Oracle Utilities Digital Asset Cloud Service Integration to Oracle Utilities Edge Distributed Energy Resources Management System

Configuration Guide

Release 25.4

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Oracle Utilities Digital Asset Cloud Service Integration to Oracle Utilities Edge Distributed Energy Resources Management System Configuration Guide, Release 25.4

Contents

Appendix A

Preface

Welcome to the Oracle Utilities Digital Asset Cloud Service Integration to Oracle Utilities Edge Distributed Energy Resources Management System Configuration Guide for release 25.4. Use this information to learn what you need to configure the integration between Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System using Oracle Integration Cloud.

The preface includes the following:

Audience

This document is intended for anyone implementing the Oracle Utilities Digital Asset Cloud Service integration with Oracle Utilities 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 Digital Asset Cloud Service Integration to Oracle Utilities 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 Edge Distributed Energy Resources Management System documentation	https://docs.oracle.com/en/industries/energy-water/digital-asset-cloud-service/

Additional Documentation

Resource	Location
Oracle Integration Cloud Service documentation	Refer to the OIC documentation at: https://docs.oracle.com/en/cloud/paas/integration-cloud/index.html
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. 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. 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/

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

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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
DER	Distributed Energy Resource
Edge DERMS/ DERMS	Oracle Utilities Edge Distributed Energy Resources Management System
DRMS	Demand Response Management System
IWS	Inbound Web Service
LEC	Oracle Utilities Live Energy Connect
OCI	Oracle Cloud Infrastructure
OIC	Oracle Integration Cloud
OUAI	Oracle Utilities Analytics Insights

Chapter 1

Overview

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

The chapter includes the following:

Overview of the Integration

The Oracle Utilities Digital Asset Cloud Service integration to Oracle Utilities Edge Distributed Energy Resources Management System facilitates the exchange of information related to a customer's controllable device(s) during device registration, program enrollment or unenrollment, program event participation and device score used for event planning.

About Oracle Utilities Digital Asset Cloud Service (DACS)

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 Edge Distributed Energy Resources Management System (Edge DERMS)

Oracle Utilities Edge Distributed Energy Resources Management System (Edge DERMS) is built on Oracle Utilities Network Management System (NMS), adding incremental support to the Oracle Utilities Network Management System platform for the management of behind the meter demand response resources.

Oracle Utilities Edge Distributed Energy Resources Management System can:

- Initiate control signals to devices inside customer homes, such as smart thermostats.
- Provide strategy templates to be used for the forecasting of 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.

- Support 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.

Here, the role of Oracle Utilities Network Management System is to facilitate the modeling of individual demand response devices down to the customer service point and/or aggregated to load transformers to support NMS-driven optimization. In conjunction with NMS, the DERMS component can help optimize electrical networks both operationally and commercially.

About Oracle Integration Cloud (OIC)

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 Digital Asset Cloud Service
- Oracle Utilities Edge Distributed Energy Resources Management System
- Oracle Integration Cloud

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

The documentation mentioned is available on Oracle Help Center.

Prerequisites

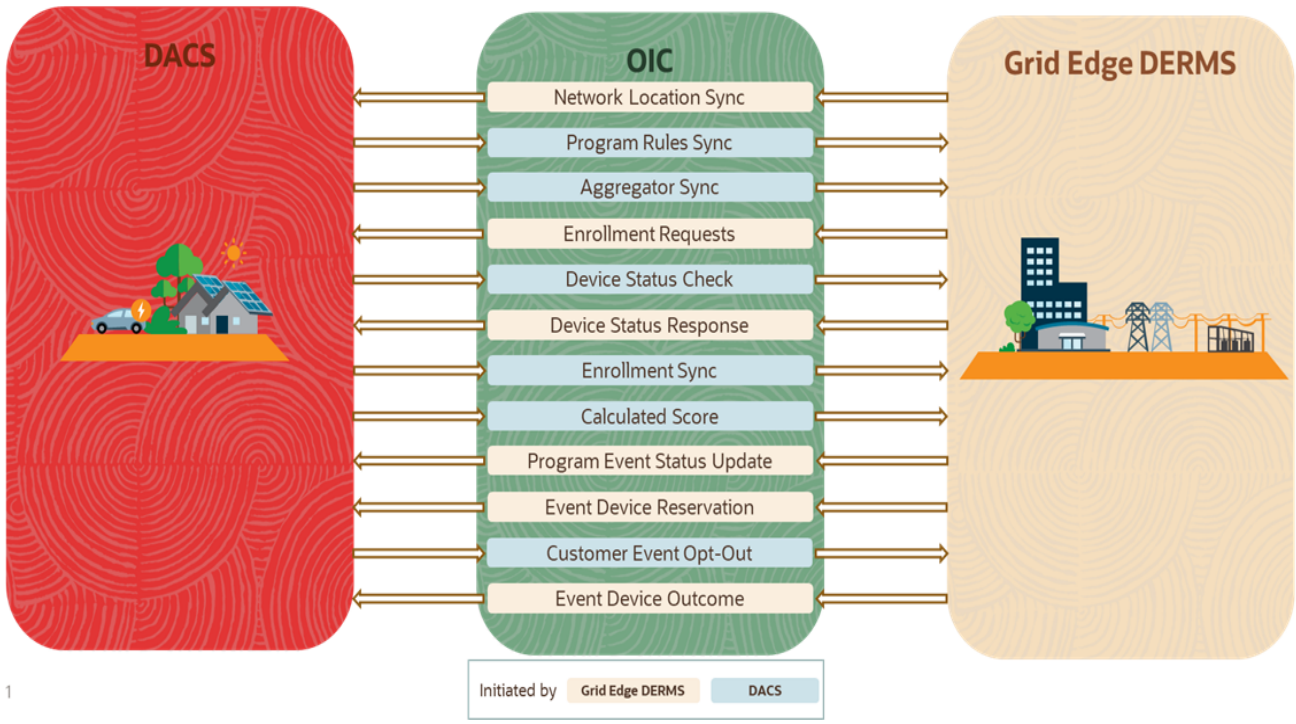
Make sure all participating applications are installed, set up, and working properly.

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

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

Supported Business Processes

The following diagram illustrates the supported business processes of this integration:



The integration can be leveraged to:

- Send electrical network hierarchy for a customer's service point from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service. This facilitates the association of the Service Point to the Transformer, Feeder, and Substation via the network location within Oracle Utilities Digital Asset Cloud Service.
- Send the program rules and constraints associated to a program from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System. This will enable Oracle Utilities Edge Distributed Energy Resources Management System to compute a device's availability for participation in an event.
- Send the Energy Aggregator details from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.

- Send enrollment requests for customer owned devices from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service. This initiates the controllable device's enrollment process in Oracle Utilities Digital Asset Cloud Service.
- Send the controllable device status check request initiated from Oracle Utilities Digital Asset Cloud Service and receive the most recent controllable device status response from Oracle Utilities Edge Distributed Energy Resources Management System.
- Synchronize customer, controllable device(s), and program subscription information on successful enrollments, unenrollment, and device replacements from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.
- Periodically transfer the device score values calculated from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System for event planning.
- Send scheduled event and stage information from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service. Oracle Utilities Edge Distributed Energy Resources Management System also sends the succeeding event-stage status updates to Oracle Utilities Digital Asset Cloud Service.
- Send the device reservation information. They are the selected controllable devices participating in an upcoming scheduled event from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service.
- Send the customer event-opt out notifications for each reserved device for an upcoming event from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.
- Send the device outcome for all participating devices in an event from Oracle Utilities Edge Distributed Energy Resources Management System 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 Digital Asset Cloud Service and Oracle Utilities 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 Edge DERMS REST APIs.
  - REST Adapter interacts with Oracle Cloud Infrastructure Object Storage REST APIs.
  - 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:
  - **Business email notifications**:

    These notifications are used in file processing flows.

    In the **OUTL-BRT-DACS_DRMS_ConfigProps** lookup, configure the following properties to enable or disable notifications:

    - Set property name `notification.email.process.complete.flag` to 'true' to receive an email notification when the process is completed or partially processed. By default, this is set to 'true'.
    - Set property name `notification.email.process.nofile.flag` to 'true' to receive an 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 `to.process.notification` recipients of lookup **OUTL-BRT-DACS_DRMS_Email_ID**. These are sent to the application business users.
  - **Technical error email notifications**:

    These notifications are sent when a technical fault is encountered. Some examples are authentication error, connection issues or server unavailable.

    In the **OUTL-BRT-DACS_DRMS_ConfigProps** lookup, configure the property name `notification.email.error.flag` to 'true' to receive email notification when errors are encountered. By default, this is set to 'true'.

    The recipient(s) of the error email notification are configured in the `to` recipients of lookup **OUTL-BRT-DACS_DRMS_Email_ID**. These are sent to the application administrator(s).

    Note: Email notifications are optional but are enabled by default.

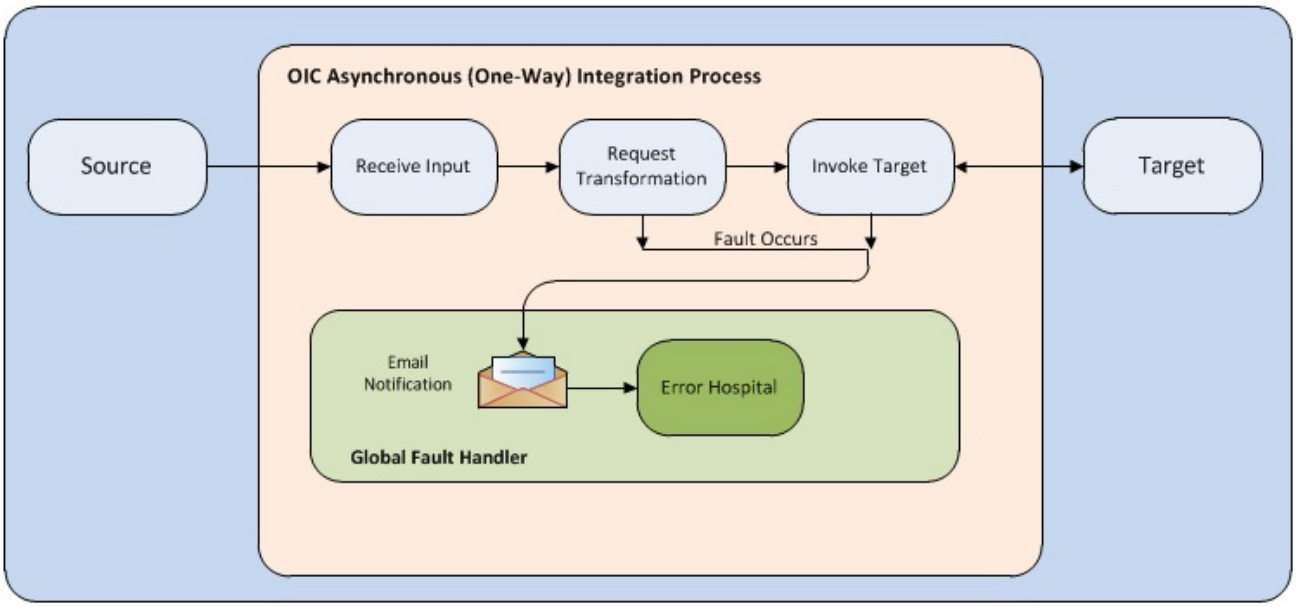
- Lookup **OUTL-BRT-DACS_DRMS_ConfigProps** is used to define the default values needed by the integration flows. Make sure the properties in the lookup are configured.
- Integration related DVM lookups are used for translation of values from one application to the other. Make sure these DVM lookups are configured.
- In the Oracle Utilities Digital Asset Cloud Service initiated processes, batch processes are used to send the outbound messages or to create file(s) and upload to the content server defined for an external application to pull for processing. For inbound messages, it uses REST inbound web services (IWS) to receive messages and batch processes for file upload.
- In the Oracle Utilities Edge Distributed Energy Resources Management System initiated processes, events are triggered to send the outbound messages and files, if applicable. For inbound messages, it uses REST APIs to receive the messages and files, if applicable.
- 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 uses One-way Asynchronous pattern.

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.

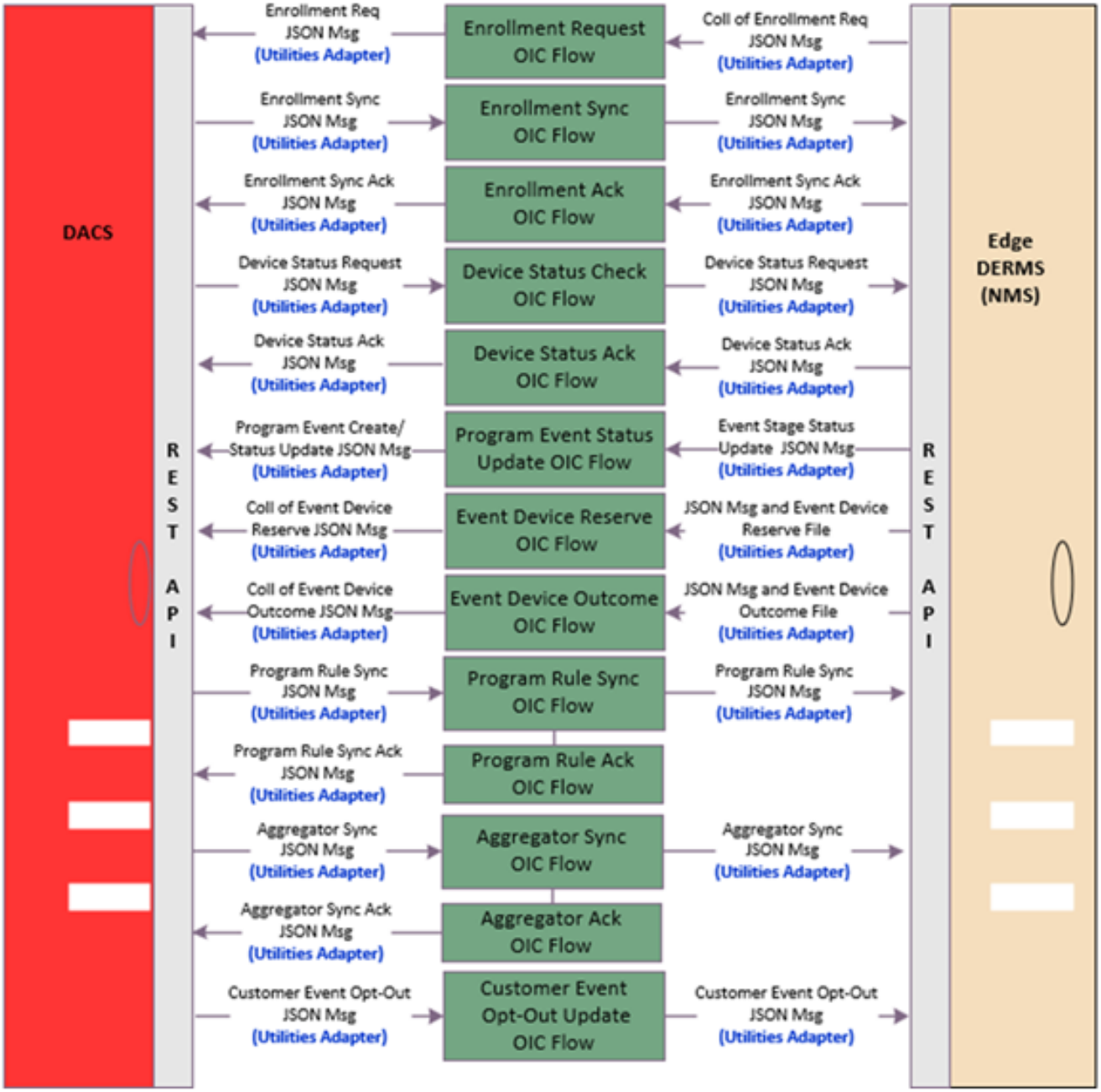


Solution Diagram

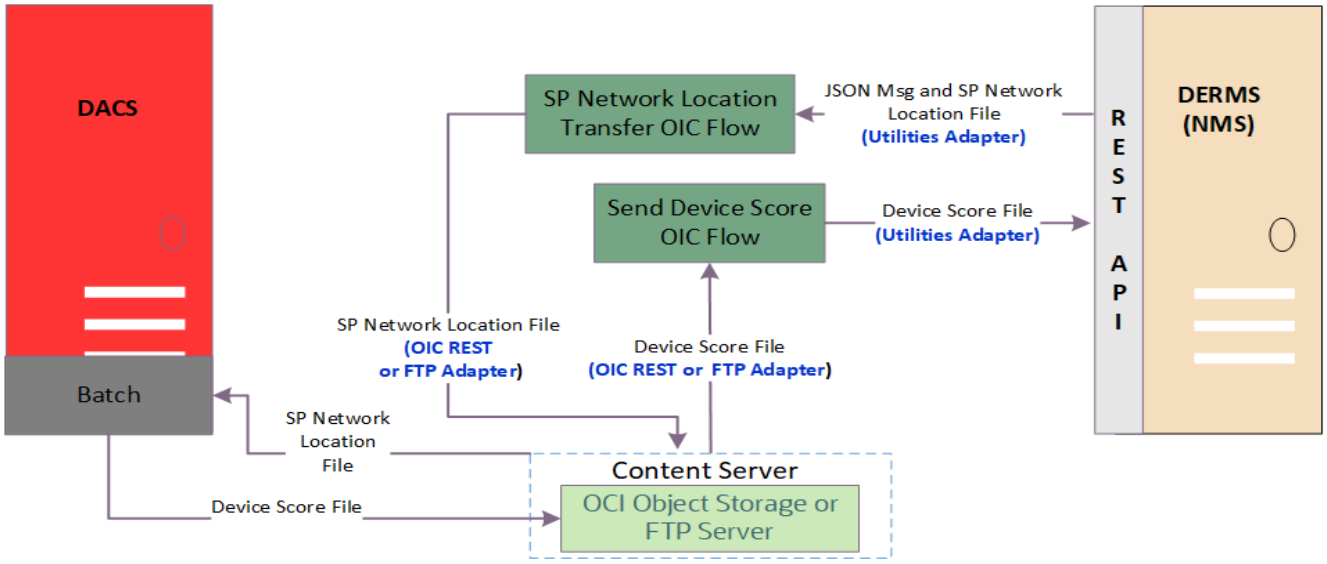
The following solution diagrams show the integration between Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System:

- DACS to DERMS Integration Flows
- DACS-Content Server to DERMS Integration Flows

DACS to DERMS Integration Flows



DACS-Content Server to DERMS Integration Flows



Integration Flows

The integration supports the following processes:

- Enrollment Request (Edge DERMS Initiated)
- Enrollment Sync Process
  - Enrollment Sync (DACS Initiated)
  - Enrollment Sync Acknowledgment (Edge DERMS Initiated)
- Device Status Check and Acknowledgment
  - Device Status Check (DACS Initiated)
  - Device Status Check Acknowledgment (Edge DERMS Initiated)
- Program Event Status Update (Edge DERMS Initiated)
- Event Device Reservation (Edge DERMS Initiated)
- Event Device Outcome (Edge DERMS Initiated)
- Customer Event Opt Out Update (DACS Initiated)
- Program Rule Sync Process
  - Program Rule Sync (DACS Initiated)
  - Program Rule Sync Acknowledgment (OIC Initiated)
- Aggregator Sync Process
  - Aggregator Sync (DACS Initiated)
  - Aggregator Sync Acknowledgment (Edge DERMS Initiated)
- SP Network Location Transfer (Edge DERMS Initiated)
- Send Device Score (DACS Initiated)

- Common Integration Flows
- Common Error Handler (OIC Initiated)

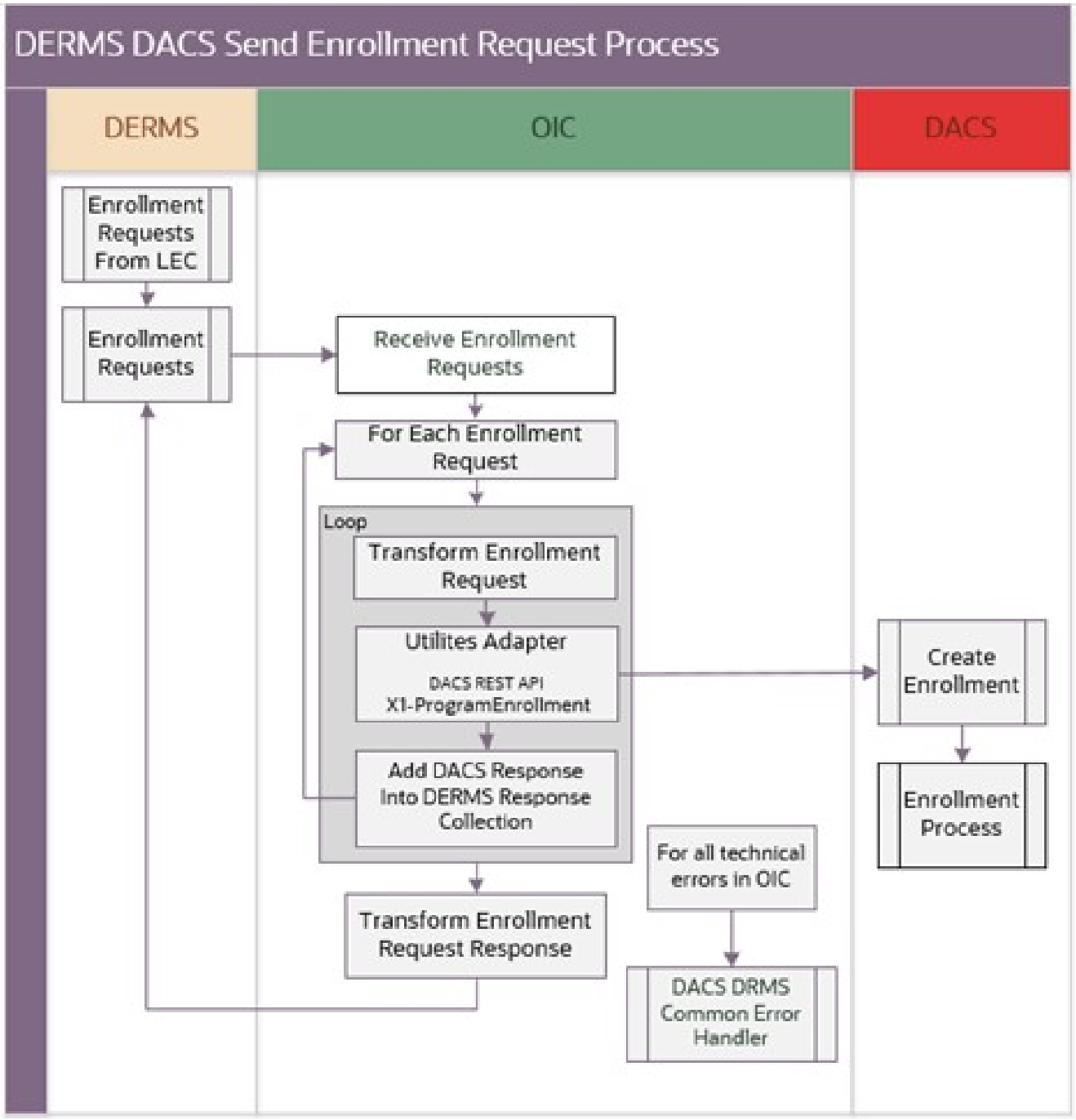
Enrollment Request (Edge DERMS Initiated)

When customers enroll their smart controllable device(s) in a program through the head-end system provider or aggregator/vendor, such as Ecobee or Google Nest, the enrollment requests are sent to Oracle Utilities Live Energy Connect.

This integration process sends the enrollment request that Oracle Utilities Edge Distributed Energy Resources Management System received from Oracle Utilities Live Energy Connect to Oracle Utilities Digital Asset Cloud Service.

The integration then sends the list of responses for each enrollment request back to Oracle Utilities Edge Distributed Energy Resources Management System when the process is completed.

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



Processing Details

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

1. The process is triggered when it receives an enrollment request message from Oracle Utilities Edge Distributed Energy Resources Management System. The incoming

request message can contain multiple enrollment requests, but the DACS REST API can only accept a single enrollment request.

2. The integration loops through each incoming request:
    - Transforms the enrollment request payload to Oracle Utilities Digital Asset Cloud Service format.
    - Invokes the Program Enrollment DACS REST endpoint to create the enrollment in Oracle Utilities Digital Asset Cloud Service in PENDING status.
    - Response per enrollment request coming from Oracle Utilities Digital Asset Cloud Service are collected and later returned to Oracle Utilities Edge Distributed Energy Resources Management System. If an error is encountered, the process continues to the next enrollment request.
        - If the enrollment is successfully created, it will store the enrollment ID in the response collection to Oracle Utilities Edge Distributed Energy Resources Management System.
        - If Oracle Utilities Digital Asset Cloud Service returns an ERROR, store the error in the response collection to Oracle Utilities Edge Distributed Energy Resources Management System.
3. After all the records are processed, it transforms the Oracle Utilities Digital Asset Cloud Service response into the Oracle Utilities Edge Distributed Energy Resources Management System response payload.
    - It will set the overall **ackType** field in the response with the following code:
        - **SUCCESS**, if all enrollment responses from Oracle Utilities Digital Asset Cloud Service have the SUCCESS value in the **responseCode** field.
        - **FAILURE**, or ERROR if at least one **responseCode** within the enrollment responses from Oracle Utilities Digital Asset Cloud Service contains one of those values.
    - It will send the responses collected from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.
4. For technical faults encountered in the process, such as Oracle Utilities Digital Asset Cloud Service unavailable, the integration will set the overall **ackType** to "FAILURE".
    - If it encounters a technical error while processing an enrollment request, but can continue processing the collection, the error details will be captured inside the response back to Oracle Utilities Edge Distributed Energy Resources Management System and an error email notification is sent out on the first time the error is encounter.
    - If it faults and cannot continue processing the collection, Oracle Integration Cloud will try to send a response back to Oracle Utilities Edge Distributed Energy Resources Management System with the details and will also send an email notification with the error details via a common error handler to the users configured in the 'to' recipients of lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
    - If Oracle Integration Cloud is trying to send a failure response to Oracle Utilities Edge Distributed Energy Resources Management System, and it fails, it will send an email notification with the error details via a common error handler to the

users configured in the 'to' recipients of lookup **OUTL-BRT-DACS_DRMS_Email_ID**.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS Enrollment Request
Integration Process Identifier	OUTL-BA-DRMS_DACS_ENROLLRQ
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DRMS for DACS-DERMS
trigger	• DERMS Service Name: NMS-DACSOutbound • openAPIUrl: https://{host}:{port}/nms-drms/ • outbound/openapi.json • OperationId: enroll • Method: POST • URI: /enroll-to-dacs
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• Web Service Name: X1-ProgramEnrollment • Computed URL: https://{host}:{port}/{tenant}/{domain}/ccs/rest/apis/cross/digitalAssets/programEnrollments • Method: POST • URI:/enroll
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_ EnrollmentStatus • OUTL-BRT-DACS_DRMS_AssetSpec • OUTL-BRT-DACS_DRMS_AssetType

Enrollment Sync Process

When customers enroll, unenroll, or replace their smart controllable device(s) in a program successfully in Oracle Utilities Digital Asset Cloud Service, the enrollment information is sent to Oracle Utilities Edge Distributed Energy Resources Management System.

It also uses the enrollment sync process to send out DER Registration completed in Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.

This integration process synchronizes the enrollment or registration information from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.

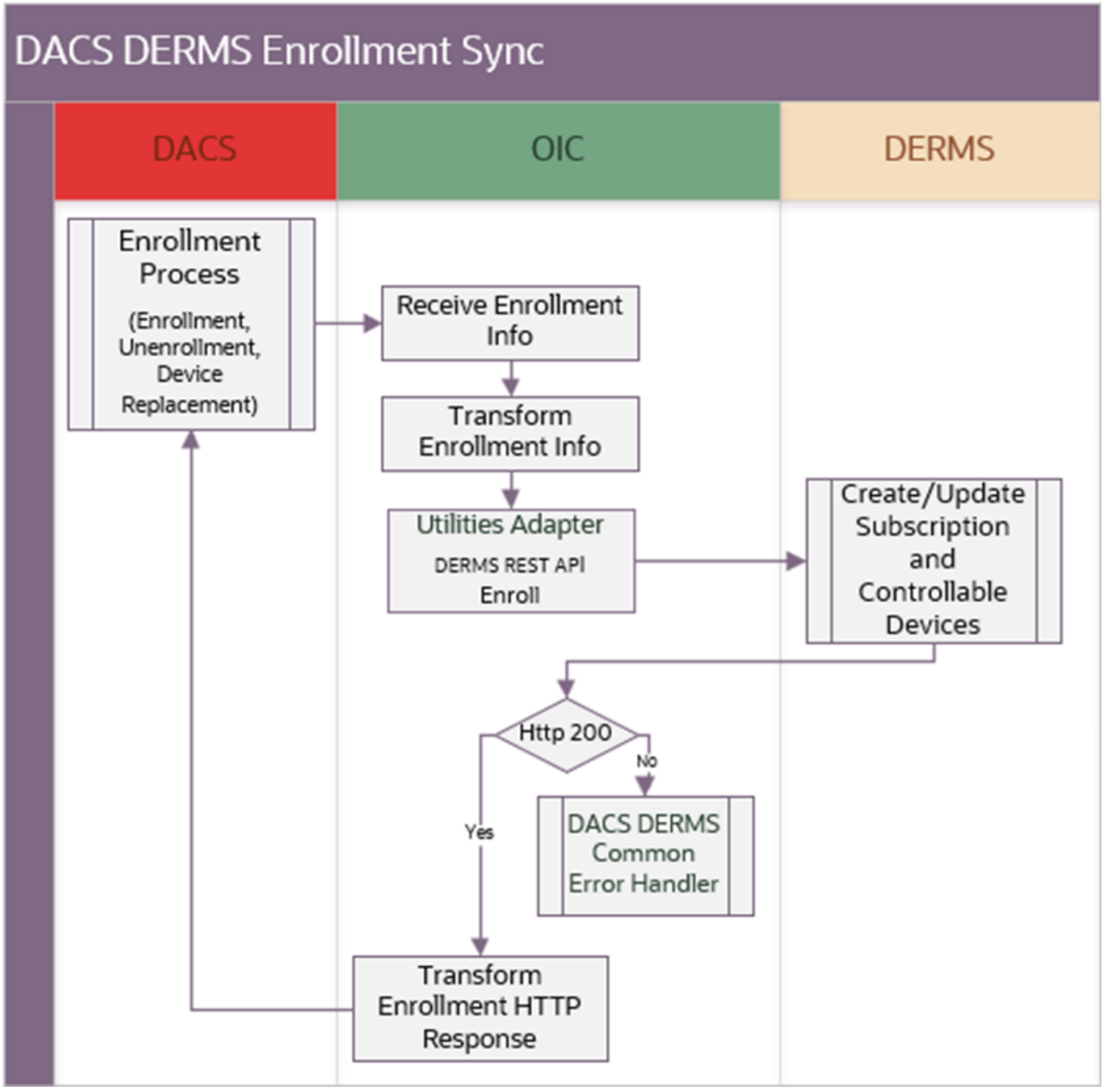
After Oracle Utilities Edge Distributed Energy Resources Management System processes the request, it sends an acknowledgment back to Oracle Utilities Digital Asset Cloud Service.

The enrollment synchronization and acknowledgment are handled by the following Oracle Integration Cloud integration flows:

- Enrollment Sync (DACS Initiated)
- Enrollment Sync Acknowledgment (Edge DERMS Initiated)

Enrollment Sync (DACS Initiated)

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



Processing Details

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

1. The process is triggered when it receives a request from Oracle Utilities Digital Asset Cloud Service.
2. Transform the payload to Oracle Utilities Edge Distributed Energy Resources Management System format.
3. Invoke the Oracle Utilities Edge Distributed Energy Resources Management System enrollment service endpoint.

4. If the REST service returns:
    - Status 200 (OK),
        - Enrollment Sync integration will finish the initial request by returning the incoming "syncRequestId" into the response "externalId".
    - Error Status, such as 400 or 500,
        - Throws a fault back to Oracle Utilities Digital Asset Cloud Service and an error email notification with the error details is sent via the common error handler.
5. For any errors encountered in this process:
    - An error email notification with error details is sent via the common error handler.
    - The process returns a fault to Oracle Utilities Digital Asset Cloud Service.
    - The integration flow will stop processing.

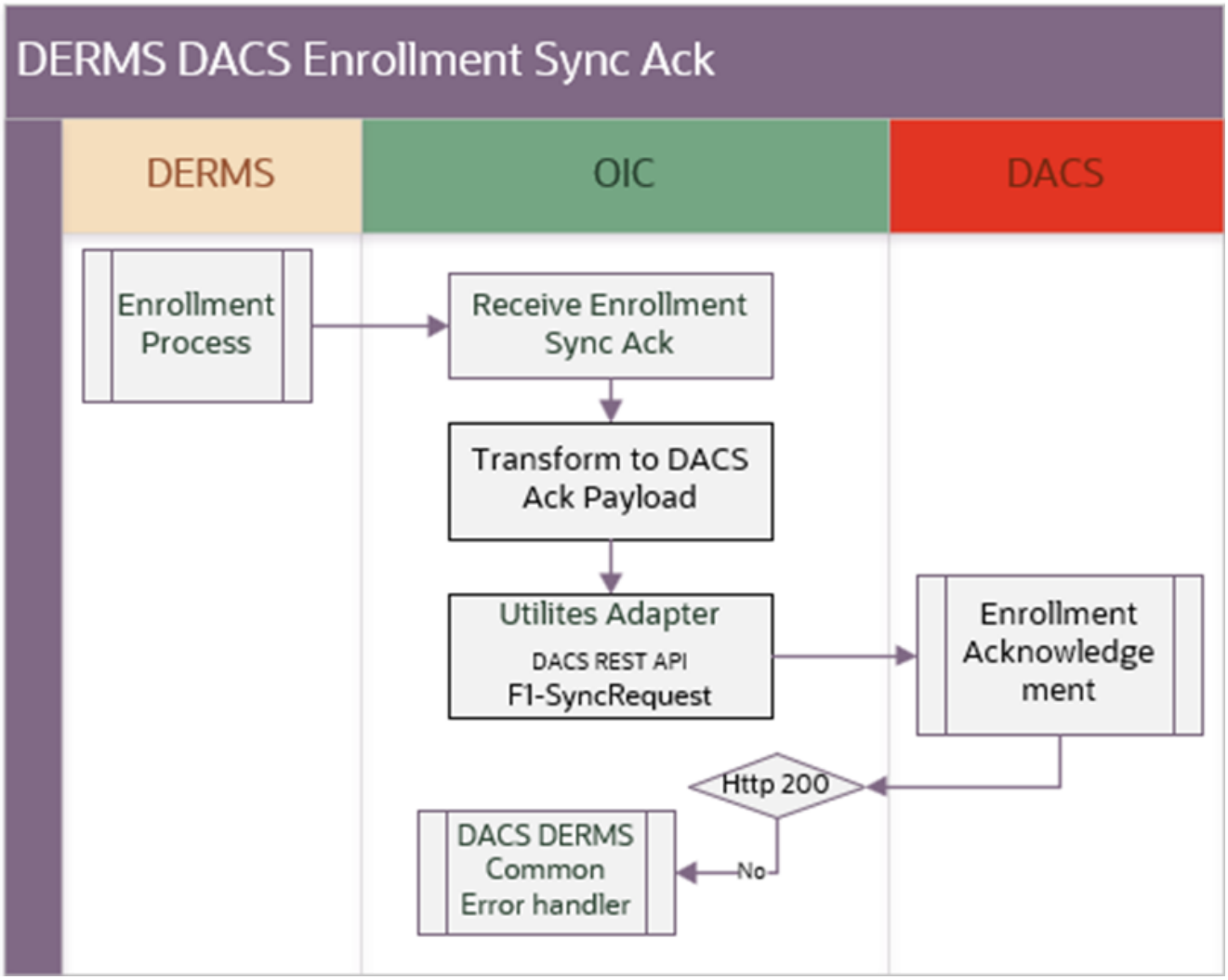
Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DACS DERMS Enrollment Sync
Integration Process Identifier	OUTL-BA-DACS_DRMS_ENROLL_SYNC
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
trigger	Outbound Message Type: X1-NMSDASMSG (Asset Customer)
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port} /nms-drms/rest/v1/openapi.json • OperationId: enroll • Method: POST • URI: /enroll
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_Routing

Enrollment Sync Acknowledgment (Edge DERMS Initiated)

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



Processing Details

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

1. The process is triggered when it receives the Oracle Utilities Edge Distributed Energy Resources Management System enrollment sync acknowledgment.
2. Transforms the payload to Oracle Utilities Digital Asset Cloud Service format.
3. Invokes the Oracle Utilities Digital Asset Cloud Service Sync Request Update REST endpoint to send the acknowledgment.
4. For any errors encountered in this process:
   - An error email notification with error details is sent via the common error handler.
   - The integration flow will stop processing.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU DERMS DACS Enroll Sync Ack
Integration Process Identifier	OUTL-BA-DRMS_DACS_SYNC_ACK
Integration Project Name	OU DACS DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• Web Service Name: F1-SyncRequest • Computed URL: https://{host}:{port}/{tenant}/{domain /ouaf/rest/apis/common/sync/syncRequest • Method: PATCH • URI: /{syncRequestId}
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID

Device Status Check and Acknowledgment

This integration process sends a device status check from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System to retrieve the most recent communication status for the device. Oracle Utilities Edge Distributed Energy Resources Management System then gets the device status from Oracle Utilities Live Energy Connect.

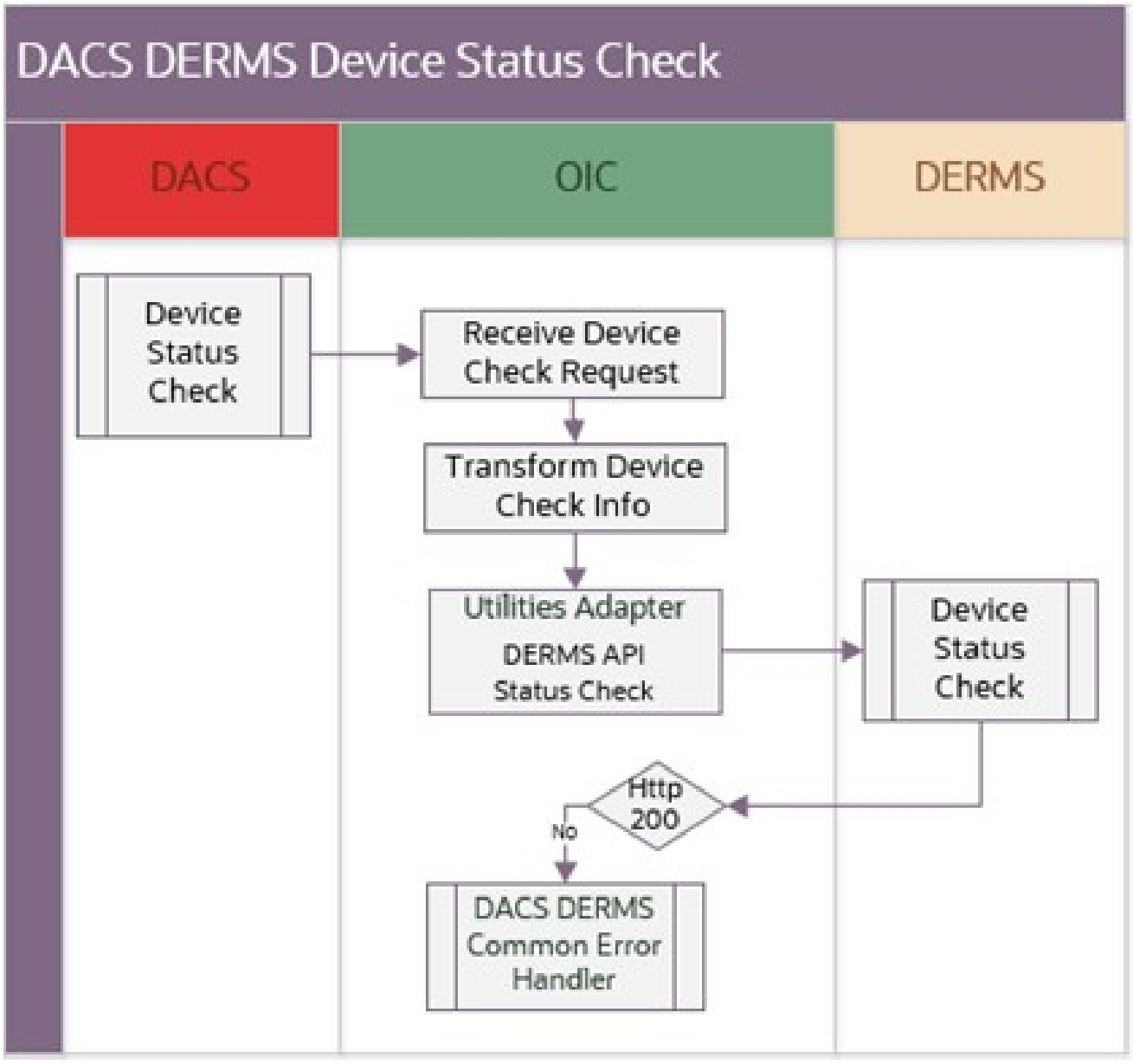
When Oracle Utilities Edge Distributed Energy Resources Management System gets the device status from Oracle Utilities Live Energy Connect, it sends and asynchronous response back to Oracle Utilities Digital Asset Cloud Service for the corresponding device status check request.

Device status check request and response are asynchronous processes:

- Device Status Check (DACS Initiated)
- Device Status Check Acknowledgment (Edge DERMS Initiated)

Device Status Check (DACS Initiated)

The following diagram shows a graphical representation of the Device Status Check integration process:



Processing Details

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

1. The process is triggered when it receives a device status request from Oracle Utilities Digital Asset Cloud Service.
2. Transforms the payload to the Oracle Utilities Edge Distributed Energy Resources Management System format.
3. Invokes the Oracle Utilities Edge Distributed Energy Resources Management System Status Check REST Service.

4. If the REST service returns:
    - Status 200 (OK), end the process.
    - Error Status, such as 400 or 500, an error email notification with the error details is sent via common error handler. The process returns a fault to Oracle Utilities Digital Asset Cloud Service.

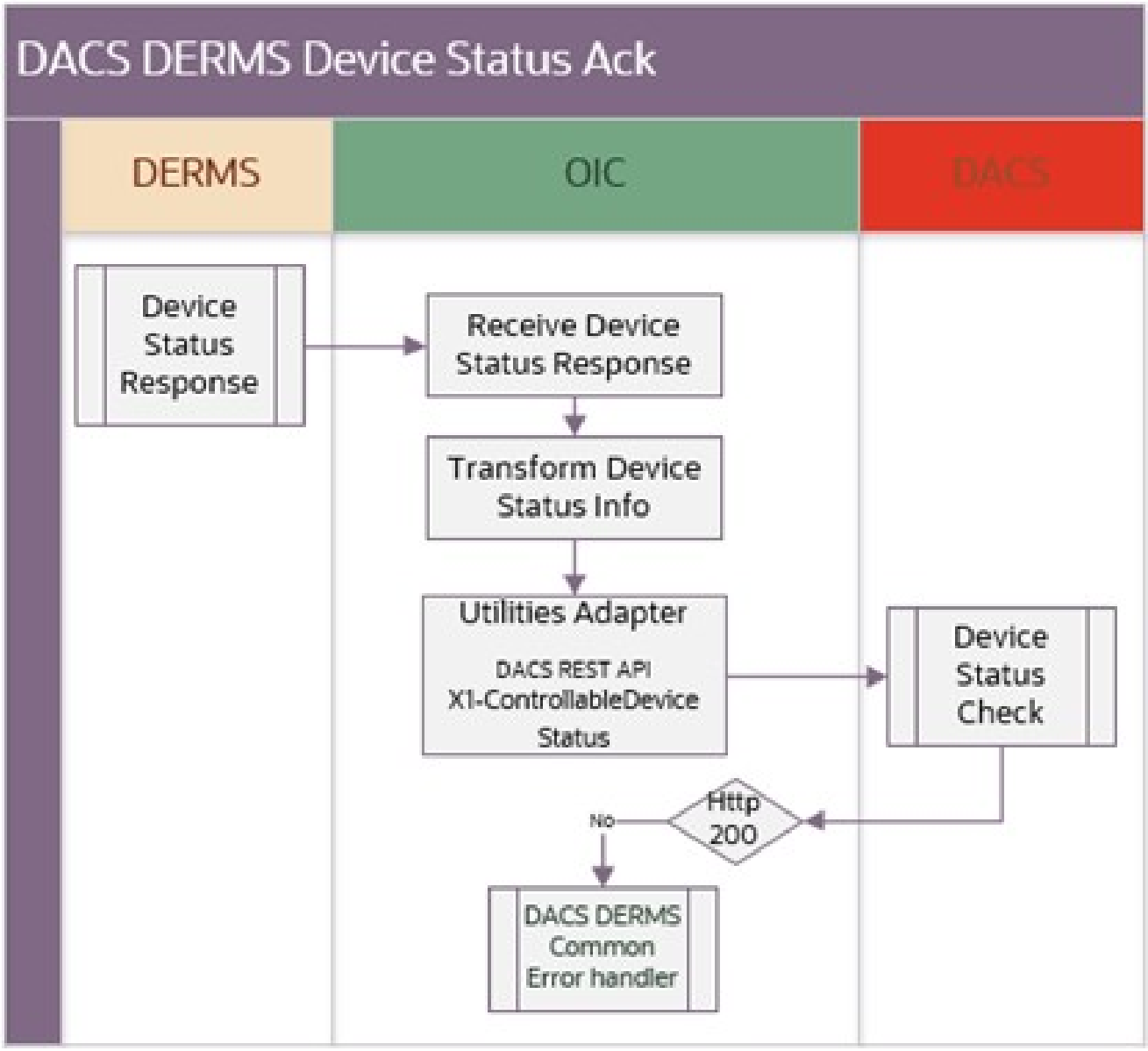
Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DACS DERMS Device Status Check
Integration Process Identifier	OUTL-BA-DACS_DRMS_DEVICE_STATUS
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
trigger	Outbound Message Type: X1-CTRLDVCS (Controllable Device Status Check)
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port} /nms-drms/rest/v1/openapi.json • OperationId: statusCheck • Method: POST • URI: /status-check
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Routing

Device Status Check Acknowledgment (Edge DERMS Initiated)

The following diagram shows a graphical representation of the Device Status Check Response integration process:



Processing Details

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

1. The process is triggered when it receives the device status from Oracle Utilities Edge Distributed Energy Resources Management System.
2. Transforms the payload to the Oracle Utilities Digital Asset Cloud Service format.
3. Invokes the Oracle Utilities Digital Asset Cloud Service postControllableDeviceStatus REST Service using the Utilities Adapter.

4. If the REST service returns:
    - Status 200 (OK), the process returns a response to Oracle Utilities Edge Distributed Energy Resources Management System with the Oracle Utilities Digital Asset Cloud Service boStatus in the Oracle Utilities Edge Distributed Energy Resources Management System responseCode and a SUCCESS ackType.
    - Error Status, such as 400 or 500, the process returns a response to Oracle Utilities Edge Distributed Energy Resources Management System with a FAILURE ackType.
5. For any errors encountered in this process:
    - An error email notification with error details is sent via the common error handler.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS Device Status Ack
Integration Process Identifier	OUTL-BA-DACS_DRMS_DEVICE_STATUS
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
trigger	• DERMS Service Name: NMS-DACSOutbound • openAPIUrl: https://{host}:{port}/nms-drms/outbound/openapi.json • OperationId: deviceStatusCheckAck • Method: POST • URI: /status-check-ack-to-dacs
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• Web Service Name: X1-CtrlDvcStatusCheckResp • Computed URL: https://{host}:{port}/{tenant}/ • {domain}/ouaf/rest/apis/cross/digitalAssets/controllableDeviceStatus • Method: POST • URI: /response
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup	OUTL-BRT-DACS_DRMS_ConfigProps

Program Event Status Update (Edge DERMS Initiated)

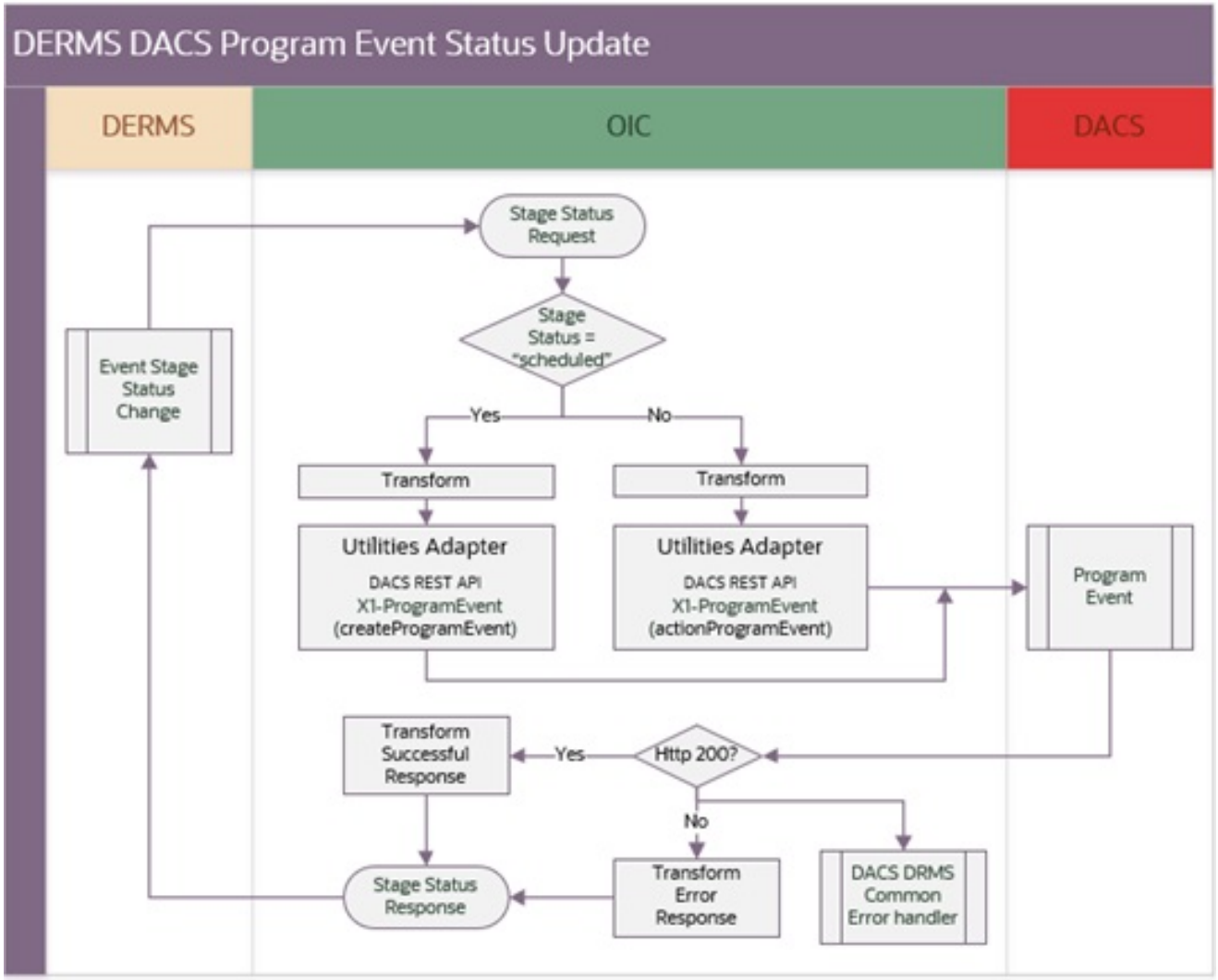
When Oracle Utilities Edge Distributed Energy Resources Management System creates an event, it can have multiple stages in it where each stage consists of a specific time frame for a specific program. Each stage is equivalent to a Oracle Utilities Digital Asset Cloud Service program event.

When the event transitions to SCHEDULED status, Oracle Utilities Edge Distributed Energy Resources Management System sends an outbound message for each stage in the event to Oracle Utilities Digital Asset Cloud Service for program event creation.

When an event stage status transitions to a different status in Oracle Utilities Edge Distributed Energy Resources Management System, the status update information is also sent to Oracle Utilities Digital Asset Cloud Service.

> **Note:** Not all status updates are sent out from DERMS. This can be configured in the DRMS Parameters Table, attribute name OIC_NOTIFY_STAGE_STATUSES.

The following diagram shows a graphical representation of the Program Event Stage Status integration process:



Processing Details

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

1. The process is triggered when it receives the stage and status information from Oracle Utilities Edge Distributed Energy Resources Management System. The message received is a JSON payload.
2. Transforms the payload to Oracle Utilities Digital Asset Cloud Service format.
3. Depending on the incoming stage status, Oracle Integration Cloud invokes one of the following operations from Program Event on the DACS REST endpoint:
   - Map to createProgramEvent for a "scheduled" status value.
   - Map to actionProgramEvent for all other values.
4. 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 to the users defined in 'to' recipients in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
   - Return a negative response to Oracle Utilities Edge Distributed Energy Resources Management System.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS ProgramEvent Stage Status Update
Integration Process Identifier	OUTL-BA-DRMS_DACS_STAGE_STAT_UPD
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
trigger	• Service Name: NMS-DACSOutbound • openAPIUrl: https://{host}:{port}/nms-drms/outbound/openapi.json • Method: POST • URI: /stage-status-to-dacs
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS

Artifacts	Value
invoke	• DACS Web Service Name: X1-ProgramEvent • Computed URL: https://{host}:{port}/{tenant}/{domain}/ ouaf/rest/apis/cross/service/programEvent • Method: POST • *createProgramEvent* URI: / • *actionProgramEvent* URI: /lifecycle
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_EventType • OUTL-BRT-DACS_DRMS_StageStatus

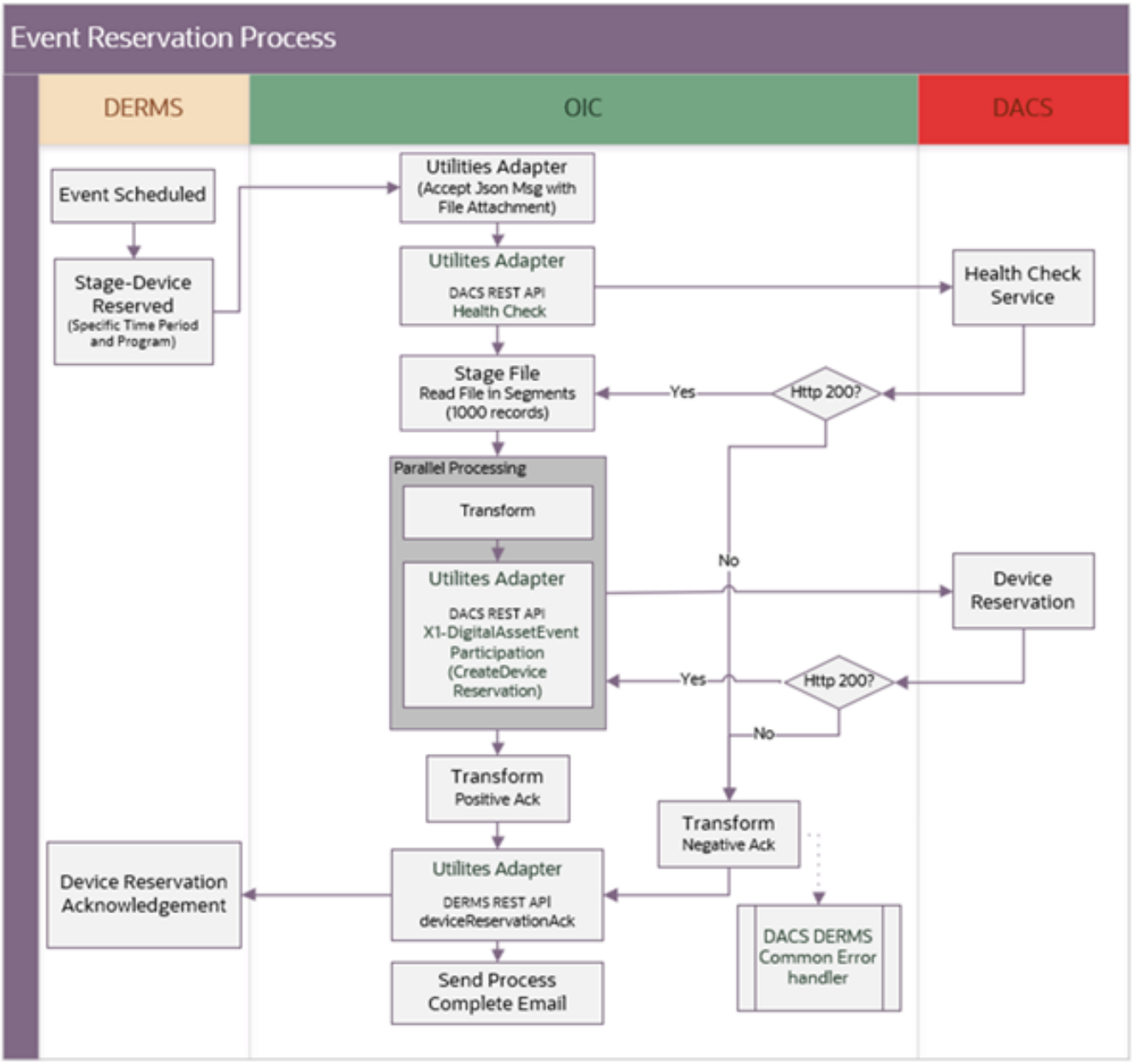
Event Device Reservation (Edge DERMS Initiated)

When controllable devices are selected to participate in an upcoming event, Oracle Utilities Edge Distributed Energy Resources Management System notifies Oracle Utilities Digital Asset Cloud Service of the devices reserved for the specific event.

An Oracle Utilities Edge Distributed Energy Resources Management System event can have multiple stages and a stage consist of a specific time frame for a specific program. Oracle Utilities Edge Distributed Energy Resources Management System sends an outbound message for each stage in the event when they are scheduled.

This integration process sends the devices reserved for a stage to Oracle Utilities Digital Asset Cloud Service. It then sends an acknowledgment back to Oracle Utilities 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 Device Reservation integration process:



Processing Details

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

1. The process is triggered when Oracle Utilities Edge Distributed Energy Resources Management System invokes the REST endpoint to send the device reservation information for a specific stage or program event to Oracle Utilities Digital Asset Cloud Service. The message received is a json payload with a csv file attachment. The json message contains the stage information and the csv file contains the devices participating in the stage.

2. Before sending the file, the integration invokes F1-HealthCheckRest Rest endpoint to check if the Oracle Utilities Digital Asset Cloud Service environment is up and accessible.
    - If the REST service returns HTTP status 200, DACS is accessible and proceed to Step 3.
    - Else:
        - Transforms the Negative Acknowledgment message. Send 'FAILURE' ackType to Oracle Utilities Edge Distributed Energy Resources Management System so it can auto retry the failed message according to the MAX_RETRIES setting in their DRMS_PARAMENTERS table.
        - Invokes the DERMS Event Reservation Acknowledgment REST endpoint.
3. Uses Stage File operation "ReadFileinSegments" to read the file in segments of 1000 records with parallel processing option.
    - Transforms the stage and device reservation payload from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service format.
    - Invokes the Program Event Participation-Reserve Device DACS REST endpoint to pass the Program Event Device Reservation information to Oracle Utilities Digital Asset Cloud Service.
        - If any of the REST service invocation returns an HTTP Error status:
            - Transforms the Negative Acknowledgment message. Send 'FAILURE' ackType to Oracle Utilities Edge Distributed Energy Resources Management System so it can auto retry the failed message according to the MAX_RETRIES setting in their DRMS_PARAMENTERS table.
            - It is expected that Oracle Utilities Digital Asset Cloud Service will not return any business faults but handle these with a To-Do task instead.
            - Invokes Oracle Utilities Edge Distributed Energy Resources Management System Event Reservation Acknowledgment REST endpoint.
4. After all the records in the file are processed:
    - A positive acknowledgment with a 'SUCCESS' ackType is sent to Oracle Utilities Edge Distributed Energy Resources Management System by invoking the Oracle Utilities Edge Distributed Energy Resources Management System Event Reservation Acknowledgment REST endpoint.
    - A process completed email notification is sent to the users defined in `to.processnotification` recipients in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
5. For any errors encountered in this process:
    - An error email notification with error details is sent via the common error handler OIC process to the users defined in 'to' recipients in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
    - A negative Acknowledgment with 'FAILURE' ackType is sent to Oracle Utilities Edge Distributed Energy Resources Management System so Oracle Utilities Edge Distributed Energy Resources Management System can auto retry the

failed message according to 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 Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS Event Device Reserve
Integration Process Identifier	OUTL_BA_DRMS_DACS_EVT_DVCRESV
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• DACS Web Service Name: X1-ProgramEventParticipation • Computed URL: https://{host}:{port}/{tenant}/{domain}/ccs/rest/apis/cross/service/programEventParticipation • Method: POST • URI: /reserveDevice
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port}/nms-drms/rest/v1/openapi.json • Method: POST • URI: /event-reservation-ack
Local Integrations	• OU DACS DERMS • CommonErrorHandler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_EventType • OUTL-BRT-DACS_DRMS_Routing

Event Device Outcome (Edge DERMS Initiated)

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

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

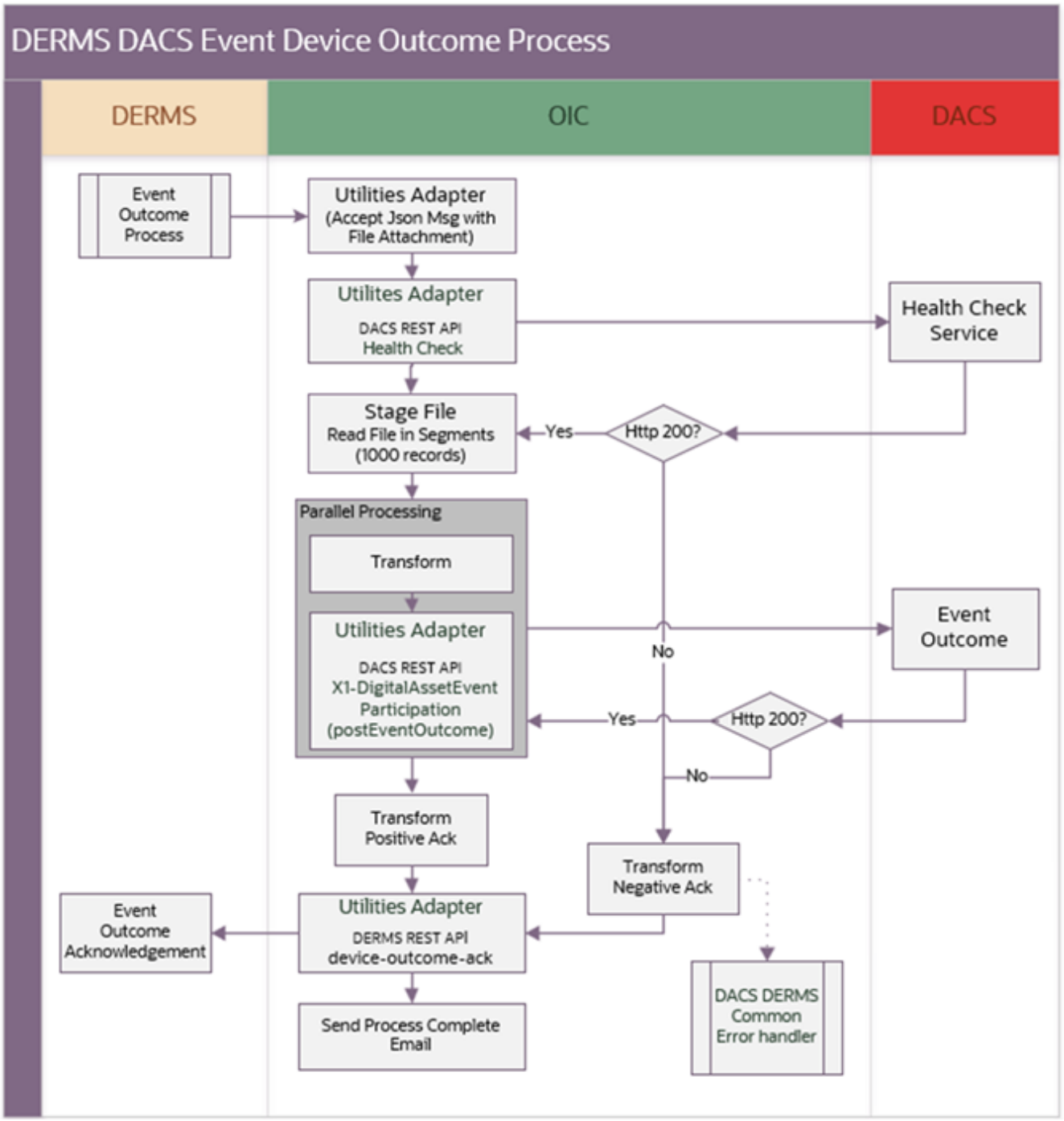
Oracle Utilities Edge Distributed Energy Resources Management System aggregates and sends both Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Analytics Insights the post event outcome for all controllable devices called to participate in an event or events through a file extract.

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 Edge Distributed Energy Resources Management System sends the JSON outbound message with the file attachment.

The integration process sends the post event outcome file from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service and sends an acknowledgment back to Oracle Utilities 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 Device Outcome integration process:



Processing Details

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

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

2. Before sending the file, the integration invokes F1-HealthCheckRest Rest endpoint to check if the Oracle Utilities Digital Asset Cloud Service environment is up and accessible.
    - If the REST service returns HTTP status 200, Oracle Utilities Digital Asset Cloud Service is accessible and proceed to Step 3.
    - Else,
        - Transforms the Negative Acknowledgment message. Send 'FAILURE' ackType to Oracle Utilities Edge Distributed Energy Resources Management System, so Oracle Utilities Edge Distributed Energy Resources Management System can auto retry the failed message according to the MAX_RETRIES setting in their DRMS_PARAMENTERS table.
        - Invokes the Oracle Utilities Edge Distributed Energy Resources Management System Event Outcome Acknowledgment REST endpoint
3. Uses Stage File operation "ReadFileinSegments" to read the file in segments of 1000 records with parallel processing option and loops through each incoming request:
    - Transforms the event outcome request payload from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service format.
    - Invokes the Program event participation post event outcome Oracle Utilities Digital Asset Cloud Service rest endpoint to update event outcome from the participated device reservation. The event outcome status will be changed accordingly.
        - If any of the REST service invocation returns an HTTP Error status:
            - Transforms the Negative Acknowledgment message. Send 'FAILURE' ackType to Oracle Utilities Edge Distributed Energy Resources Management System so it can auto retry the failed message according to the MAX_RETRIES setting in their DRMS_PARAMENTERS table.
            - It is expected that Oracle Utilities Digital Asset Cloud Service will not return any business faults but handle these with a To-Do task instead.
            - Invokes the Oracle Utilities Edge Distributed Energy Resources Management System Device Outcome Acknowledgment REST endpoint.
4. After all the records in the file are processed:
    - A positive acknowledgment with a 'SUCCESS' ackType is sent to Oracle Utilities Edge Distributed Energy Resources Management System by invoking the Oracle Utilities Edge Distributed Energy Resources Management System Device Outcome Acknowledgment REST endpoint.
    - A process completed email notification is also sent to the users defined in to.processnotification recipients in lookup OUTL_BRT_DACS_DRMS_Email_ID.
5. For any errors encountered in this process:
    - An error email notification with error details is sent via the common error handler OIC process to the users defined in 'to' recipients in lookup OUTL_BRT_DACS_DRMS_Email_ID.

- A negative Acknowledgment with 'FAILURE' ackType is sent to Oracle Utilities Edge Distributed Energy Resources Management System so Oracle Utilities Edge Distributed Energy Resources Management System can auto retry the failed message according to 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 Edge Distributed Energy Resources Management System and Oracle Utilities Analytics Insights artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS Event Device Outcome Process
Integration Process Identifier	OUTL-BA-DRMS_DACS_EVT_OUTC_TRNFR
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• DACS Web Service Name: X1ProgramEventParticipation • Computed URL: https://{host}:{port}/ {tenant}/ {domain}/rest/apis/cross/service/ programEventParticipation • Method: POST • URI: / postEventOutcome
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port} /nms-drms/ rest/v1/openapi.json • OperationId: deviceOutcomeAck • Method: POST • URI: /device-outcome-ack
Local Integrations	OU DACS DRMS Common Handler
Lookup For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_EventOutcome • OUTL-BRT-DACS_OUAI_Routing

Customer Event Opt Out Update (DACS Initiated)

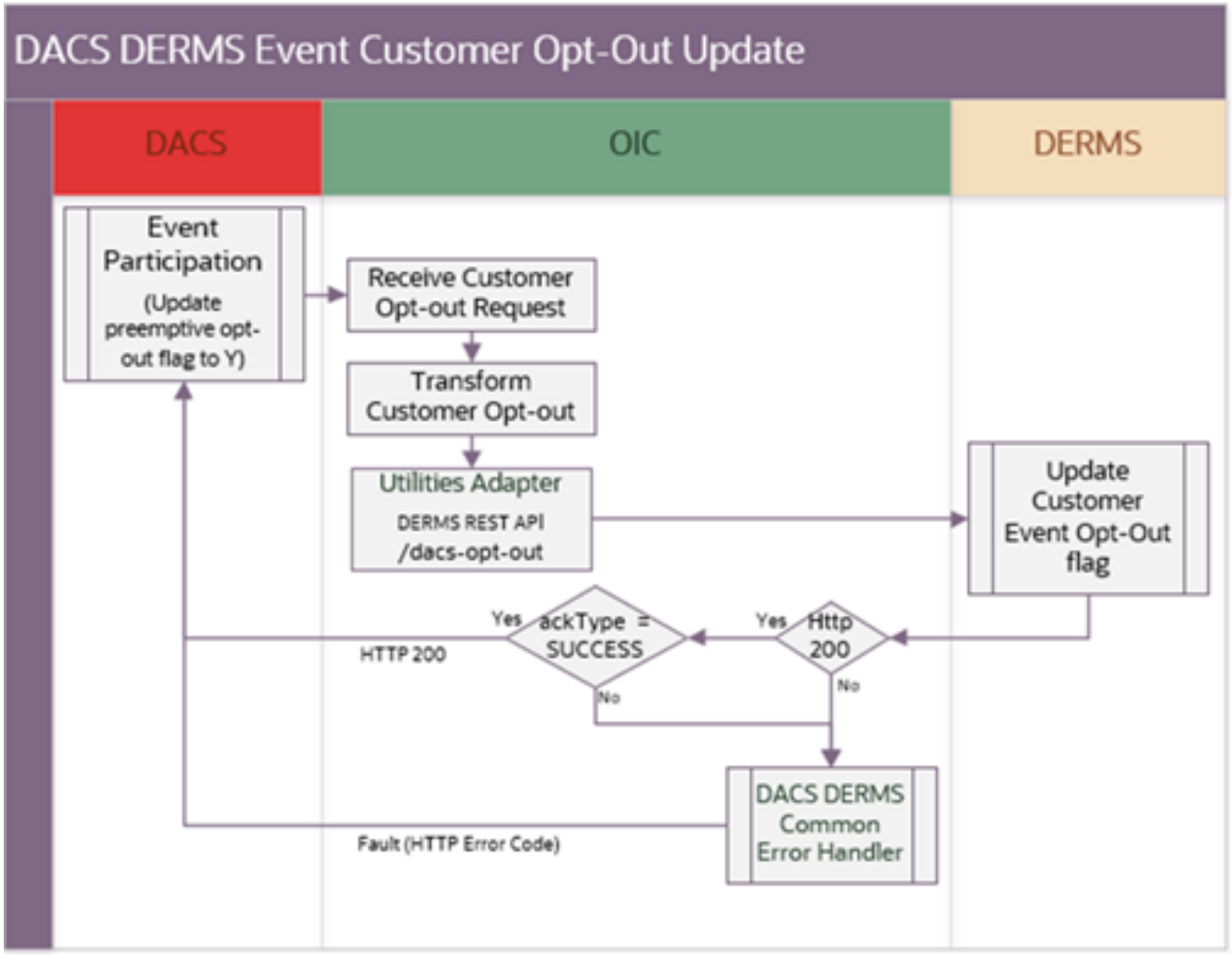
When a customer receives a notification from the Utility of an upcoming event, the customer can choose to not participate in that scheduled event. They can inform the utility through a call or email.

When a CSR receives this request from a customer, the CSR manually updates the **Preemptive Opt-Out** field from the default "No" option to "Yes" in the Oracle Utilities Digital Asset Cloud Service application. After this opt-out flag is updated to "Yes", Oracle Utilities Digital Asset Cloud Service sends a real-time outbound message to notify Oracle Utilities Edge Distributed Energy Resources Management System of each device that has been opted out of an upcoming event.

When Oracle Utilities Edge Distributed Energy Resources Management System receives the message, it will send a message to Oracle Utilities Live Energy Connect to instruct the external system (Head End/Aggregator) to cancel the control commands on the end devices that opt-out for that particular event.

After procesing the request message, Oracle Utilities Edge Distributed Energy Resources Management System will send a synchronous response to Oracle Integration Cloud whether it was successfully processed or not in Oracle Utilities Edge Distributed Energy Resources Management System.

The following diagram shows a graphical representation of the Event Customer Opt Out Update 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 it receives a request from Oracle Utilities Digital Asset Cloud Service.
2. Transforms the payload to Oracle Utilities Edge Distributed Energy Resources Management System format.
3. Invokes the Oracle Utilities Edge Distributed Energy Resources Management System Event Opt Out service endpoint.
4. If the REST service returns:
    - Status 200 (OK), check the Oracle Utilities Edge Distributed Energy Resources Management System response ackType.
        - If it is 'SUCCESS', the flow will finish successfully.

- Else, throws a fault back to Oracle Utilities Digital Asset Cloud Service and an error email notification with the error details is sent via the common error handler.

- Error Status, such as 400 or 500,
  - Throws a fault back to Oracle Utilities Digital Asset Cloud Service and an error email notification with the error details is sent via the common error handler.

5. For any errors encountered in this process:
   - An error email notification with error details is sent via the common error handler.
   - The process returns a fault to Oracle Utilities Digital Asset Cloud Service.
   - The integration flow will stop processing.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management Systemartifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU DERMS DACS Customer Event Opt-Out Update
Integration Process Identifier	OUTL-BA-DACS_DERMS_EVTOPTOUT_UPD
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
Trigger	Outbound Message Type: X1-EPOPTOMSG (Event Participation Opt Out)
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port}/nms-drms/ rest/v1/openapi.json • OperationId: dacsOptOut • Method: POST • URI: /dacs-opt-out
Local Integrations	OU DACS DERMS Common Error Handler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_Routing

Program Rule Sync Process

A set of event related constraints or rules can be maintained for each program by the utility.

The Program and its associated program rules are mastered in Oracle Utilities Digital Asset Cloud Service to be managed by the Program Manager. When a program rule is created or updated, the Program along with these rules are synchronized to Oracle Utilities Edge Distributed Energy Resources Management System. Only program rules linked to a program are synchronized to Oracle Utilities Edge Distributed Energy Resources Management System.

This integration process synchronizes the program rules from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System to give Oracle Utilities Edge Distributed Energy Resources Management System also the ability to calculate device availability.

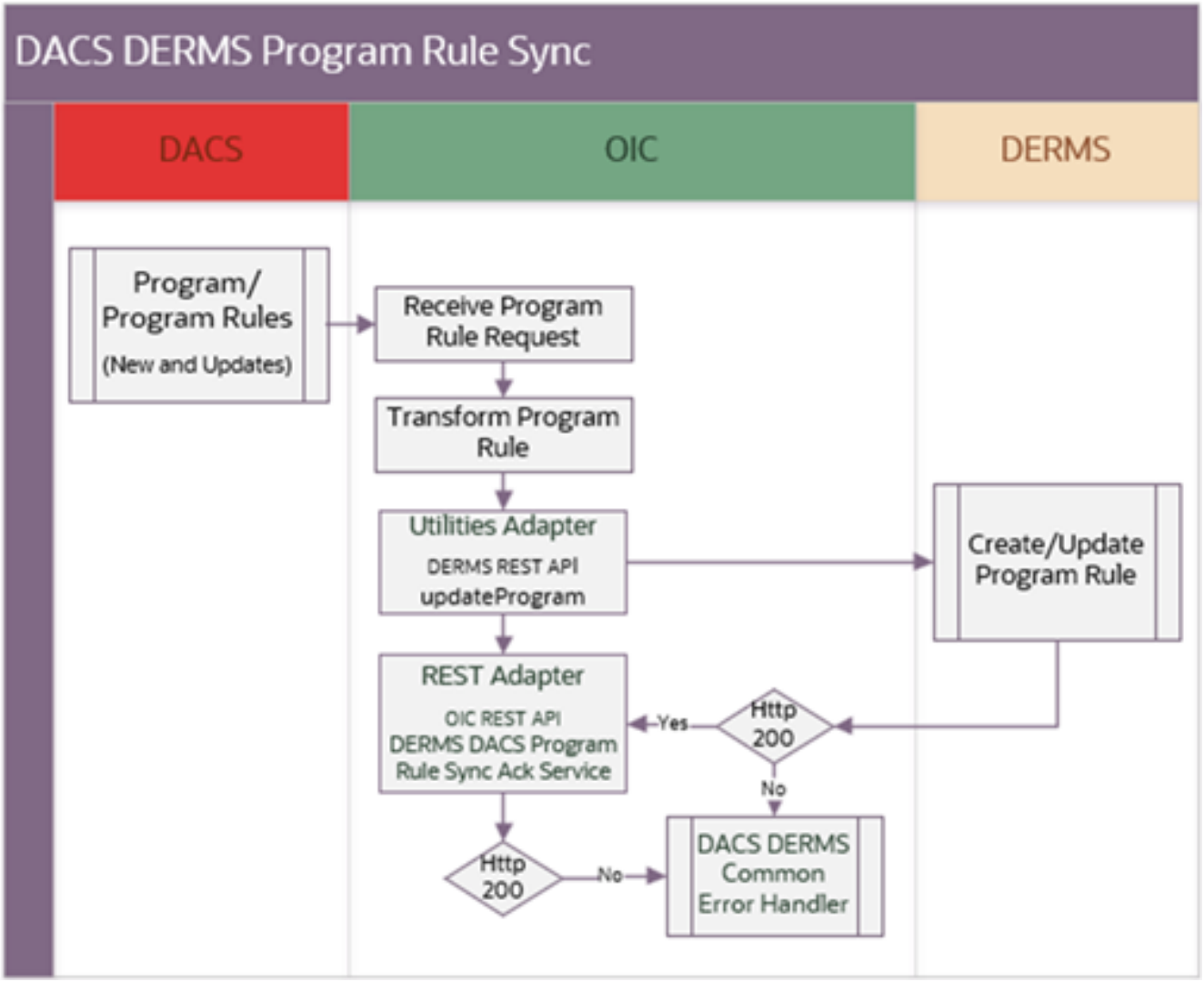
The integration then sends an acknowledgment back to Oracle Utilities Digital Asset Cloud Service.

The program rule synchronization and acknowledgment are handled by the following Oracle Integration Cloud integration flows:

- Program Rule Sync (DACS Initiated)
- Program Rule Sync Acknowledgment (OIC Initiated)

Program Rule Sync (DACS Initiated)

The following diagram shows a graphical representation of the Program Rule Sync integration process:



Processing Details

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

1. The process is triggered when it receives a request from Oracle Utilities Digital Asset Cloud Service.
2. Transforms the payload to Oracle Utilities Edge Distributed Energy Resources Management System format.
3. Invokes the Oracle Utilities Edge Distributed Energy Resources Management System update program service endpoint.
4. If the REST service returns:
    - Status 200 (OK),
        - Invokes the internal Oracle Utilities DERMS DACS Program Rule Sync Ack Oracle Integration Cloud integration process.

- Error Status, such as 400 or 500,
  - Throws a fault back to Oracle Utilities Digital Asset Cloud Service and an error email notification with the error details is sent via the common error handler.

5. For any errors encountered in this process:
   - An error email notification with error details is sent via the common error handler.
   - The process returns a fault to Oracle Utilities Digital Asset Cloud Service.
   - The integration flow will stop processing.

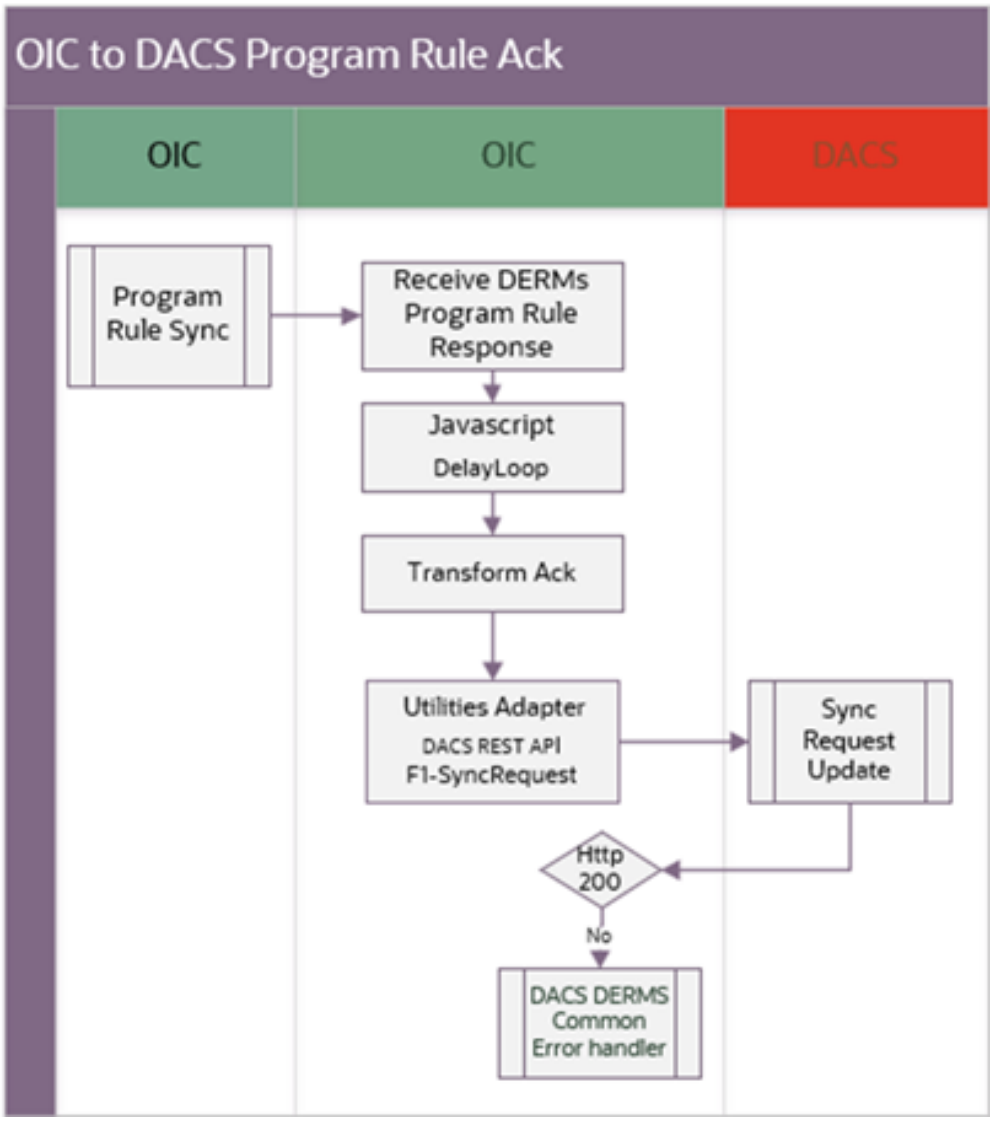
Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DACS DERMS Program Rule Sync
Integration Process Identifier	OUTL-BA-DACS_DERMS_PROGRULE_SYNC
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DRMS for DACS-DERMS
trigger	Outbound Message Type: X1-GEDPGRMSG (Program Rule)
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port}/nms-drms/rest/v1/openapi.json • OperationId: updateProgram • Method: POST • URI: /update-program
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_Routing • OUTL-BRT-DACS_DRMS_CycleFrequency • OUTL-BRT-DACS_DRMS_WeekDay • OUTL-BRT-DACS_DRMS_AllowEventDays

Program Rule Sync Acknowledgment (OIC Initiated)

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



Processing Details

The integration process deployed on Oracle Integration Cloud is exposed as a REST API, called internally by the DACS-DERMS Program Rule Sync OIC integration process, and performs the following activities:

1. The process is triggered after it receives an Http 200 synchronous response from Oracle Utilities Edge Distributed Energy Resources Management System update program REST API.
2. Transforms the Oracle Utilities Edge Distributed Energy Resources Management System update program response payload to Oracle Utilities Digital Asset Cloud Service format.
3. Invokes the Oracle Utilities Digital Asset Cloud Service Sync Request Update REST endpoint to send the acknowledgment.

4. For any errors encountered in this process:
    - An error email notification with error details is sent via the common error handler.
    - The integration flow will stop processing.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Assets Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU DERMS DACS Enroll Sync Ack
Integration Process Identifier	OUTL-BA-DRMS_DACS_SYNC_ACK
Integration Project Name	OU DACS DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• Web Service Name: F1-SyncRequest • Computed URL: https://{host}:{port}/ {tenant}/ {domain /ouaf/rest/apis/ common/sync/ syncRequest • Method: PATCH • URI: /{syncRequestId}
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID

Aggregator Sync Process

Distributed Energy Resources devices can be enrolled and managed by an aggregator. This model is maintained in Oracle Utilities Digital Asset Cloud Service.

Once an Aggregator is successfully created or updated in Oracle Utilities Digital Asset Cloud Service, it is synchronized to Oracle Utilities Edge Distributed Energy Resources Management System and Oracle Utilities Live Energy Connect.

This integration process synchronizes the aggregator information from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System.

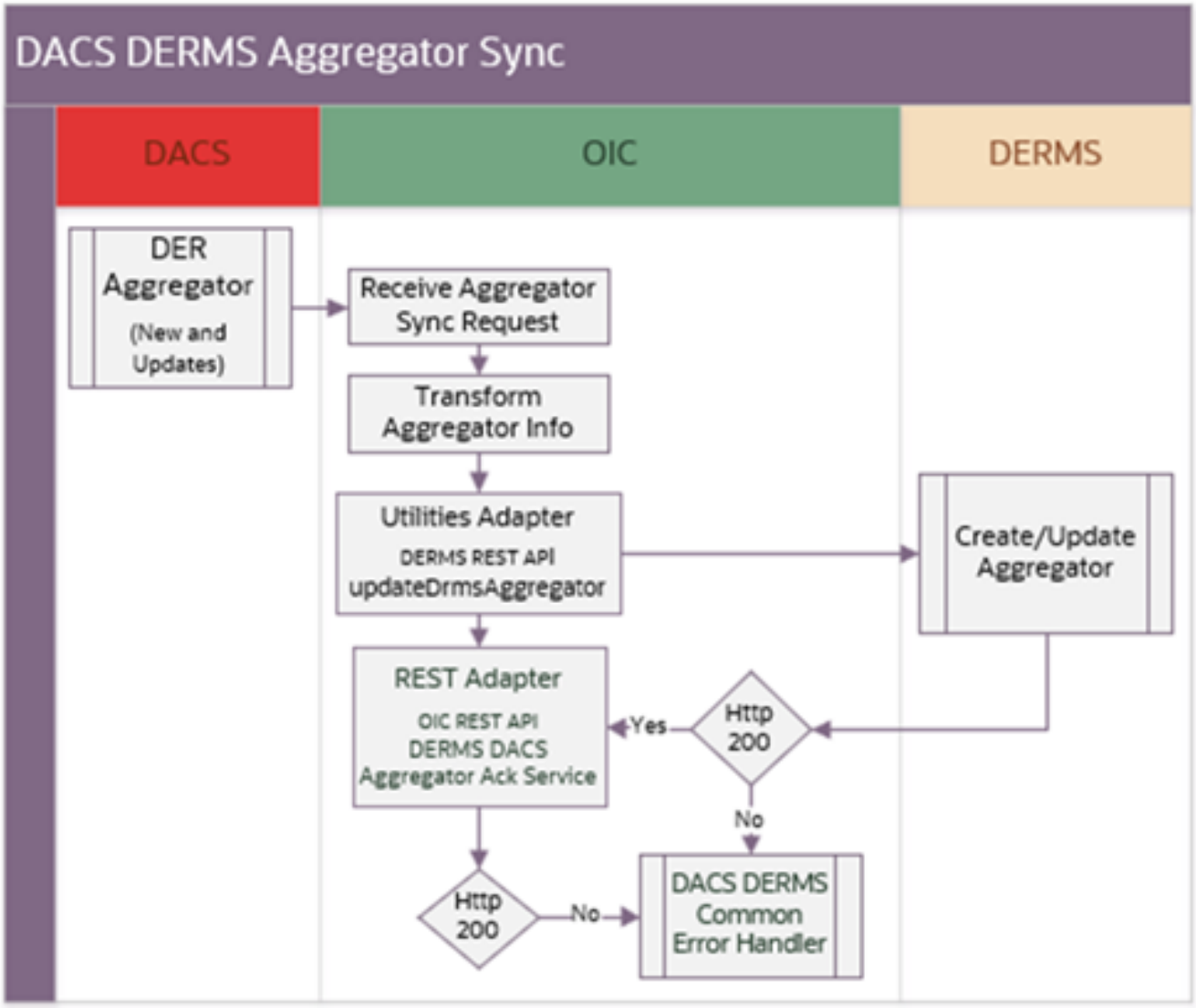
The integration then sends an acknowledgment back to Oracle Utilities Digital Asset Cloud Service.

The aggregator synchronization and acknowledgment are handled by the following Oracle Integration Cloud integration flows:

- Aggregator Sync (DACS Initiated)
- Aggregator Sync Acknowledgment (Edge DERMS Initiated)

Aggregator Sync (DACS Initiated)

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



Processing Details

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

1. The process is triggered when it receives a request from Oracle Utilities Digital Asset Cloud Service.
2. Transforms the payload to Oracle Utilities Edge Distributed Energy Resources Management System format.
3. Invokes the Oracle Utilities Edge Distributed Energy Resources Management System update aggregator service endpoint.
4. If the REST service returns:
   - Status 200 (OK),

- Invokes the internal Oracle Utilities DERMS DACS Aggregator Sync Ack Oracle Integration Cloud integration process.

- Error Status, such as 400 or 500,
  - Throws a fault back to Oracle Utilities Digital Asset Cloud Service and an error email notification with the error details is sent via the common error handler.

5. For any errors encountered in this process:
   - An error email notification with error details is sent via the common error handler.
   - The process returns a fault to Oracle Utilities Digital Asset Cloud Service.
   - The integration flow will stop processing.

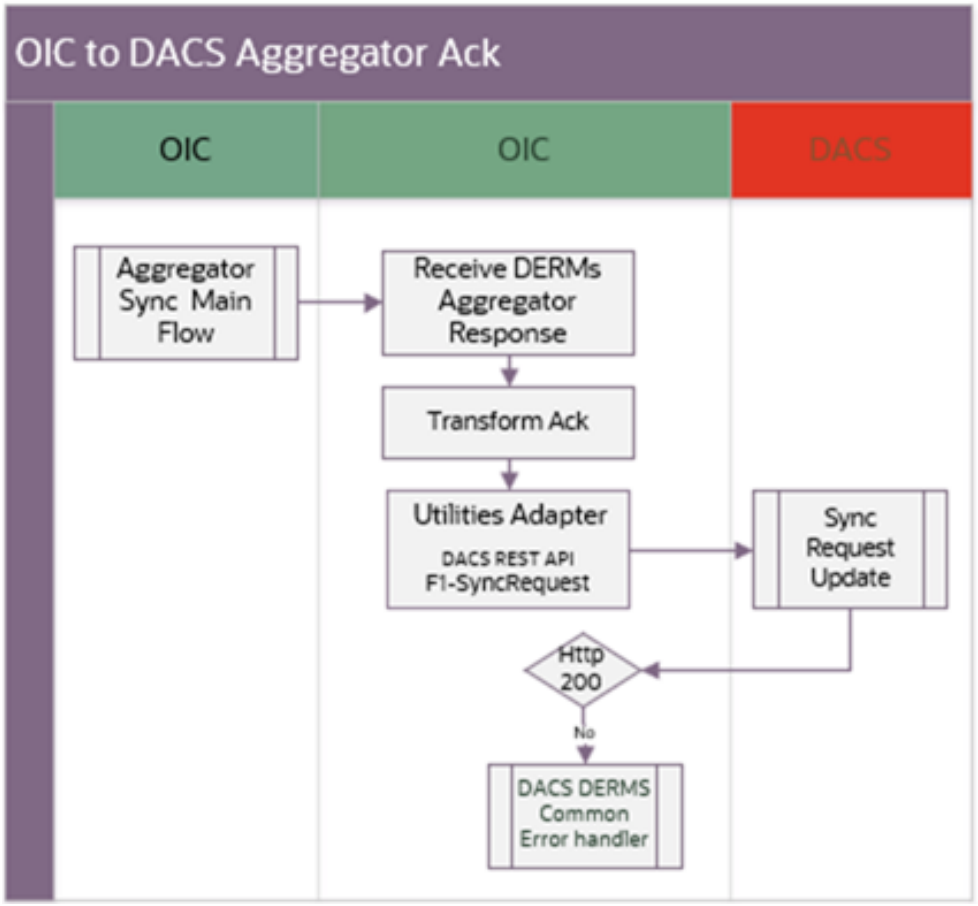
Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DACS DERMS Aggregator Sync
Integration Process Identifier	OUTL-BA-DACS_DERMS_AGGREG_SYNC
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
trigger	Outbound Message Type: X1-GEDAGRMSG (Aggregator)
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port}/nms-drms/ rest/v1/openapi.json • OperationId: updateAggregator • Method: POST • URI: /update-aggregator
Local Integrations	OU DACS DERMS CommonErrorHandler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_Routing

Aggregator Sync Acknowledgment (Edge DERMS Initiated)

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



Processing Details

The integration process deployed on Oracle Integration Cloud is exposed as a REST API, called internally by the DACS-DERMS Aggregator Sync OIC integration process, and performs the following activities:

1. The process is triggered after it receives an Http 200 synchronous response from Oracle Utilities Edge Distributed Energy Resources Management System update aggregator REST API.
2. Transforms the Oracle Utilities Edge Distributed Energy Resources Management System update aggregator response payload to Oracle Utilities Digital Asset Cloud Service format.
3. Invokes the Oracle Utilities Digital Asset Cloud Service Sync Request Update REST endpoint to send the acknowledgment.
4. For any errors encountered in this process:
   - An error email notification with error details is sent via the common error handler.
   - The process returns a fault to Oracle Utilities Digital Asset Cloud Service.
   - The integration flow will stop processing.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU DERMS DACS Aggregator Sync Ack
Integration Process Identifier	OUTL-BA-DERMS_DACS_AGGSYNC_ACK
Integration Project Name	OU DACS DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DACS for DACS-DERMS
invoke	• Web Service Name: F1-SyncRequest • Computed URL: https://{host}:{port}/{tenant}/ {domain /ouaf/rest/apis/common/sync/ syncRequest • Method: PATCH • URI: /{syncRequestId}
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID

SP Network Location Transfer (Edge DERMS Initiated)

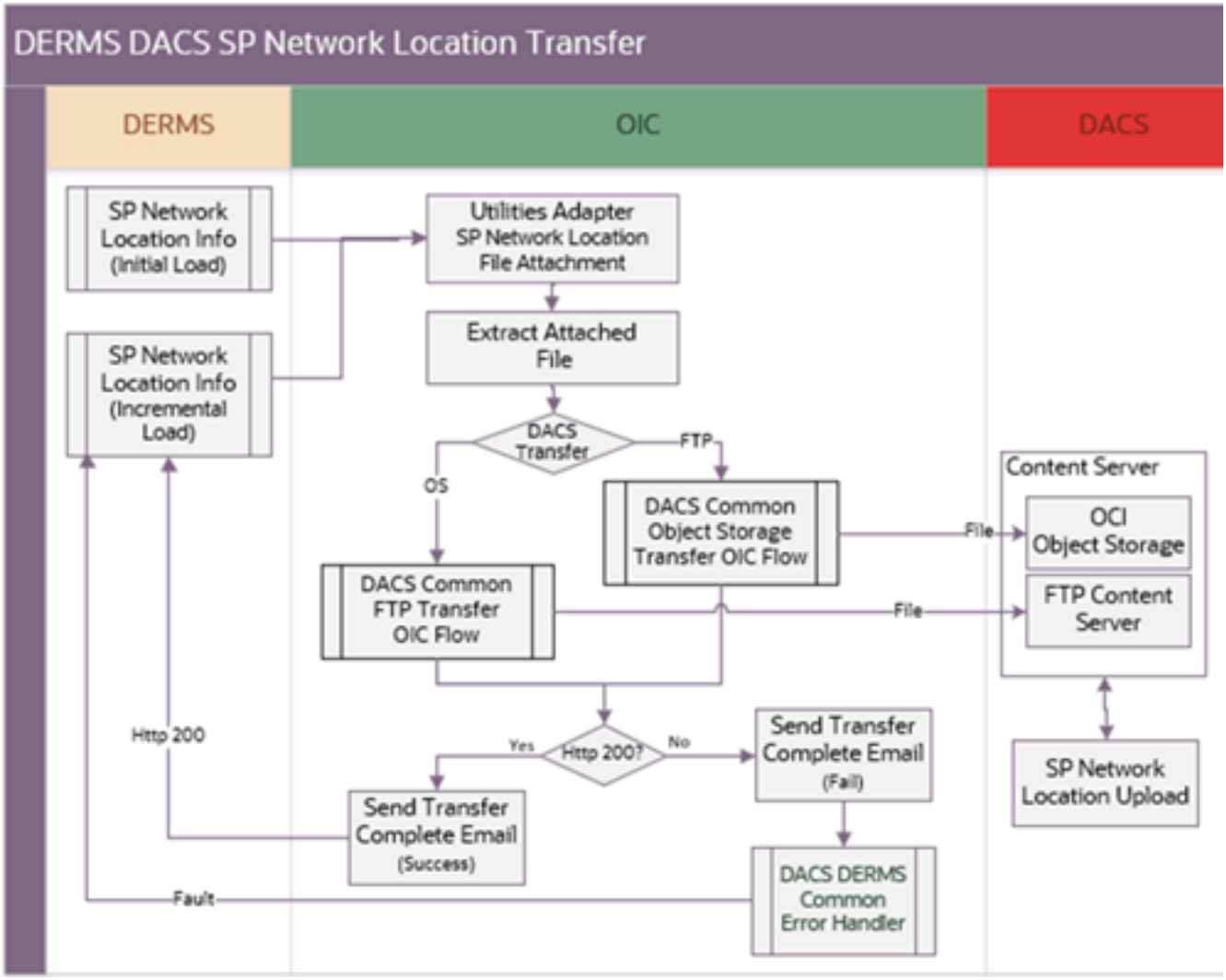
To support device grouping in DACS, DACS needs to know the network hierarchy of a service point (SP) so that it can associate devices with service transformers, substations and zones.

Oracle Utilities Edge Distributed Energy Resources Management System creates the file extract containing the nominal network information, namely the Transformer, Feeder and Substation, linked to an SP. Once the file is ready, Oracle Utilities Edge Distributed Energy Resources Management System sends the JSON outbound message with the file attachment to Oracle Integration Cloud.

Edge DERMS can send the initial load and any following updates, add or updates to existing records, as part of the incremental sync.

This integration process transfers the SP network location file from Oracle Utilities Edge Distributed Energy Resources Management System to Oracle Utilities Digital Asset Cloud Service and no acknowledgment needs to be returned to Oracle Utilities Edge Distributed Energy Resources Management System when the process is completed. This is just a file transfer, and no transformation will be done in the integration.

The following diagram shows a graphical representation of the SP Network Location Transfer 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 Edge Distributed Energy Resources Management System invokes the REST endpoint to send the SP Network Location information to Oracle Utilities Digital Asset Cloud Service. The message received is a JSON payload with a CSV file attachment.
2. Based on the value set in the dacs.file.target.transfer.pref property, the process sends the file to a child OIC process.
    a. The 2 child OIC processes that can be called are 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. This file is sent to DACS OCI Object Storage. The file location is set in the dacs.os.namespace and dacs.spNtwkLoc.os.bucketname properties.

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

b. If the child process returns HTTP status 200, the file transfer was successfully completed. Otherwise, an error occurred during the file transfer.

3. After the child process is completed, a Process Complete Notification email is sent to dacs.to.process.notification recipients defined in the OUTL-BRT-DACS_DRMS_Email_ID lookup. This process complete email can contain a success or error file transfer information.
4. 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.
5. The integration flow will stop processing.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Edge Distributed Energy Resources Management System and Oracle Utilities Digital Asset Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DERMS DACS SP Network Location Transfer
Integration Process Identifier	OUTL-BA-DERMS_DACS_SPNWLOC_TRNFR
Integration Project Name	OU DACS DERMS
Source Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
Trigger	• DERMS Service Name: NMS-DACSOutbound • OperationId: exportCustomerModel
Target Connection (REST Adapter)	OU REST MP OIC for DACS-DERMS (Connecting to internal OU DACS Common OS and FTP Transfer OIC flows passing file as attachment)
Local Integrations	• OU DACS Common OS Transfer • OU DACS Common FTP Transfer • OU DACS DERMS Common Error Handler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID • OUTL-BRT-DACS_DRMS_Routing

Send Device Score (DACS Initiated)

Oracle Utilities Digital Asset Cloud Service computes and maintains the device score for each controllable device enrolled in a program and sends the information periodically to Oracle Utilities Edge Distributed Energy Resources Management System through a file extract. The calculation depends on factors, such as equipment specifications, monthly/annual capacity, device participation history, and more.

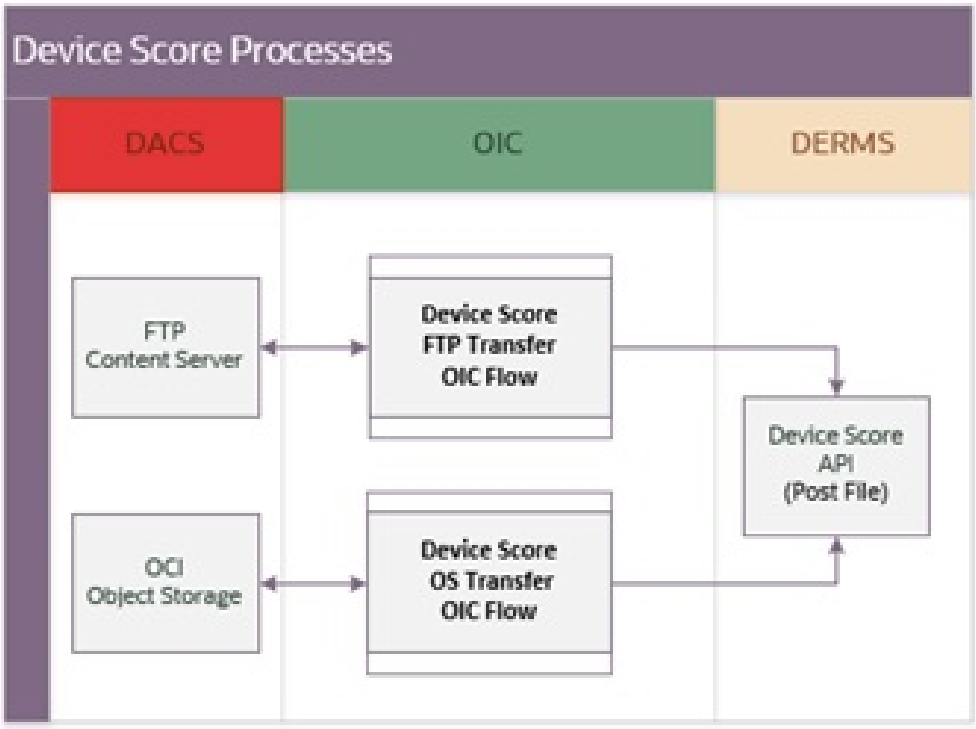
This integration process transfers the device score from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Edge Distributed Energy Resources Management System to facilitate its eligibility evaluation during event planning.

Oracle Utilities Digital Asset Cloud Service can place the file in an On Premise FTP Server or in an Oracle Integration Cloud Object Storage location and Oracle Utilities Edge Distributed Energy Resources Management System receives the files through a REST web service.

The device score file transfer is handled by the following Oracle Integration Cloud integration flows depending on the file transfer preference:

- Device Score FTP Transfer (DACS Initiated)
- Device Score OS Transfer (DACS Initiated)

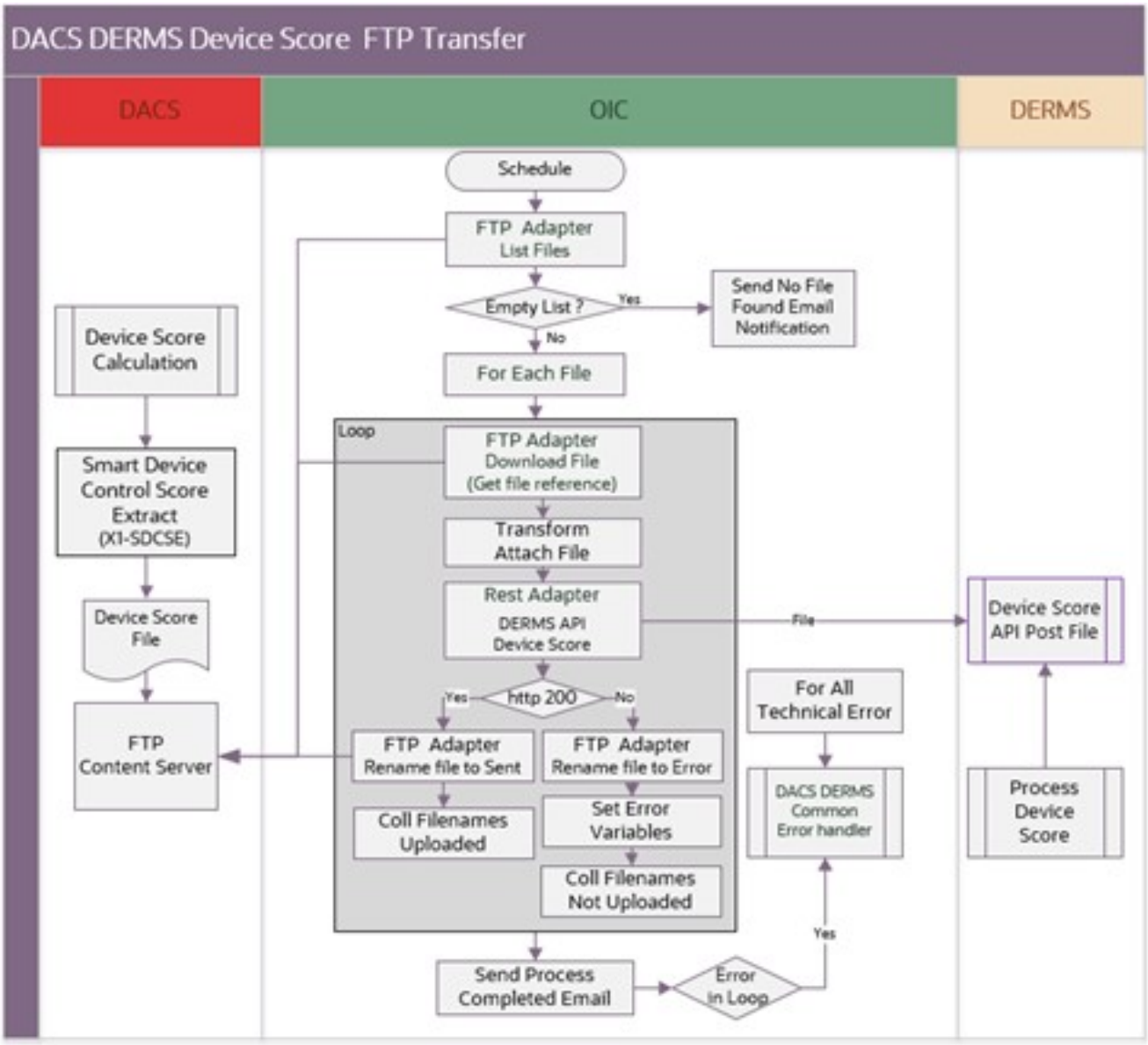
The following diagram shows the Device Score related processes:



Device Score FTP Transfer (DACS Initiated)

This integration process retrieves the device score data file(s) from an FTP content storage location where Oracle Utilities Digital Asset Cloud Service uploads files and sends it to Oracle Utilities Edge Distributed Energy Resources Management System through a REST API call.

The following diagram shows a graphical representation of the Device Score Transfer integration process from an FTP Server:



Processing Details

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

1. The process is triggered by a schedule or it can also be triggered manually.
    - Define the integration schedule for this process and make sure the Smart Control Device Score Extract Job (X1-SDCSE) schedule in Oracle Utilities Digital Asset Cloud Service is always run first, so the file is available to be processed by the integration.
    - A couple of the default values used in this integration are defined in the **OUTLBRT-DACS_DRMS_ConfigProps**. Make sure to define the properties needed for this integration.

2. It invokes the FTP adapter to list files from the Oracle Utilities Digital Asset Cloud Service on-premises location obtained from the file path set in the `dacs.dvcScore.ftp.input.directory` property. It will retrieve files matching the prefix set in the `dacs.dvcScore.extract.filename.prefix` property.

   Note: The value dacs.dvcScore.extract.filename.prefix should match the beginning of the parameter filename in Oracle Utilities Digital Asset Cloud Service Batch X1-SDCSE.

   - If no file is found and `notification.email.process.nofile.flag` is *true* (by default it is false), it will send a no file found email notification to `to.process.notification` recipients defined in lookup **OUTL-BRT-DACS_DRMS_EMAIL_ID** and the process will stop.
   - If files are found, go to the next step.

3. For each file, do the following:
   - Invoke the FTP Adapter with Download File operation to get the actual file to process.
   - Invoke DERMS Device Score REST API and send the file as a binary attachment.
     - If Oracle Utilities Edge Distributed Energy Resources Management System returns an HTTP 200 or 202, invoke the FTP adapter to rename the source file obtained from the server by adding the prefix set in the `dacs.prefixtag.fileuploaded` property and the next file in the list is processed.
4. After the successful transfer of all files, if the notification.email.process.complete.flag is true, a Process Complete email notification is sent to to.process.notification recipients defined in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
5. Error Handling.

   For any errors encountered in this process:
   - Invoke the FTP Adapter to rename the source file obtained from the server by adding the prefix set in property `dacs.prefixtag.filenotuploaded`.
   - An error email notification with error details is sent via the common error handler Oracle Integration Cloud process to the users defined in `to` recipients in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
   - 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 Utilities Digital Asset Cloud Service and Oracle Utilities Edge Distributed Energy Resources Management System artifacts used in this integration process.

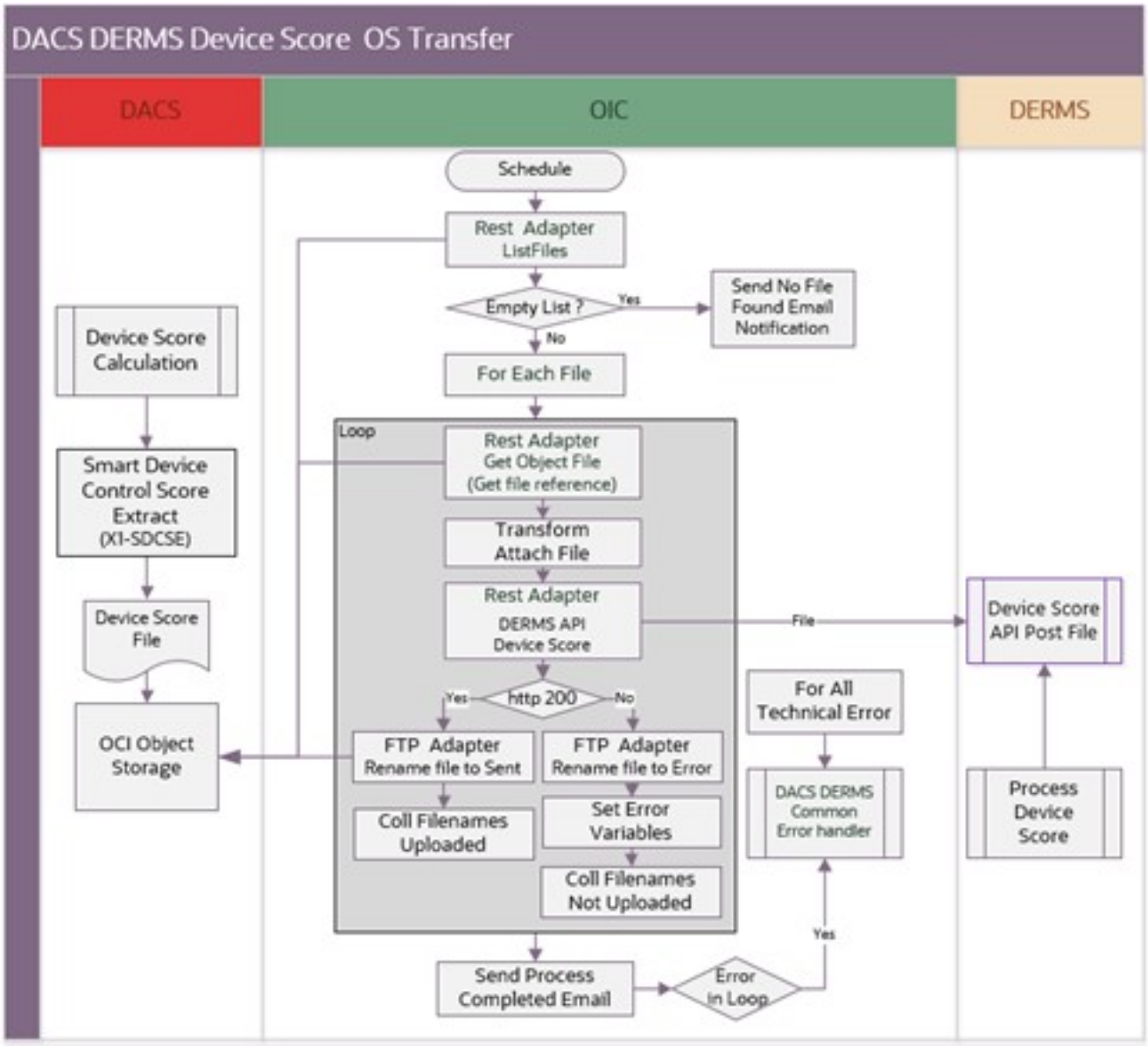
Artifacts	Value
Integration Process Name	OU DACS DERMS Device Score FTP Transfer
Integration Process Identifier	OUTL-BA-DRMS_DACS_SEND_DVCSCORE

Artifacts	Value
Integration Project Name	OU DACS DERMS
Source Connection (FTP Adapter)	OU FTP DACS for DACS-DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DERMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port} /nms-drms/rest/v1/openapi.json • OperationId: deviceScore • Method: POST • URI: /device-score/{file-name}
Local Integrations	OU DACS DERMS Common Error Handler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID

Device Score OS Transfer (DACS Initiated)

This integration process retrieves the device score data file(s) from an Oracle Integration Cloud Object Storage location where Oracle Utilities Digital Asset Cloud Service uploads files and transfer it Oracle Utilities Edge Distributed Energy Resources Management System through a REST API call.

The following diagram shows a graphical representation of the Device Score Transfer integration process from an Oracle Integration Cloud Object Storage:



Processing Details

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

1. The process is triggered by a schedule or can also be triggered manually.
    a. Define the integration schedule for this process and makes sure the Smart Control Device Score Extract Job (X1-SDCSE) schedule in Oracle Utilities Digital Asset Cloud Service is always run first, so the file is available to be processed by the integration.
    b. A couple of the default values used in this integration are defined in the **OUTL-BRT-DACS_DRMS_ConfigProps**. Make sure to define the properties needed for this integration.

2. It invokes the Object Storage - List Objects REST API to get the list of files found in the Oracle Utilities Digital Asset Cloud Service Object Storage bucket, set in the properties `dacs.os.dvcScore.bucketname` and `dacs.os.namespace`. It will retrieve files matching the prefix set in property `dacs.dvcScore.extract.filename.prefix`.

   Note: The value `dacs.dvcScore.extract.filename.prefix` should match the beginning of the parameter filename in Oracle Utilities Digital Asset Cloud Service Batch X1-SDCSE.

   - If no file is found and notification.email.process.nofile.flag is true (by default it is false), it will send a no file found email notification to to.process.notification recipients defined in lookup **OUTL-BRT-DACS_DRMS_EMAIL_ID** and the process will stop.
   - If files are found, proceed to the next step.

3. For each file, do the following:
   a. Invoke the Object Storage: Gets Object REST API to get the actual file to process.
   b. Invoke DERMS Device Score REST API and sends the file as a binary attachment.
      - If Oracle Utilities Edge Distributed Energy Resources Management System returns an HTTP 200 or 202, it invokes the REST API RenameObject to rename the source file obtained from the server by adding the prefix set in property `dacs.prefixtag.fileuploaded` and the next file in the list is processed.
4. After the successful transfer of all files, if the `notification.email.process.complete.flag` is *true*, a Process Complete email notification is sent to `to.process.notification` recipients defined in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
5. Error Handling.

   For any errors encountered in this process:

   - Invoke the REST API RenameObject to rename the source file obtained from the server by adding the prefix set in property *dacs.prefixtag.filenotuploaded*.
   - An error email notification with error details is sent via the common error handler Oracle Integration Cloud process to the users defined in `to` recipients in lookup **OUTL-BRT-DACS_DRMS_Email_ID**.
   - 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 Edge Distributed Energy Resources Management System artifacts used in this integration process.

Artifacts	Value
Integration Process Name	OU DACS DERMS Device Score OS Transfer

Artifacts	Value
Integration Process Identifier	OUTL-BA-DRMS_DACS_SEND_DVCSCOREC
Integration Project Name	OU DACS DERMS
Source Connection (REST Adapter)	OU REST DACS Object Storage for DACS-DERMS
Target Connection (Oracle Utilities Adapter)	OU REST DRMS for DACS-DERMS
invoke	• DERMS Service Name: NMS-DACSInbound • openAPIUrl: https://{host}:{port} /nms-drms/rest/v1/openapi.json • OperationId: deviceScore • Method: POST • URI: /device-score/{file-name}
Local Integrations	OU DACS DERMS Common Error Handler
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID

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
- Common Child File Transfer OIC Flows (OIC Initiated)

File to File Transfer

Many integrations move 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.

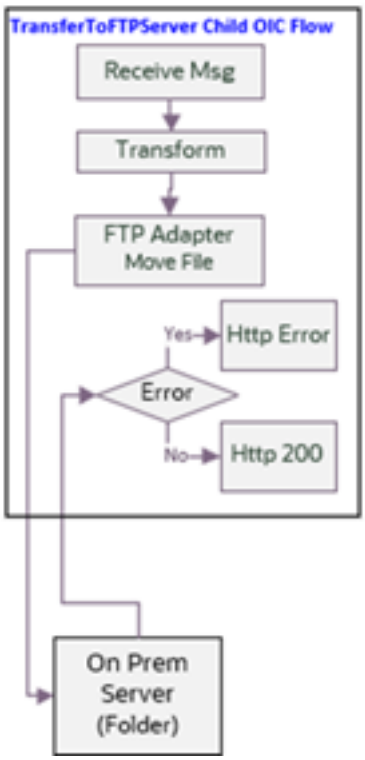
> **Note**: Oracle Utilities Edge Distributed Energy Resources Management System uses REST APIs to send and receive files. Oracle Utilities Digital Asset Cloud Service supports both FTP and Object Storage as its content server.

If the source application supports both FTP and 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.

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



Common Child File Transfer OIC Flows (OIC Initiated)

- OU DACS Common FTP Transfer
- OU DACS Common OS Transfer

All child Oracle Integration Cloud flows are exposed as a REST API with multipart request media type to pass a json request message with a file attachment. They 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
Bucket Name	Directory
File Reference	File Reference

Technical Details

The following tables describe the integration processes and the respective Oracle Utilities Digital Asset Cloud Service artifacts used in the integration process.

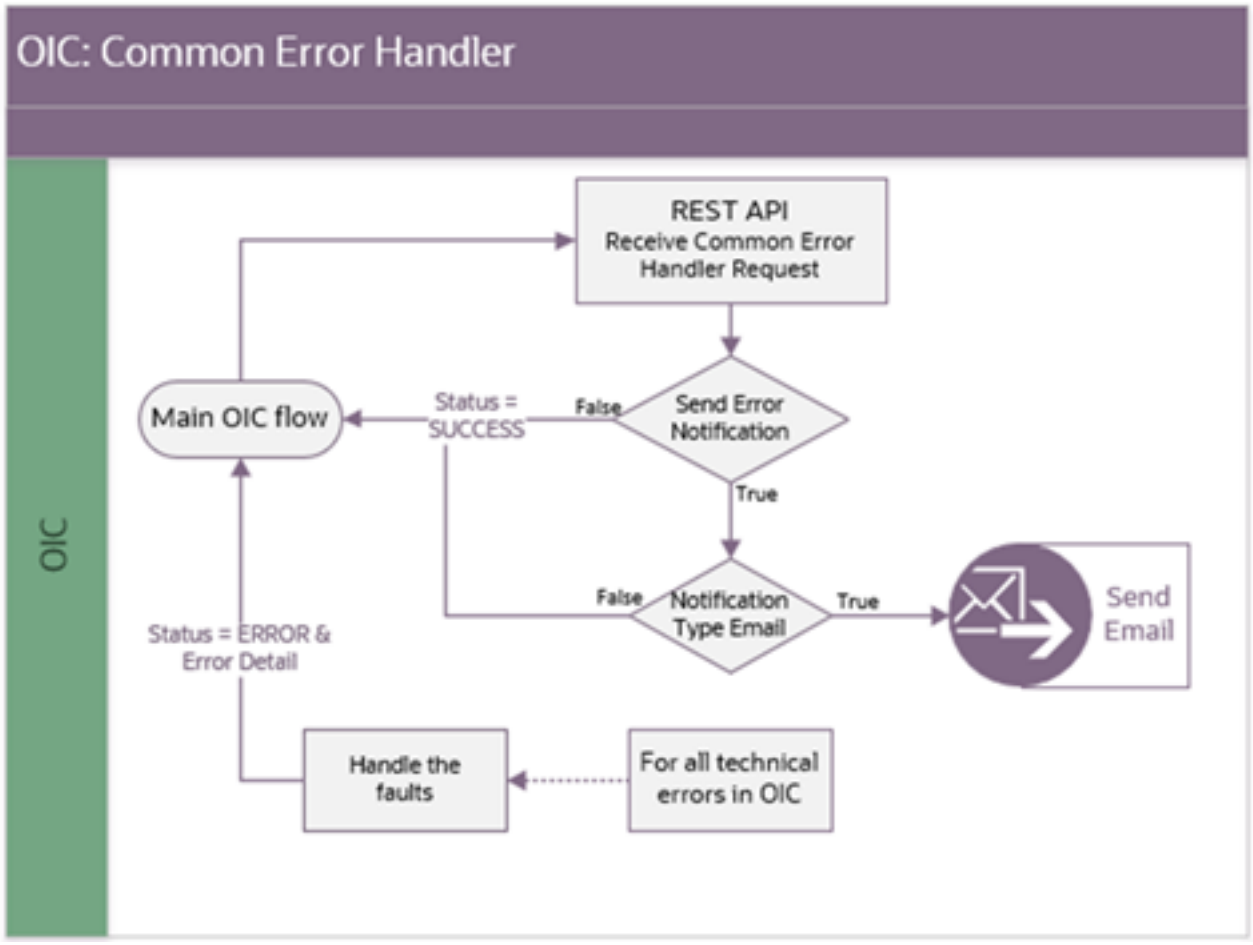
Artifacts	Value
Integration Process Name	OU DACS Common FTP Transfer
Integration Process Identifier	OUTL-BA-DACS_FTP_TRANSFER
Integration Project Name	OU DACS DERMS
Source Connection (REST Adapter-Trigger)	OU REST for DACS-DERMS
Target Connection (FTP Adapter)	OU FTP DACS for DACS-DERMS

Artifacts	Value
Integration Process Name	OU DACS Common OS Transfer
Integration Process Identifier	OUTL-BA-DACS_OS_TRANSFER
Integration Project Name	OU DACS DERMS
Source Connection (REST Adapter-Trigger)	OU REST for DACS-DERMS
Target Connection (REST Adapter)	OU REST DACS Object Storage for DACS-DERMS

Common Error Handler (OIC 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:



Processing Details

The integration process deployed on Oracle Integration Cloud is exposed as a REST API and performs 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 flow.
2. The request message received is processed based on the `notification.email.error.flag` and `notification.type.email` property names in the **OUTL-BRT-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 the integration processes and the respective artifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU DACS DERMS Common Error Handler
Integration Process Identifier	OUTL-BA-DACS_DRMS_ERROR
Integration Project Name	OU DACS DERMS
Source Connection	local integration
trigger	/receiveMessage
Lookup	• OUTL-BRT-DACS_DRMS_ConfigProps • OUTL-BRT-DACS_DRMS_Email_ID For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

Chapter 3

Configuring Oracle Utilities Digital Asset Cloud Service

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

- Configuring Admin Data
- Scheduling Batch Jobs
- Managing Web Service Catalog
- Adding Oracle Integration Cloud Certificates

For more information about Oracle Utilities Digital Asset Cloud Service, refer to the Oracle Utilities Digital Asset Cloud Service documentation on Oracle Help Center.

Configuring Admin Data

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

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

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
- **HTTP Transport Method**: SendReceive or Send
- **HTTP URL 1**:

  Sample format:

  ```
  https://[oic.oraclecloud.com]/ic/api/integration/v2/flows/
  oracleutilities/project/[projectName]/[oicprocessflow]
  ```

Sample Message Sender Setup For This Integration

Message Sender	Description	HTTP Transport Method	Endpoint URL
DRMS_DvcStatChk	Send device status check to DERMS	SendReceive	`https://inst1.oraclecloud.com/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DACS_DRMS_DEVICE_STATUS/1.0/deviceStatusCheck`
DRMS_EnrlSync	Send Enrollment to DERMS	SendReceive	`https://inst1.oraclecloud.com/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DACS_DRMS_ENROLL_SYNC/1.0/enroll`
DRMS_ProgRule	Send Program Rules to DERMS	Send	`https://inst1.oraclecloud.com/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DACS_DERMS_PROGRULE_SYNC/1.0/programRuleSync`
DRMS_opt-out	Send event Opt Out to DRMS	Send	`https://inst1.oraclecloud.com / ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DACS_DERMS_EVTOPTOUT_UPD/1.0/dacsoptout`
DRMS_Agg	Send Aggregator to DERMS	Send	`https://inst1.oraclecloud.com/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DACS_DERMS_AGGREG_SYNC/1.0/aggregatorSync`

Note: The Integration URL is obtained in the Oracle Integration Cloud.

1. Login to Oracle Integration Cloud.
2. Navigate to the DACS DERMS project and select the integration to invoke from Oracle Utilities Digital Asset Cloud Service.
3. Go to **Actions** and select **Run**.
4. Click the metadata URL to get the endpoint URL.

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. Add the following outbound message types 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 (Asset Customer) outbound message type.
        - **Event Participation Opt Output**: Use the X1-EPOPTOMSG (Event Participation Opt Out) outbound message type.
        - **Aggregator**: Use the X1-GEDAGRMSG (Aggregator) outbound message type.
        - **Program Rule**: Use the X1-GEDPGRMSG (Program Rule) 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
- X1-ProgramEvent

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**.

- Cross Product Master Configuration
- Digital Asset Integration Master Configuration
- Seeder Sync Request Master Configuration
- Master Data Synchronization Master Configuration

Cross Product Master Configuration

The Cross Product master configuration is used in a Oracle Utilities Customer to Meter (C2M) implementation. The External System define here is used for all communications between Oracle Utilities Customer Care and Billing and Oracle Utilities Meter Data Management applications, such as sync requests, Service Order Management (SOM) queries, and so on.

Digital Asset Integration Master Configuration

The Digital Asset master configuration is used to synchronize digital asset customer information to Oracle Utilities Edge Distributed Energy Resources Management System.

To create or update a Digital Asset Integration master configuration:

1. In the Oracle Utilities Edge Distributed Energy Resources Management System **Integration Parameters** section, populate the following:
   - **External System**: DERMS External System
   - **Outbound Message Types:**

Aggregator	X1-GEDAGRMSG
Program Rule	X1-GEDPGRMSG
Asset Customer	X1-NMSDASMSG
Opt Out	X1-EPOPTOMSG

   - **Program Subscription Types Eligible for Sync**: Configure one or more program subscription types that are eligible for synchronization to Oracle Utilities Edge Distributed Energy Resources Management System.
2. Save the configuration details.

Seeder Sync Request Master Configuration

The Seeder Sync master configuration identifies the ongoing synchronization request business object and key reference view for the maintenance object specified in the synchronization request.

Master Data Synchronization Master Configuration

The Seeder Sync master configuration identifies the ongoing synchronization request business object and key reference view for the maintenance object specified in the synchronization request.

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 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

Controllable Asset Specification

Specifications describe design details and functional performance criteria for a set of controllable assets. This can include manufacturer, model, and other information specified for the assets.

Create new or update existing controllable asset specification for each combination of head end system, make and model.

To create a specification:

1. In the **Main** menu, navigate to **[Asset Management]** > **Specification** > **Add**.
2. Select **Specification Business Object**: Controllable Asset Specification (X1-ControllableAssetSpec)
3. Enter a unique specification and its description.
4. Enter the **Asset Type** for the controllable asset.
5. Enter the **Manufacturer**, **Make**, and **Head End System**.

Program Type

Programs Type defines certain parameters and attributes for a class of programs.

To create a program type:

1. In the **Admin** menu, navigate to **[Digital Asset Management]** > **Program Type** > **Add**.

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

   Note: In the **Event Opt Out Parameters**, the **Allow To Opt Out** flag must be set to "Yes" to allow customers to opt out from programs associated to this program type.

Program

Programs represent specific demand response programs in which customers can participate and let their utility service provider temporarily take control of specific devices in their homes in response to periods of high demand.

Note: You can create new demand response programs, or update the existing ones.

To create a program:

1. In the Main menu navigate to **[Digital Asset Management]** > **Program** > **Add**.
2. Select **Program Type** associated with the program. Program types define certain parameters and attributes of a class of programs.
3. Enter a unique description.
4. Enter the **Program External ID**. It is the Program ID or Code used by external systems.
5. Enter other relevant information as needed.

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

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 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 synchronization request.

Scheduling Batch Jobs

Run the following Oracle Utilities Digital Asset Cloud Service batch processes:

- Enrollment - Sync Request Monitor Process
- Program Rule - Sync Request Monitor Process
- Aggregator - Sync Request Monitor Process
- Device Score Batch Processes

Enrollment - Sync Request Monitor Process

Sync Request Monitor Process is the batch process to run the sync request to send enrollment out from Oracle Utilities Digital Asset Cloud Service.

- **F1-SYNRQ - Sync Request Monitor Process:** It is a generic batch process that is used for different synchronization processes. It includes parameters that can be used to control which synchronization request to process.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	F1-SYNC REQ
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	true
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	X1-NMSDigitalAssetCustSync
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	PENDING

Program Rule - Sync Request Monitor Process

Sync Request Monitor Process is the batch process to run the sync request to send program rule out from Oracle Utilities Digital Asset Cloud Service.

- **F1-SYNRQ - Sync Request Monitor Process:** It is a generic batch process used for different synchronization processes. It includes parameters that can be used to control which synchronization request to process.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	F1-SYNC REQ

Batch Parameters	Parameter Description	Value
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	true
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	X1-GridEdgeDERMSPrgRuleSync
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	PENDING

Aggregator - Sync Request Monitor Process

Sync Request Monitor Process is the batch process to run the sync request to send aggregator out from Oracle Utilities Digital Asset Cloud Service.

- **F1-SYNRQ - Sync Request Monitor Process:** It is a generic batch process used for different synchronization processes. It includes parameters that can be used to control which synchronization request to process.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	F1-SYNC REQ
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	true
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	X1-GridEdgeDERMSAggregatorSync
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	PENDING

SP Network Location Batch Processes

These batch processes need to be run to upload the file, create or update the facilities for the transformer, feeder and substation and create or update the network location and link it to the SP.

Schedule the following batch jobs in the order they are listed below:

- **D1-NLUP - Network Location File Upload:** This batch process uploads and creates a synchronization request for each record in the file to Oracle Utilities Digital Asset Cloud Service.

Batch Parameters	Parameter Description	Value
fileName	File Name	drms* Example DERMS filename: drms-model-Site1-20250401161043-1450-438355399355923500.csv
filePath	File Path to get the file	
charEncoding	Character Encoding	Default to UTF-8
processedFileExtension	Processed File Extension	PROCESSED
errorOnNoFilesFound	Error When No Files Found	true
externalSystem	External SystemDRMS	DRMS

- **D1-MNLOC – Maintain Network Location:** This batch process maintains the network location and creates the facility if the transformer, feeder or substation does not exist in Oracle Utilities Digital Asset Cloud Service.

Batch Parameters	Parameter Description	Value
DIST-THD-POOL	Thread Pool Name	DEFAULT
maxErrors	Override maximum errors	
overrideLowIdValue	Override Low Id Value	00000000000000
overrideHighIdValue	Override High Id Value	99999999999999
idRangeOverrideClass	Custom Id Range Class	
emailMode	Email Mode	

- **D1-SNLPE – SP NW Loc Sync Request – Pending (deferred):** This batch process create or update the Network Location and link it to the SP.

Batch Parameters	Parameter Description	Value
maintenanceObject	Maintenance Object	F1-SYNCREQIN
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	true
restrictToType	Restrict By Related Type	

Batch Parameters	Parameter Description	Value
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	D1-SyncReqInSPNetworkLocation
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	PENDING

- **D1-SNLPE – SP NW Loc Sync Request – Pending (deferred):** This batch process create or update the Network Location and link it to the SP.

Batch Parameters	Parameter Description	Value
maintenanceObject	Maintenance Object	F1-SYNCREQIN
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	true
restrictToType	Restrict By Related Type	
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	D1-SyncReqInSPNetworkLocation
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	VALID_ERROR

Device Score Batch Processes

These batch processes calculate and send out the device score to Oracle Utilities Edge Distributed Energy Resources Management System. Schedule the following batch jobs in the order they are listed below:

- **X1-CALAS - Calculate Asset Score**: This batch process monitors controllable assets that are currently installed on a device location and enrolled in a device control program. It triggers the calculation of device's score based on its previous program event participation, as well as other factors set on a program score calculation rule.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	W1-ASSET

Batch Parameters	Parameter Description	Value
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	False
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	X1-Controllable Asset
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	INSTALLED

- **X1-SDCSE - Smart Device Control Score Extract**: This batch process creates the device score extract file.

Batch Parameters	Parameter Description	Value
maintenanceObject	Sync Request maintenance object	F1-SYNC REQ
isRestrictedByBatchCode	The value of true restrict processing to sync requests whose current state is linked to this batch code.	True
restrictToBusinessObject	Enter a business object code here to limit the process to sync requests linked to this business object.	X1-NMSDigitalAssetCustSync
restrictToBOStatus	Enter a status code to limit the process to sync requests in this state.	PENDING

Managing Web Service Catalog

The web service catalog is used by Oracle Integration Cloud to communicate with the respective application. It is used to identify the services that should be retrieved by the Oracle Utilities Adapter. It is configured in the **Catalog URL** in the Oracle Integration Cloud connection.

To configure the catalog in Oracle Utilities Digital Asset Cloud Service:

1. Log in to Oracle Utilities Digital Asset Cloud Service.
2. Navigate to **Admin** > **[W or Integration]** > **Web Service Catalog**. Alternatively, you can search for the **Web Service Catalog** page from the **Search** menu.
3. Select **REST Web Service Class**.

4. Add the following REST inbound web services to the catalog.

Service Type	Service Name	Description
Inbound Web Service	F1-HealthCheckREST	Health Check
Inbound Web Service	F1-SyncRequest	Master Data Synchronization
Inbound Web Service	X1-ControllableDeviceStatus	Controllable Device Status
Inbound Web Service	X1-ProgramEnrollment	Program Enrollments
Inbound Web Service	X1-ProgramEvent	Program Event
Inbound Web Service	X1-ProgramEventParticipation	Program Event Participation

5. If applicable, for outbound messages, add the External System that was set up previously.

For more information about configuration, refer to the Oracle Utilities Work and Asset Cloud Service documentation available at Oracle Help Center.

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 available at Oracle Help Center.

Chapter 4

Configuring Oracle Utilities Edge Distributed Energy Resources Management System

This chapter focuses on configuring the Oracle Utilities Edge Distributed Energy Resources Management System parameters related to the integration.

- Configuring DRMS Parameters in Oracle Utilities Edge Distributed Energy Resources Management System

For more information about Oracle Utilities Edge Distributed Energy Resources Management System, refer to the Oracle Utilities Network Management System (NMS) documentation available at Oracle Help Center.

Configuring DRMS Parameters in Oracle Utilities Edge Distributed Energy Resources Management System

Configure the following DRMS parameters in Oracle Utilities Edge Distributed Energy Resources Management System to establish the communication between Oracle Utilities Edge Distributed Energy Resources Management System and Oracle Integration Cloud, as well as for controlling other parameters related to the integration.

DRMS Parameters

The DRMS parameters can be populated from:

- The Oracle Utilities Edge Distributed Energy Resources Management System application > Tools Selection > DERMS Configuration Parameters User Interface (UI) or
- Using the SQL files to load the DRMS_Parameters table.

Oracle Integration Cloud (OIC) Endpoint URL

Oracle Utilities Edge Distributed Energy Resources Management System invokes the endpoint URL to send outbound messages to Oracle Integration Cloud.

Attribute	Value
OIC_STATUS_ACK_URL (Device Status Check Ack Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DRMS_DACS_DEV_STAT_ACK/1.0/status-check-ack-to-dacs
OIC_RESERVE_DEVICE_URL (Event Device Reservation Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL_BA_DRMS_DACS_EVT_DVCRESV/1.0/reserveDevice
OIC_ENROLL_URL (Enrollment Request Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DRMS_DACS_ENROLLRQ/1.0/enroll-to-dacs
OIC_ENROLL_ACK_URL (Enroll Sync Ack Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DRMS_DACS_SYNC_ACK/1.0/sendEnrollAck
OIC_DEVICE_OUTCOME_DACS_URL (Event Device Outcome Process Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DRMS_DACS_EVT_OUTC_TRNFR/1.0/eventOutcome

Attribute	Value
OIC_STAGE_STATUS_CHANGE_URL (Program Event Status Update Flow)	https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/OUTL-BA-DRMS_DACS_PEVNT_STAT_UPD/1.0/statusUpdate
OIC_MODEL_EXPORT_URL (SP Network Location Transfer Flow)	https://hostname:port/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-DACS_DERMS/ OUTL-BA-DERMS_DACS_SPNWLOC_TRNFR/1.0/spNetworkLocSync

Oracle Integration Cloud (OIC) Security Credentials

Oracle Utilities Edge Distributed Energy Resources Management System uses these credentials to connect to Oracle Integration Cloud.

Attribute	Value
Populate the following when using OAuth Client Credential to access OIC.	
config.auth.token.url	URL for requesting OAuth token to be used for outgoing requests. If this parameter is not specified, then the basic http authentication will be used.
config.auth.token.scope	The scope value used when requesting OAuth token to be used for outgoing requests.
config.auth.token.user	Client ID User for requesting OAuth token to be used for outgoing requests.
config.auth.token.pwd	Client Secret Password for requesting OAuth token to be used for outgoing requests. This parameter should be encrypted. For testing, this can be plain text.
config.auth.timeout	OAuth communication timeout (seconds)
Populate the following when using Basic Authentication to access OIC.	
OIC_USER	Define the OIC username.
OIC_Password	Define the OIC password.

DERMS Security Credentials to Receive REST Messages

Oracle Utilities Edge Distributed Energy Resources Management System uses these credentials to receive REST messages.

Attribute	Value
NMS_URL	The NMS URL to receive REST Messages.

Attribute	Value
Populate the following when using OAuth to receive REST messages.	
config.auth.jwk	Either URL for requesting token signing certificate from OAuth server or the certificate itself. If this parameter is not specified, then incoming requests with bearer token authentication will be rejected with error 401 (Unauthorized). In production environments, it is recommended to configure the certificate itself instead of URL.
config.auth.allow.user	Username used for validating OAuth tokens in incoming requests. It should match the principal or (if principal not provided) subject in the received token.
config.auth.allow.scope	Scope value used for validating OAuth tokens in incoming requests. It should match one of the scope values in the received token.
Populate the following when using Basic Authentication receive REST Messages.	
NMS_USER	NMS user. This can be encrypted using the WLS key.
NMS_PASS	NMS password. This can be encrypted using the WLS key.

Other Attributes Related to the Integration

Attribute	Value
DERMS_SITE	Site ID passed in the messages to OIC as drmsInstanceId.
MAX_FILE_RECORDS	Maximum number of records to write in a file for Event Device Reservation, Event Device Outcome and SP Network Location. Default value is 1000.
MAX_RETRIES	Set the value to the number of retries DERMS will perform upon receiving a technical fault or negative acknowledgment. **Note**: The drms_outbound_messages database table holds the outbound messages to be resent when the ack 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'.

Attribute	Value
OIC_NOTIFY_STAGE_ STATUSES	Stage Status updates to send to Digital Asset Cloud Service (DACS). • Default statuses sent: SCHEDULED,CANCELED,IN_PROGRESS,COMPLETED • Valid values: PLANNED,SCHEDULED, IN_PROGRESS, COMPLETED ,CANCELED,FORCED_CANCELED
USE_OUAI_REDUCTION_ FCAST	This flag determines if the OUAI-based reduction forecast has to be used. Default: false
OIC_MODEL_EXPORT_SCHED ULE	Schedule for sending network model information to OIC web service. Schedule is configured using unix-line cron expressions comprised of 5 required fields separated by white space. The fields are as follows: minutes, hours,day-of-month, month,day-of-week Example: '0 21 * * ?' executes every day at 21:00
ASSET_MGR	The DER manager class. Default: DACSMgr Make sure this is set to DACS Mgr to send the outbound message out.

Chapter 5

Importing, Configuring, and Testing Integration Connections

This chapter explains how to import an Oracle Accelerator Project (which imports the connections, integrations, lookups, and libraries) into an Oracle Integration Cloud instance. It also explains the configuration info of the imported connections, agents, and security certificates.

It includes the following sections:

Importing the Oracle Accelerator Project from Oracle Cloud Marketplace

All integration points are shipped as part of a single accelerator project (.car) file.

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

1. Launch the Oracle Cloud Marketplace portal.
2. Click **Applications**.
3. Search for "Utilities Digital Asset Cloud Svc. to Distributed Energy Resource Mgmt. System".
4. In **Filter by Region/Country**, select the **North America** checkbox.
5. Select the pre-built integration project.
6. Click **GetApp**.
7. Review and accept "Oracle Standard Terms and Restrictions".
8. Click **Next**. My Oracle Support portal opens.
9. From the integration artifacts table, click the link to download the DACS-DERMS Business Accelerator Project (.car) file: OUTL-BA-DACS_DERMS-01.25.0401.car.
10. Perform the following steps before importing the new Accelerator Project (.car) file into your Oracle Integration Cloud instance.
    a. Take a backup of the existing customized integrations and lookups.
    b. Perform cleanup by deactivating and deleting the existing flows, connections, lookups, libraries used in the integration and the (.par) project file.

    Note: If your previous pre-built integration was package based (.par file), you will see the following:

    - The package is visible on the **Design-Packages** page in your Oracle Integration Cloud instance.
    - The individual integration flows are visible on the **Design-Integrations** page. Each integration flow is designated with an Accelerator and BUILT BY ORACLE message displayed.
11. In the **Navigation** pane, click **Projects**.
12. Click **Add**.
13. Select **Import Project**, then drag-and-drop the (.car) file downloaded from Oracle Cloud Marketplace.

    Note: Make sure to select the **Anyone can edit, view, and monitor** checkbox.
14. The new project will show up in the list but with a status of **Configured** due to the connections not being completed yet.
15. Click **Project Edit** and follow the verification and configuration steps documented in the following sections.
16. If all configurations are complete, activate the integration by:
    - Clicking **Activate** in the **Design** page.
    - Or activate the latest deployment plan in the **Deploy** page.

Verifying the Project Import

To verify the project was imported successfully, go to the **OU DACS DERMS** project:

1. In the **Integrations** section of the project, verify that the following integrations (version 1.25.0400) were imported successfully:
   - OU DERMS DACS Enrollment Request
   - OU DACS DERMS Enrollment Sync
   - OU DERMS DACS Enroll Sync Ack
   - OU DACS DERMS Device Status Check
   - OU DERMS DACS Device Status Ack
   - OU DACS DERMS Device Score FTP Transfer
   - OU DACS DERMS Device Score OS Transfer
   - OU DERMS DACS Program Event Status Update
   - OU DERMS DACS Event Device Reserve
   - OU DERMS DACS Event Device Outcome Process
   - OU DACS DERMS Customer Event Opt-Out Update
   - OU DACS DERMS Aggregator Sync
   - OU DERMS DACS Aggregator Sync Ack
   - OU DACS DERMS Program Rule Sync
   - OU DERMS DACS Program Rule Sync Ack
   - OU DERMS DACS SP Network Location Transfer
   - OU DACS Common FTP Transfer
   - OU DACS Common OS Transfer
   - OU DACS DERMS Common Error Handler
2. In the **Connections** section of the project, verify that the following connections are imported successfully:
   - OU REST DACS for DACS-DERMS
   - OU REST DERMS for DACS-DERMS
   - OU REST for DACS-DERMS
   - OU REST MP OIC for DACS-DERMS
   - OU FTP DACS for DACS-DERMS
   - OU REST DACS Object Storage for DACS-DERMS
3. In the **Lookups** section of the project, make sure that the following lookups are imported successfully:
   - OUTL-BRT-DACS_DRMS_AllowEventDays
   - OUTL-BRT-DACS_DRMS_AssetType
   - OUTL-BRT-DACS_DRMS_AssetSpec
   - OUTL-BRT-DACS_DRMS_ConfigProps

- OUTL-BRT-DACS_DRMS_CycleFrequency
- OUTL-BRT-DACS_DRMS_DeviceLocationStatus
- OUTL-BRT-DACS_DRMS_Email_ID
- OUTL-BRT-DACS_DRMS_EnrollmentStatus
- OUTL-BRT-DACS_DRMS_EventOutcome
- OUTL-BRT-DACS_DRMS_EventType
- OUTL-BRT-DACS_DRMS_Routing
- OUTL-BRT-DACS_DRMS_StageStatus
- OUTL-BRT-DACS_DRMS_WeekDay

Configuring Connections in Oracle Integration Cloud

After the project is imported and verified, configure the respective connections.

This section describes the procedure to configure the following:

- OU REST DACS for DACS-DERMS Connection
- OU REST DERMS for DACS-DERMS Connection
- OU REST for DACS-DERMS Connection
- OU REST MP OIC for DACS-DERMS Connection
- OU FTP DACS for DACS-DERMS Connection
- OU REST DACS Object Storage for DACS-DERMS Connection

OU REST DACS for DACS-DERMS Connection

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

To configure the connection:

1. Add the Oracle Utilities Digital Asset application catalog URL in the **Catalog URL** field.
   - For Oracle Utilities Digital Asset Management on-premises application, the catalog format is:

     `https://{host}:{port}/{context}/rest/ouaf/openapi/iws/catalog`

     Example: `https://dacsHost:port/ouaf/rest/ouaf/openapi/iws/catalog`
   - For Oracle Utilities Digital Asset Cloud Service, the catalog format is:

     `https://{host}:{port}/{tenant}/{domain}/{appName}/rest/openapi/iws/catalog`

     Example: `https://dacsHost:port/tenantName/test/dac/rest/openapi/iws/catalog`

2. In the **Security** section, select the applicable security policy to access the application.

   Note: See Create Oracle Utilities Adapter Connection in the Oracle Utilities Adapter documentation for more information on the supported security policies.

3. Once connected to Oracle Utilities Digital Asset Management on-premise application, configure the agent.
   a. In the **Agent Group** section, click **Configure Agents**.
   b. Select the agent group from the list created in **Creating an Agent Group**.
4. On the **Connection** page, click **Test** at the upper-right corner.
5. Once the connection has been tested successfully, click **Save**.

OU REST DERMS for DACS-DERMS Connection

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

To configure this connection:

1. Add the Oracle Utilities Edge Distributed Energy Resources Management System catalog URL in the Catalog URL field.

   Catalog format: `https://{host}:{port}/nms-drms/rest/v1/catalog`

   Example: `https://dermshost:port/nms-drms/rest/v1/catalog`

2. In the **Security** section, select the applicable security policy to access the application.

   Note: See Create Oracle Utilities Adapter Connection in the Oracle Utilities Adapter documentation for more information on the supported security policies.

3. Once connected to the Oracle Utilities Digital Asset Management on-premise application, configure the agent:
   a. In the **Agent Group** section, click **Configure Agents**.
   b. Select the agent group from the list created in Creating an Agent Group.
4. On the **Connection** page, enter the username and click **Test** at the upper- right corner to test the connection.
5. After the connection is tested successfully, click **Save**.

OU REST for DACS-DERMS Connection

This connection is used to expose the integration as a REST service.

To configure this connection:

1. Select **OAuth 2.0** or **Basic Auth** for the **Security policy**, and select **Role** as **Trigger**.
2. On the **Connection** page, click **Test**.
3. Once the connection has been tested successfully, click **Save**.

OU REST MP OIC for DACS-DERMS Connection

This connection is used to invoke local integrations that can accept a multipart request for passing a multipart attachment reference using the REST adapter.

To configure this connection:

1. In the **Connection Properties** section, select the "REST API Base URL" for the **Connection Type**.
2. Add the OIC connection URL.

   Example: https://OIC_CloundInstance.com
3. Select OAuth client Credentials as **Security Policy**, for this security type also add the **Access Token URI**, **Client Id**, **Client Secret** in Security and under Optional Security add the **Scope** and choose Send client credentials as basic auth header for **Client Authentication**.

   Or if you select **Basic Auth** on the **Security** tab than 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 FTP DACS for DACS-DERMS Connection

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

To configure this connection:

1. In the **Connection Properties** section, enter the **FTP Server Host Address** and the **FTP Server Port**.
2. Expand **Optional Properties**, then select **Yes** for **SFTP Connection**.
3. In the **Security** section, select the applicable security policy for your Utilities Digital Asset Application FTP Server. For example, you can select the **FTP Server Access** policy on the **Security Policy** tab, then enter the Oracle Utilities Digital Asset Cloud Service FTP Server username and password.

   Note: For more information on the supported security policies, see Create an FTP Adapter Connection in the Integration 3 documentation.
4. Configure the appropriate **Agent Group** if applicable.
5. On the **Connection** page, click **Test**.
6. Once the connection has been tested successfully, click **Save**.

   Note: Make sure the FTP Server is set up and configured in Oracle Utilities Digital Asset Cloud Service.

OU REST DACS Object Storage for DACS-DERMS Connection

This connection is used to communicate with Oracle Infrastructure Cloud Object Storage Service APIs 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.

   Connection Type: REST API Base URL

   Connection URL format: `https://objectstorage.{region}.oraclecloud.com`

   Note: To see the Object Storage Service API and endpoints, refer to the Oracle Cloud Infrastructure documentation/API Reference and Endpoints.

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)

      Note: For more information, refer to the Object Storage Setup Guide 20C.
3. 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 Edge Distributed Energy Resources Management System on-premises and .

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 the connectivity agent installer, see the following:

- Download and Run the Connectivity Agent Installer for Oracle Integration Cloud Generation 2
- Download and Run the Connectivity Agent Installer for Oracle Integration Cloud Generation 3

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.

      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 listed in the following

      - Download and Run the Connectivity Agent Installer for Oracle Integration Cloud Generation 2
      - Download and Run the Connectivity Agent Installer for Oracle Integration Cloud Generation 3

   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.

Setting up Certificates for Security

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

If there are no valid certificates for this integration, download the Oracle Utilities 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 Edge Distributed Energy Resources Management System/Oracle Utilities Digital Asset Cloud Service.

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

1. Login to Oracle Utilities Digital Asset Cloud Service/Oracle Utilities 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 6

Configuring Lookups, Error Handling, and Email Notifications

This chapter focuses on configuring the lookups, handling business and technical errors, and sending email notifications. It includes the following sections:

Configuring Lookups

This section describes the lookups and the configuration details in the integration:

Lookups

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

Lookup Name	Integration Name	Purpose
OUTL-BRT-DACS_DRMS_AllowEventDays	OU DACS DERMS Program Rule Sync	Translates DACS Program Rule Allow Event Days Flag to the DERMS Program Rule Allow Event Days Flag
OUTL-BRT-DACS_DRMS_AssetType	OU DERMS DACS Enrollment Request	
OUTL-BRT-DACS_DRMS_AssetSpec	OU DERMS DACS Enrollment Request	Translates DERMS device make and model (format MAKE!MODEL) to DACS asset specification.
OUTL-BRT-DACS_DRMS_ConfigProps	• OU DACS DERMS Aggregator Sync • OU DERMS DACS Aggregator Sync Ack • OU DACS DERMS CommonErrorHandler • OU DACS DERMS Customer Event Opt-Out Update • OU DACS DERMS Device Score FTP Transfer • OU DACS DERMS Device Score OS Transfer • OU DACS DERMS Device Status Check • OU DERMS DACS Device Status Ack • OU DERMS DACS Enrollment Request • OU DACS DERMS Enrollment Sync • OU DERMS DACS Enroll Sync Ack • OU DERMS DACS Event Device Reserve • OU DERMS DACS Event Outcome Process • OU DERMS DACS Program Event Status Update • OU DACS DERMS Program Rule Sync • OU DERMS DACS Program Rule Sync Ack • OU DERMS DACS SP Network Location Transfer	Generic properties and default values used in the integration's business logic and mappings

Lookup Name	Integration Name	Purpose
OUTL-BRT-DACS_DRMS_CycleFrequency	OU DACS DERMS Program Rule Sync	Translates DACS Program Rule Frequency to the DERMS Program Rule Frequency. This is the cycle frequency for which the Program Rule is applicable. 1-to-1 relationship between each Program Rule and Frequency.
OUTL-BRT-DACS_DRMS_DeviceLocationStatus	OU DACS DERMS Enrollment Sync	Translates device status values between applications
OUTL-BRT-DACS_DRMS_Email_ID	• OU DACS DERMS Common Error Handler • OU DACS DERMS Customer Event Opt-Out Update • OU DACS DERMS Device Score FTP Transfer • OU DACS DERMS Device Score OS Transfer • OU DERMS DACS Event Device Reserve • OU DERMS DACS Event Outcome Process • OU DERMS DACS SP Network Location Transfer	Provides the email information to send error details: • **to** property contains the email address(es) of people who handle technical issues like network connection issues, 401 unauthorize issues. • **to.ProcessNotification** property contains the email address(es) of business or application users in DACS and/or DERMS.
OUTL-BRT-DACS_DRMS_EventType	• OU DERMS DACS ProgramEvent Status Update	Translates event type between applications
OUTL-BRT-DACS_DRMS_Routing	• OU DACS DERMS Customer Event Opt-Out Update • OU DACS DERMS Device Status Check • OU DERMS DACS Event Device Outcome Process • OU DACS DERMS Enrollment Sync • OU DERMS DACS Event Device Reserve • OU DACS DERMS Program Rule Sync • OU DACS DERMS Aggregator Sync • OU DERMS DACS SP Network Location Transfer	This lookup is used to route the DERMS environment instances to the DACS CIS Division
OUTL-BRT-DACS_DRMS_EnrollmentStatus	OU DERMS DACS Enrollment Request	Translates the enrollment status to code
OUTL-BRT-DACS_DRMS_EventOutcome	OU DERMS DACS Event Outcome Process	Translates the incoming event outcome to DACS code

Lookup Name	Integration Name	Purpose
OUTL-BRT-DACS_DRMS_StageStatus	OU DERMS DACS ProgramEvent Status Update	Translates stage status values between applications
OUTL-BRT-DACS_DRMS_WeekDay	OU DACS DERMS Program Rule Sync	Translates DACS Program Rule Week Start to the DERMS Program Rule Week Start. This is applicable for cycle frequency of Weekly.

Editing Lookups

To edit a lookup:

1. Login to Oracle Integration for Cloud.
2. Navigate to **Projects**.
3. Select the project and go to the **Lookups** section of the project.
4. Click **Save** and **Close**.

Lookup Tables

This section lists the lookup tables in this integration.

Lookup: OUTL-BRT-DACS_DRMS_AllowEventDays

The values released in this lookup are the values defined in the edge applications. You need not configure this lookup unless there are custom values.

DACS_AllowEventDays	DERMS_AllowEventDays	Description
X1AD	All_Days	All Days
X1WE	Weekend	Weekend
X1WD	Weekdays	Weekdays

Lookup: OUTL-BRT-DACS_DRMS_AssetSpec

DRMS_MAKE_MODEL	DACS_SPECIFICATION	Description
NEST!N3GEN	EST_G3_SPEC	Value for DACS/DERMS for device

Lookup: OUTL-BRT-DACS_DRMS_AssetType

DRMS_ASSET_TYPE	DACS_ASSET_TYPE	Description
SMART_THERMOSTAT	SMART THERMOSTAT	Value for DACS/DERMS for type of device

Lookup: OUTL-BRT-DACS_DRMS_CycleFrequency

The values released in the lookup are the defined values in the edge applications. No need to configure this lookup unless there are custom values.

DACS_Frequency	DERMS_Frequency	Description
X1DY	Daily	Daily
X1MT	Monthly	Monthly
X1SE	Seasonal	Seasonal
X1WK	Weekly	Weekly

Lookup: OUTL-BRT-DACS_DRMS_DeviceLocationStatus

DACS_DEVICE_LOC_STATUS	DRMS_DEVICE_STATUS	Description
D1YS	Active	Value for DACS/DERMS for active or inactive device
D1NO	Inactive	

Lookup: OUTL-BRT-DACS_DRMS_EnrollmentStatus

Property Name	Value	Description
PENDING	SUCCESS	
ERROR	ERROR	
VALERROR	ERROR	
FAILURE	ERROR	
10589	SUCCESS	Duplicate errors can be ignored

Lookup: OUTL-BRT-DACS_DRMS_Email_ID

Property Name	Sample Value	Description
From	admin@myCy.com	The email address used to identify who is sending the notification. This value is the default email address for all outgoing emails for this project.
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. These are likely the administrators or users who maintain the applications.

Property Name	Sample Value	Description
to.process.notification	busUserDist@myCy.com	The email address(es) who should receive notification 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 business or application users.

Lookup: OUTL-BRT-DACS_DRMS_EventOutcome

The values released in the lookup are the defined values in the edge applications. No need to configure this lookup unless there are custom values.

DRMS_EVENT_OUTCOME	Value	Description
0	D1SP	Successful participation
1	D1CN	Cancelled
2	D1ER	Error
3	D1IO	In-flight override
4	D1ND	Non-responsive device

Lookup: OUTL-BRT-DACS_DRMS_EventType

DRMS_EventType	DACS_EventType	Description
X1EC	X1EC	Economic Event Type
X1EM	X1EM	Emergency Event Type
X1DT	X1DT	
X1RE	X1RE	

Lookup: OUTL-BRT-DACS_DRMS_Routing

DRMS_Instance	DRMS_Site_Connection	DACS_CIS_Division	DACS_Connection
Attribute Value of DERMS SITE in DRMS Parameters	Name of OIC Connection	CIS Division value	Name of DACS Connection

Lookup: OUTL-BRT-OUAI_DACS_DRMS_StageStatus

DRMS_StageStatus	DACS_StageStatus	Description
CANCELED	F1CN	
COMPLETED	F1CO	
IN_PROGRESS	X1IP	

DRMS_StageStatus	DACS_StageStatus	Description
SCHEDULED	X1SD	

Lookup: OUTL-BRT-DACS_DRMS_WeekDay

The values released in the lookup are the defined values in the edge applications. No need to configure this lookup unless there are custom values.

DACS_Frequency	DERMS_Frequency	Description
1	SUN	Sunday
2	MON	Monday
3	TUE	Tuesday
4	WED	Wednesday
5	THU	Thursday
6	FRI	Friday
7	SAT	Saturday

Configuration Properties

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

Lookup: OUTL-BRT-DACS_DRMS_ConfigProps

Property Name	Sample Value	Description
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 besides the current default: 'email'
notification.email.error.flag	true	If the value is set to true, email notification will be sent out for errors. Valid values: true/false. Default to true. Also, setup the OUTL-BRT-DACS_DRMS_Email_ID 'to' property for the users or administrators who should receive the email.

Property Name	Sample Value	Description
notification.email.pro cess.complete.flag	true	If the value is set to true, email notification will be sent out when the process is completed. Valid values: true/false. Default to true. This is used by flows doing file processing. Also, setup the OUTL-BRTDACS_DRMS_Email_ID 'to.process.notification' property for the users who should receive the email.
notification.email.pro cess.nofile.flag	true	If the value is set to true, email notification will be sent out when no file was processed. Valid values: true/false. Default to true. This is used by flows doing file processing. Also, setup the OUTL-BRTDACS_DRMS_Email_ID 'to.process.notification' property for the users who should receive the email.
dacs.enrollmentSource.default	X1BY	Default to X1BY (Bring Your Own). This is used in Enrollment Request flow. Valid Values: • X1BY - Bring Your Ownm • X1CC - Contact Center • X1SS - Self Service
dacs.prefixtag.fileuploaded	Sent-	Prefix to append to the filename from DACS that has been transferred successfully to the target location. Shared property for all file related flows in this integration.
dacs.prefixtag.filenot uploaded	Error-	Prefix to append to the filename from DACS to mark the file as error or not uploaded to the target location. Shared property for all file related flows in this integration.
dacs.file.target.transfer.pref	os or ftp	
dacs.os.namespace	dacsnamespace	DACS Object Storage namespace serves as a container for all DACS related buckets and objects. It is used when calling the Object Storage APIs. Required to be populated when DACS is in the cloud.

Property Name	Sample Value	Description
dacs.dvcScore.extract .filename.prefix	DeviceScore	Device Score Extract file name prefix. It should have the same beginning value as the batch parameter filename in Batch Process X1-SDCSE. Integration use this for filtering the file(s) to pick up from DACS file location by the Device Score flows.
dacs.dvcScore.ftp.input.directory	/sploutput/ DACSEnv/ DvcScore	DACS FTP directory where the Device Score extract files are stored for OIC to pick up from. Required to be populated when DACS is on-premises.
dacs.os.dvcScore.bucket name	DACS_DVCSCORE	Define the bucket name where the Device Score Extract files are stored in the DACS Object Storage for OIC to pick up from. It is used when calling the Object Storage APIs. Required to be populated when DACS is in the cloud.
dacs.spNtwkLoc.ftp.input.directory	/sploutput /DACSEnv / SPNtwkLocInput Dir	DACS FTP directory where the SP Network Location files are dropped by the OIC flow for DACS to pick up from. Required to be populated when DACS is on premises.
dacs.spNtwkLoc.os.bucketname	DACS_SPNetworkLoc	Define the bucket name where the SP Network Location files are dropped in the DACS Object Storage by OIC flow for DACS to pick up from. It is used when calling the Object Storage APIs. Required to be populated when DACS is in the cloud.
dacs.error.ack.messagecategory	11114	DACS - Integration Message Category
dacs.error.ack.messagenumber	31002	Error occurred while processing request to NMS %1%2%3%4%5%6%7%8%9
syncAckDelayInSeconds	3	Value is in seconds. Delay before seeing an cknowledgement back. Used in Aggregator and Program Rule Sync Ack Flows.

Error Handling

This section describes the different ways errors are handled in the integration:

- Summary of Integration Error Handling
- Resubmitting the Error Instances in Oracle Integration Cloud

Summary of Integration Error Handling

Integration Process: DERMS DACS Enrollment Request

Type of Error	Action	Notification Type	Retry
Technical Fault Example: DACS is not accessible	• Send FAILURE ackType to DERMS • Process Stop	Error Email	Resend message from DERMS
Business Fault (For each record processing where DACS enrollProgram returns - Status VAL-ERROR or ERROR)	• Set Error to the record's responseCode and add to DERMS Responses Collection. • Process the next record. • At the end of the collection processing, send ERROR ackType and the response collection to DERMS.		None Enrollments created in DACS in Pending Status. DACS handles the business errors.
Business Fault (For each record processing DACS enrollProgram returns messageNumber = 10589)	• Error means the enrollment request already exists in DACS. • Ignore the error • Process the next record		None

Integration Process: DACS DERMS Enrollment Sync

Type of error	Action	Notification Type	Retry
Technical Fault Example: DERMS is not accessible	Process Stop	Error Email	Resend message from DACS
Business Fault Example: Cannot create the subscription in DERMS due to null CIS_PERSON_ID.	Process Stop	Send Enrollment Sync Ack with Error	Fix the data in DACS. Resend message from DACS.

Integration Process: DACS DERMS Device Status Check

Type of error	Action	Notification Type	Retry
Technical Fault Example: DERMS is not accessible	Process Stop	Error Email	Resend message from DACS

Integration Process: DERMS DACS Program Event Status Update

Type of error	Action	Notification Type	Retry
Technical Fault Example: DACS is not accessible	• Send FAILURE ackType to DERMS • Process Stop	Error Email	Resend message from DERMS
Technical Fault (When HTTP 400 encountered)	• Send FAILURE ackType to DERMS • Process Stop	Error Email	Resend message from DERMS

Integration Process: DERMS DACS Event Device Reservation

Type of error	Action	Notification Type	Retry
Technical Fault (DACS HealthCheck API Error)	• Send FAILURE ackType to DERMS • Process Stop	Error Email	Resend message from DERMS
Technical Fault (Read File Error) Example: File Empty	• Send FAILURE ackType to DERMS • Process Stop	Error Email Process Complete Email - Error	Resend message from DERMS
Technical Fault (DACS Event Participation - Reserve Device API Error)	• Send FAILURE ackType to DERMS • Process Stop	Error Email Process Complete Email - Error	Resend message from DERMS
Business Fault	N/A		None DACS handles the business errors

Integration Process: DERMS DACS Event Device Outcome

Type of error	Action	Notification Type	Retry
Technical Fault (DACS HealthCheck API Error)	• Send FAILURE ackType to DERMS • Process Stop	Error Email	Resend message from DERMS

Type of error	Action	Notification Type	Retry
Technical Fault (Read File Error) Example: File Empty	• Send FAILURE ackType to DERMS • Process Stop	Error Email Process Complete Email - Error	Resend message from DERMS
Technical Fault (DACS Event Participation - Post Event Outcome API Error)	• Send FAILURE ackType to DERMS • Process Stop	Error Email Process Complete Email - Error	Resend message from DERMS
Business Fault	N/A		None DACS handles the business errors

Integration Process: DACS DERMS Customer Event Opt Out Update

Type of error	Action	Notification Type	Retry
Technical Fault Example: DERMS is not accessible	Process Stop	Error Email	No Retry Manual Update in DERMS
Business Fault (DERMS Response AckType = Error)	Process Stop	Error Email	No Retry Manual Update in DERMS

Integration Process: DACS DERMS Program Rule Sync

Type of error	Action	Notification Type	Retry
Technical Fault Example: DERMS is not accessible	Process Stop	Error Email	Resend message from DACS
Business Fault (DERMS Response AckType = Error	Process Stop	Error Email	Resend message from DACS

Integration Process: DACS DERMS Aggregator Sync

Type of error	Action	Notification Type	Retry
Technical Fault Example: DERMS is not accessible	Process Stop	Error Email	Resend message from DACS
Business Fault (DERMS Response AckType = Error	Process Stop	Error Email	Resend message from DACS

Integration Process: DERMS DACS SP Network Location Transfer

Type of error	Action	Notification Type	Retry
Technical Fault Example: Common OS or FTP Flow is not accessible	• Send FAILURE ackType to DERMS • Process Stop	Error Email Process Complete Email - Error	Resend message from DERMS
Business Fault (DERMS Response AckType = Error	N/A		None DACS handles the business errors

Integration Process: DACS DERMS Device Score

Type of error	Action	Notification Type	Retry
Technical Fault 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.
Partial Processing Technical Fault During Processing in Loop Example: DERMS is not accessible	Process Stop	Error Email Process Complete Email (also includes list of files not transferred)	Rename the file in DACS content server by removing the "Error-' prefix in the filename then manually run the OIC Process.
Business errors	N/A		

Resubmitting the Error Instances in Oracle Integration Cloud

In this integration, the flows initiated 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 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 when technical errors are encountered in Oracle Integration Cloud.

To receive an email notification:

1. Login to Oracle Integration Cloud.
2. Navigate to **Integrations** > **Designer** > **Lookups**.
3. Edit the **OUTL-BRT-DACS_DRMS_ConfigProps** lookup.

   Change the `notification.email.error.flag` property value to "true".
4. Edit the **OUTL-BRT-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** field, provide the comma separated email IDs.

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

Chapter 7

Customizations

In Oracle Integration Generation 3, you can customize an integration in an accelerator project by adding and configuring an extension group, which is what enables the integration customization by adding to the integrations in your accelerator project invoke connections (stitch, for-each, switch, map), integration actions, and global variables.

For more details on how to perform these changes, refer to Manage a Project in Using Integrations in Oracle Integration 3, and to the Knowledge Base article How To Extend Oracle Integration Cloud Gen3 Project (Doc ID 3017378.1).

Chapter 8

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 logs.

See the **Troubleshooting** section in the *Oracle Utilities Cloud Services Implementation Guide* on Oracle Help Center for more information.

Cloud Service Logs

The customer or system integrator can request access logs from cloud environments. Every Access Log request will require a service request to be logged in My Oracle Support.

On-Premise Application Logs

Application related error logs can be viewed from:

- DACS_ENV_NAME/logs/ or DACS_ENV_NAME/logs/system folder. Example: V27_DACS_ORA_WLS/logs/system/

See the Oracle Utilities Digital Asset Cloud Service documentation for details.

Oracle Integration Cloud

This section focuses on the monitoring of the Oracle Integration Cloud, as well as on the troubleshooting of issues related to the integration activation:

- Monitoring Integration Flows
- Troubleshooting

Monitoring Integration Flows

Integration flows are monitored from:

- Project (for project based integration instances)
- Observability (for non project based integration instances)

To monitor the integration flows within a project:

1. Login to Oracle Integration Cloud.
2. Click **Projects**. On the navigation pane, click the relevant project.
3. Navigate to the **Observe** menu, where you can consult the following:
   - **Integrations**: To view the counts of various status of instances created per integration flows.
   - **Instances**: To see instances of integrations of the project.
   - **Future runs**: To see all the runs scheduled or started for scheduled integrations.
   - **Audit**: To view and download design-time audit logs.

To monitor the integration flows through the Oracle Integration Cloud menu:

1. Login to Oracle Integration Cloud.
2. On the navigation pane, click **Observability**.
3. Select the following as required:
    - **Dashboards**: To monitor the complete integration information. Get at-a-glance information about the number and status of your projects, integrations, connections and more.
    - **Integrations**: The Monitor integrations page lets you view the message processing status of your running integrations. It shows how many messages have been received and processed and how many messages are successful, in error or aborted and errors have occurred, and how many messages have been aborted. To monitor each integration.
    - **Instances**: To filter and track the status of integration instances and show the flow trace/activity stream of the integration.
    - **Error**: To manage errors in Oracle Integrations. Resubmit failed instances, discard failed instances, view message recovery status, and view basic and detailed error messages.

      For more information, refer to Explore the Navigation Pane.

Troubleshooting

To troubleshoot the errors in the workflow through the generated instances, you can set tracing level to DEBUG to generate detailed logs.

To enable DEBUG:

1. Select **Configure Activation** and then select the **Tracing Level** to be 'DEBUG'.
2. Run the integration and check the activity stream which now will include the runtime log details of the flow.
3. If an activation fails, the Integrations page displays an error message. Some of the 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.
    - For Oracle Utilities Digital Asset Cloud Service initiated integration flows activated for the first time, ensure that Oracle Utilities Work and Asset Cloud Service catalog is configured accurately. All external systems and inbound web services used by the integration are defined in the catalog.

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 Digital Assets Cloud Service Integration to Oracle Utilities Edge Distributed Energy Resources Management System Release Notes* included in this release. The documentation is available at Oracle Help Center.