in Oracle Utilities Operational Device Management, Contact sync response in the form of XML messages are sent to Contact sync response integration process Oracle Utilities Operational Device Management-Meter Data Management Contact Sync Response which is deployed on Oracle Integration Cloud.
2. The response integration process transforms the Contact response message in the Oracle Utilities Operational Device Management format to Contact message in the Oracle Utilities Meter Data Management format and invokes F1-

UpdateAndTransitionSyncRequest inbound web service in Oracle Utilities Meter Data Management.

3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODM_MDM_Email lookup.

Technical Details

This section provides the integration process, as well as the Oracle Utilities Meter Data Management and Oracle Utilities Operational Device Management inbound web services used for the Contact Synchronization integration point.

Integration Flow Name	Description
Oracle Utilities Meter Data Management-Operational Device Management Contact Sync	Contact Sync Request integration process that transforms Contact request from Oracle Utilities Meter Data Management to Contact in Oracle Utilities Operational Device Management.
Oracle Utilities Operational Device Management-Meter Data Management Contact Sync Response	Contact Sync Response integration process that transforms Contact response from Oracle Utilities Operational Device Management to Contact in Oracle Utilities Meter Data Management.

Integration Package Name	Description
outl.ba.odm_mdm.1.23.1000	Contact sync request and response flows (.iar) are included in this package file (.par)

Oracle Utilities Operational Device Management Services

Service Name	Description
W1-SyncRequestInbound	The inbound web service to process the sync request from integration layer.

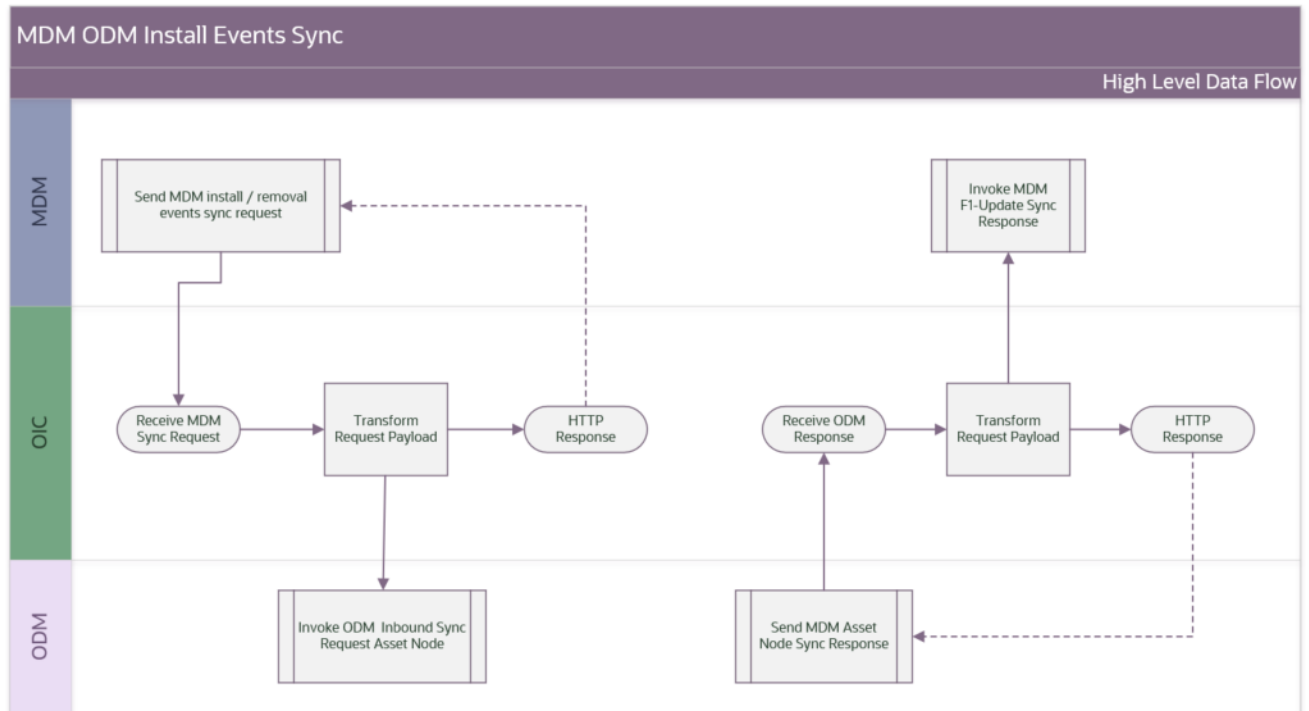
Oracle Utilities Meter Data Management Services

Service Name	Description
F1-UpdateAndTransitionSyncRequest	Updates a Transition Master Data Sync Request. This IWS is invoked by the integration layer to send the sync response message.

Install Event - Asset Node Synchronization

This process synchronizes asset node details required by Oracle Utilities Operational Device Management from install event in Oracle Utilities Meter Data Management.

The following diagram provides a graphical representation of this processing:



Business Processing

The Install Event - Asset Node Sync *request* integration process includes the following activities:

1. Oracle Utilities Meter Data Management sends the Install Event sync information in the form of XML messages to the Install Event sync request integration process Oracle Utilities Meter Data Management-Operational Device Management Install Event Sync which is deployed on Oracle Integration Cloud.
2. The request integration process transforms Install Event request messages in the Oracle Utilities Meter Data Management format to Asset Node messages in the Oracle Utilities Operational Device Management format and invokes W1-SyncRequestInboundAssetNode inbound web service in Oracle Utilities Operational Device Management.
3. An immediate acknowledgment is sent to Oracle Utilities Meter Data Management.
4. Any errors are reported back to Oracle Utilities Meter Data Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODM_MDM_Email lookup.

The Install Event - Asset Node Sync *response* integration process includes the following activities:

1. After running the batch job in Oracle Utilities Operational Device Management, Asset Node sync response in the form of XML messages are sent to the Asset Node sync response integration process Oracle Utilities Operational Device Management-Meter Data Management Install Event Sync Resp which is deployed on Oracle Integration Cloud.
2. The response integration process transforms the Asset Node response message in the Oracle Utilities Operational Device Management format to Install Event message in the Oracle Utilities Meter Data Management format and invokes F1-UpdateAndTransitionSyncRequest inbound web service in Oracle Utilities Meter Data Management.
3. An immediate acknowledgment is sent to Oracle Utilities Operational Device Management.
4. Any errors are reported back to Oracle Utilities Operational Device Management through the global fault handler.
5. An email notification with error details will be sent to the users configured in the OUTL-BRT-ODM_MDM_Email lookup.

Technical Details

This section provides the integration process, as well as Oracle Utilities Meter Data Management and Oracle Utilities Operational Device Management inbound web services used for the Install Event - Asset Node Synchronization integration point.

Integration Flow Name	Description
Oracle Utilities Meter Data Management-Operational Device Management Install Event Sync	Transforms Install Event request from Oracle Utilities Meter Data Management to Asset Node in Oracle Utilities Operational Device Management.
Oracle Utilities Operational Device Management-Meter Data Management Install Event Sync Resp	Transforms Asset Node response from Oracle Utilities Operational Device Management to Service Point in Oracle Utilities Meter Data Management.

Integration Package Name	Description
outl.ba.odm_mdm.1.23.1000	Install Event - Asset Node sync request and response flows (.iar) are included in this package file (.par).

Oracle Utilities Operational Device Management Services

Service Name	Description
W1-SyncRequestInboundAssetNode	Processes the Asset Node sync request from integration layer.

Oracle Utilities Meter Data Management Services

Service Name	Description
F1-UpdateAndTransitionSyncRequest	Updates a Transition Master Data Sync Request. This inbound web service is invoked by the integration layer to send the sync response message.

Chapter 3

Configuring the Participating Applications and Integration Layer

This chapter provides details regarding the configuration settings required for the integration. The following are discussed in detail:

- [Synchronizing Data](#)
- [Setting Up Oracle Utilities Operational Device Management](#)
- [Setting Up Oracle Utilities Meter Data Management](#)
- [Setting Up the Integration Process](#)

Synchronizing Data

In this integration, Oracle Utilities Meter Data Management serves as the database for contacts, service points, and meter device connections, while Oracle Utilities Operational Device Management manages assets (meters and components).

Any asset data addition in Oracle Utilities Operational Device Management is communicated to Oracle Utilities Meter Data Management. Based on a template ID, device, device configuration, and measuring component, the records are associated. Once these devices are installed at service points in Oracle Utilities Meter Data Management, the installation information is communicated to Oracle Utilities Operational Device Management.

Service point and contact information are necessary to communicate installation information. These are synchronized separately from Oracle Utilities Meter Data Management to Oracle Utilities Operational Device Management.

Setting Up Oracle Utilities Operational Device Management

To set up Oracle Utilities Operational Device Management for the integration, configure the admin data and system data tables, outbound messages, and catalog services.

The following sections provide details about how to configure these items:

- [Configuring Admin Data Tables](#)
- [Configuring System Data Tables](#)
- [Configuring Outbound Messages](#)
- [Managing Catalog Service](#)

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.

For more information on configuring and working with Oracle Utilities Operational Device Management, refer to the Oracle Utilities Operational Device Management documentation.

Configuring Admin Data Tables

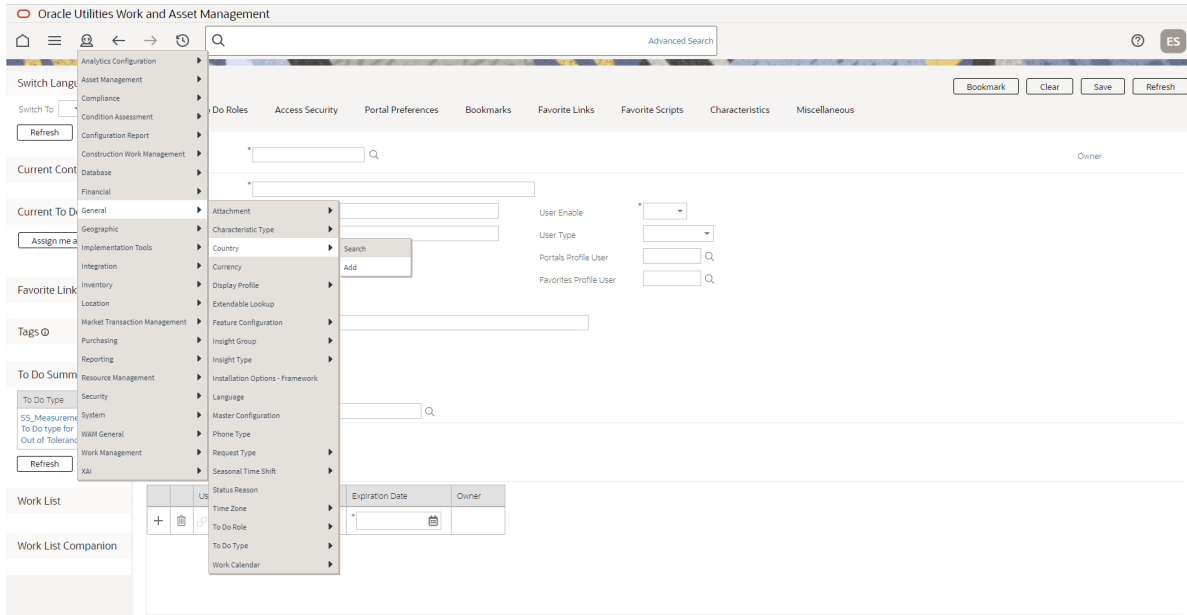
This section describes the unique setup issues specifically related to configuring your system for the integration.

To configure Admin Data Tables, define the following entities:

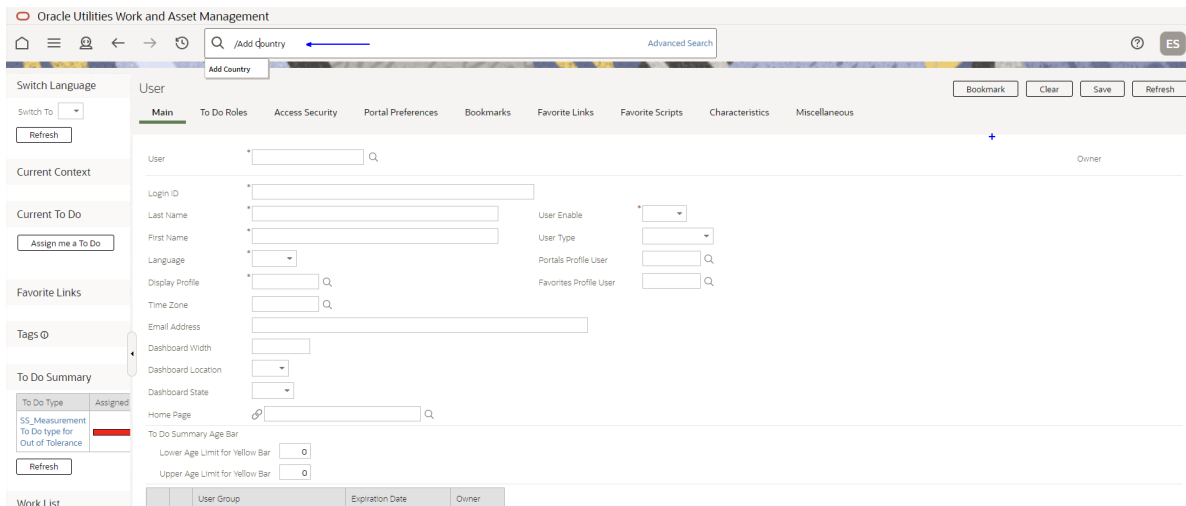
- [Country](#)
- [Contact Type](#)
- [Asset Location Type](#)
- [Time Zone](#)
- [Asset Type](#)

- [Specification](#)
- [Master Configuration](#)

Important: In the following sections, alphabetical menus are used to specify the navigation path. Alternatively, you can either navigate to the required entity using functional menus or search for a specific entity using the **Search Menu**.



Navigation using Alphabetical Menu



Navigation using Search Menu

Country

Create a country code in Oracle Utilities Operational Device Management.

The **Main** page is used to customize the fields and field descriptions that are displayed where addresses are used in the system. This ensures that all addresses conform to the

customary address format and conventions of the particular country defined. The codes defined here must exactly match values in the Lookups/DVMs indicated.

Country Code Details for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Admin > C > Country	Create the Country codes	OUTL-BRT- ODM_MDM_Country

Contact Type

Create the required Contact Types. The codes defined here must exactly match values in the lookup indicated.

Contact Type Code Details for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Admin > C > Contact Type	Create Contact Types	OUTL-BRT- ODM_MDM_ContactType

Asset Location Type

Create the required Asset Location Types. The codes defined here must exactly match values in the lookup indicated.

Asset Location Type Code Details for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Admin > A > Asset Location Type	Create Asset Location Types	OUTL-BRT- ODM_MDM_SPNodeType

Time Zone

Create the required Time Zones. The codes defined here must exactly match values in the lookup indicated.

Time Zone Code for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Admin > T > TimeZone	Create Timezone Types	OUTL-BRT- ODM_MDM_TimeZone

Asset Type

Create the required Asset Types. The codes defined here must exactly match values in the lookup.

Asset Types for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Admin > A > Asset Type	Create Asset Types	OUTL-BRT- ODM_MDM_AssetDeviceType

Specification

Create the required Specification codes. The codes defined here will be used by the Specification extendable lookup in Oracle Utilities Meter Data Management.

Specification Codes for Oracle Utilities Operational Device Management

Navigation	Guidelines	Corresponding DVM
Menu > Asset Management > Specification	Create Specification codes	N/A

Master Configuration

Two master configurations - Master Data Synchronization Configuration and Seeder Sync Request Master Configuration - have to be configured. A business process analysis script is provided to pre-populate these with the information necessary to support the base objects included in the sync. Execute W2-MDMPreMCF to accomplish this.

A third master configuration, Oracle Utilities Meter Data Management Integration Master Configuration, needs to be completed manually. The Oracle Utilities Meter Data Management URL, timeout threshold hours for outbound requests, and the maintenance object/Outbound Message Type combinations used by outbound requests are all defined here. The To Do Type to use for asset-location sync scenarios that require manual intervention is also defined here as well as the time out number of hours used by the outbound sync.

Configuring System Data Tables

To configure the System Data tables, the following are required:

- [Business Objects](#)
- [Business Object Algorithms](#)
- [Extendable Lookups](#)
- [Menus](#)
- [Batch Scheduling](#)

Business Objects

This section describes the unique setup issues specifically related to integration system configuration.

Business Object	Business Object Description
W1-OngoingSyncRequestContact	Defines the behavior of inbound sync requests. The
W1-OngoingSyncRequestLocation	schema elements define information required to
W1-OngoingSyncRequestAssetNode	maintain the master data in Oracle Utilities
	Operational Device Management.
	<p>As part of sync request processing, an acknowledgment message is sent to the external system (either positive or negative). The “Outbound Message Type” business object option contains a reference to the outbound message business object to use for this purpose. The base package includes business object W1-MDMAssetSyncReqOutMsg to be used on the outbound message type configuration.</p>
	<p>For more information, refer to the Configuring Outbound Messages section.</p>
	<p>The error states in the ongoing sync requests contain automatic To Do creation and automatic retry. The parameters relevant to these processes (To Do Retry Frequency and To Do Maximum Retries) are captured as business object status options. If your implementation needs to introduce custom values, add a higher sequenced row for the option you need to modify. The algorithms will automatically use these values.</p>
	<p>The Create To Do algorithm (W1-CRE-SRTD) has been delivered to use the base package supplied To Do Type W1-SYRQI for this process. If your implementation needs to use a different To Do Type, you will need to configure your own algorithm and supply the value in its parameters.</p>
	<p>The monitor process on the initial states of these business objects may be removed by the implementation if immediate processing of the sync requests as they are received is desired.</p>

Business Object	Business Object Description
W1-MDMAssetSyncRequest	<p>Defines the behavior of an outbound sync request. The schema elements define the information needed by Oracle Utilities Meter Data Management to maintain device master data.</p> <p>The business object and data area necessary to build the sync snapshot are defined as business object options on the sync request business object. The business object W1-MDMAsset and DA W1-MDMAssetSnapshot are included in the base for use with these options. If your implementation needs to use your own snapshot business object or DA, simply add a higher sequenced row for the relevant option. The Post Service Script for Extract option allows your implementation to perform additional manipulation of the data during the building of the snapshot.</p> <p>The Create To Do algorithm (W1-CRE-SROTD) has been delivered to use the base package supplied To Do Type W1-SYRQO for this process. If your implementation needs to use a different To Do Type, you will need to configure your own algorithm and supply the value in its parameters.</p>
W2-SmartMeter, W2-ManualMeter W2-CommunicationComponent	<p>These base asset business objects need to have the audit plug-in configured to create outbound sync requests.</p> <p>For more details, refer to the Business Object Algorithms section.</p> <p>The sync request business object to use for Oracle Utilities Meter Data Management is defined as a business object Option on these business objects. The base includes W1-MDMAssetSyncRequest for this purpose.</p>

Business Object Algorithms

The following table lists the business object algorithm types.

Algorithm Type	Description for Business Object Algorithm Types
W1-GCHG-CDCP	An audit algorithm that creates a sync request (if there is not already a Pending one in existence) for the particular record being modified. It retrieves the Sync Request business object option from the record's business object.

Algorithm Type	Description for Business Object Algorithm Types
W1-EXTSYSRST	A monitor algorithm that sets a timeout limit on the receipt of a response from the external system. It retrieves this timeout limit from the MDM Integration Master Configuration. Use the latter to define the number of hours your implementation wishes to wait for a response from Oracle Utilities Meter Data Management before transitioning the sync request into the Error state.

Extendable Lookups

Configure the following extendable lookups in Oracle Utilities Operational Device Management:

- W2-SmartMeterConfiguration - Configure the values to be used by Oracle Utilities Meter Data Management to identify a template device.

This value is used in Oracle Utilities Meter Data Management in conjunction with the Specification to select a template device from which to create the device configuration and measuring components. Both configuration and specification values need to be set up in the Specification extendable lookup in Oracle Utilities Meter Data Management.

- W2-ManualMeterConfiguration - Configure the values to be used by Oracle Utilities Meter Data Management to identify a template device.

This value is used in Oracle Utilities Meter Data Management in conjunction with the Specification to select a template device from which to create the device configuration and measuring components. Both configuration and specification values need to be set up in the Specification extendable lookup in Oracle Utilities Meter Data Management.

Menus

Make sure that the users have access to the W1-GOTOMDM application service. This application service is defined in the business process analysis scripts to allow you to switch from Oracle Utilities Operational Device Management to Oracle Utilities Meter Data Management. The context menu items appear on **Asset**.

Batch Scheduling

This batch process runs the sync request. It is a generic batch process used for different sync processes. The parameters in this batch are used to control which sync request business objects should be processed.

The following batch processes are used for Initial Sync requests:

Note: All sync requests for all objects being synchronized are expected to be present in the **Pending** state. The general process flow of the batches for the initial sync request is described below.

Batch Scheduling Details

Batch Code	Batch Process Description
F1-SYNRQ	Transitions all the sync requests out of the PENDING state.
F1-SAKRQ	Pre-allocates the production key to each record and transitions all the sync requests out of the Transformed/Schema Validated state into the Key Allocated state.
W1-SIKCN	Resolves any foreign keys within the schema as well as executes the validation algorithms on the target business objects. This batch code is for processing Contact initial sync requests.
W1-SILCN	Loads the records for Contact into the production tables.
W1-SIKSP	Resolves any foreign keys within the schema as well as executes the validation algorithms on the target business objects. This batch code is for processing service point initial sync requests.
W1-SILSP	Loads the records for service point into the production tables.
W1-SILDD	Transitions all initial sync requests into the Additional Processing state from the Loaded state. An algorithm in the Additional Processing state sends an acknowledgment back to the external system along with the production ID of the synchronized object in Oracle Utilities Operational Device Management.
W1-SIIER	Transitions sync request out of the ERROR state.

Note: If any sync requests exist in the Validation Error state after errors have been investigated and resolved, run W1- SIIER to retry the data transformation/schema validation process. If any sync requests exist in the Resolution/Business Object Validation Error state, run its respective W1-SIK* batch job.

Refer to the above table for proper suffix to use for each master data record being synchronized.

Batch Processes for Ongoing Sync Requests

Batch Code	Batch Process Description
D1-SIOPE	Transitions ongoing sync request out of the PENDING state. It is a generic batch process that is used for different sync processes. It has a couple of parameters that can be used to control which sync request business objects to process.
W1-SIOER	Transitions ongoing sync request out of the ERROR state.

Batch Processes for Outbound Sync Requests

Batch Code	Batch Process Description
F1-SYNRQ	Runs the sync request. The Sync Request Monitor Process is a generic batch process that is used for different sync processes. It has a couple of parameters that can be used to control which sync request business objects to process.
F1-SYNIL	Creates an initial sync request business object for a particular maintenance object. The algorithm parameters for filtering records are provided, so implementations can further restrict the creation of initial sync requests to certain records within the maintenance object.

Note: To generate initial sync requests, submit the F1-SYNIL batch job. To transition Sync Requests out of the Pending state, run the F1-SYNRQ batch job.

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

Configuring Outbound Messages

Configure the outbound messages to send them out to the integration layer. The following should be configured during the outbound message configuration:

- [Message Sender](#)
- [Outbound Message Type](#)
- [External System](#)

Message Sender

For Oracle Utilities Operational Device Management to access Oracle Integration Cloud services, create a Message Sender for each integration service.

1. Navigate to the **Message Sender** page.
You can do so from the **Admin** menu or from the **Search** menu.
2. Enter a unique **Message Sender** name and its description.
3. Populate the following values:
 - **Message Sender** - Sender name in Oracle Utilities Operational Device Management
 - **Description** - Sender description
 - **Invocation Type** - Real-time
 - **Message Class** - SOAPSND (SOAP Sender)
 - **Active** - Select the checkbox
 - **Message Encoding** - UTF-8 message encoding
4. On the **Context** tab, set values for the following context types:

- **HTTP Header** - SOAPAction:"Operation name in the respective Oracle Integration Cloud integration process wsdl"
- **HTTP Login User** - User ID to access Oracle Integration Cloud's integration process
- **HTTP Password** - Password to access Oracle Integration Cloud's integration 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 is invalid, use the additional HTTP URL types to set the complete URL.

- **Message Namespace URI** - Namespace from the respective Oracle Integration Cloud integration process wsdl

Example Message Sender for Integration Services

Asset Device Sync Request Process

Message Sender	Description	HTTP Header	HTTP URL
ADSynReq	Asset Device Sync Request	SOAPAction:"_MDM_WM-MDMASTSYN"	https:// OIC_HOST:PORT/ ic/ws/integration/ v1/flows/ oracleutilities/ OUTL-BA- ODM_MDM_ASSE T_SYNC_REQ/ 1.0/

Contact Sync Response Process

Message Sender	Description	HTTP Header	HTTP URL
ConSynResp	Contact Sync Response	SOAPAction:"MDM_WM-CN-SYNRSP"	https://host:port/ ic/ws/integration/ v1/flows/ oracleutilities/ OUTL-BA- ODM_MDM_CON TACT_SYNC_RES/ 1.0/

Install Event Asset Node Sync Response Process

Message Sender	Description	HTTP Header	HTTP URL
InsEANSynResp	Install Event Asset Node Sync Response	SOAPAction:"MDM_WM-AN-SYNRSP"	http://ICS_HOST:7003/ic/ws/integration/v1/flows/oracleutilities/OUTL-BA-ODM_MDM_IE_SYNC_RES/1.0/

SP Node Sync Response Process

Message Sender	Description	HTTP Header	HTTP URL
SPNSynResp	SP Node Sync Response	SOAPAction:"MDM_WM-SP-SYNRSP"	https://host:port/ic/ws/integration/v1/flows/oracleutilities/OUTL-BA-ODM_MDM_SP_SYNC_RES/1.0/

Outbound Message Type

To create a new outbound message type for each integration process, do the following:

1. Navigate to the **Outbound Message Type** page.
You can do so from the **Admin** menu or from the **Search** menu.
2. Enter an outbound message type, description, and detailed description.
3. Select the outbound message business object created for a specific service.

Example Outbound Message Types for Integration Points

Asset - Device Sync Integration Point Outbound Message

Outbound Message Type	Description	Business Object
WM-MDMASYSYN	Asset Sync Request - For Outbound Message	W1-MDMAssetSyncReqOutMsg

Service Point - Node Sync Integration Point Outbound Message

Outbound Message Type	Description	Business Object
WM-SP-SYNRSP	Service Point Sync Response - For Acknowledgment Message	W1-OutboundAcknowledge Message

Contact Sync Integration Point Outbound Message

Outbound Message Type	Description	Business Object
WM-CN-SYNRSP	Contact Sync Response - For Acknowledgment Message	W1-OutboundAcknowledge Message

Install Event - Asset Location Sync Integration Point Outbound Message

Outbound Message Type	Description	Business Object
WM-AN-SYNRSP	Asset - Node Sync Response - For Acknowledgment Message	W1-OutboundAcknowledge Message

External System

To create a new external system to support the integration:

- Navigate to the **External System** page.
You can do so from the **Admin** menu or from the **Search** menu.
- Enter a unique external system and description.
For example: Name = MDM_ICS, Description = Oracle Utilities Meter Data Management
- Set the **Our Name in Their System** field to *ODM*.
- 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 Operational Device Management outbound queue.
 - Processing Method** - Real-time
 - Message Sender** - Set the message sender created for the queue.
 - Date/Time Format** - XSD
 - Namespace Option** - Configured on Sender

If Oracle Utilities Operational Device Management sends messages to the integration service, use the Message Senders created for each integration.

For more information about Message Senders, refer to the [Message Sender](#) section.

External System Details

Outbound Message Type	Processing Method	Message Sender
WM-MDMASTSYN	Real-time	ADSynReq
WM-SP-SYNRSP	Real-time	SPNSynResp
WM-CN-SYNRSP	Real-time	ConSynResp
WM-AN-SYNRSP	Real-time	InsEANSynResp

Managing Catalog Service

The catalog service is used by Oracle Integration Cloud to communicate with the respective application. This is configured in Catalog URL in the Oracle Integration Cloud connection.

To configure the catalog service in Oracle Utilities Operational Device Management:

1. Navigate to the **Web Service Catalog** page.

You can do so either from the **Admin** menu or the **Search** menu.

The external system and inbound web services are added to the catalog.

2. To get the catalog URL, append “webservices/builtin/ServiceCatalog?wsdl” to the Oracle Utilities Operational Device Management URL.

For example: `http(s)://<ODM_HOST>:<ODM_PORT>/<ContextRoot>/webservices/builtin/ServiceCatalog?wsdl`

For more information about configuration, refer to the Oracle Utilities Operational Device Management documentation.

Setting Up Oracle Utilities Meter Data Management

The D1-AddODMAlg and D1-ODMPreMcg business process analysis scripts aid in setting up Oracle Utilities Meter Data Management sync processing. Consequently, the setup effort by an implementation is greatly reduced.

These scripts insert Oracle Utilities Operational Device Management-specific algorithms to Sync Request business objects. They are intended to be executed only once prior to any customization(s) being made to any of the sync objects.

The details are as follows:

- **D1-AddODMAlg** - Inserts transformation algorithms specific to the Oracle Utilities Operational Device Management integration into the sync request business objects.

If your implementation needs to introduce additional transformation algorithms, insert them after running this script.

- **D1-ODMPreMcg**- Used to setup data in the following master configurations:
 - Master Data Synchronization Configuration - Contains the foreign key reference information used by framework to validate and/or resolve foreign keys in the master data sync requests.

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

To set up Oracle Utilities Meter Data Management for the integration, configure the admin data and system data tables, outbound messages, and catalog services.

The following sections provide details about how to configure these items:

- [Configuring Admin Data Tables](#)
- [Configure System Data Tables](#)
- [Configuring Outbound Messages](#)
- [Managing Catalog Service](#)

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.

For more information on configuring and working with Oracle Utilities Meter Data Management, refer to the Oracle Utilities Meter Data Management documentation.

Configuring Admin Data Tables

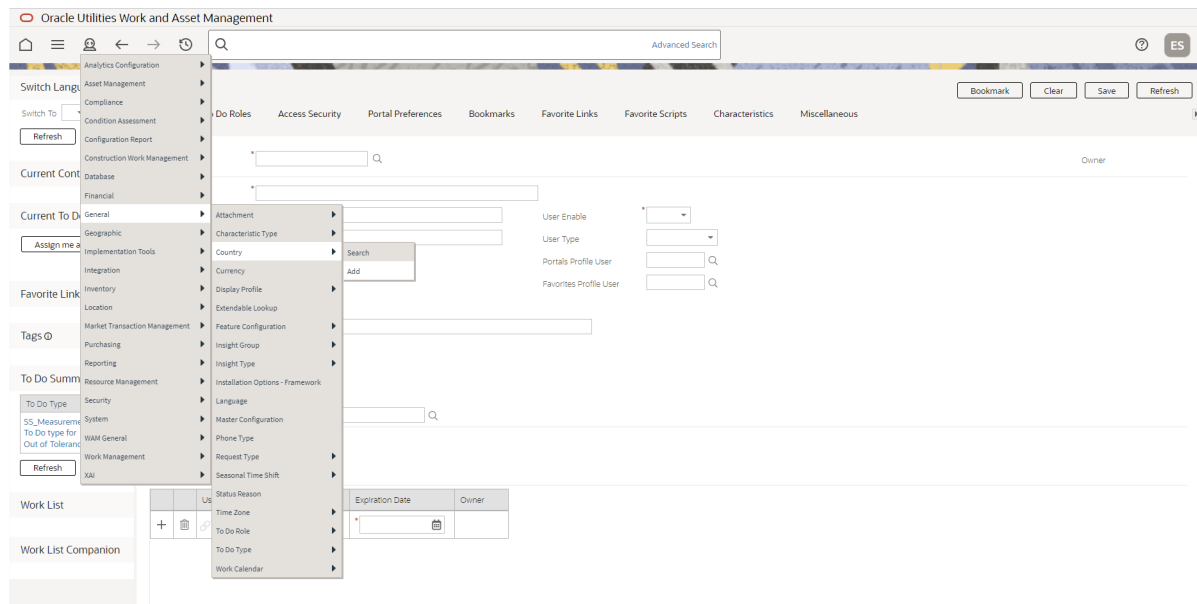
This section describes the unique setup issues specifically related to configuring the system for integration. For more information about configuring Oracle Utilities Meter Data Management, refer to the *Oracle Utilities Meter Data Management User's Guide*.

To configure Admin Data Tables, define the following codes and types:

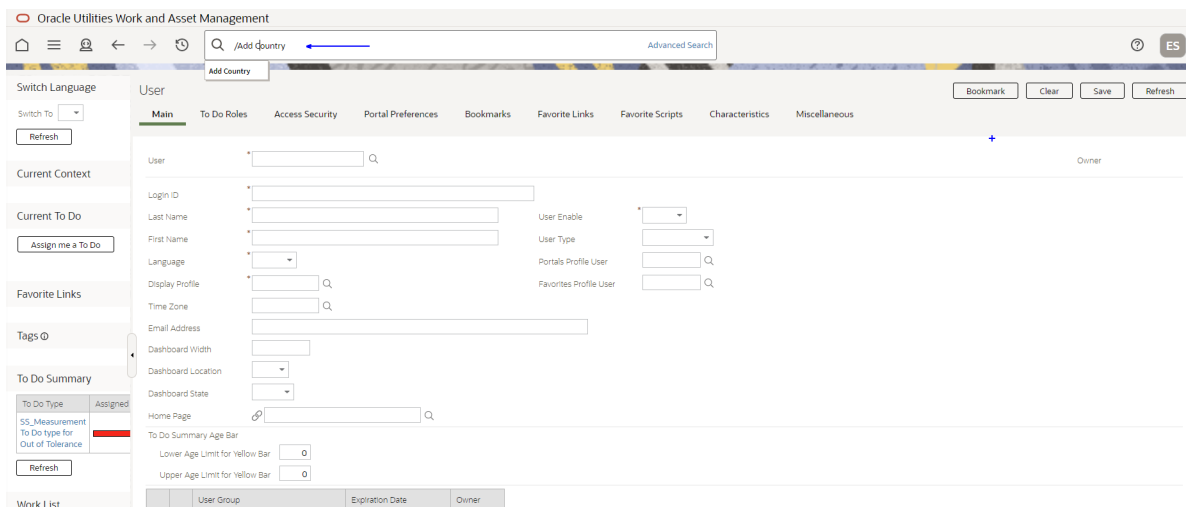
- [Country](#)
- [Service Point Type](#)
- [Contact Type](#)
- [Device Type](#)
- [Master Configuration](#)

Important: In the following sections, alphabetical menus are used to specify the navigation path. Alternatively, you can either navigate to the

required entity using functional menus or search for a specific entity using the **Search Menu**.



Navigation using Alphabetical Menu



Navigation using Search Menu

Country

Create a country code in Oracle Utilities Meter Data Management.

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

Country Code Details for Oracle Utilities Meter Data Management

Navigation	Guidelines	Corresponding DVM
Admin > C > Country	Create the Country codes	OUTL-BRT- ODM_MDM_Country

Service Point Type

Create the required Service Point Types. The codes defined here must exactly match values in the lookup indicated.

Service Point Type Code for Oracle Utilities Meter Data Management

Navigation	Guidelines	Corresponding DVM
Admin > S > Service Point Type	Create Service Point Types	OUTL-BRT- ODM_MDM_SPNodeType

Contact Type

Create the required Contact Types. The codes defined here must exactly match values in the lookup indicated.

Contact Type Code Details for Oracle Utilities Meter Data Management

Navigation	Guidelines	Corresponding DVM
Admin > C > Contact Type	Create Contact Types	OUTL-BRT- ODM_MDM_ContactType

Device Type

Create the required Device Types. The codes defined here must exactly match values in the lookup indicated.

Device Type Code Details for Oracle Utilities Meter Data Management

Navigation	Guidelines	Corresponding DVM
Admin > D > Device Type	Create Device Types	OUTL-BRT ODM_MDM_AssetDeviceType

Master Configuration

Two master configurations - Master Data Synchronization Configuration and Seeder Sync Request Master Configuration - have to be configured. A business process analysis script is provided to pre-populate these with the information necessary to support the base objects included in the sync. Execute W2-MDMPreMCf to accomplish this.

A third master configuration, Oracle Utilities Meter Data Management Integration Master Configuration, needs to be completed manually. The Oracle Utilities Operational Device Management URL, timeout threshold hours for outbound requests, and the

maintenance object/Outbound Message Type combinations used by outbound requests are all defined here. The To Do Type to use for asset-location sync scenarios that require manual intervention is also defined here, as well as the time out number of hours used by the outbound sync.

Configure System Data Tables

To configure System Data Tables, the following are required:

- [Business Objects](#)
- [Business Object Algorithms](#)
- [Maintenance Object](#)
- [Maintenance Object Algorithms](#)
- [Extendable Lookups](#)
- [Lookups](#)
- [Menus](#)
- [Batch Scheduling](#)

Business Objects

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

Business Objects Details

Business Object	Business Object Description
D1-OngoingSyncRequestDevice	<p data-bbox="894 254 1523 380">Defines the behavior of an ongoing sync request. The schema elements define information required to maintain the device master data in Oracle Utilities Meter Data Management.</p> <p data-bbox="894 422 1523 642">As part of sync request processing, an acknowledgment message is sent to the external system (either positive or negative). The "Outbound Message Type" business object option contains a reference to the outbound message business object to use for this purpose. The base package includes business object D1-OngoingSyncReqAckMsg to be used on the outbound message type configuration.</p> <p data-bbox="894 674 1523 926">The error states in the ongoing sync requests contain automatic To Do creation and automatic retry. The parameters relevant to these processes (To Do Retry Frequency and To Do Maximum Retries) are captured as business object status options. If your implementation needs to introduce your own values, simply add a higher sequenced row for the option you intend to modify. The algorithms will automatically use these values.</p> <p data-bbox="894 957 1523 1115">The Create To Do algorithm (D1-TDCREATE) has been delivered to use the base package supplied To Do Type D1-SYNIN for this process. If your implementation needs to use a different To Do Type, you will need to configure your own algorithm and supply the value in its parameters.</p> <p data-bbox="894 1146 1523 1272">The monitor process on the initial states of these business objects may be removed by the implementation if immediate processing of the sync requests as they are received is desired.</p>

Business Object	Business Object Description
D1-ODMContactSyncRequest D1-ODMSPSyncRequest D1-InstallEventSyncRequest	<p>These business objects define the behavior of an outbound sync request. The schema elements define the information needed by Oracle Utilities Operational Device Management to maintain contact, SP, and asset-node master data.</p> <p>The business object and data area necessary to build the sync snapshot are defined as business object options on the sync request business object. The business objects D1-ContactODMBORead, D1-InstallEventBORead, and D1-ServicePointODMBORead as well as DAs D1-ODMContactBasedSnapshot, D1-ODMSPSnapshot, and D1-InstallEventSnapshot are included in the base for use with these options. If your implementation needs to use your own snapshot business object or DA, simply add a higher sequenced row for the relevant option. The Post Service Script for Extract option allows your implementation to perform additional manipulation of the data during the building of the snapshot.</p> <p>The Create To Do algorithm (D1-SRCRETODO) has been delivered to use the base package supplied To Do Type F1-SYNRQ for this process. If your implementation needs to use a different To Do Type, you will need to configure your own algorithm and supply the value in its parameters.</p>

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

Business Object Algorithms

Oracle Utilities Operational Device Management-specific algorithms need to be plugged in on the sync request business objects. A business process analysis script is provided to plug-in these algorithms on to the sync business objects. This business process analysis script should be executed prior to any further customizations done on the sync business objects. It should only be executed once. Run D1-AddODMAlg Insert Oracle Utilities Operational Device Management-specific algorithms to Sync Request business objects (MDF) to accomplish this.

Maintenance Object

Configure the Maintenance Object algorithm type.

Maintenance Object Algorithm Type

Algorithm Type	Algorithm Type Description
D1-CONTACT	Specify the maintenance object Audit algorithm configured in the previous section.

Algorithm Type	Algorithm Type Description
D1-SP	Specify the generic maintenance object Audit algorithm D1-ODM-GCDCP. Also specify the D1-ODMSPSyncRequest business object in the Sync Request BO MO Option.
D1-INSTLEVT	Specify the generic MO Audit algorithm D1-ODM-GCDCP. Also specify the D1-InstallEventSyncRequest business object in the Sync Request BO MO Option.

Maintenance Object Algorithms

Configure the maintenance object Audit algorithms.

Maintenance object Audit algorithms contain the logic to instantiate a sync request (as long as one does not already exist in the initial state for the maintenance object-Primary Keys combination).

A generic algorithm F1-GCHG-CDCP comes with the base product and is plugged in on maintenance objects that need to instantiate sync requests for the same maintenance object. This algorithm instantiates the business objects defined in the Sync Request business object maintenance object Option. For more details, refer to the [Maintenance Object](#) section. For maintenance objects that have idiosyncratic logic, unique algorithms that contain this logic are used.

For example: Changes to the Contact maintenance object are only communicated to Oracle Utilities Operational Device Management if the Contact is linked to an Service Point.

Algorithm Type	Description
D1-CONCDCSP	Instantiates a Contact-based sync request whenever a change to the Contact maintenance object is detected and the Contact is associated with a service point. Define the sync request business object to be instantiated in the algorithm's parameters.

Extendable Lookups

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

- D1-OkToEnterLookup – Configure the corresponding values from Oracle Utilities Operational Device Management (values are yes or no). Ensure that the values are mapped correctly using the DVM OUTL-BRT-ODM_MDM_OkToEnterCode.

Lookups

Configure the following lookups in Oracle Utilities Meter Data Management:

- DL_LS_SL_FLG – Configure the corresponding values from Oracle Utilities Operational Device Management (values are Life Support or NA). Ensure that

the values are mapped correctly using the DVM OUTL-BRT-ODM_MDM_LifeSupportSensitiveLoad.

Menus

Ensure that users have access to the application service D1-GOTOODM. This application service is defined on the business process analysis scripts that take a user from Oracle Utilities Meter Data Management into Oracle Utilities Operational Device Management. The context menu items appear on Contact and Service Point.

Batch Scheduling

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

Note: All sync requests for all objects being synchronized are expected to be present in the **Pending** state.

The general process flow of the batches for the initial sync request is described as follows.

Batch Processes for Initial Sync Requests

Batch Code	Description
F1-SYSRQ	Transitions all the sync requests out of the PENDING state.
F1-SAKRQ	Pre-allocates the production key to each record and transitions all the sync requests out of the Transformed/Schema Validated state into the Key Allocated state.
D1-SIKDV	Resolves any foreign keys within the schema as well as executes the validation algorithms on the target business objects. This batch code is for processing Device initial sync requests.
D1-SILDV	Loads the records for Device into the production tables.
D1-SIIER	Transitions sync request out of the ERROR state.

Note: If any sync requests exist in the Validation Error state after errors have been investigated and resolved, run W1- SIIER to retry the data transformation/schema validation process. If any sync requests exist in the Resolution/Business Object Validation Error state, run its respective W1-SIK* batch job.

Refer to the above table for proper suffix to use for each master data record being synchronized.

Batch Code for Ongoing Sync Requests

Batch Code	Description
D1-SIOPE	Transitions ongoing sync request out of the PENDING state. It is a generic batch process that is used for different sync processes. It has a couple of parameters that can be used to control which sync request business objects to process.
D1-SIOER	Transitions ongoing sync request out of the ERROR state.

Note: Depending on how sync requests are sent from Oracle Utilities Operational Device Management, it is possible that interdependent sync requests might be received out of order.

If you wish to control the order of processing the ongoing sync requests within, you can either introduce your own batch controls to replace D1-SIOPE (each batch control will have the specific ongoing sync business object defaulted in the input parameter); or you can submit D1-SIOPE several times, each time specifying a different ongoing sync business object in the input parameter. Otherwise, you can let the built-in retry processing within the ongoing sync request life cycle resolve the error by running D1-SIOER.

Batch Processes for Usage Transaction Processing

Batch Code	Batch Process Description
F1-SYNRQ	Runs the sync request. The Sync Request Monitor Process is a generic batch process that is used for different sync processes. It has a couple of parameters that can be used to control which sync request business objects to process.
F1-SYNIL	Creates an initial sync request business object for a particular maintenance object. The algorithm parameters for filtering records are provided, so implementations can further restrict the creation of initial sync requests to certain records within the maintenance object.

Configuring Outbound Messages

Configure the outbound messages to send them out to the integration layer. The following should be configured during the outbound message configuration:

- [Message Sender](#)
- [Outbound Message Type](#)
- [External System](#)

Message Sender

If Oracle Utilities Meter Data Management accesses Oracle Integration Cloud processes, create a Message Sender for each integration process.

To configure a Message Sender for an integration service:

1. Navigate to **Admin > M > Message Sender**.

2. Enter a unique **Message Sender name** and its description.
3. Populate the following values:
 - **Message Sender** - Sender name in Oracle Utilities Operational Device Management
 - **Description** - Sender description
 - **Invocation Type** - Real-time
 - **Message Class** - SOAPSND (SOAP Sender)
 - **Active** - Select the checkbox
 - **Message Encoding** - UTF-8 message encoding
4. On the **Context** tab, set values for the following context types:
 - **HTTP Header** - SOAPAction:"Operation Name in Oracle Integration Cloud integration process wsdl"
 - **HTTP Login User** - User ID to access Oracle Integration Cloud's integration process
 - **HTTP Password** - Password to access Oracle Integration Cloud's integration 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 is invalid, use the additional HTTP URL types to set the complete URL.
 - **Message Namespace URI** - Namespace from the respective Oracle Integration Cloud integration process wsdl

Example Message Sender for Integration Services

Asset Device Sync Response Integration Service

Message Sender	Description	HTTP Header	HTTP URL
ADSynResp	Asset Device Sync Response	SOAPAction:"ODM_DM-OMT-DEF"	https:// OIC_HOST:PORT/ ic/ws/integration/ v1/flows/ oracleutilities/ OUTL-BA- MDM_ODM_ASSE T_SYNC_RES/1.0/

Contact Sync Request Integration Service

Message Sender	Description	HTTP Header	HTTP URL
ConSynReq	Contact Sync Request	SOAPAction:"ODM_D1-CONOUTMSG"	https://host:port/ic/ws/integration/v1/flows/oracleutilities/OUTL-BA-MDM_ODM_CON TACT_SYNC /1.0/

Install Event Asset Node Sync Request Integration Service

Message Sender	Description	HTTP Header	HTTP URL
InsEANSynReq	Install Event Asset Node Sync Request	SOAPAction:"ODM_D1-IEOUTMSG"	http://ICS_HOST:7003/ic/ws/integration/v1/flows/oracleutilities/OUTL-BA-MDM_ODM_IE_S YNC/1.0/

Service Point Node Sync Request Integration Service

Message Sender	Description	HTTP Header	HTTP URL
SPNSynReq	SP Node Sync Request	SOAPAction:"ODM_D1-SPOUTMSG"	https://host:port/ic/ws/integration/v1/flows/oracleutilities/OUTL-BA-MDM_ODM_SP_S YNC/1.0/

Outbound Message Type

To create a new outbound message type for each Oracle Utilities Meter Data Management outbound process:

1. Navigate to **Admin > 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 service.

Example Outbound Message Types for Integration Points

Outbound Message Type for Asset -Device Sync

Outbound Message Type	Description	Business Object
DM-OMT-DEF	Device Sync Response Outbound Message Type	D1-OngoingSyncReqAckMsg

Outbound Message Type for SP-Node Configuration Sync

Outbound Message Type	Description	Business Object
D1-SPOUTMSG	Operational Device Management Service Point Outbound Message	D1-OutboundMessage

Outbound Message Type for Contact Sync

Outbound Message Type	Description	Business Object
D1-CONOUTMSG	Operational Device Management Contact Outbound Message	D1-OutboundMessage

Outbound Message Type for Install Event - Asset Node Sync

Outbound Message Type	Description	Business Object
D1-IEOUTMSG	Operational Device Management Install Event Outbound Message	D1-OutboundMessage

External System

To create a new external system to support the integration:

1. Navigate to **Admin > E > External System**.
2. Enter a unique external system and description.
For example: Name = ODM_ICS, Description = Oracle Utilities Operational Device Management
3. Set the **Our Name in Their System** field to *MDM*.
4. Associate the outbound message types created to the external system.
5. For each outbound message type, set the following:
 - **Outbound Message Type** - Set the outbound message type created for Oracle Utilities Meter Data Management outbound process.
 - **Processing Method** - Real-time
 - **Message Sender** - Set the message sender created for the process.
 - **Date/Time Format** - XSD
 - **Namespace Option** - Configured on Sender

For example: External System - ODM_ICS

External System Details

Outbound Message Type	Processing Method	Message Sender
DM-OMT-DEF	Real-time	ADSynResp
D1-SPOUTMSG	Real-time	SPNSynReq

Outbound Message Type	Processing Method	Message Sender
D1-CONOUTMSG	Real-time	ConSynReq
D1-IEOUTMSG	Real-time	InsEANSynReq

Managing Catalog Service

The catalog service is used by Oracle Integration Cloud to communicate with the application. This is configured in Catalog URL in the Oracle Integration Cloud connection.

To configure the catalog service in Oracle Utilities Operational Device Management:

1. Navigate to **Admin > W > Web Service Catalog**. The external system and Inbound Web Services are added to the catalog.
2. To get the catalog URL, append “webservices/builtin/ServiceCatalog?wsdl” to the Oracle Utilities Meter Data Management URL.

For example: `http(s)://<MDM_HOST>:<MDM_PORT>/<ContextRoot>/webservices/builtin/ServiceCatalog?wsdl`

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

Setting Up the Integration Process

The following sections describe the steps to configure the integration pack to meet the requirements for this integration.

- [Configuring Oracle Integration Cloud](#)
- [Configuring Lookups](#)
- [Error Handling](#)
- [Email Notifications](#)
- [Customizations](#)

Configuring Oracle Integration Cloud

Oracle Integration Cloud is a complete, secure, but lightweight integration solution that enables to connect your applications in the cloud. It simplifies connectivity between the applications, and connects both the applications that live in the cloud and those that still are on-premises.

Oracle Integration Cloud provides secure, enterprise-grade connectivity regardless of the applications you are connecting or where they reside. The adapters simplify connectivity by handling the underlying complexities of connecting to applications using industry-wide best practices. Only a connection has to be created that provides minimal connectivity information for each system.

To use any Oracle Integration Cloud integration, do the following:

1. Download the integration package from the Oracle Market Place.

2. Import the package into the Oracle Integration Cloud server and configure the connections.
3. Update connections with the respective edge application's catalog URLs and activate the integration before doing the end-to-end testing.

Perform the following tasks to configure the Oracle Integration Cloud integration:

- [Working with Install Agent](#)
- [Configuring Connections](#)
- [Importing Pre-built Integration Packages](#)
- [Activating Integration Flows](#)
- [Testing Integration Flows](#)
- [Setting Up Security](#)

Working with Install Agent

Create an agent group in Oracle Integration Cloud and install agent on the on-premises server before creating/activating an integration in which messages are exchanged between the on-premises applications and Oracle Integration Cloud.

The agent related configurations are needed only if the server points to an on-premises application. The possible combinations are as follows:

- [Oracle Utilities Operational Device Management on Cloud and Oracle Utilities Meter Data Management on Cloud](#)
- [Oracle Utilities Operational Device Management on Cloud and Oracle Utilities Meter Data Management On-Premises](#)
- [Oracle Utilities Operational Device Management On-Premises and Oracle Utilities Meter Data Management on Cloud](#)

Important: While modifying the configuration of any cloud and on-premises application combination, make sure that the package is downloaded from Oracle Market Place. Please do not download the package from the existing Oracle Integration Cloud environment.

Oracle Utilities Operational Device Management on Cloud and Oracle Utilities Meter Data Management on Cloud

When both the edge applications are on cloud, the connectivity agent is not required and an agent group need not be created in Oracle Integration Cloud.

Perform the following steps:

1. Import the integration package from Oracle Market Place.

For instructions to import an integration package, refer to the [Importing Pre-built Integration Packages](#) section.

2. Edit the Oracle Utilities Operational Device Management and Oracle Utilities Meter Data Management connections.

For instructions to edit the application connections, refer to the [Configuring Connections](#) section.

3. Activate the integrations.

For instructions to activate the integration, refer to the [Activating Integration Flows](#) section.

The following table shows the complete setup in edge applications/Oracle Integration Cloud required for this combination.

Integration Scenario	ODM	MDM
Application is on cloud	Yes	Yes
Application is on-premises	No	No
Need Agent group in Oracle Integration cloud connection	No	No
Install Agent on-premises	No	No

Oracle Utilities Operational Device Management on Cloud and Oracle Utilities Meter Data Management On-Premises

When Oracle Utilities Operational Device Management is on cloud and Oracle Utilities Meter Data Management is on-premises:

1. Create an agent group 'UAG' in Oracle Integration Cloud.

For instructions to create an agent group, refer to the [Create an Agent Group](#) section.

2. Install the agent in Oracle Utilities Meter Data Management on-premises server.

For steps to download the agent installer and install on-premises, refer to the [Downloading Agent Installer](#) and [Install On-Premises Agent](#) sections.

3. Import the integration package.

For steps to import the integration package, refer to the [Importing Pre-built Integration Packages](#) section.

4. Edit the Oracle Utilities SOAP MDM for ODM-MDM connection.

- Update the catalog URL and security details.
- Check if the agent group is displayed in the **Agent Group** section.
- Save and test the connection.

For steps to configure an Oracle Utilities Meter Data Management connection, refer to [Configuring the Oracle Utilities Meter Data Management Connection](#) section.

5. Edit the Oracle Utilities SOAP ODM for ODM-MDM connection.

- Update the catalog URL and security details.
- If **UAG** is displayed in the **Agent Group** section, remove it. It is not needed since Oracle Utilities Operational Device Management is on cloud.
- Save and test the connection.

For steps to configure an Oracle Utilities Operational Device Management connection, refer to [Configuring the Oracle Utilities Operational Device Management Connection](#) section.

6. Activate the integrations.

For steps to activate the integration, refer to the [Activating Integration Flows](#) section. The following table shows the complete setup in edge applications/Oracle Integration Cloud required for this combination.

Integration Entities	ODM	MDM
Application is on cloud	Yes	No
Application is on-premises	No	Yes
Need Agent group in Oracle Integration cloud connection	No	Yes
Install Agent on-premises	No	Yes

Oracle Utilities Operational Device Management On-Premises and Oracle Utilities Meter Data Management on Cloud

When Oracle Utilities Operational Device Management is on-premises and Oracle Utilities Meter Data Management is on cloud, perform the following steps:

1. Create an agent group 'UAG' in Oracle Integration Cloud.
For instructions to create an agent group, refer to the [Create an Agent Group](#) section.
2. Install the agent in Oracle Utilities Operational Device Management on-premises server.

For steps to download the agent installer and install on-premises, refer to the [Downloading Agent Installer](#) and [Install On-Premises Agent](#) sections.

3. Import the integration package.
For steps to import the integration package, refer to the [Importing Pre-built Integration Packages](#) section.
4. Edit the Oracle Utilities SOAP ODM for ODM-MDM connection.
 - a. Update the catalog URL and security details.
 - b. Check if the agent group is displayed in the Agent Group section.
 - c. Save and test the connection.

For steps to configure an Oracle Utilities Operational Device Management connection, refer to [Configuring the Oracle Utilities Operational Device Management Connection](#) section.

5. Edit the Oracle Utilities SOAP MDM for ODM-MDM connection.
 - a. Update the catalog URL and security details.
 - b. If UAG is displayed in the **Agent Group** section, remove it. It is not needed since Oracle Utilities Operational Device Management is on cloud.
 - c. Save and test the connection.

For steps to configure an Oracle Utilities Operational Device Management connection, refer to [Configuring the Oracle Utilities Meter Data Management Connection](#) section.

6. Activate the integrations.

For steps to activate the integration, refer to the [Activating Integration Flows](#) section.

The following table shows the complete setup in edge applications/Oracle Integration Cloud required for this combination..

Integration Entities	ODM	MDM
Application is on cloud	No	Yes
Application is on-premises	Yes	No
Need Agent group in Oracle Integration Cloud connection	Yes	No
Install Agent on-premises	Yes	No

Create an Agent Group

Create an agent group in Oracle Integration Cloud before running the agent installer. When the on-premises agent is installed in the environment, the on-premises agent is associated with the agent group identifier. Only one on-premises agent can be associated with an agent group. For a single Oracle Integration Cloud instance, you can create up to five agent groups. Creating the agent group also creates the necessary queues required for message exchange.

To create an agent group:

1. On the Oracle Integration Cloud **Home** page, click **Agents**.
2. Click **Create Agent Group**.
3. Enter the following information and click **Create**.
 - Agent Group Name
 - Identifier
 - Agent Type: "Connectivity Agent"
 - Description

Note: The agent group name and identifier must be same.

Downloading Agent Installer

Download the agent installer from Oracle Integration Cloud and run the installer to install the on-premises agent in your local environment.

During the installation, associate the agent with the Agent Group Identifier generated when creating an agent group in Oracle Integration Cloud.

For more information on agent installer, see <https://docs.oracle.com/en/cloud/paas/integration-cloud/integrations-user/downloading-and-running-premises-agent-installer.html>

Install On-Premises Agent

To install an on-premises agent:

1. On the Oracle Integration Cloud **Home** page, click **Agents**.
2. Click **Download**.
3. Select **Connectivity Agent**.
4. Select **Save File** when prompted to save the file to a directory location on your on-premises host.

5. Navigate to that directory and unzip **oic_connectivity_agent.zip**.
6. Change the file permissions to be executable.
7. Modify **InstallerProfile.cfg** to include the following information.

```
# Required Parameters
# oic_URL format should be https://hostname:sslPort
oic_URL=https://icshost:sslport
agent_GROUP_IDENTIFIER=

#Proxy Parameters
proxy_HOST=
proxy_PORT=
proxy_USER=
proxy_PASSWORD=
proxy_NON_PROXY_HOSTS=
```

8. Set the JAVA_HOME property to the directory/folder where JDK is installed.
9. Run the connectivity agent installer from the command prompt.

```
java -jar connectivityagent.jar
```

10. Provide the Oracle Integration Cloud credentials when prompted.
11. Wait for a successful installation message to appear.

After the installation is complete, an agent instance is created to interact with Oracle Integration Cloud.

To verify if the agent instance was created:

1. Navigate to the **Agent Groups** page.
2. Check if the agent count increased by one. Click the number to view the agent details.

Note: For more details, refer to Oracle Integration Cloud documentation at <https://docs.oracle.com/en/cloud/paas/integration-cloud-service/index.html>

Importing Pre-built Integration Packages

Every integration point is shipped as a package (.par) file.

To import a pre-built integration from Oracle Market Place:

1. Open the **Oracle Market Place** portal.
https://cloudmarketplace.oracle.com/marketplace/en_US/homePage.jspx
2. Click **Applications**.
3. Browse through the list of applications and select the pre-built integration package to import.
4. When prompted, select the server where the pre-built integration file should be uploaded.

The pre-built integration is imported as a package file that is visible on the **Packages** page in Oracle Integration Cloud. On the **Integrations** page, you can view the individual integrations of that imported package file that are designated with a BUILT BY ORACLE message.

Configuring Connections

After a successful import, the following connections are available in your Oracle Integration Cloud environment by default.

- Oracle Utilities SOAP ODM for ODM-MDM - Oracle Utilities Operational Device Management connection.

For steps to configure this connection, refer to the [Configuring the Oracle Utilities Operational Device Management Connection](#) section.

- Oracle Utilities SOAP MDM for ODM-MDM - Oracle Utilities Meter Data Management connection.

For steps to configure this connection, refer to the [Configuring the Oracle Utilities Meter Data Management Connection](#) section.

Configuring the Oracle Utilities Operational Device Management Connection

To configure an Oracle Utilities Operational Device Management connection:

1. On the Oracle Integration Cloud **Home** page, click **Connections**.
2. On the **Connections** page, search for the connection name: **Oracle Utilities SOAP ODM for ODM-MDM**.
3. From the **Actions** menu, select **Edit**. You can alternatively click the connection name. The **Connection** page is displayed.
4. Enter the URL for the Oracle Utilities Operational Device Management web service catalog in the **Catalog URL** field.
5. Click **OK**.
6. Click **Configure Security** and select a security policy.
7. Enter the respective details in the **Username**, **Password**, and **Confirm Password** fields.
8. Check if the **UAG** agent group is displayed in the **Agent Group** section.
If the integration uses the Oracle Utilities Operational Device Management Cloud environment, remove this agent group from the connection page.
9. Click **OK**.
10. Click **Test** in the upper-right corner of the page.
11. Click **Save** to save the connection.

Configuring the Oracle Utilities Meter Data Management Connection

To configure the Oracle Utilities Meter Data Management connection:

1. On the Oracle Integration Cloud **Home** page, click **Connections**.
2. On the **Connections** page, search for the connection name: **Oracle Utilities SOAP MDM for ODM-MDM**.
3. From the **Actions** menu, select **Edit**. You can alternatively click the connection name. The **Connection** page is displayed.
4. Enter the URL for the Oracle Utilities Meter Data Management web service catalog in the **Catalog URL** field.
5. Click **OK**.

6. Click **Configure Security** and select a security policy.
7. Enter the respective details in the **Username**, **Password**, and **Confirm Password** fields.
8. Check if the **UAG** agent group is displayed in the **Agent Group** section.
If the server point to the Oracle Utilities Meter Data Management cloud environment, remove this agent group.
9. Click **OK**.
10. Click **Test** in the upper-right corner of the page.
11. Click **Save** to save the connection.

Activating Integration Flows

After the package is imported, the integration process gets deployed in the Oracle Integration Cloud environment. The integration can now be activated to the run-time environment.

Note: An integration is eligible for activation only if the connections, mappings, tracking, etc. are specified.

To activate an integration flow:

1. On the Oracle Integration Cloud **Home** page, click **Integrations**.
2. Select an integration to be activated from the **Integrations** list.
3. Click the **PENDING ACTIVATION** slider.
4. To collect detailed logging information about messages processed by this integration flow at runtime, select **Enable detailed tracing**.

Detailed tracing may affect performance. To disable tracing, you must deactivate the integration, and then reactivate it without selecting the **Enable detailed tracing** check box.

To access the detailed trace logging information, refer to [Monitoring Integration Flows using Oracle Integration Cloud Logs](#) section.

5. If the activation is successful, the status of the integration changes to **ACTIVE** in the list. If it fails, an error message is displayed at the top of the **Integrations** page.
For information to troubleshoot the activation error, refer to the **Troubleshooting** section.
6. To view active integrations, click the integration name. Alternatively, you can select **View** from the menu to the right.
7. The active integrations are displayed as read-only. You will not be able to do any of the following:
 - View **Save** or **Actions** buttons.
 - Add adapters as there is no **Connections Palette**.
 - Modify configuration details, such as the business identifiers under the **Tracking** tab, the source-to-target and target-to-source mappings in the mapper, and the configurations on the pages of the connection wizards.

Testing Integration Flows

An integration process can be tested only after it is activated.

To test an integration:

1. Check if the integration is activated.
2. In the **Integrations** list, click the **How to run** icon for an integration. It displays the WSDL URL of that integration to use for testing.
3. Test the integration.
 - To test only the integration process, test the WSDL URL retrieved in step 2 in SOAP UI.
 - To perform an end-to-end testing, configure the integration flow endpoint in the edge application.

For instructions to configure Oracle Utilities Operational Device Management, refer to the [Message Sender](#) section. For instructions to configure Oracle Utilities Operational Device Management, refer to the [Message Sender](#) section.

4. After the necessary configurations are in place, create data in the application.
5. Run the respective batch job to trigger the sync request that invokes the integration service.

Setting Up Security

As part of the Oracle Utilities Integration for Device Operations Using Oracle Integration Cloud, Certificate mechanism is used to communicate with the application.

A Certificate Authority (CA) is a trusted entity that issues electronic documents that verify a digital entity's identity on the Internet. The electronic documents, which are called digital certificates, are an essential part of secure communication and play an important part in the public key infrastructure (PKI).

CA-signed certificates are used to communicate with the source applications as part of the Utilities adapter.

To upload the CA-signed certificates to Oracle Integration Cloud:

1. Log into the Oracle Integration Cloud as an Administrator.
2. Navigate to **Settings > Certificates**.
3. Click **Upload**.
4. Select **Certificate Type** as *Trust Certificate*.
5. Provide the **Certificate Alias Name** and choose the certificate to be uploaded.
6. Click **OK**.

Configuring Lookups

A lookup associates values for a specific field used by an application to the values for the same field used by other applications. This provides the capability to map values across vocabularies or systems. The tables are reusable across multiple integrations.

The lookup maps can be imported and exported to CSV format, allowing for reuse across Cloud to on-on-premises implementations.

Editing Lookups

To add any new record in the lookup:

1. On the Oracle Integration Cloud **Home** page, click the **Lookup** icon.
2. From the list of lookup tables, click the **Lookup** to be edited.
3. Click **+** next to the column names (adapter or domain name).
4. Enter/modify the values in the field below the adapter or domain name.
5. To add more rows for additional values, click **+**.
6. Click **Save** when complete.

Lookup Name	Integration Point	Description
OUTL-BRT-ODM_MDM_ErrorCode	All Integration points	Maps error codes in Oracle Utilities Meter Data Management to Oracle Utilities Operational Device Management and Oracle Utilities Operational Device Management to Oracle Utilities Meter Data Management.
OUTL-BRT-ODM_MDM_AssetDeviceType	Asset Device Sync	Maps Oracle Utilities Operational Device Management asset type to corresponding Oracle Utilities Meter Data Management device type
OUTL-BRT-ODM_MDM_AssetDeviceStatus	Asset Device Sync	Maps Oracle Utilities Operational Device Management asset status to corresponding Oracle Utilities Meter Data Management device status.
OUTL-BRT-ODM_MDM_DisconnectLocation	SP Node Sync	Maps Oracle Utilities Meter Data Management disconnect location code to corresponding Oracle Utilities Operational Device Management disconnect location code.
OUTL-BRT-ODM_MDM_NodeDisposition	SP Node Sync	Maps Oracle Utilities Meter Data Management Measurement node disposition to corresponding Oracle Utilities Operational Device Management node disposition.
OUTL-BRT-ODM_MDM_SPNodeType	SP Node Sync	Maps Oracle Utilities Meter Data Management service point type to corresponding Oracle Utilities Operational Device Management node type.
OUTL-BRT-ODM_MDM_Country	SP Node Sync	Maps Oracle Utilities Meter Data Management country code to corresponding Oracle Utilities Operational Device Management country code.

Lookup Name	Integration Point	Description
OUTL-BRT-ODM_MDM_OkToEnterCode	SP Node Sync	Maps Oracle Utilities Meter Data Management ok to enter code (values are yes or no) to corresponding Oracle Utilities Device Management Ok To Enter code.
OUTL-BRT-ODM_MDM_TimeZone	SP Node Sync	Maps Oracle Utilities Meter Data Management time zone code to corresponding Oracle Utilities Operational Device Management time zone code.
OUTL-BRT-ODM_MDM_LifeSupportSensitiveLoad	SP Node Sync	Maps Oracle Utilities Meter Data Management Life Support Sensitive Load flag to corresponding Oracle Utilities Operational Device Management life support sensitive load flag.
OUTL-BRT-ODM_MDM_ContactType	Contact Sync	Maps Oracle Utilities Meter Data Management Contact Type value to corresponding Oracle Utilities Operational Device Management Contact Type value.
OUTL-BRT-ODM_MDM_Email	All Integration points	Lookup to configure and map email ids in From & To fields in Notification activity.
OUTL-BRT-ODM_MDM_ConfigProperties	All Integration points	Lookup to enable custom asset movement flag and email notifications.
OUTL-BRT-ODM_MDM_MO	All Integration points	Maps Oracle Utilities Meter Data Management Maintenance Object value to the corresponding Oracle Utilities Operational Device Management Maintenance Object value.

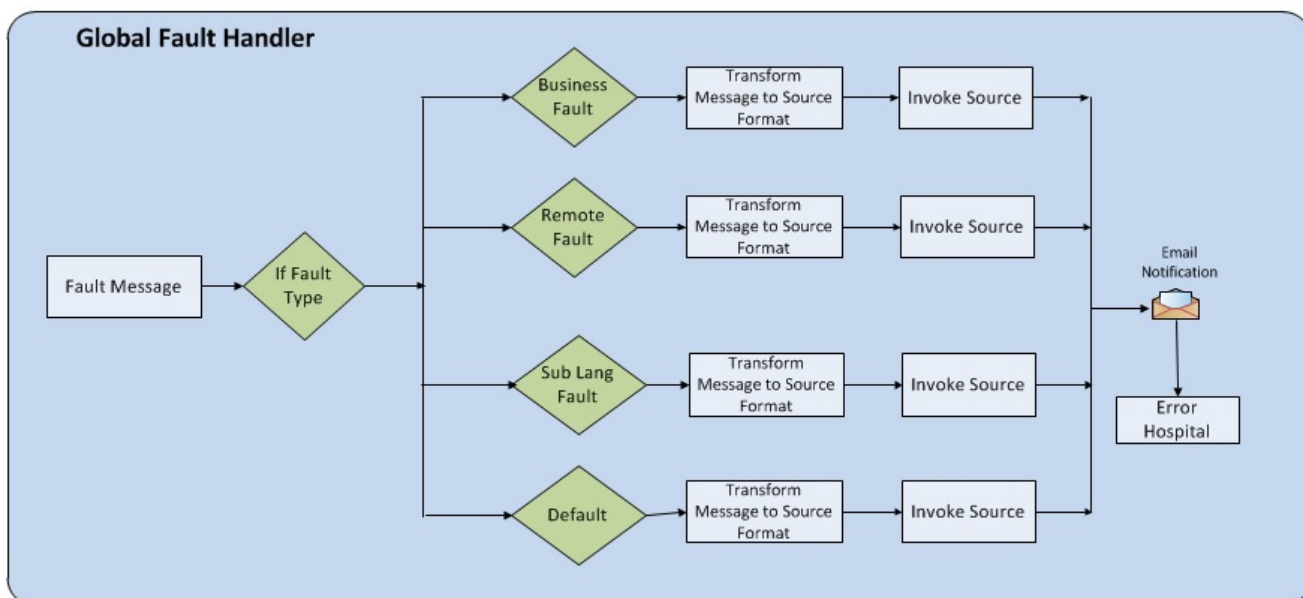
Error Handling

The integration includes two types of errors:

- **Business Errors** – Triggered when the target application throws any data related errors. Business errors are sent back to the source application and can be re-tried from there.
- **Technical Errors** – Triggered when there are connectivity issues between the integration layer and application or any assignment errors (sub language execution faults). Technical errors are sent to the source application.

In both cases an email notification will be sent to the people defined in the property “to” from OUTL-BRT-ODM_MDM_Email lookup. This notification will only be sent if the property “email.flag” is set to “true” within OUTL-BRT-ODM_MDM_ConfigProperties lookup.

The following diagram depicts the process for error handling:



Error Handling Process Diagram

Email Notifications

Whenever there is a fault in the integration flow, an email notification is sent to the recipient.

To receive an email with error details, provide a valid email ID in the **To** field of the **Notification** activity.

To edit the **To** field:

1. On the Oracle Integration Cloud **Home** page, click the **Lookup** icon.
2. On the **Lookup** page, edit the OUTL-BRT-ODM_MDM_Email lookup table.

The lookup has the following columns:

Recipient	email_id
from	abc@domain.com
to	xyz@domain.com

3. Provide the valid email address in the **email_id** column.
4. Click **Save** to save the changes.

Customizations

Define a custom template in the existing main XSL. Apply the template just before the root element's closing tag. For any extra mappings, edit the custom template.

To add custom mappings, do the following:

1. Export the integration process (.iar).
2. Edit the respective XSL file.

3. Add the custom code/mappings to the custom template.
4. Import the updated XSL in the integration.
5. Save the changes and activate the integration flow.
6. Test the flow to check if the customized changes are in place.

Chapter 4

Monitoring and Troubleshooting

This chapter discusses about monitoring and troubleshooting the integration:

- [Monitoring from Oracle Utilities Operational Device Management](#)
- [Monitoring from Oracle Utilities Meter Data Management](#)
- [Monitoring from the Integration Layer](#)
- [Troubleshooting](#)

Monitoring from Oracle Utilities Operational Device Management

This section describes the following:

- [Oracle Utilities Operational Device Management Error Logs](#)
- [Notifications](#)
- [Connection Errors](#)

Oracle Utilities Operational Device Management Error Logs

Monitoring the error logs is possible only in on-premises applications only. Applications on cloud cannot access the error logs.

The following error logs can be monitored for Oracle Utilities Operational Device Management:

- Errors related to the online integration invocation from Oracle Utilities Operational Device Management are stored in the `ODM_ENVIRONMENT_NAME/logs/system` folder.
For example: `V231_ODM_PERF_BLD10_LIN_ORA_WLS/logs/system\`
- Errors related to batch integration invocation from Oracle Utilities Operational Device Management are stored in the `$SPLOUTPUT/ODM_ENVIRONMENT_NAME` folder.
For example: `/spl/sploutput/V231_ODM_PERF_BLD10_LIN_ORA_WLS`

For more information about errors and notifications, see the Oracle Utilities Operational Device Management documentation.

Notifications

When Oracle Utilities Operational Device Management sends a request message out to Oracle Utilities Meter Data Management, it expects a response back. It can get a positive response when the message is processed successfully or can get an error response when a business error is encountered in the integration or from the target application.

- If there is an error encountered while processing the message, a fault will be thrown causing the message to be rolled back and a To Do entry is created, if configured.

For example: If Oracle Utilities Operational Device Management receives a contact sync response message and an error is encountered, the message will transition to an Error state.

- If the message was processed successfully, the business object or business service or service script (business object/BS/SS) defined on Inbound Web Service is invoked. If an application error is encountered inside the business object/BS/SS processing, the message will not be rolled back to the error queue. If configured, only a To Do entry is created. Otherwise, the error will only be seen in the `spl-service.log` file.

Note: The Inbound Web 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.

Connection Errors

The log files provide detailed information about errors and reasons for failure.

For more information about error logs and their respective folders, refer to the [Oracle Utilities Operational Device Management Error Logs](#) section.

Monitoring from Oracle Utilities Meter Data Management

This section describes the following:

- [Oracle Utilities Meter Data Management Error Logs](#)
- [Notifications](#)
- [Connection Errors](#)

Oracle Utilities Meter Data Management Error Logs

The following Oracle Utilities Meter Data Management error logs can be monitored:

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

For example: V201_MDM_BLD10_LIN_ORA_WLS/logs/system

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

For example: /spl/sploutput/V201_MDM_BLD10_LIN_ORA_WLS

For more information about errors and notifications, refer to the Oracle Utilities Meter Data Management documentation.

Notifications

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

- If there is an error encountered while processing the message, a fault will be thrown causing the message to be rolled back and a To Do entry is created, if configured.

For example: If Oracle Utilities Meter Data Management receives a contact sync request message and an error is encountered, the message will transition to an Error state.

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

Note: The Inbound Web 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.

Connection Errors

The log files provide detailed information about errors and reasons for failure.

For more information about error logs and their respective folders, refer to the [Oracle Utilities Meter Data Management Error Logs](#) section.

Monitoring from the Integration Layer

To monitor the integration flow, use any of the following method:

- [Monitoring Integration Flows from Oracle Integration Cloud Dashboard](#)
- [Monitoring Integration Flows using Oracle Integration Cloud Logs](#)

Monitoring Integration Flows from Oracle Integration Cloud Dashboard

On the Oracle Integration Cloud dashboard, you can view how the running integrations process messages, such as:

- Messages received and processed
- Successful messages and errors occurred
- Overall success rate

Note: Only activated integrations are listed on this page.

To monitor integrations from the Oracle Integration Cloud dashboard:

1. On the Oracle Integration Cloud **Home** page, click the **Monitoring** icon.
2. On the navigation pane, click **Dashboards** to see the overall success/failure rate of the integration.
3. On the navigation pane, click **Integrations**.

A list of running integrations is shown. Also, processing information about the number of messages received, the number of messages processed, the number of successful messages, and the number of failed messages is displayed.

4. From the **In Retention Period** list, select the time period for which the integration information should be displayed.

For example: one hour, six hours, one day, two days, three days, or since the first activation

5. From the **Integrations** list, select **Activity Stream** to view the activity stream for the integrations.

Monitoring Integration Flows using Oracle Integration Cloud Logs

To monitor integration flows using Oracle Integration Cloud logs, perform the following steps:

1. On the Oracle Integration Cloud **Home** page, click the **Monitoring** icon.
2. On the navigation pane, click **Dashboards** to see the overall success/failure rate of the integration.
3. Navigate to the **Logs** menu.
4. In the right pane, click the link to show options for downloading the Oracle Integration Cloud logs or diagnostics logs.
5. If there are issues with an integration, attach the diagnostic logs to a service request for help in debugging the issue.

Troubleshooting

If the activation fails, an error message is displayed at the top of the **Integrations** page.

To troubleshoot the activation error:

1. Click **Download diagnostic logs** to download the logs for diagnosing the issue.
2. If you selected to enable tracing, **TRACE ENABLED** is displayed next to **ACTIVE**.