**Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System**

Configuration Guide

Release 23B

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Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Configuration Guide, Release 23B

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# Preface

Welcome to the Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Configuration Guide for release 23B.

This preface explains how the guide is organized and introduces other sources of information that can help you. It includes the following:

- Audience
- Documentation and Resources
- Documentation Accessibility
- Conventions
- Acronyms

Preface - i

Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Configuration Guide

# Audience

This document is intended for anyone implementing the Oracle Utilities Analytics Insights integration with Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System.

# Documentation and Resources

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

**Product Documentation**

| Topic | Location |
| --- | --- |
| Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System documentation | https://docs.oracle.com/en/industries/energy-water/integrations-index.html |
| Oracle Utilities Network Management System documentation | https://docs.oracle.com/en/industries/energy-water/network-management-system/ |
| Oracle Utilities Digital Asset Cloud Service documentation | https://docs.oracle.com/en/industries/energy-water/digital-asset-cloud-service/ |
| Oracle Utilities Analytics Insights documentation | https://docs.oracle.com/en/industries/energy-water/analytics-insights/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. <br><br> Refer to the *Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1)* on My Oracle Support to determine if support for newer versions of the listed products is included. <br><br> For more information, refer to the Oracle Utilities Integrations page at http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm |
| Oracle Technology Network (OTN) Latest versions of documents | http://www.oracle.com/technetwork/index.html |
| Oracle University for training opportunities | http://education.oracle.com/ |

Preface - ii

Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Configuration Guide

# Documentation Accessibility

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

**Access to Oracle Support**

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

# Conventions

The following text conventions are used in this document:

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

# Acronyms

The following terms are used in this document:

| Term | Expanded Form |
| --- | --- |
| DACS | Oracle Utilities Digital Asset Cloud Service |
| DERMS | Oracle Utilities Grid Edge Distributed Energy Resources Management System |
| DRMS | Demand Response Management System |
| IWS | Inbound Web Service |
| LEC | Oracle Utilities Live Energy Connect |
| OIC | Oracle Integration Cloud |
| OUAI | Oracle Utilities Analytics Insights |

# Chapter 1

## Overview

This chapter provides an overview of the integration between Oracle Utilities Analytics Insights, Oracle Utilities Digital Asset Cloud Service, and Oracle Utilities Grid Edge Distributed Energy Resources Management System using Oracle Integration Cloud. It also provides information about software requirements, participating applications, and supported business processes by the integration.

The chapter includes the following:

- Overview of the Integration

- About Oracle Utilities Digital Asset Cloud Service

- About Oracle Utilities Grid Edge Distributed Energy Resources Management System

- About Oracle Utilities Analytics Insights

- About Oracle Integration Cloud

- Software Requirements

- Prerequisites

- Supported Business Processes

# Overview of the Integration

The integration between Oracle Utilities Analytics Insights, Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System facilitates the exchange of information related to a customer's controllable device(s) during program enrollment or unenrollment, load reduction forecasts for enrolled customers, program event participation outcomes, and the actual consumption reduced or kWh avoided during a program event to be used for financial settlement.

# About Oracle Utilities Digital Asset Cloud Service

Oracle Utilities Digital Asset Cloud Service provides the core functionality for utilities to create, run, and maintain demand response and distributed energy resource programs.

It comprises the following functional areas:

- **Asset and Device Management**: Maintenance of controllable assets, such as "smart" thermostats, electric vehicle chargers, storage batteries, and other types of devices.

- **Program Enrollment/Unenrollment**: Identifying specific customers that are eligible for particular programs, and establishing relationships between the customers, the programs, and if appropriate, device locations where one or more controllable devices are (or have been) installed.

- **Program Management**: Creation and maintenance of Demand Response Programs to which customers can subscribe and which allows utilities to temporarily alter the settings of specific devices in their homes as a response to periods of high demand.

- **Program Subscriptions**: Maintenance of a customer's program subscriptions that represent the customer's enrollment in a program and device registration. Program subscriptions link the customer to a program and device location where controllable devices are installed.

- **Demand Response Event Management**: Identification and reservation of a customer's controllable devices in response to usage demand.

# About Oracle Utilities Grid Edge Distributed Energy Resources Management System

Oracle Utilities Grid Edge Distributed Energy Resources Management System is built on Oracle Utilities Network Management System (NMS). It adds incremental support to the Oracle Utilities Network Management System platform for the management of behind the meter demand response resources. Oracle Utilities Grid Edge Distributed Energy Resources Management System can initiate control signals to devices inside customer homes, such as smart thermostats. Oracle Utilities Network Management System facilitates the modeling of individual Demand Response devices down to the customer service point and/or aggregated to load transformers to support Oracle Utilities Network Management System driven optimization. In conjunction with Oracle Utilities Network Management System the Oracle Utilities Grid Edge Distributed Energy Resources

Management System component can help optimize electrical networks both operationally and commercially.

Oracle Utilities Grid Edge Distributed Energy Resources Management System offers strategy templates to be used for forecasting for various scenarios during event management. It provides event functions that help grid operators manage and review the forecasted impact of an event. This includes the ability to nominate, approve or reject an event; monitor or cancel an ongoing event and audit historical events. Oracle Utilities Grid Edge Distributed Energy Resources Management System supports automatic generation of event stages (blocks of field device activity) for configured objectives. Stages are built based on cost scores and reduction forecasts received from external applications used to help monitor and manage the Demand Response programs.

# About Oracle Utilities Analytics Insights

Oracle Utilities Analytics Insights delivers pre-built and trained machine learning insights designed to drive utility business outcomes, solving specific and complex use cases with data science. It provides a client-facing web portal user interface with a back-end analytics engine. Insights are surfaced onto Oracle Analytics Cloud to be explored further by utility users.

Oracle Utilities Analytics Insights supports standardized data ingest from other Oracle Utilities applications to significantly speed up delivery. It provides a flexible platform that allows the ability to ingest any type of data and allow data scientists to add it into an algorithm. Export tools featured within the product allows insights to be added to any data lake.

# About Oracle Integration Cloud

Oracle Integration Cloud is a cloud-based integration application designed to integrate cloud and on-premises applications, automate business processes, gain insight into your business processes, develop visual applications, process files, and exchange business documents with a B2B partner.

With the Process Builder business processes can be rapidly designed, automated, and managed in the cloud. Continuous business flows are quickly created by connecting and integrating applications that live in the cloud and/or on-premise.

Domain Value Map or lookups are available to match application specific codes between the applications.

Integration Insights and Stream Analytics help to simplify and extract business metrics and create custom dashboards.

# Software Requirements

The following software is required for the integration to work:

- Oracle Utilities Analytics Insights
- Oracle Utilities Digital Asset Cloud Service

- Oracle Utilities Grid Edge Distributed Energy Resources Management System
- Oracle Integration Cloud

For specific application versions, refer to the *Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Release Notes* included in this release.

The documentation is available on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/integrations-index.html

# Prerequisites

Make sure all participating applications must be installed, set up, and working properly.

Customer Information must be synchronized from the Custom Information System application or Oracle Utilities Customer Care and Billing to the following applications:

- Oracle Utilities Analytics Insights
- Oracle Utilities Digital Asset Cloud Service
- Oracle Utilities Grid Edge Distributed Energy Resources Management System

Make sure that the Oracle Utilities Digital Asset Cloud Service Integration to Oracle Utilities Grid Edge Distributed Energy Resources Management System must be installed, set up, and working properly.

# Supported Business Processes

The following diagram illustrates the business processes supported in this integration.
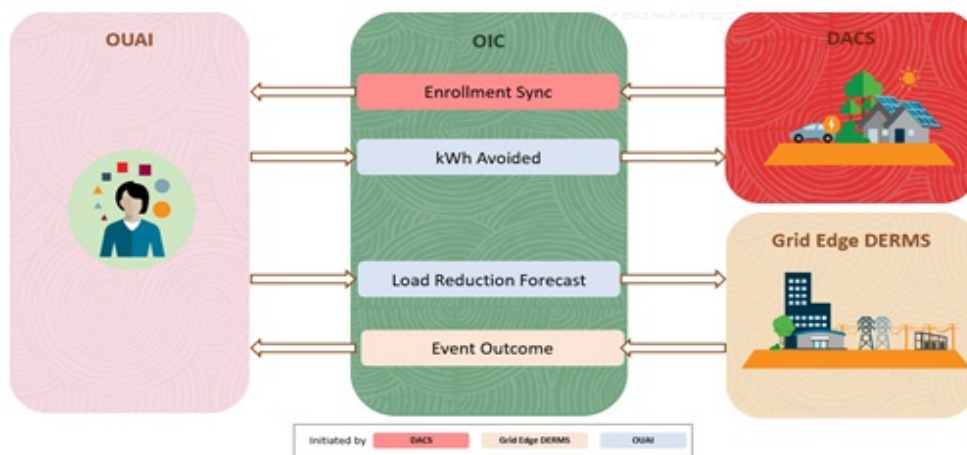


**Note:** The initial release is focused on supporting enrollments for customer-owned demand-response devices like Smart Thermostats.

The integration supports the following key functionalities:

- Synchronize the customer's program subscription information on successful enrollments and unenrollments from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Analytics Insights.

- Send device outcome for all participating devices in an event from Oracle Utilities Grid Edge Distributed Energy Resources Management System to Oracle Utilities Analytics Insights.

- Periodically transfer the estimated load reduction forecast for each metered service point that is associated to an active program from Oracle Utilities Analytics Insights to Oracle Utilities Grid Edge Distributed Energy Resources Management System.

- Transfer the actual kWh Avoided value for each participating customer post an event participation from Oracle Utilities Analytics Insights to Oracle Utilities Digital Asset Cloud Service.

# Chapter 2

## Solution Architecture

This chapter provides an overview of the application architecture used by the integration, including:

- Solution Overview
- Solution Diagram
- Integration Flows

# Solution Overview

The technical aspects involved in the integration between Oracle Utilities Analytics Insights, Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System are:

- The integration layer consists of integration processes deployed on Oracle Integration Cloud.

- The integration processes interact with other applications using the following adapters:

    - Oracle Utilities Adapter interacts with the DACS REST APIs and NMS Grid Edge DERMS REST APIs.

    - REST Adapter interacts with Oracle Cloud Infrastructure Object Storage APIs and DERMS REST APIs with file attachments.

    - FTP Adapter interacts with Oracle Utilities Digital Asset Cloud Service On Premise Server to list, get, and rename files in the server.

- Two types of email notifications can be configured in this integration, namely, business and technical error email notification. Email notifications are optional, but by default are enabled.

- Business email notifications:

    Configure the property name `notification.email.process.complete.flag` in the OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup to 'true' to receive email notification when the process is completed or partially processed. By default, this is set to 'true'.

    Configure the property name `notification.email.process.nofile.flag` in the OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup to 'true' to receive email notification when no file is found in the source location. By default, this is set to 'true'.

    The recipient(s) of these email notification are configured in the `dacs.to.process.notification`, `drms.to.process.notification` and `ouai.to.process.notification recipients` of the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup. These are sent to the business users of the applications.

- Technical error email notifications:

    Configure the property name `notification.email.error.flag` in the OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup to 'true' to receive email notification when errors are encountered. By default, this is set to 'true'.

    The recipient(s) of the email notification sent out for technical errors is configured in the `to` recipients of the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup. These are sent to the administrators of the applications.

- The OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup is used to define the default values needed by the integration flows. Make sure the properties in the lookup are configured.

- Integration related DVM lookups are used for translation of values from one application to the other. Make sure these DVM lookups are configured.

- In the Oracle Utilities Digital Asset Cloud Service initiated processes, batch processes are used to send outbound messages to pull file(s) from a content server or to create file(s) and upload to the content server defined for an external application to pull for processing.

    Oracle Utilities Digital Asset Cloud Service uses REST inbound web services (IWS) to receive messages.

- In the Oracle Utilities Grid Edge Distributed Energy Resources Management System initiated processes, events are triggered to send the outbound messages and files if applicable. Oracle Utilities Grid Edge Distributed Energy Resources Management System uses REST APIs to receive messages or files.

- In the Oracle Utilities Analytics Insights all data are transferred through files. Any incoming or outgoing files are placed in an Oracle Cloud Infrastructure Object Storage.

- For Scheduled Integration processes related to file transfer, make sure the dependent application extract processes are ran first so the files are already available in the content server for the integration process to pick up.

The integration patterns used in this solution are:

- Synchronous

- One-way Asynchronous

# Synchronous

The synchronous integration process:

1. Receives request message from the source application.

2. Transforms the message from source format to the target format. Lookups are used for data translations, if applicable.

3. Invokes the target application.

4. Transforms the response message from the target format back to the source format. It sends back the response to the source application.

5. In case of any error, the global fault handler catches them and sends the transformed error message to the source application.

6. An optional email notification is sent to the respective users as configured.
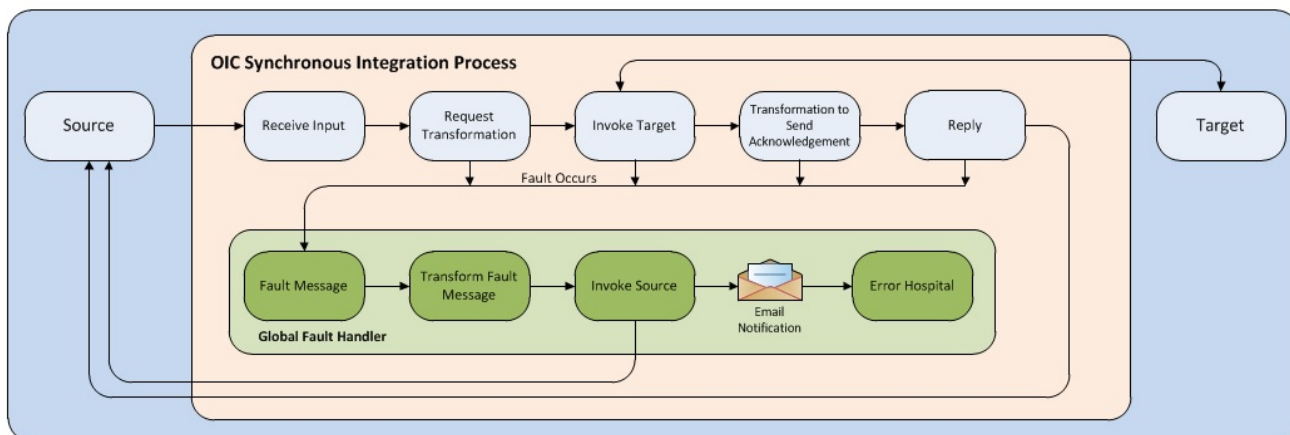


# One-way Asynchronous

The one-way asynchronous integration process:

1. Receives request message from the source application.

2. Transforms message from the source to the target format. Lookups are used for data translations, if applicable.

3. Invokes target application to send the request message.

4. In case of any error, the global fault handler catches the error.

5. An optional email notification is sent to the respective users as configured.

6. The error instance can be re-submitted from Oracle Integration Cloud. Refer to the Error Handling section in Configuring Lookups, Error Handling, and Email Notifications for more details.
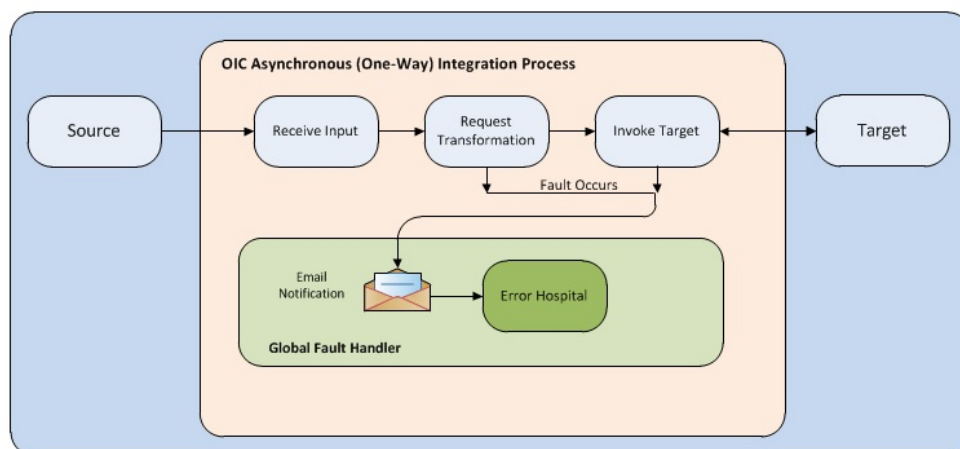
# Solution Diagram

The solution diagram for the integration between Oracle Utilities Analytics Insights, Oracle Utilities Digital Asset Cloud Service, and Oracle Utilities Grid Edge Distributed Energy Resources Management System is shown below.
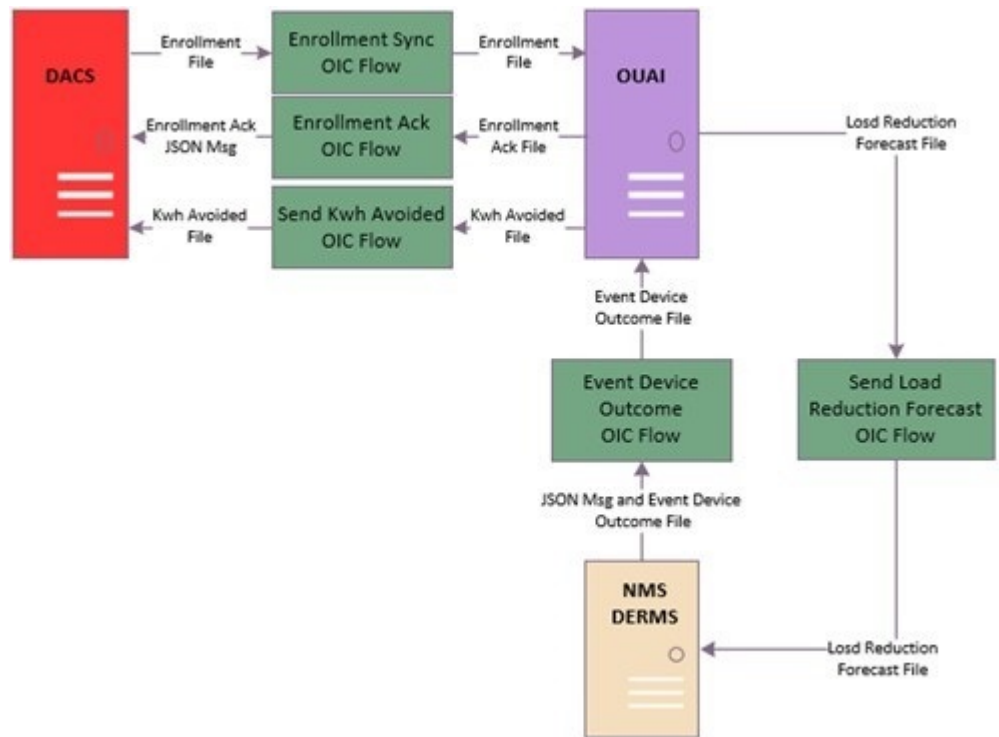
# Integration Flows

The integration supports the following processes:

- Enrollment Sync (DACS Initiated)
- Event Outcome (DERMS Initiated)
- KWH Avoided OS Transfer (OUAI Initiated)
- Load Reduction Forecast OS Transfer (OUAI Initiated)
- Common Integration Flows

## Enrollment Sync (DACS Initiated)

When customers enroll or unenroll, their smart controllable device(s) in a program successfully in Oracle Utilities Digital Asset Cloud Service, the enrollment information are sent to Oracle Utilities Analytics Insights through a file extract.

This integration process transfers the enrollment file from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Analytics Insights.

Oracle Utilities Analytics Insights process the enrollments and send the enrollment acknowledgment back to Oracle Utilities Digital Asset Cloud Service.

Oracle Utilities Digital Asset Cloud Service can place the file in an On Premise FTP Server or in an OCI Object Storage location. Oracle Utilities Analytics Insights only interacts with files through OCI Object Storage.

The enrollment synchronization and acknowledgment are handled by the following Oracle Integration Cloud integration flows depending on the file transfer preference:

- Enrollment FTP Transfer (DACS Initiated)

- Enrollment OS Transfer (DACS Initiated)

- Enrollment Acknowledgment OS Process (OUAI Initiated)

The following diagram shows the Enrollment related Processes:
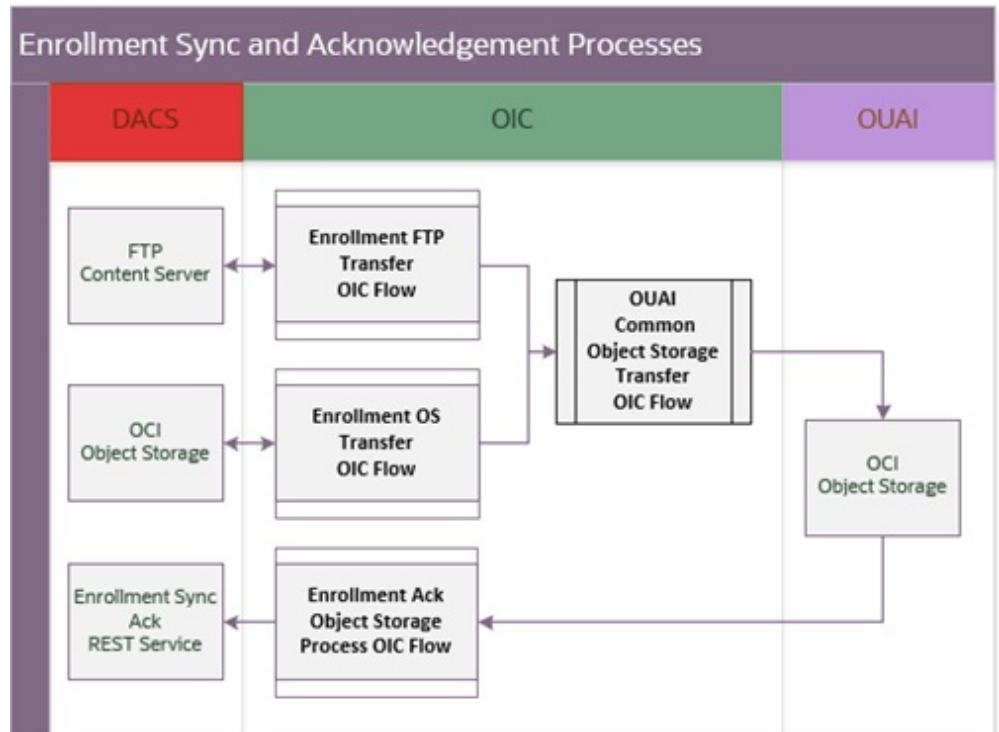


## Enrollment FTP Transfer (DACS Initiated)

This integration process retrieves the enrollment sync data file(s) from an FTP content storage location where Oracle Utilities Digital Asset Cloud Service uploads files and transfer it to the related Oracle Utilities Analytics Insights Object Storage location.

The following diagram shows a graphical representation of the Enrollment Sync integration process from an FTP Server:
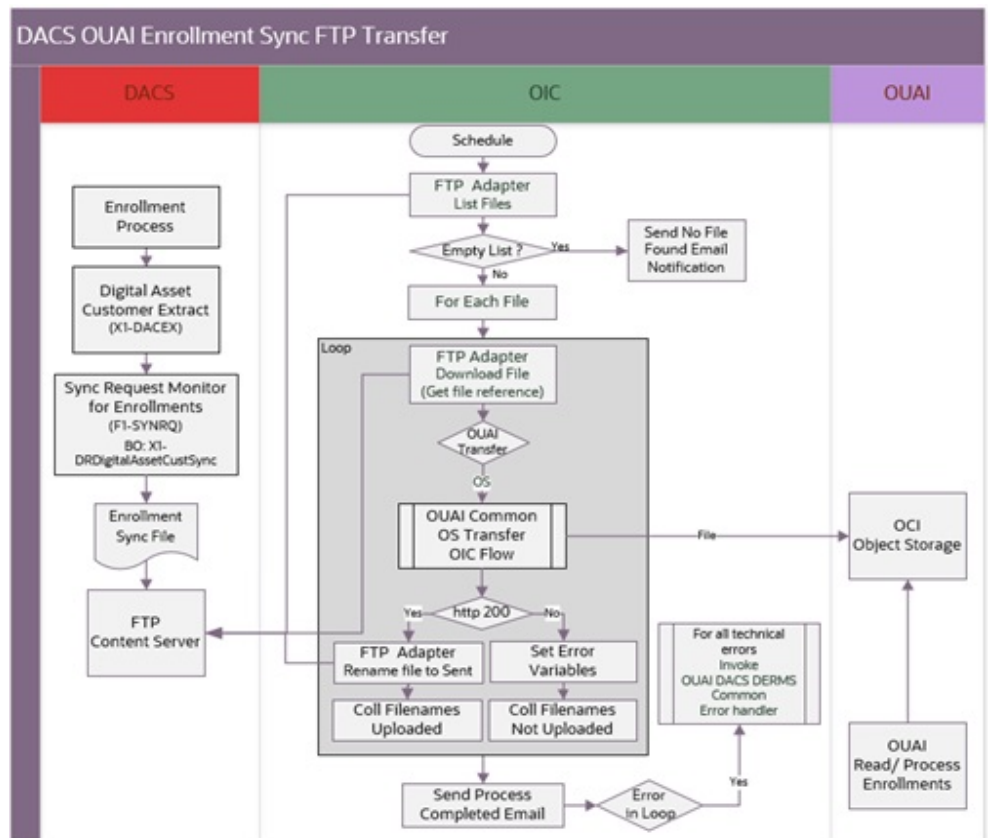


## Processing Details

This is a scheduled integration process deployed on Oracle Integration Cloud and does the following:

1. The process is triggered by a schedule or it can also be triggered manually.

2. Lists all files found in the in the Oracle Utilities Digital Asset Cloud Service source folder, filepath set in the property `dacs.ftp.enroll.input.directory`. It will retrieve files matching the prefix set in `property dacs.enroll.filename.prefix`.

   • If no file is found, it will send a no file found email notification and the process will stop.

   • If files are found, go to the next step.

3. For each file, do the following:

   a. Download the file using the FTP Adapter.

   b. If Oracle Utilities Analytics Insights is configured to receive the file via object storage, invokes the "OU OUAI Common OS Transfer" Oracle Integration Cloud child process passing the necessary information to transfer the file accordingly.

   The OU OUAI Common OS Transfer Oracle Integration Cloud child process uploads the file to the Oracle Utilities Analytics Insights object Storage.

> **Note:** The property ouai.file.target.transfer is defaulted to "os". Currently, Oracle Utility Analytics Insights only support Object Storage as its content server.

- • If the child process returns HTTP status 200, the file transfer was successfully completed. The source file name is renamed by appending the prefix set in the property.

- • Else, an error occurred during the file transfer.

4. After successful transfer of all the files, a Process Completed email notification is sent to `dacs.to.process.notification` and `ouai.to.process.notification` recipients defined in lookup OUTL-BRT-OUAI_DACS_DRMS_EMAIL_ID.

5. Error Handling.

For any errors encountered in this process:

- • An error email notification with error details is sent via the common error handler Oracle Integration Cloud process.

- • If the error occurs while processing the list of files, then the Process Complete email notification is also sent out containing the summary of files transferred and not transferred.

## Technical Details

The following table describes the integration processes and the respective Oracle Utilities Analytics Insights and Oracle Utilities Digital Asset Cloud Service artifacts used in this integration process.

| Artifacts | Value |
| --- | --- |
| Integration Process Name | OU DACS OUAI Enrollment FTP Transfer |
| Integration Process Identifier | OUTL-BA-DACS_OUAI_FTP_ENROLL |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (FTP Adapter) | OU FTP DACS for OUAI DACS DRMS |
| Target Connection (REST - OS) | OU REST OUAI OS for OUAI DACS DRMS (in OU OUAI Common OS Transfer process) |
| Local Integrations | • OU OUAI Common OS Transfer<br>• OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID |

### Lookups Referenced

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|---|---|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notification.type.email<br>• notifcation.email.error.flag<br>• notification.email.process.nofile.flag<br>• notification.email.process.complete.flag<br>• dacs.enroll.filename.prefix<br>• dacs.ftp.enroll.input.directory<br>• dacs.prefixtag.fileuploaded<br>• ouai.file.target.transfer.pref<br>• ouai.os.enroll.bucket<br>• ouai.os.namespace |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• dacs.to.process.notification<br>• ouai.to.process.notification |

## Enrollment OS Transfer (DACS Initiated)

This integration process retrieves the enrollment sync data file(s) from an Oracle Integration Cloud Object Storage location where Oracle Utilities Digital Asset Cloud Service uploads files and transfer it to the related Oracle Utilities Analytics Insights Object Storage location.

The following diagram shows a graphical representation of the Enrollment Sync integration process from an Oracle Integration Cloud Object Storage:
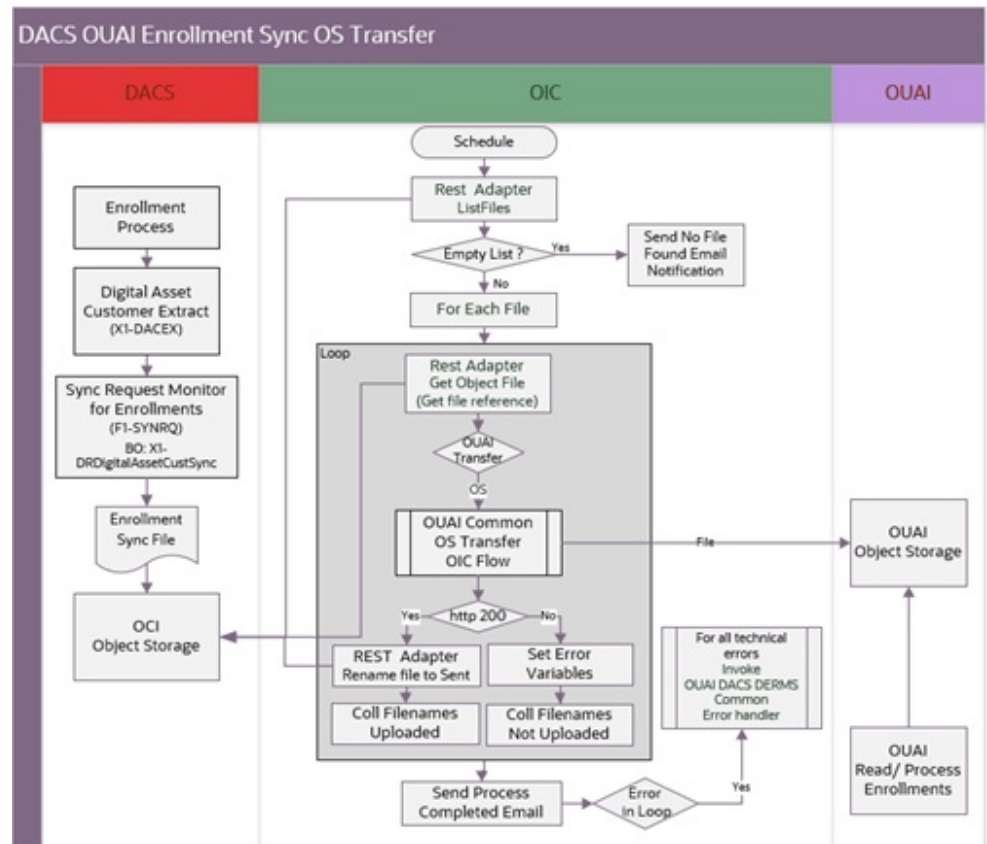


### Processing Details

This is a scheduled integration process deployed on Oracle Integration Cloud and does the following:

1.  The process is triggered by a schedule or it can also be triggered manually.

2.  Lists all files found in the Oracle Utilities Digital Asset Cloud Service Object Storage Bucket, that is set in the property `dacs.os.enroll.bucket` along with `dacs.os.namespace`. It will retrieve files matching the prefix configured in the property `dacs.enroll.filename.prefix`.

    •  If no files are found, it will send a no file found email notification and the process will stop.

    •  If files are found, go to the next step.

3.  For each file, do the following:

    a.  Get the file using the REST Adapter.

    b.  If Oracle Utilities Analytics Insights is configured to receive the file via object storage, invokes the Oracle Integration Cloud child process: OU OUAI Common OS Transfer passing the necessary information to transfer the file accordingly.

        The "OU OUAI Common OS Transfer" Oracle Integration Cloud child process uploads the file to the Oracle Utilities Analytics Insights object Storage.

> **Note:** The property ouai.file.target.transfer is defaulted to "os". Currently, Oracle Utilities Analytics Insights only support Object Storage as its content server.

- If the child REST service returns HTTP status 200, the file transfer was successfully completed. The source file name is renamed by appending the prefix set in the property `dacs.prefixtag.fileuploaded`.
- Else, an error occurred during the file transfer.

4. After successful transfer of all the files, a Process Completed email notification is sent to `dacs.to.process.notification` and `ouai.to.process.notification` defined in lookup OUTL-BRT-OUAI_DACS_DRMS_EMAIL_ID.

5. Error Handling.

   For any errors encountered in this process:

   - An error email notification with error details is sent via the common error handler Oracle Integration Cloud process.
   - If the error happens while processing the list of files, then the Process Complete email notification is also sent out containing the summary of files transferred and not transferred.

## Technical Details

The following table describes the integration processes and artifacts used in this integration process.

| Artifacts | Value |
|---|---|
| Integration Process Name | OU DACS OUAI Enrollment FTP Transfer |
| Integration Process Identifier | OUTL-BA-DACS_OUAI_FTP_ENROLL |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (REST Adapter) | OU REST DACS OS for OUAI DACS DRMS |
| Target Connection (REST - OS) | OU REST OUAI OS for OUAI DACS DRMS (in OU OUAI Common OS Transfer process) |
| Local Integrations | • OU OUAI Common OS Transfer<br>• OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID |

**Lookups Referenced**

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|---|---|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notification.type.email<br>• notifcation.email.error.flag<br>• notification.email.process.nofile.flag<br>• notifcation.email.process.complete.flag<br>• dacs.enroll.filename.prefix<br>• dacs.prefixtag.fileuploaded<br>• ouai.file.target.transfer.pref<br>• ouai.os.enroll.bucket<br>• ouai.os.namespace<br>• dacs.os.namespace<br>• dacs.os.enroll.bucket |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• dacs.to.process.notification<br>• ouai.to.process.notification |

## Enrollment Acknowledgment OS Process (OUAI Initiated)

After Oracle Utilities Analytics Insights process the enrollments received from Oracle Utilities Digital Asset Cloud Service, it sends the enrollment acknowledgment back to Oracle Utilities Digital Asset Cloud Service.

Oracle Utilities Analytics Insights only interacts with files through Oracle Integration Cloud Object Storage and Oracle Utilities Digital Asset Cloud Service receives the enrollment acknowledgments through a REST web service.

The following diagram shows a graphical representation of the Enrollment Sync Acknowledgment integration process:
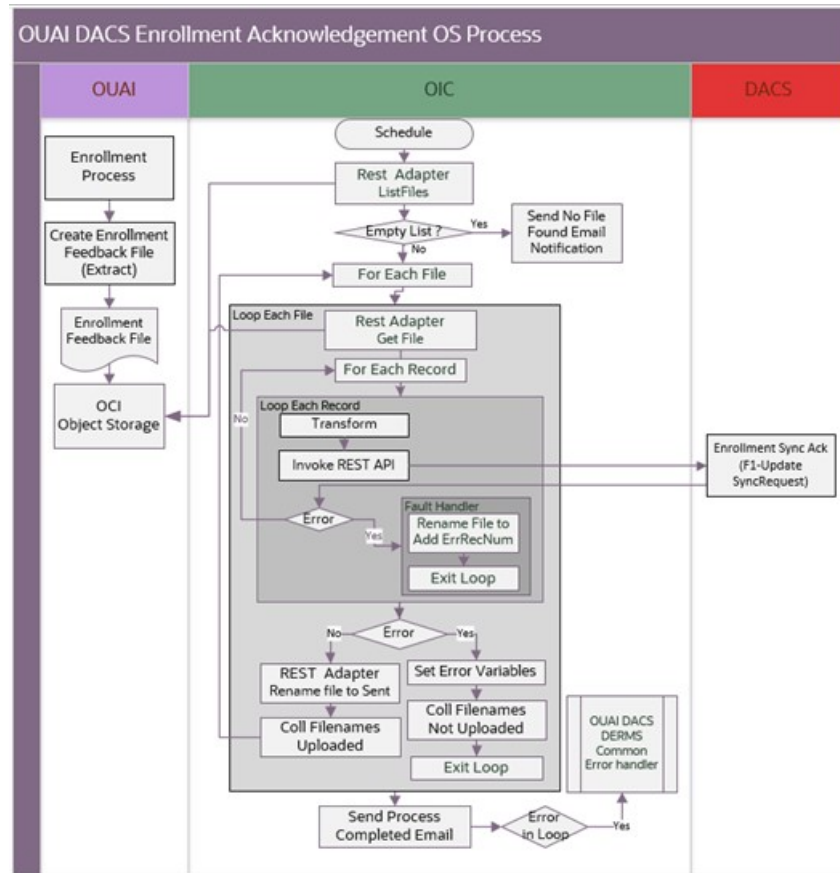


## Processing Details

This is a scheduled integration process deployed on Oracle Integration Cloud and does the following:

1. The process is triggered by a schedule or it can also be triggered manually.

2. Lists all files found in the Oracle Utilities Analytics Insights Object Storage Bucket, set in properties `ouai.os.enrollack.bucket` and `ouai.os.namespace`. It will retrieve files matching the prefix set in property `ouai.os.enrollack.filename.prefix`.

   • If no file is found, it will send a no file found email notification and the process will stop.

   • If files are found, go to the next step.

3. For each file, do the following:

   a. Get the file using the REST Adapter

   b. For each record in the file:

      • Transform the enrollment acknowledgment CSV record to Oracle Utilities Digital Asset Cloud Service JSON format.

      • Invoke Oracle Utilities Digital Asset Cloud Service Sync Request Update REST endpoint to send the acknowledgment.

- • For any errors encountered during record processing in the loop:

    - • The source file will be renamed to append the error record number.

        **Sample:** `feedback.dacs.program_subscription.20230210 _ErrInRcd_6.csv`

        The sample denotes that when processing the 6th record, an error was encountered due to a network connection issue or the application went down. When the file is reprocessed, it will start at the 6th record.

    - • It will stop further record processing in the file.

  c. If no error encountered in the record processing loop:

    - • The current source file name is renamed by appending the prefix set in the property `ouai.prefixtag.fileuploaded` processed.

    - • Else, an error occurred during the record processing and stop further file processing.

4. After successful transfer of all files, a Process Complete Notification email is sent to `dacs.to.process.notification` and `ouai.to.process.notification` recipients defined in lookup OUTL-BRT-OUAI_DACS_DRMS_Email_ID.

5. Error Handling.

   - • For technical faults encountered in the process, such as connectivity issues, an error email notification with error details is sent out via the common error handler Oracle Integration Cloud process.

   - • If an error is encountered while processing the list of files, the Process Complete email notification is also sent out containing the summary of files transferred and not transferred.

## Technical Details

The following table describes the integration processes and the respective Oracle Utilities Analytics Insights and Oracle Utilities Digital Asset Cloud Service artifacts used in this integration process.

| Artifacts | Value |
|---|---|
| Integration Process Name | OU OUAI DACS EnrollmentAck OS Process |
| Integration Process Identifier | OUTL-BA-OUAI_DACS_OS_ENROLL_ACK |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (REST Adapter) | OU REST OUAI OS for OUAI DACS DRMS |
| Target Connection (Oracle Utilities Adapter) | Oracle Utilities REST DACS for DACS-DRMS |
| Local Integrations | OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID |

**Lookups Referenced**

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|-----|----------|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notifcation.type.email.flag<br>• ouai.os.enrollack.bucket<br>• ouai.prefixtag.uploaded<br>• ouai.os.namespace<br>• ouai.os.enrollack.prefixtag.sent |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• dacs.to.process.notification<br>• ouai.to.process.notification |
| OUTL-BRT-DACS_OUAI_Routing | • DRMS_Instance<br>• DRMS_Site_Connection |

# Event Outcome (DERMS Initiated)

Customers enrolled in an active program are called upon to participate in program events for a specific duration.

After events have completed, Oracle Utilities Grid Edge Distributed Energy Resources Management System receives the actual outcome of all devices' event participation from Oracle Utilities Live Energy Connect (LEC).

Oracle Utilities Grid Edge Distributed Energy Resources Management System aggregates and sends both Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Analytics Insights the post event outcome for all controllable devices called to participate in an event or events through a file.

The data in the file can be from one or multiple events. Each device that is called to participate in an event will have one record in the file. Example, if a service point has 2 devices linked to in and both participated in an event, then each device will have one outcome record in the file.

Once the file is ready, Oracle Utilities Grid Edge Distributed Energy Resources Management System sends the JSON outbound message with the file attachment.

This integration process transfers the post event outcome file from Oracle Utilities Grid Edge Distributed Energy Resources Management System to Oracle Utilities Analytics Insights and sends an acknowledgment back to Oracle Utilities Grid Edge Distributed Energy Resources Management System when the process is completed or encountered an error.

The following diagram shows a graphical representation of the Event Outcome integration process.
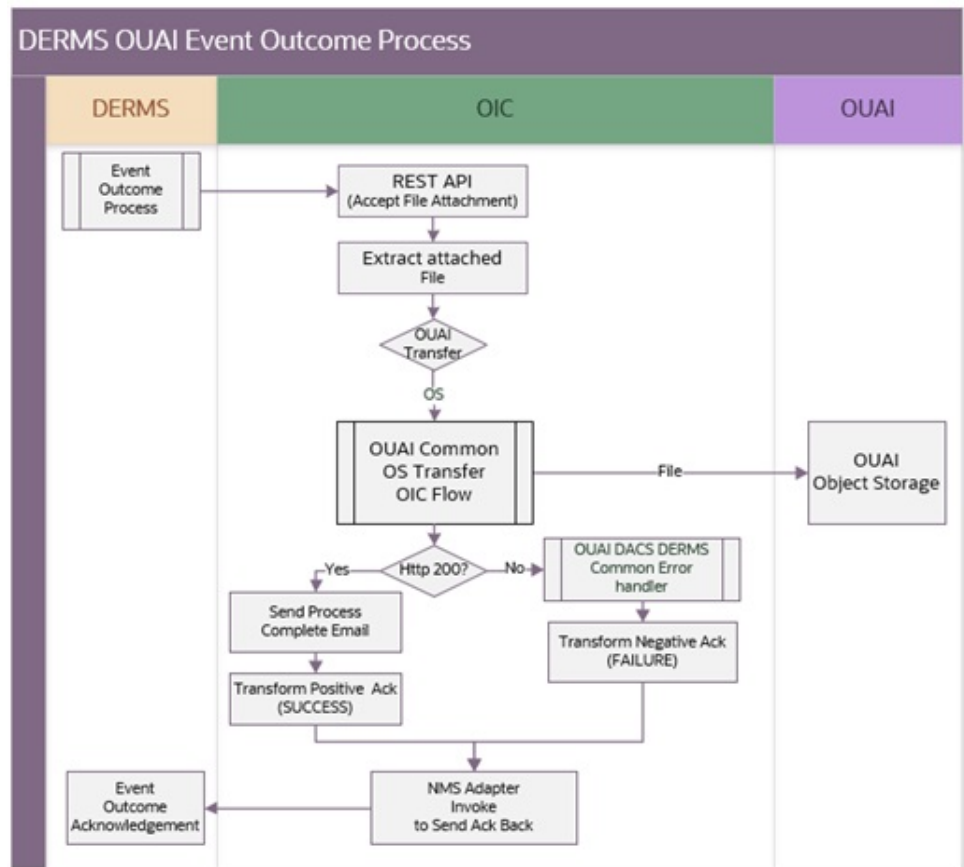


## Processing Details

The integration process deployed on Oracle Integration Cloud is exposed as a REST API and does the following:

1. The process is triggered when Oracle Utilities Grid Edge Distributed Energy Resources Management System invokes REST endpoint to send the post event outcome information to Oracle Utilities Analytics Insights Service. The message received is a JSON payload with a CSV file attachment.

2. If Oracle Utilities Analytics Insights is configured to receive the attached file via object storage the request is routed to OU OUAI Common OS Transfer child process passing the necessary information to drop it accordingly.

   The OU OUAI Common OS Transfer Oracle Integration Cloud child process uploads the file to the Oracle Utilities Analytics Insights Object Storage.

   **Note:** The property ouai.file.target.transfer is defaulted to "os". Currently, Oracle Utilities Analytics Insights only support Object Storage as its content server.

   a. If the child REST service returns HTTP status 200, the file transfer was successfully completed, and a positive post event outcome acknowledgment is sent to Oracle Utilities Grid Edge Distributed Energy Resources Management System.

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    b.   Else, an error occurred during the file transfer and a negative post event outcome acknowledgment is sent to Oracle Utilities Grid Edge Distributed Energy Resources Management System.

3.   Error Handling

For any errors encountered in this process:

- An error email notification with error details is sent via the common error handler Oracle Integration Cloud process.

- A negative acknowledgment is sent to Oracle Utilities Grid Edge Distributed Energy Resources Management System upon it will retry the file transfer according the MAX_RETRIES setting in their DRMS_PARAMENTERS table.

- The integration flow will stop processing.

## Technical Details

The following table describes the integration processes and the respective Oracle Utilities Grid Edge Distributed Energy Resources Management System and Oracle Utilities Analytics Insights artifacts used in this integration process.

| Artifacts | Value |
|---|---|
| Integration Process Name | OU DERMS OUAI Event Outcome Transfer |
| Integration Process Identifier | OUTL-BA-DRMS_OUAI_EVT_OUTC_TRNFR |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (REST Trigger) | OU REST for DACS-DRMS |
| Target Connection (Oracle Utilities Adapter) | OU REST DRMS for OUAI DACS DRMS |
| invoke | • DERMS Service Name: NMS-DACSInbound<br>• openAPIUrl: https://{host}:{port} /nms-drms/rest/v1/openapi.json<br>• OperationId: deviceOutcomeAck<br>• Method: POST<br>• URI: /device-outcome-ack |
| Local Integrations | • OU OUAI Common OS Transfer<br>• OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID<br>• OUTL-BRT-DACS_OUAI_Routing |

**Lookups Referenced**

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|-----|----------|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notification.type.email.flag<br>• ouai.file.target.transfer.pref<br>• notification.email.process.complete.flag<br>• ouai.os.namespace<br>• ouai.os.eventoutcome.bucket |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• drms.to.process.notification<br>• ouai.to.process.notification |
| OUTL-BRT-DACS_OUAI_Routing | • DRMS_Instance<br>• DRMS_Site_Connection |

# KWH Avoided OS Transfer (OUAI Initiated)

When customer devices, enrolled in an active program participated in a program event, the outcome of the devices' participation can result in a financial incentive.

The actual reduction in consumption during the event duration is calculated by Oracle Utilities Analytics Insights. The kWh Avoided is calculated at the metered service point linked to the device or devices that participated in an event.

This integration process sends the KWH Avoided data from OUAI to Oracle Utilities Digital Asset Cloud Service.

Oracle Utilities Analytics Insights only interacts with files through OCI Object Storage and Oracle Utilities Digital Asset Cloud Service can receive the files in an On Premise FTP Server or in an OCI Object Storage location.

The Kwh Avoided File Transfer called internally the following Oracle Integration Cloud integration flows depending on the target file transfer preference:

- OU DACS Common OS Transfer

- OU DACS Common FTP Transfer

The following diagram shows a graphical representation of the KWH Avoided File Transfer process.
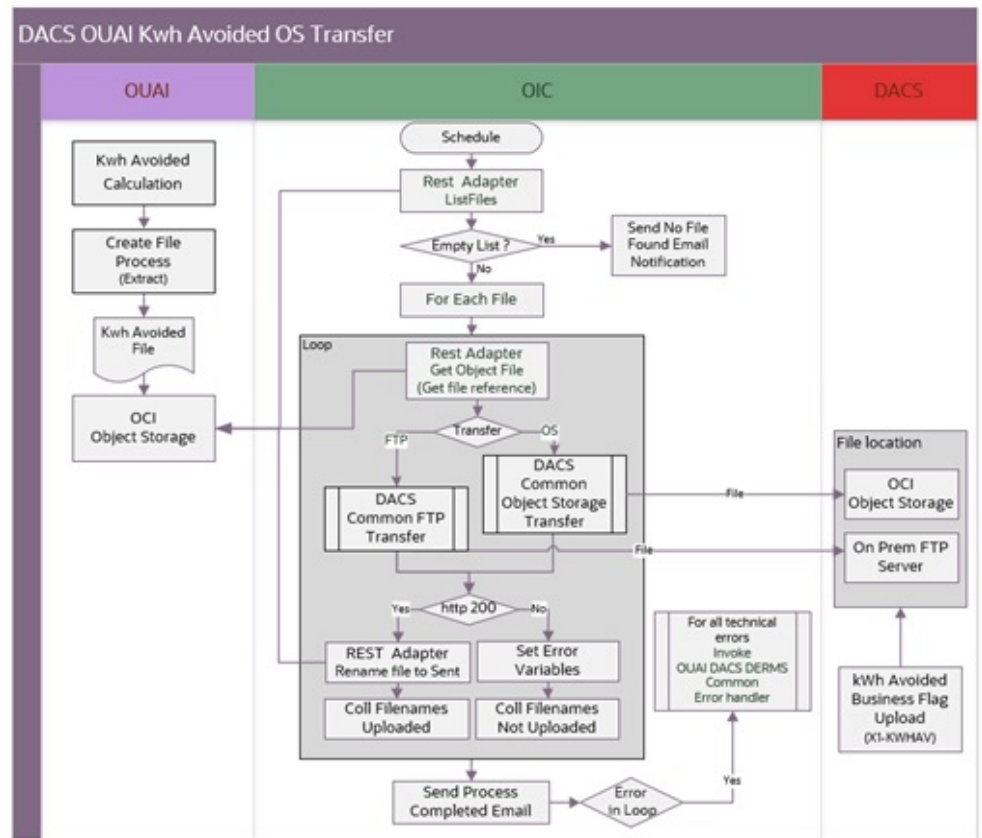


## Processing Details

This is a scheduled integration process deployed on Oracle Integration Cloud and does the following:

1. The process is triggered by a schedule or it can also be triggered manually.

2. Lists all files found in the Oracle Utilities Analytics Insights Object Storage Bucket, set in properties `ouai.os.kwhavoided.bucket` and `ouai.os.namespace`. It will retrieve files matching the prefix set in property `ouai.os.kwhavoided.filename.prefix`.

    • If the file is not found, it will send a 'no file found' email notification and the process stops.

    • If files are found, proceed to the next step.

3. For each file, do the following:

    a. Get the file using the REST Adapter.

    b. Based on the value set in the `dacs.file.target.transfer.pref` property, the process sends the file reference to a child process.

    c. There are 2 child process that can be called - OU DACS Common FTP Transfer and OU DACS Common OS Transfer.

        • If the property value is 'os', it is routed to the OU DACS Common OS Transfer child process, the file is sent to DACS OCI Object Storage. The file

location is set in the `dacs.os.namespace` and `dacs.os.kwhavoided.bucket` property.

- If property value is 'ftp', it is routed to OU DACS Common FTP Transfer child process, the file is sent to DACS FTP location. The file location is set in `property dacs.ftp.kwhavoid.input.directory`.

d. If the child process returns HTTP status 200, the file transfer was successfully completed. The source file name is renamed by appending the prefix set in the `property ouai.prefixtag.fileuploaded`. Otherwise, an error occurred during the file transfer.

4. After successful transfer of all files, a Process Complete Notification email is sent to `dacs.to.process.notification` and `ouai.to.process.notification` recipients defined in the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup.

5. Error Handling.

   For any errors encountered in this process:

   - An error email notification with error details is sent via the common error handler Oracle Integration Cloud process.

   - If an error is encountered while processing the list of files, the Process Complete email notification is also sent out that contains the summary of files transferred and not transferred.

   - The integration flow will stop processing.

## Technical Details

The following table describes the integration processes and the respective OUAI and DACS artifacts used in this integration process.

| Artifacts | Value |
|---|---|
| Integration Process Name | OU OUAI DACS KwhAvoided OS Transfer |
| Integration Process Identifier | OUTL-BA-OUAI_DACS_KWHAVD_OS_TRF |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (REST Adapter) | OU REST OUAI OS for OUAI DACS DRMS |
| Target Connection (FTP Adapter) | OU FTP DACS for OUAI DACS DRMS (in OU DACS Common FTP Transfer process) |
| Target Connection (REST - OS) | OU REST DACS OS for OUAI DACS DRMS (in OU DACS Common OS Transfer process) |
| Local Integrations | • OU DACS Common FTP Transfer<br>• OU DACS Common OS Transfer<br>• OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID |

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### Lookups Referenced

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
| --- | --- |
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notifcation.type.email.flag<br>• dacs.file.transfer.pref<br>• dacs.os.kwhavoided.bucket<br>• dacs.os.namespace<br>• dacs.ftp.kwhavoid.input.directory<br>• ouai.os.kwhavoided.bucket<br>• ouai.os.kwhavoided.filename.prefix<br>• ouai.os.namespace |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• dacs.to.process.notification<br>• ouai.to.process.notification |

# Load Reduction Forecast OS Transfer (OUAI Initiated)

Oracle Utilities Analytics Insights calculates the load reduction forecast for each metered service point associated to a utility customer enrolled in an active demand response program and sends the information to Oracle Utilities Grid Edge Distributed Energy Resources Management System.

Oracle Utilities Analytics Insights only interacts with files through the Oracle Integration Cloud Object Storage and Oracle Utilities Grid Edge Distributed Energy Resources Management System receives the files through a REST web service.

The following diagram shows a graphical representation of the Load Reduction Forecast File Transfer process.
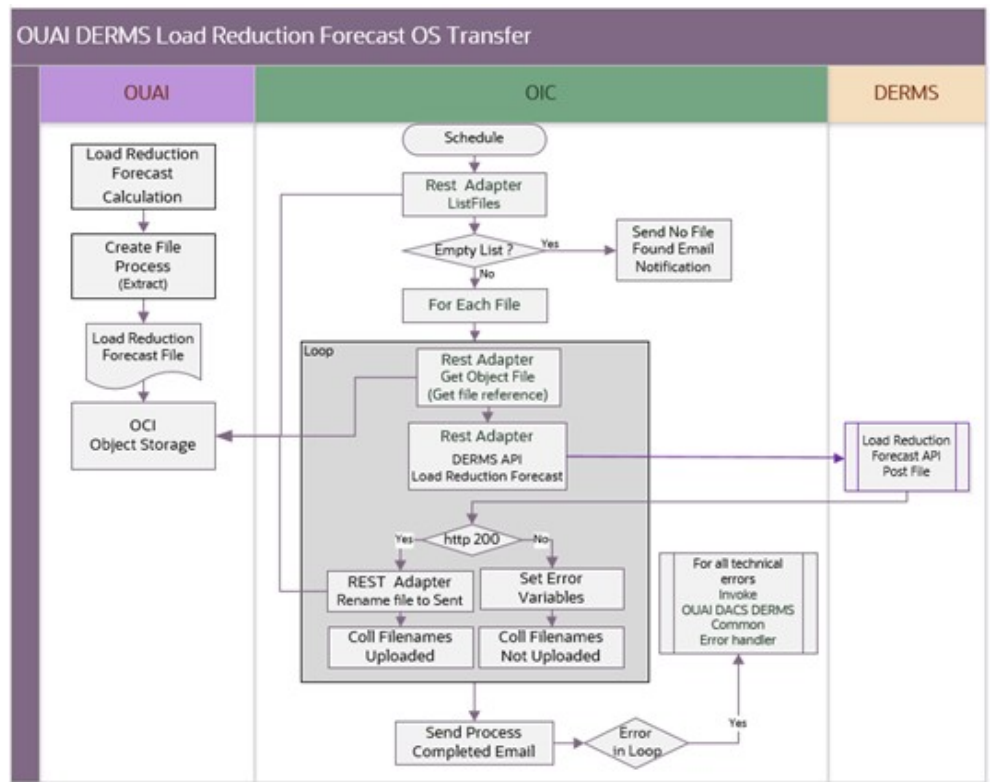


## Processing Details

This is a scheduled integration process deployed on Oracle Integration Cloud and does the following:

1. The process is triggered by a schedule or it can also be triggered manually

2. List all file list found from in the Oracle Utilities Analytics Insights Object Storage bucket, set in properties `ouai.os.loadreductionforecast.bucket` and `ouai.os.namespace`. It will retrieve files matching the prefix set in property `ouai.loadreductionforecast.filename.prefix`.

   • If no file is found, it will send a no file found email notification and the process will stop.

   • If files are found, go to the next step.

3. For each file, do the following:

   a. Get the file using the REST Adapter.

   b. Prepare the file to send to Oracle Utilities Grid Edge Distributed Energy Resources Management System.

   c. Invoke DERMS Load Reduction Forecast REST API and send the file as a binary attachment.

   d. Check the **Acknowledge Type (ackType)** field from Oracle Utilities Grid Edge Distributed Energy Resources Management System.

- If it displays "SUCCESS", the source file name is renamed by appending the prefix set in property `ouai.prefixtag.fileuploaded` and the next file in the list is processed.

- Otherwise, an error occurred during file transfer and the rest of the files, if any, will not be processed.

4. After successful transfer of all files, a Process Complete email notification is sent to `ouai.to.process.notification` and `derms.to.process.notification` recipients defined in the lookup OUTL-BRT-OUAI_DACS_DRMS_Email_ID.

5. Error Handling.

   For any errors encountered in this process:

   - An error email notification with error details is sent via the common error handler Oracle Integration Cloud process.

   - If the error happens while processing the list of files, the Process Complete email notification is also sent out containing the summary of files transferred and not transferred.

## Technical Details

The following table describes the integration processes and the respective Oracle Cloud Infrastructure Object Storage and Oracle Utilities Grid Edge Distributed Energy Resources Management System artifacts used in this integration process.

| Artifacts | Value |
| --- | --- |
| Integration Process Name | OU OUAI DERMS LoadReductionForecast OS Transfer |
| Integration Process Identifier | OUTL-BA-OUAI_OS_LR_FORECAST |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection (REST Adapter) | OU REST OUAI OS for OUAI DACS DRMS |
| Target Connection (REST Adapter) | OU REST API DRMS for OUAI DACS DRMS |
| Local Integrations | OU OUAI DACS DERMS Common Error Handler |
| OIC Lookup | • OUTL-BRT-OUAI_DACS_DRMS_ConfigProps<br>• OUTL-BRT-OUAI_DACS_DRMS_Email_ID |

### Lookups Referenced

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|---|---|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notifcation.type.email<br>• ouai.loadreductionforecast.filename.prefix<br>• ouai.prefixtag.fileuploaded<br>• notification.email.process.complete.flag<br>• ouai.os.namespace<br>• ouai.os.loadreductionforecast.bucket |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • from<br>• to<br>• dacs.to.process.notification<br>• ouai.to.process.notification |

## Common Integration Flows

This section focuses on the common logic that is used throughout the integration. The common logic is placed in common integration flows to be reused or called by the other integrations flows. It can be categorized in design standards, email format, and common integration.

### File to File Transfer

Many integrations are moving files from one application to another. Source and target locations can be a folder in an on-premises server or a cloud object storage. This is dependent on what the source and target applications support during the implementation.

> **Note:** Currently, Oracle Utilities Analytics Insights only uses the Oracle Integration Cloud Object Storage as its content server. Oracle Utilities Grid Edge Distributed Energy Resources Management System uses REST APIs to send and receive files. Oracle Utilities Digital Asset Cloud Service supports both FTP and Object Storage as its content server.

If the source application supports FTP or object storage as it's content server, then there will be two Oracle Integration Cloud flows to support each entry point. It is duplicated because an integration cannot be activated if one of the connections is not setup.

To allow customers to decide how to transfer files to a target location, a file target transfer preference property must be set to determine where to transfer the file. Valid values are "os" or "ftp".

• If set to "os", a child Oracle Integration Cloud flow is called to transfer the file to a target object storage location.
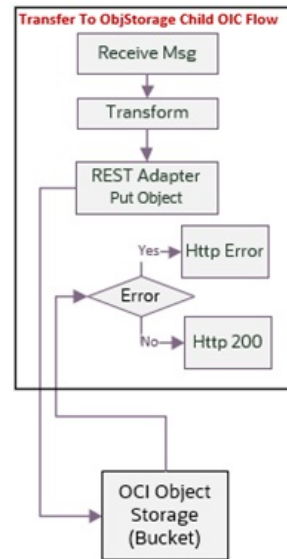
> **Note:** Each application's target object storage location has it's own child Oracle Integration Cloud flow.

- If set to "ftp", a child Oracle Integration Cloud flow is called to transfer the file to a target ftp location.
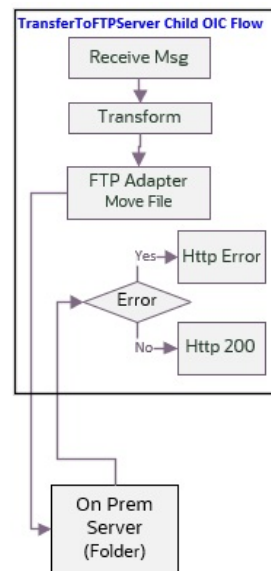


> **Note:** Each application's target FTP location has it's own child Oracle Integration Cloud flow.

## Common Child File Transfer Flows (Oracle Integration Cloud Initiated)

- OU OUAI Common OS Transfer

- OU DACS Common FTP Transfer

- OU DACS Common OS Transfer

All child Oracle Integration Cloud flows are exposed as a REST API and are setup similarly to receive the endpoint information to send to an FTP or Object Storage location.

| To Object Storage | To FTP Server |
|---|---|
| Object Name | Filename |
| Namespace Name | Directory |
| Bucket Name | |
| File Reference | File Reference |

## Common Error Handler (Oracle Integration Cloud Initiated)

This integration process is used to send email notification in case of errors in Oracle Integration Cloud.

The following diagram shows a graphical representation of the Common Error Handler integration process.
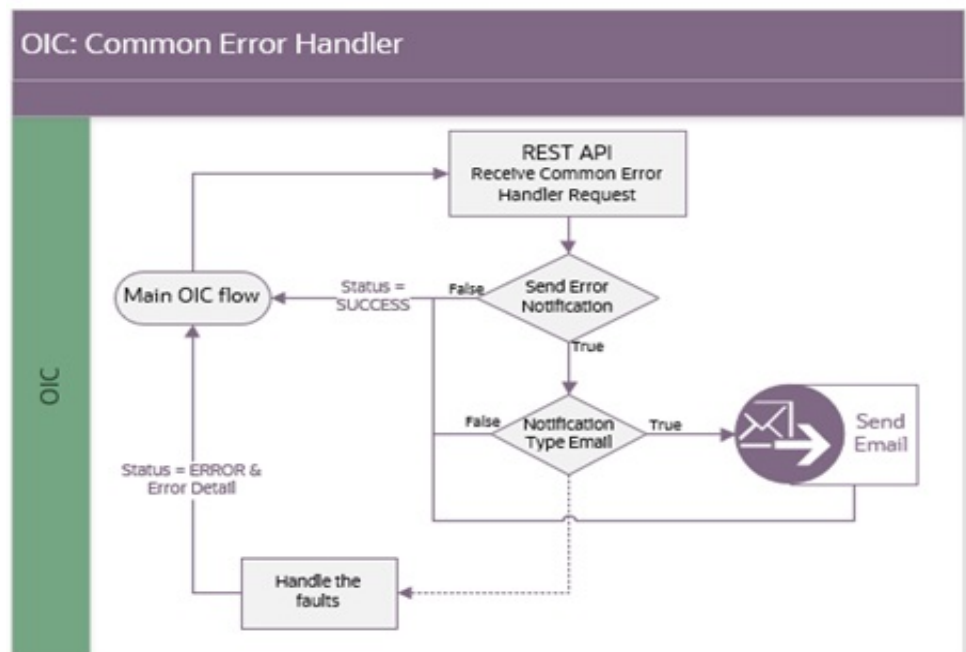


### Business Processing

The integration process deployed on Oracle Integration Cloud is exposed as a REST API and perform the following activities:

1. This process is invoked internally by other Oracle Integration Cloud flows when a technical error occurs in any of the main integration flows.

2. The request message received is processed based on the following property names, `notification.email.error.flag` and `notification.type.email`, in the **OUTL-BRT-OUAI_DACS_DRMS_ConfigProps** lookup. If both are set to 'true', then an email notification will be sent on error.

**Technical Details**

The following table describes artifacts used in this integration process.

| Artifacts | Value |
|---|---|
| Integration Process Name | OU OUAI DACS DERMS Common Error Handler |
| Integration Process Identifier | OUTL-BA-OUAI_DACS_DRMS_ERR_HNDLR |
| Integration Package Name | outl.ba.ouai_dacs_derms.01_23_2000 |
| Source Connection | local integration |
| trigger | /receiveMessage |

## Lookups Referenced

The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

| DVM | Property |
|---|---|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • notifcation.type.email<br>• notification.email.error.flag |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • From<br>• To |

# Chapter 3

# Configuring Oracle Utilities Digital Asset Cloud Service

This chapter elaborates about the configuration of about various data, messages and catalog for the integration used by Oracle Utilities Digital Asset Cloud Service. It includes the following sections:

- Configuring Admin Data in Oracle Utilities Digital Asset Cloud Service

- Adding Oracle Integration Cloud Certificates

# Configuring Admin Data in Oracle Utilities Digital Asset Cloud Service

This section describes the admin data setup in Oracle Utilities Digital Asset Cloud Service related to the integration. The **Admin** menus can be configured to be grouped alphabetically or by functional groups. The descriptions that follow will include both groupings.

- Message Senders
- External System
- Inbound Web Service (IWS)
- Master Configuration
- Head End System
- Activity Type
- Communication Type
- Service Task Type
- Sync Request Process
- Scheduling Batch Jobs

## Message Senders

Create a new or update an existing real-time message sender for each Oracle Utilities Digital Asset Cloud Service Outbound Message.

To create a message sender:

1. In the **Admin** menu navigate to **[M or Integration]** > **Message Sender** > **Add**.

2. Enter a unique message sender and its description.

3. Populate the following values:

   - **Message Sender**: Sender name in Oracle Utilities Digital Asset Cloud Service
   - **Description**: Sender's description
   - **Invocation Type**: Real-time
   - **Message Class**: RTJSONSNDR (Sender for real-time HTTP / JSON messages)
   - **Active**: Select the check box.
   - **MSG Encoding**: UTF-8 message encoding

4. Select the **Context** tab and set values for the following context types:

   - **HTTP Header**: application/json
   - **HTTP Login User**: User ID to access OIC
   - **HTTP Login Password**: Password to access OIC
   - **HTTP Method (POST/GET)**: POST
   - **HTTP Timeout**: 300

# External System

Create a new or update an existing external system to support the Distributed Energy Resources Management System.

To create an external system:

1. In the **Admin** menu navigate to **[M or Integration]** > **External System** > **Add**.

2. Enter a unique **External System** and its **Description**.

3. Associate the outbound message types created to the external system. For each outbound message type, set the following:

   - **Outbound Message Type**

     - **Controllable Device Status Check**: Use the X1-CTRLDVCS (Controllable Device Status Check) outbound message type

     - **Synchronize Digital Asset**: Use the X1-NMSDASMSG (Synchronize Digital Asset (NMS)) outbound message type

   - **Processing Method**: Real-time

   - **Message Sender**: Set the corresponding message sender for the outbound message

   - **Date/Time Format**: XSD

   - **JSON Conversion Method**: Base JSON conversion

# Inbound Web Service (IWS)

The following REST inbound web services are delivered for this integration:

- X1-ProgramEnrollment

- X1-ControllableDeviceStatus

- X1-ProgramEventParticipation

The full URI component for the REST inbound web service is configurable.

The Oracle Utilities Digital Asset Cloud Service documentation provides instructions about the one-time setup. Refer to the Documentation and Resources section in Configuring Oracle Utilities Digital Asset Cloud Service for information about documentation resources.

# Master Configuration

This section describes the master configuration details for the integration. The following Master Configurations can be found from the **Admin menu** > **[M or General]** > **Master Configuration**.

- Digital Asset Integration Master Configuration

# Head End System

Create a new or update an existing head end system for each external energy aggregator interfaced to Oracle Utilities Live Energy Connect.

To create a head end system:

1.  In the **Admin** menu navigate to **[H or Digital Asset Management]** > **Head End System** > **Add**.

2.  Enter a unique head end system and its description.

3.  Specify the external system created for Oracle Utilities Grid Edge Distributed Energy Resources Management System.

4.  Add a processing method for processing role Device Status Check. On the processing method, set the following:

    *   **Default Business Object:** X1-CtrlDvcStatusCheckComm (Controllable Device - Device Status Check)

    *   **Default Outbound Message Type**: Controllable Device Status Check

# Activity Type

Create a new or update an existing activity type for the Controllable Device Status Check activity.

To create an activity type:

1.  In the **Admin** menu, navigate to **[A or Communication]**.

2.  Add or edit the **Controllable Device Status Check** activity and its description. Refer to the embedded help for more information.

# Communication Type

Create a new or update an existing communication type for the following Communication Types:

*   Controllable Device: Device Status Check

*   Controllable Device: Device Status Check Response

To create a communication type:

1.  In the **Admin** menu navigate to **[C or Communication Type]**.

2.  Enter a unique communication type and its description. Refer to the embedded help for more information.

# Service Task Type

Create a new or update an existing service task type for the following Service Task Type Business Objects:

*   Digital Asset Enrollment Request Task Type

*   Digital Asset Unenrollment Request Task Type

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To create a service task type:

1. In the **Admin** menu navigate to **[S or General]**.

2. Enter a unique service task type and its description. Refer to the embedded help for more information.

# Sync Request Process

The Sync Request Process is used to synchronize customer enrollment and unenrollment data from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Grid Edge Distributed Energy Resources Management System. Maintenance Object - Audit algorithms are responsible for instantiating subscription based sync request records.

To configure a Maintenance Object:

1. In the **Admin** menu, navigate to **[M or Database]** > **Maintenance Object** > **Search**.

2. Navigate to the following Maintenance Objects and configure the following:

   - **Usage Subscription (D1-US)**: Under the **Maintenance Object - Options** tab, add the "Sync Request BO" MO Option with an option value "X1-NMSDigitalAssetCustSync (NMS Digital Asset Customer Sync Request)". Plug in the F1-GCHG-CDCP (Generic Change Data Capture) MO audit algorithm. When a change is detected on a program subscription, this algorithm is responsible for instantiating the sync request.

   - **Contact (D1-CONTACT)**: Plug in the X1-CNTCDCDA (Contact Change Data Capture (Digital Asset Subscription Based)) MO audit algorithm. When a change is detected on a contact associated to an eligible program subscription, this algorithm is responsible for instantiating the sync request.

   - **Device (D1-DEVICE)**: Plug in the X1-DVCCDCDA (Device Change Data Capture (Digital Asset Subscription Based)) MO audit algorithm. When a change is detected on a controllable device associated to an eligible program subscription, this algorithm is responsible for instantiating the sync request.

   - **Service Point (D1-SP)**: Plug in the X1-LOCCDCDA (Location Change Data Capture (Digital Asset Subscription Based)) MO audit algorithm. When a change is detected on a device location associated to an eligible program subscription, this algorithm is responsible for instantiating the sync request.

# Scheduling Batch Jobs

Make sure to schedule the following batch jobs in the order they are listed:

1. **X1-CALAS**: Updates control scores of enrolled devices with the latest information.

2. **X1-SDCSE**: Extracts the latest control scores of enrolled devices.

# Adding Oracle Integration Cloud Certificates

Add the Oracle Integration for Cloud certificate to the Oracle Utilities Digital Asset Cloud Service stores wherever applicable to send transactions to the Oracle Integration Cloud layer.

For more information about configuration, refer to the Oracle Utilities Digital Asset Cloud Service documentation at: https://docs.oracle.com/en/industries/energy-water/digital-asset-cloud-service/

# Chapter 4

## Configuring Oracle Utilities Grid Edge Distributed Energy Resources Management System

This chapter includes information about the following:

- Configuring Admin Data in Oracle Utilities Grid Edge Distributed Energy Resources Management System

For more information about Oracle Utilities Grid Edge Distributed Energy Resources Management System, refer to the Oracle Utilities Network Management System (NMS) documentation on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/network-management-system/

# Configuring Admin Data in Oracle Utilities Grid Edge Distributed Energy Resources Management System

To configure Admin data in Oracle Utilities Grid Edge Distributed Energy Resources Management System, establish the communication from Oracle Utilities Grid Edge Distributed Energy Resources Management System to Oracle Integration Cloud.

Update the Oracle Utilities Grid Edge Distributed Energy Resources Management System database table with the following Oracle Integration Cloud details.

| Table Name | drms_parameters |
|---|---|
| OIC flow end point URL | Update the value with OIC flow end point URL<br>• <https://hostname:port/ic/api/integration/v1/flows/rest/OUTL-BA-DRMS_OUAI_EVT_OUTC_TRNFR/1.0/eventOutcome where the attrib = '*OIC_EVENT_OUTCOME_OUAI_URL*' |
| OIC Credentials | The <OIC_USER> and <OIC_PASS> should already be configured from the implemented DACS-DERMS package. |
| MAX_RETRIES | • This should already be configured from the implemented DACS-DERMS package. Value to be set to the amount of retries DERMS will perform upon receiving a technical fault or negative acknowledgment.<br><br>• The drms_outbound_messages database table holds the outbound messages to be resent when the status = '*FAIL*' and the num_retries is less than the configured MAX_RETRIES value. If you want to resend a failed message that has already retried the maximum number of times, update the num_retries record back to 0. If you need to resend a successful message for any reason, also update the status to '*FAIL*'. |

# Chapter 5

## Configuring Oracle Utilities Analytics Insights

For information about Oracle Utilities Analytics Insights, refer to the Oracle Utilities Analytics Insights (OUAI) documentation on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/analytics-insights/index.html

# Chapter 6

# Importing, Configuring, and Testing Integration Connections

This chapter explains in detail the process for importing the connections, packages, and files needed for the integration and the configuration of these connections imported through the packages. After a successful import and configuration the chapter lists out steps to help test the connections. It includes the following sections:

- Importing the Oracle Integration Cloud Package from Oracle Cloud Marketplace

- Verifying the Package Import

- Configuring Connections in Oracle Integration Cloud

- Configuring Agent (if applicable)

- Setting up Certificates for Security

# Importing the Oracle Integration Cloud Package from Oracle Cloud Marketplace

All integration points are shipped as part of single package (.par) file.

To import a pre-built integration from Oracle Cloud Marketplace:

1. Launch the Oracle Cloud Marketplace portal.

   https://cloudmarketplace.oracle.com/marketplace/en_US/homePage.jspx

2. Click **Applications**.

3. Search for "Oracle Utilities Digital Asset Cloud Service".

4. Browse through the list of applications and select the pre-built integration package to import.

5. Click **GetApp**.

6. Review and accept "Oracle Standard Terms and Restrictions".

7. Click **Next**. My Oracle Support portal opens.

8. Download the integration package from My Oracle Support.

9. 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.

10. On the **Integrations** page, the individual integrations of the imported package file that are designated with a BUILT BY ORACLE message are displayed.

    > **Important!** This note is applicable only for existing customers. Make sure to take a backup of the existing package and lookups and perform the cleanup before proceeding with the new package import. The cleanup includes deactivating the existing flows in this package and deleting the package, connections, lookups and libraries used in the integration.

To import a package in Oracle Integration Cloud:

1. Login to Oracle Integration Cloud.

2. Navigate to **Integrations** > **Designer** > **Packages**.

3. Click **Import**.

4. Select the .par file downloaded from Oracle Cloud Marketplace.

5. Verify if the package is imported is successfully.

# Verifying the Package Import

To verify the package import was successful:

1. Verify whether the following integrations are imported successfully.

   • OU OUAI DACS DERMS Common Error Handler (01.23.2000)

   • OU OUAI DACS KwhAvoided OS Transfer (01.23.2000)

- OU DACS Common FTP Transfer (01.23.2000)
- OU DACS OS Common Transfer (01.23.2000)
- OU DERMS OUAI Event Outcome Transfer (01.23.2000)
- OU OUAI Common OS Transfer (01.23.2000)
- OU DACS OUAI Enrollment FTP Transfer (01.23.2000)
- OU DACS OUAI Enrollment OS Transfer (01.23.2000)
- OU OUAI DACS EnrollmentAck OS Process (01.23.2000)
- OU OUAI DERMS LoadReductionForecast OS Transfer

2. Verify if the following connections are in place:
   - OU FTP DACS for OUAI DACS DRMS
   - OU REST DACS OS for OUAI DACS DRMS
   - OU REST DACS for OUAI DACS DRMS
   - OU REST DRMS for OUAI DACS DRMS
   - OU REST OUAI OS for OUAI DACS DRMS
   - OU REST for OUAI DACS DERMS
   - OU REST API DRMS for OUAI DACS DRMS

3. Make sure that the following lookups are imported successfully:
   - OUTL-BRT-OUAI_DACS_DRMS_ConfigProps
   - OUTL-BRT-OUAI_DACS_DRMS_Email_ID

# Configuring Connections in Oracle Integration Cloud

After the packages are imported and verified, configure the respective connections.

This section describes the procedure to configure the following:

- OU FTP DACS for OUAI DACS DRMS Connection
- OU REST DACS OS for OUAI DACS DRMS Connection
- OU REST DACS for OUAI DACS DRMS Connection
- OU REST DRMS for OUAI DACS DRMS Connection
- OU REST OUAI OS for OUAI DACS DRMS Connection
- OU REST for DACS-DRMS Connection
- OU REST API DRMS for OUAI DACS DRMS Connection

# OU FTP DACS for OUAI DACS DRMS Connection

This connection is used to communicate with Oracle Utilities Digital Asset Cloud Service using the FTP adapter.

To configure this connection:

1.  Login to Oracle Integration Cloud and navigate to the connection.

2.  Set the **FTP Server Host Address** (xxxx.com).

3.  Do not modify anything on the **FTP Server port** and **SFTP connection** tabs.

4.  Select the **FTP Server Access** policy on the **Security policy** tab and enter the Oracle Utilities Digital Asset Cloud Service FTP Server username and password.

5.  Configure the appropriate **Agent Group** if applicable.

6.  On the **Connection** page, click **Test**.

7.  After the connection is tested successfully, click **Save**.

> **Note:** Make sure the FTP Server is setup and configured in Oracle Utilities Digital Asset Cloud Service.

# OU REST DACS OS for OUAI DACS DRMS Connection

This connection is used to communicate with Oracle Infrastructure Cloud Object Storage using the REST adapter.

To configure this connection:

1.  In the **Connection Properties** section, enter the object storage API endpoint in the **Connection URL** field.

    The Connection URL follows this format: https://objectstorage.{region}.oraclecloud.com

    Refer to the Oracle Cloud Infrastructure documentation/API Reference and Endpoints to see the Object Storage Service API and endpoints at: https://docs.oracle.com/en-us/iaas/api/

2.  In the **Security** section:

    a.  Select the *OCI Signature Version 1* security policy.

    b.  Provide the following Object Storage information:

    - Tenancy OCID
    - User OCID
    - Upload the private key
    - Fingerprint (obtained from object storage after register the public key for the appropriate user)

    For more information, refer to the Object Storage Setup Guide 20C at: https://docs.oracle.com/cd/F35460_01/index.htm

3.  After the connection is tested successfully, click **Save**.

## OU REST DACS for OUAI DACS DRMS Connection

This connection is used to communicate with Oracle Utilities Digital Asset Cloud Service using the Utilities adapter.

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.

2. Add the Oracle Utilities Digital Asset Cloud Service catalog URL in the **Catalog Url** element.

3. Select **Basic Auth** on the **Security** tab and enter the Oracle Utilities Digital Asset Cloud Service username and password.

4. Configure the appropriate **Agent Group** if applicable.

5. On the **Connection** page, click **Test**.

6. After the connection is tested successfully, click **Save**.

## OU REST DRMS for OUAI DACS DRMS Connection

This connection is used to communicate with Oracle Utilities Grid Edge Distributed Energy Resources Management System application service using the Utilities adapter.

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.

2. Add the Oracle Utilities Grid Edge Distributed Energy Resources Management System catalog URL in the **Catalog Url** element.

3. Select **Basic Auth** on the **Security** tab and enter the Oracle Utilities Grid Edge Distributed Energy Resources Management System username and password.

4. Configure the appropriate **Agent Group** if applicable.

5. On the **Connection** page, click **Test**.

6. After the connection is tested successfully, click **Save**.

## OU REST OUAI OS for OUAI DACS DRMS Connection

This connection is used to communicate with Oracle Infrastructure Cloud Object Storage using the REST adapter.

To configure this connection:

1. In the **Connection Properties** section, enter the object storage API endpoint in the **Connection URL** field.

   The Connection URL follows this format: https://objectstorage.{region}.oraclecloud.com

   Refer to the Oracle Cloud Infrastructure documentation/API Reference and Endpoints to see the Object Storage Service API and endpoints at: https://docs.oracle.com/en-us/iaas/api/

2. In the **Security** section:

   a. Select the *OCI Signature Version 1* security policy.

   b. Provide the following Object Storage information:

- Tenancy OCID

- User OCID

- Upload the private key

- Fingerprint (obtained from object storage after register the public key for the appropriate user)

  For more information, refer to the Object Storage Setup Guide 20C at: https://docs.oracle.com/cd/F35460_01/index.htm

3. After the connection is tested successfully, click **Save**.

## OU REST for DACS-DRMS Connection

This connection is used to communicate with and from connected applications using a REST adapter. This connection is used by Oracle Utilities Grid Edge Distributed Energy Resources Management System to trigger incoming messages. A REST trigger cannot be used if it has an agent configured.

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.

2. Add the Oracle Integration Cloud instance connection URL in the **Connection URL** element.

3. Select **Basic Auth** on the **Security** tab and enter the Oracle Integration Cloud username and password.

4. On the **Connection** page, click **Test**.

5. After the connection is tested successfully, click **Save**.

## OU REST API DRMS for OUAI DACS DRMS Connection

This connection is used to communicate with and from connected applications using a REST adapter. This connection is used by Oracle Utilities Grid Edge Distributed Energy Resources Management System to trigger incoming messages.

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.

2. Add the DRMS connection URL (For example: https://hostname:port/nms-drms/rest/v1) in the **Connection URL** element.

3. Select **Basic Auth** on the **Security** tab and enter the Oracle Integration Cloud username and password.

4. Configure Agents if needed.

5. On the **Connection** page, click **Test**.

6. After the connection is tested successfully, click **Save**.

# Configuring Agent (if applicable)

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.

This section includes:

- Possible Combinations
- Creating an Agent Group
- Downloading Agent Installer
- Installing On-Premises Agent

## Possible Combinations

The possible combination of an agent group is:

- Oracle Utilities Grid Edge Distributed Energy Resources Management System on-premises and Oracle Utilities Grid Edge Distributed Energy Resources Management System
- Oracle Utilities Digital Asset Cloud Service

## Creating 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. Login to Oracle Integration Cloud.

2. On the **Home** page, click **Agents**.

3. Click **Create Agent Group**.

4. Enter the following information:

   - Agent Group Name
   - Identifier

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

   - Agent Type: "Connectivity Agent"
   - Description

5. Click **Create**.

# 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-agentinstaller.html

# Installing On-Premises Agent

To install an on-premises agent:

1. Login to Oracle Integration Cloud.

2. On the **Home** page, click **Agents**.

3. Click **Download**.

4. Select **Connectivity Agent**.

5. Select **Save File** when prompted to save the file to a directory location on your on-on-premises host.

6. Navigate to that directory and unzip **oic_connectivity_agent.zip**.

7. Change the file permissions to be executable.

8. Download the Oracle Utilities Digital Asset Cloud Service certificate and upload by running the below command from agent home directory.

   ```
   keytool -import -file directoryPath/sample.crt -alias SampleCert -
   keystore <Agent_Home>/agenthome/agent/cert/keystore.jks
   ```

9. Modify **InstallerProfile.cfg** to include the following information.

   a. Provide the oic_URL value with the OIC SSL host name.

      For example: https://OIC_host:OIC_port

   b. Provide the agent_GROUP_IDENTIFIER. It should be the agent group created in Oracle Integration Cloud.

   c. Set the proxy parameters if the connectivity agent is used with a proxy in the on-premises environment.

   d. Set the JAVA_HOME property to the directory/folder where JDK is installed.

      **Note**: Before running the connectivity agent installer, perform the steps in the link below.
      https://docs.oracle.com/en/cloud/paas/integration-cloud/utilities-adapters/you-begin-setting-oracle-utilities-adapter.html#GUID-7F770AD1-5B87-4C62-968A-3AB30D043835

   e. Run the connectivity agent installer from the command prompt.

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

   f. Provide the Oracle Integration Cloud credentials when prompted.

   g. 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 **Agents** page in Oracle Integration Cloud.

2. Check if the agent count for your **Agent Group** is increased by one.

3. Click the number to view the agent details.

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

# Setting up Certificates for Security

> **Important!** Skip this section if there are valid CA certificates for the integration.

If there no valid certificates for this integration, download the Oracle Utilities Grid Edge Distributed Energy Resources Management System/Oracle Utilities Digital Asset Cloud Service certificates and upload them to Oracle Integration Cloud to handshake with Oracle Utilities Grid Edge Distributed Energy Resources Management System/Oracle Utilities Digital Asset Cloud Service.

To download the Oracle Utilities Grid Edge Distributed Energy Resources Management System/Oracle Utilities Digital Asset Cloud Service certificate:

1. Login to Oracle Utilities Digital Asset Cloud Service/Oracle Utilities Grid Edge Distributed Energy Resources Management System.

2. Click the URL on the top-left corner.

3. On the **Security** tab, click **View Certificate**.

4. On the **Details** tab, click **Export**.

5. Save the certificate.


To upload the certificate to Oracle Integration Cloud:

1. Login to Oracle Integration Cloud with Admin credentials.

2. Navigate to **Settings** > **Certificates**.

3. On the **Certificate** window, click **Upload**.

4. Select **Certificate Type** as **Trust Certificate**.

5. Provide the **Certificate Alias Name**.

6. Select the certificate to upload.

7. Click **Upload**.

# Chapter 7

# Configuring Lookups, Error Handling, and Email Notifications

This chapter focuses on the lookups configuration, handling business and technical errors, sending email notifications, and customizations in this integration. It includes the following sections:

- Configuring Lookups
- Error Handling
- Email Notifications

# Configuring Lookups

The following table lists the lookups that are part of this integration.

| Lookup Name | Integration Name | Purpose |
|---|---|---|
| OUTL-BRT-OUAI_DACS_DRMS_ConfigProps | • OU DACS OUAI Enrollment FTP Transfer<br><br>• OU DACS OUAI Enrollment OS Transfer<br><br>• OU DERMS OUAI Event Outcome Transfer<br><br>• OU OUAI DACS DERMS Common Error Handler<br><br>• OU OUAI DACS EnrollmentAck OS Process<br><br>• OU OUAI DACS KwhAvoided OS Transfer<br><br>• OU OUAI DERMS LoadReductionForecast OS Transfer | Generic properties used in the integration's business logic and mappings. |
| OUTL-BRT-OUAI_DACS_DRMS_Email_ID | • OU DACS OUAI Enrollment FTP Transfer<br><br>• OU DACS OUAI Enrollment OS Transfer<br><br>• OU DERMS OUAI Event Outcome Transfer<br><br>• OU OUAI DACS DERMS Common Error Handler<br><br>• OU OUAI DACS EnrollmentAck OS Process<br><br>• OU OUAI DACS KwhAvoided OS Transfer<br><br>• OU OUAI DERMS LoadReductionForecast OS Transfer | Provides the email information to send details. |

## Editing Lookups

To edit a lookup:

1. Login to Oracle Integration for Cloud.

2. Navigate to **Integrations** > **Designer** > **Lookups**.

3. Select the lookup to edit and make the necessary changes.

4. Click **Save** and **Close**.

# Configuration Properties

The lookups contain the properties that can be configured and defaulted in the integration.

**Lookup**: OUTL-BRT-OUAI_DACS_DRMS_ConfigProps

| Property Name | Sample Value | Description |
|---|---|---|
| dacs.file.target.transfer.pref | os | Target DACS file location preference.<br><br>Values are "os" or "ftp". |
| dacs.enroll.filename.prefix | ENROLL_SYNC | Enrollment Sync Extract file name prefix .<br><br>It should have the same beginning value as the batch parameter filename in Batch Process X1-DACEX or X1-DACIL.<br><br>Integration use this for filtering the file(s) to pick up from DACS file location by the Enrollment Sync flow. |
| dacs.ftp.enroll.input. directory | /sploutput/DACSEnv/ enroll/ | DACS FTP directory where the Enrollment Sync extract files are stored for OIC to pick up from.<br><br>Required to be populated when DACS is on-premise, dacs.file.transfer.pref is = 'ftp'. |
| dacs.ftp.kwhavoid.input.dire ctory | /sploutput/DACSEnv/ KWHAvoid | DACS FTP directory where the Kwh Avoided extract files are stored for OIC to pick up from.<br><br>Required to be populated when DACS is on-premise, dacs.file.transfer.pref is = 'ftp'. |
| dacs.os.namespace | dacsnamespace | DACS Object Storage namespace serves as a container for all DACS related buckets and objects.<br><br>Required to be populated when DACS is in the cloud, dacs.file.transfer.pref = 'os'. |

| Property Name | Sample Value | Description |
|---|---|---|
| dacs.os.enroll.bucket | DACS_EnrollFolder | Define the bucket name where the Enroll Sync extract files are stored in the DACS Object Storage for OIC to pick up from.<br><br>Required to be populated when DACS is in the cloud, dacs.file.transfer.pref = 'os'. |
| dacs.os.kwhavoided.bucket | DACS_KWHAvdFolder | Define the bucket name where the Kwh Avoided extract files are stored in the DACS Object Storage for OIC to pick up from.<br><br>Required to be populated when DACS is in the cloud, dacs.file.transfer.pref = 'os'. |
| dacs.prefixtag.fileuploaded | Sent- | Prefix to append to the filename from DACS that has been transferred successfully to the target location.<br><br>Shared property for all file related flows in this integration. |
| notification.email.error.flag | true | If the value is set to true, email notification will be sent out for errors.<br><br>Valid values: true/false. Default to true.<br><br>Also, setup the OUTL-BRT-OUAI_DACS_DRMS_Email_ID 'to' property for the users or administrators who should receive the email. |

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| Property Name | Sample Value | Description |
| --- | --- | --- |
| notification.email.process. complete.flag | true | If the value is set to true, email notification will be sent out when the process is completed.<br><br>Valid values: true/false. Default to true<br><br>This is used by flows doing file processing.<br><br>Also, setup the OUTL-BRT-OUAI_DACS_DRMS_Email_ ID 'ouai.to.process.notification', 'dacs.to.process.notification' and 'derms.to.process.notification' properties for the users who should receive the email. |
| notification.email.process. nofile.flag | true | If the value is set to true, email notification will be sent out when no file was processed.<br><br>Valid values: true/false. Default to true<br><br>This is used by flows doing file processing.<br><br>Also, setup the OUTL-BRT-OUAI_DACS_DRMS_Email_ ID 'ouai.to.process.notification', 'dacs.to.process.notification' and 'derms.to.process.notification' properties for the users who should receive the email. |
| notification.type.email | email | Hardcoded value for the integrations to send to the 'common error handler' to decide how to send the notifications out. In future release this might be augmented with other types beside of 'email'. |
| ouai.file.target.transfer.pref | os | Target OUAI file location preference.<br><br>Values are "os" or "ftp". Defaulted to "os" |

| Property Name | Sample Value | Description |
| --- | --- | --- |
| ouai.os.namespace | ouainamespace | OUAI Object Storage namespace serves as a container for all OUAI related buckets and objects.<br><br>Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os' |
| ouai.os.enrollack.filename .prefix | feedback.dacs.program_sub scription | Enrollment Ack file(s) produce by OUAI should begin with this value.<br><br>Integration use this for filtering the file(s) to pick up from OUAI file location by the Enrollment Ack flow. |
| ouai.os.kwhavoided.filename .prefix | ouai.kwh_avoided | Kwh Avoided file(s) produced by OUAI should begin with this value.<br><br>Integration use this for filtering the file(s) to pick up from OUAI file location by the KWHAvoided flow. |
| ouai.loadreductionforecast. fi lename.prefix | ouai.load_forecast | Load Reduction Forecast file(s) produced by OUAI should begin with this value.<br><br>Integration use this for filtering the file(s) to pick up from OUAI file location by the LoadReductionForecast flow. |
| ouai.os.enroll.bucket | OUAIEnrollFolder | Define the bucket name where the Enrollment Sync extract files are stored in the OUAI Object Storage for OIC to drop the file.<br><br>Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os'. |
| ouai.os.enrollack.bucket | OUAIEnrollAckFolder | Define the bucket name where the Enrollment Ack extract files are stored in the OUAI Object Storage for OIC to pick from.<br><br>Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os'. |

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| Property Name | Sample Value | Description |
|---|---|---|
| ouai.os.eventoutcome. bucke t | OUAIOutcomeFolder | Define the bucket name where the Event Outcome extract files are stored in the OUAI Object Storage for OIC to drop the file.<br><br>Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os'. |
| ouai.os.kwhavoided.bucket | OUAIKwhAvoidFolder | Define the bucket name where the Kwh Avoided extract files are stored in OUAI Object Stoarage for OIC to pick the file from. Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os'. |
| ouai.os.loadreduction forecast.bucket | OUAI_LRFolder | OUAI directory where the LoadReductionForecast extract files are stored. Required to be populated when OUAI is in the cloud, ouai.file.transfer.pref = 'os'. |
| ouai.prefixtag.fileuploaded | Sent- | Prefix to append to the filename from OUAI that has been transferred or processed successfully to the target location.<br><br>Shared property for all file related flows in this integration |

**Lookup**: OUTL-BRT-OUAI_DACS_DRMS_Email_ID

| Recipient | Email ID | Description |
|---|---|---|
| from | admin@myCy.com | The email address used to identify who is sending the notification.<br><br>This value is the default email address for all outgoing emails for the package. |

| Recipient | Email ID | Description |
|---|---|---|
| to | errorDist@myCy.com | The email address(es) who should receive any error notification. Multiple emails can be configured by putting comma to separate the email IDs.<br><br>These are likely the administrators or users who maintain the applications. |
| dacs.to.process.notification | dacsUser@myCy.com | The email address(es) who should receive notification for DACS related integration when the file processing has completed, or no file was processed. Multiple emails can be configured by putting comma to separate the email IDs.<br><br>These are likely the DACS business or application users. |
| ouai.to.process.notification | ouaiUser@myCy.com | The email address(es) who should receive notification for OUAI related integration when the file processing has completed, or no file was processed. Multiple emails can be configured by putting comma to separate the email IDs.<br><br>These are likely the OUAI business or application users. |

| Recipient | Email ID | Description |
|-----------|----------|-------------|
| drms.to.process.notification | drmsUser@myCy.com | The email address(es) who should receive notification for DERMS related integration when the file processing has completed, or no file was processed. Multiple emails can be configured by putting comma to separate the email IDs. |
| | | These are likely the DERMS business or application users. |

# Error Handling

This section provides information about the different ways used to handle errors in the integration and also resubmitting the instances after rectifying the errors.

- Error Handling Ways
- Resubmitting the Error Instances in Oracle Integration Cloud

## Error Handling Ways

In this integration, the errors are handled in different ways due to the limitation of Oracle Integration Cloud.

- Synchronous Flow Error Handling
- Asynchronous Flow Error Handling
- Summary of Integration Error Handling

### Synchronous Flow Error Handling
As part this error handler the errors are sent back to global fault handler and the respective system via Common Error Handler flow.

### Technical Fault
This fault occurs when there is a data mismatch or any Xpath related error. On this error, the flow immediately goes to global fault handler and the fault is sent back to the respective system.

### Remote Fault
This fault occurs when the target system is down. When this error occurs the flow immediately goes to global fault handler and the fault is sent back to the respective system.

**Business Fault**

This fault occurs only when the business fault occurs in the target system due to invalid data. When this error occurs, the fault is sent back to the respective system as part of immediate response.

## Asynchronous Flow Error Handling

### Technical Fault

This fault occurs when there is a data mismatch or any Xpath related error. When this error occurs, the flow immediately goes to global fault handler and an optional email to the respective user is sent via Common Error Handler flow.

### Remote Fault

This fault occurs when the target system is down. When this error occurs, the flow immediately goes to global fault handler and an optional email is sent to the respective user.

### Business Fault

This fault occurs only when the business fault occurs in the target system due to invalid data. When this error occurs the flow immediately goes to global fault handler and an optional email is sent to the respective user.

## Summary of Integration Error Handling

**Integration Process**: Event Outcome

| Type of error | Action | Notification Type | Retry |
|---|---|---|---|
| Technical or Remote Fault<br><br>Example: OUAI object storage is not accessible | • Send FAILURE ackType to DERMS<br>• Process Stop | Email | Resend message from DERMS |
| Business Fault | N/A | | |

**Integration Process**: Enrollment Sync (applies to OIC flows FTP and OS)

| Type of error | Action | Notification Type | Retry |
|---|---|---|---|
| Business errors | N/A | | |
| Technical Fault<br><br>Example: Source FTP or Source Object storage is not accessible | Process Stop | Error Email | Next scheduled run will pick up the files from DACS source content server or manually run the OIC process |

| Type of error | Action | Notification Type | Retry |
|---|---|---|---|
| Partial processing<br><br>Example: Network connection issue, OUAI object storage not accessible | Process Stop | Error Email<br><br>Process Complete Email (includes list of files not transferred | Next scheduled run will pick up the files not transferred from DACS source content server or manually run the OIC process |

**Integration Process**: Load Reduction Forecast

| Type of error | Action | Notification Type | Retry |
|---|---|---|---|
| Technical Fault<br><br>Example: OUAI object storage is not accessible | • Send FAILURE ackType to DERMS<br>• Process Stop | Error Email | Resend message from DERMS |
| Business Fault | N/A | | |

**Integration Process**: Enrollment Sync Acknowledgment

| Type of error | Action | Notification Type | Retry |
|---|---|---|---|
| Technical or Remote Fault<br><br>Example: OUAI object storage is not accessible | Process Stop | Error Email | Rerun or schedule the integration process |
| Business Fault | N/A | | |
| Technical Fault<br><br>(DACS returns Status 401 or 500) | Process Stop | Email | Integration fix: Rerun or reschedule the integration process |
| Technical Fault<br><br>(DACS returns Status 400) | Process Continue | N/A | DACS throws 400 error when a duplicate request is found with syncrequestid. OIC will suppress this kind of error as this is already been sync from Oracle Utilities Analytics Insights to Oracle Utilities Digital Asset Cloud Service. |

## Resubmitting the Error Instances in Oracle Integration Cloud

In this integration, the flows initiated by Oracle Utilities Analytics Insights are asynchronous flows. The **Resubmit** option is available only for asynchronous flows.

To resubmit the error instances in Oracle Integration Cloud:

1. Login to Oracle Utilities Analytics InsightsOracle Integration Cloud.

2. Navigate to **Integrations** > **Monitoring** > **Errors**.

3. Select the integration to resubmit.

4. Click the **Resubmit** icon.

# Email Notifications

This pre-built integration includes a configurable email notification for technical errors and business completions.

To receive a technical error email notification:

1. Login to Oracle Integration Cloud.

2. Navigate to **Integrations** > **Designer** > **Lookups**.

3. Edit the OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup.

4. Change the notification.email.error.flag property value to 'true'.

5. Edit the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup.

   a. In the **From** field, enter the email ID to receive an email from.

   b. In the **To** field, enter the email ID to send the email to.

   c. In the **Email_Id** column, provide the comma separated email IDs.

      **Note:** In the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup, do not edit the values provided in the **Recipient** column.

To receive business completion notifications:

1. Login to Oracle Integration Cloud.

2. Navigate to **Integrations** > **Designer** > **Lookups**.

3. Edit the OUTL-BRT-OUAI_DACS_DRMS_ConfigProps lookup.

   Change the `notification.email.process.complete.flag` property value to '*true*'.

   Change the `notification.email.process.nofile.flag` property value to '*true*', if you want to be notified even if no files were found during a scheduled run.

4. Edit the OUTL-BRT-OUAI_DACS_DRMS_Email_ID lookup.

   a. In the **From** field, enter the email ID to receive an email from.

   b. In the corresponding **dacs.to.process.notification**, **drms.to.process.notification**, and **ouai.to.process.notification** fields, enter the email ID of the recipient.

   c. In the **Email_Id** column, provide the comma separated email IDs.

# Chapter 8

## Customizations

This chapter describes options for customizing the integration to meet specific business requirements, including:

- Adding New Mappings

# Adding New Mappings

To add a new mapping for the elements available in the Oracle Integration Cloud application schema, the pre-built integration provides a customization template for all the integration flows.

As the integration is delivered as business accelerator, the base integration flow cannot be edited and they need to clone the existing integration flow to add any customizations to the existing xsl mapper files.

The supported cases are:

- **Case 1**: In the Oracle Utilities Digital Asset Cloud Service application schema, elements exist but are not mapped in the Oracle Integration Cloud pre-built integration.

- **Case 2**: In Oracle Utilities Analytics Insights, properties exist but are not mapped in the Oracle Integration Cloud pre-built integration.

This section provides the steps to add a new mapping using the import xsl.

In this integration, Oracle Utilities Digital Asset Cloud Service is the source and Oracle Field Service is the target.

To add custom mappings in Oracle Integration Cloud layer:

1. Login to Oracle Integration Cloud.

2. Identify the integration to add custom mappings.

3. Clone the integration.

4. Export the respective cloned integration from Oracle Integration Cloud to your local machine.

5. Unzip the .iar file and identify the mapping/xsl file in which the custom mappings have to be added.

6. This integration has all mappers as import xsl. To add any new mapping, edit the respective mapper/xsl file.

    **Note**: Mappings cannot be added using the Mapper Design view.

7. In all integration mappings, a template is added under every complex element. Any custom elements under that complex element can be added directly in the template provided.

8. Add the mapping under the respective customization template. Save the changes.

9. In Oracle Integration Cloud, click the integration to add the mapping for an extra element. Select the respective map activity.

10. Click **Import** and upload the updated mapper/xsl file.

11. Save and close and activate the integration to reflect the custom mappings.

Following is the list of integrations and the respective mappers/xsls with customization templates defined.

Every integration process (.iar) file has a folder structure after exporting and unzipping it. Mappings/xsls are found under the **Resources** folder.

Example:

<integration_process_identifier_name>\icspackage\project\<integration_process_identifier_name>\resources\<processor_xxx>\<resourcegroup_xxx>\<req_xxx.xsl>

# Chapter 9

## Monitoring and Troubleshooting

This section provides information about monitoring and troubleshooting the integration. It includes the following:

- Oracle Utilities Digital Asset Cloud Service
- Oracle Integration Cloud

# Oracle Utilities Digital Asset Cloud Service

This section provides information about monitoring Oracle Utilities Digital Asset Cloud Service.

## Oracle Utilities Digital Asset Cloud Service Error Logs

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

The following error logs can be monitored for Oracle Utilities Digital Asset Cloud Service:

- Errors related to the online integration invocation from Oracle Utilities Digital Asset Cloud Service are stored in the NMS_ENVIRONMENT_NAME/logs/ or NMS_ENVIRONMENT_NAME/logs/system folder.

  Example: V27_NMS_ORA_WLS/logs/system\

For more information about errors and notifications, see the Oracle Utilities Digital Asset Cloud Service documentation.

# Oracle Integration Cloud

This section focuses on the monitoring Oracle Integration Cloud and troubleshooting any issues that occur during the integration activation.

## Monitoring Integration Flows

Integration flows are monitored using the following:

- Dashboard
- Cloud Logs

**To monitor the integration flows from the Oracle Integration Cloud dashboard:**

1. Login to Oracle Integration Cloud.

2. On the **Home** page, click **Monitoring**.

3. Select any of the following as required:

   - **Dashboards**: To monitor the complete dashboard of integration.

   - **Integrations**: To monitor each integration.

   - **Tracking**: To monitor instance and flow trace/activity stream of the integration.

   - **Error**: To monitor the integrations in 'error' state. Re-submit the asynchronous integration flows.

**To monitor the integration flows using Oracle Integration Cloud logs**:

1. Login to Oracle Integration Cloud.

2. On the **Home** page, click **Monitoring**.

3. On the navigation pane, click **Dashboards** to view the overall success/failure rate of the integration.

4. Navigate to the **Logs** menu.

5. In the right pane, click the link to show options for downloading the Oracle Integration Cloud logs or diagnostics logs.

6. In case of any issues, attach the diagnostic logs to a service request for help.

# Troubleshooting

If an activation fails, the Integrations page displays an error message.

To troubleshoot the activation error:

1. Click **Download Diagnostic Logs** to download the logs for diagnosing the issue.

2. Select **Enable Tracing**.

   TRACE ENABLED is displayed next to ACTIVE.

A few sample cases are as follows:

- For any connectivity errors while activating the integration, make sure the trigger connection is successful. Test the connection and refresh the metadata, and then activate the integration.

- If the integration (Oracle Utilities Network Management System  initiated flows) is activated for the first time, make sure the Oracle Utilities Network Management System  catalog is configured accurately.

# Appendix A
## Limitations and Workarounds

For a list of limitations and workarounds in this integration and in the respective edge applications, refer to the *Oracle Utilities Analytics Insights Integration to Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Grid Edge Distributed Energy Resources Management System Release Notes* included in this release.

The documentation is available on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/integrations-index.html