Oracle Utilities Customer Cloud Service Integration to Oracle Utilities Digital Asset Cloud Service

Configuration Guide

Release 23C

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Oracle Utilities Customer Cloud Service Integration to Oracle Utilities Digital Asset Cloud Service Configuration Guide, Release 23C

Contents

Preface

Welcome to the Oracle Utilities Customer Cloud Service Integration to Oracle Utilities Digital Asset Cloud Service Configuration Guide for release 23C. Use this information to learn what you need to configure the integration between Oracle Utilities Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service using Oracle Integration Cloud.

The preface includes the following:

Audience

This document is intended for anyone implementing the Oracle Utilities Customer Cloud Service integration with Oracle Utilities Digital Asset Cloud Service.

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 Customer Cloud Service Integration to Oracle Utilities Digital Asset Cloud Service documentation	https://docs.oracle.com/en/industries/energy-water/integrations-index.html
Oracle Utilities Customer Cloud Service documentation	https://docs.oracle.com/en/industries/energy-water/customer-cloud-service/index.html
Oracle Utilities Digital Asset Cloud Service documentation	https://docs.oracle.com/en/industries/energy-water/digital-asset-cloud-service/index.html

Additional Documentation

Resource	Location
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. 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

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

Conventions

The following text conventions are used in this document:

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

Acronyms

The following terms are used in this document:

Term	Expanded Form
DACS	Oracle Utilities Digital Asset Cloud Service
CCS	Oracle Utilities Customer Cloud Service
OIC	Oracle Integration Cloud
IWS	Inbound Web Service

Chapter 1

Overview

This chapter provides an overview of the integration between Oracle Utilities Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service 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 Customer Cloud Service integration to Oracle Utilities Digital Asset Cloud Service synchronizes customer information, mainly, customers (persons), accounts/service agreements (SAs), and service points (SPs) to Oracle Utilities Digital Asset Cloud Service.

About Oracle Utilities Customer Cloud Service

Oracle Utilities Customer Cloud Service is a customer care, service order, metering, and billing solution for traditional scalar devices and billing processes. The solution is designed to cater for utilities of all sizes, supports one to many utility service types, and handles the complexities associated with a utility's processes.

Oracle Utilities Customer Cloud Service includes:

- Customer information and customer lifecycle processing including:
  - Sales and marketing management
  - Customer information management for various types of customers, starting and stopping service, and supporting inbound and outbound customer care interactions.
  - Financial management including rating, billing, payment, and collections activities.
- Meter data management functionality, including:
  - Device and measurement data management including validating, editing, and estimating incoming data for traditional scalar devices.
  - Usage management for calculating billable usage or billing determinants to support traditional scalar billing processes.
- Service order management for orchestrating service order activities for traditional scalar device.
- Operational device management functionality, including:
  - Asset management, including location management and tracking of individual devices throughout their lifecycle, capturing device configurations and settings, and managing configuration between devices and components.
  - Oracle Utilities Cloud Service Foundation: Tools used to orchestrate and automate infrastructure related processes and migrate data from legacy applications into the cloud service.
  - Oracle Utilities Analytics Visualization: A suite of analytics applications that provides access to real-time data for self-service exploration, discovery, visualization, and analysis. It includes rich pre-built analytical data models, metrics, and key performance indicators that allow you to derive strategic insights from your data.

About Oracle Utilities Digital Asset Cloud Service

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

It comprises the following functional areas:

- **Asset and Device Management**: Maintenance of controllable assets, such as "smart" thermostats, electric vehicle chargers, storage batteries, and other types of devices.
- **Program Enrollment/Unenrollment**: Identifying specific customers that are eligible for particular programs, and establishing relationships between the customers, the programs, and if appropriate, device locations where one or more controllable devices are (or have been) installed.
- **Program Management**: Creation and maintenance of Demand Response Programs to which customers can subscribe and which allows utilities to temporarily alter the settings of specific devices in their homes as a response to periods of high demand.
- **Program Subscriptions**: Maintenance of a customer's program subscriptions that represent the customer's enrollment in a program and device registration. Program subscriptions link the customer to a program and device location where controllable devices are installed.
- **Demand Response Event Management**: Identification and reservation of a customer's controllable devices in response to usage demand.

About Oracle Integration Cloud

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

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

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

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

Software Requirements

The following software is required for the integration to work:

- Oracle Utilities Customer Cloud Service
- Oracle Utilities Digital Asset Cloud Service
- Oracle Integration Cloud

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

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

Prerequisites

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

In Oracle Utilities Customer Cloud Service, Person/Contact extract jobs only consider the Person Contact Details feature.

If the customer uses the legacy feature, Oracle Utilities Customer Cloud Service deployment uses the classic Phone Email feature.

There is an existing upgrade job (C1-INPUS - Create Person Contact from Person Phone/Email) that will move the classic phone/email details to the new contact details.

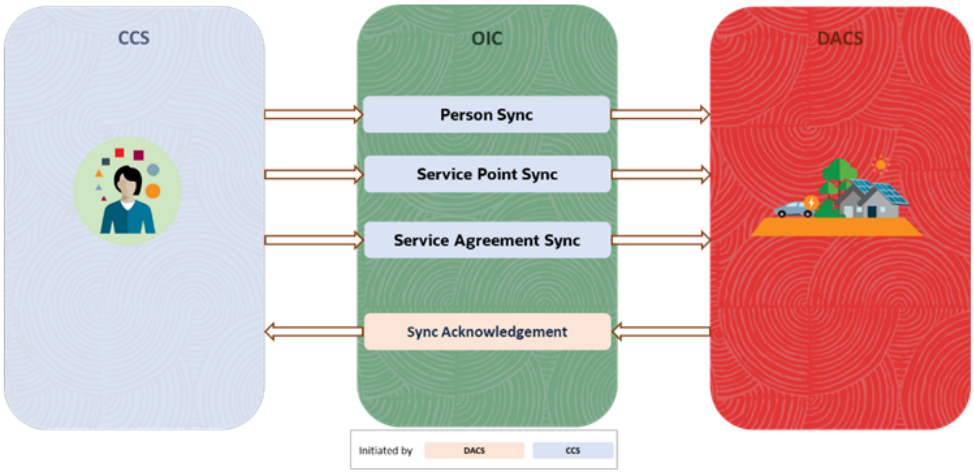
The following steps populate the Person Contact Type from Phone Type and creates the Person Contact Details for the person's emails and phones:

- Migrate Admin Data has been run: This creates the Person Contact Detail Type for primary email (PRIMARYEMAIL) and phone types.
- Submit the batch job (C1-INPUS) for Email mode with email person contact type - PRIMARYEMAIL to create the person contact details for email.
- Submit the batch job (C1-INPUS) for Phone Mode to create the person contact details for phone.

Supported Business Processes

This integration supports synchronization of customer data from Oracle Utilities Customer Cloud Service to Oracle Utilities Digital Asset Cloud Service.

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



The integration supports the following key functionalities:

- Synchronize Oracle Utilities Customer Cloud Service Master data to Oracle Utilities Digital Asset Cloud Service. Specifically, Oracle Utilities Customer Cloud Service Persons, Service Points, and Service Agreements. In Oracle Utilities Digital Asset Cloud Service, these become Contacts, Metered Service Points, and Metered Services. The extracted entities are created as tab-delimited records that are written to the extract file. The integration will move the extract file from the Oracle Utilities Customer Cloud Service extract folder to the Oracle Utilities Digital Asset Cloud Service upload folder for processing in Oracle Utilities Digital Asset Cloud Service.
- The integration supports an initial synchronization to extract the eligible Oracle Utilities Customer Cloud Service entities and upload them to Oracle Utilities Digital Asset Cloud Service.
- The integration also supports incremental synchronization. If an eligible entity is changed, a synchronization request is created to extract the data for synchronizing to Oracle Utilities Digital Asset Cloud Service.
- If configured, an acknowledgement, positive or negative, will be sent from Oracle Utilities Digital Asset Cloud Service to Oracle Utilities Customer Cloud Service for incremental synchronization only.

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 Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service 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 CCS REST APIs.
  - REST Adapter interacts with Oracle Cloud Infrastructure Object Storage APIs.
  - FTP Adapter interacts with the Oracle Utilities Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service on-premises server to list, get, and rename files in the server.
- Two types of email notifications can be configured in this integration, namely, business and technical error email notification. Email notifications are optional, but by default are enabled.
  - Business email notifications:

    Configure the following properties in the OUTL-BRT-CCS_DACS_ConfigProps lookup:

    - Property name `notification.email.process.complete.flag` to 'true' to receive email notification when the process is completed or partially processed. By default, this is set to 'true'.
    - Property name `notification.email.process.nofile.flag` to 'true' to receive email notification when no file is found in the source location. By default, this is set to 'true'.

    The recipient(s) of these email notification are configured in the `to.process.notification` recipients of the **OUTL-BRT_CCS_DACS_Email_ID** lookup. These are sent to the business users of the applications.
  - Technical error email notifications:

    Configure the following properties in the **OUTL-BRT-CCS_DACS_ConfigProps** lookup:

    - Property name `notification.email.error.flag` to 'true' to receive email notification when errors are encountered. By default, this is set to 'true'.

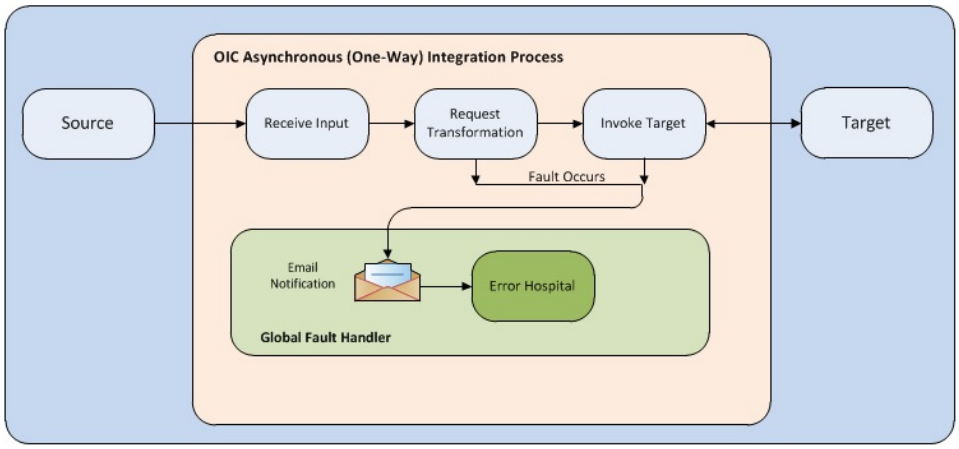
    The recipient(s) of the email notification sent out for technical errors is configured in the `to` recipients of the **OUTL-BRT-CCS_DACS_Email_ID** lookup. These are sent to the administrators of the applications.
- The **OUTL-BRT-CCS_DACS_ConfigProps** lookup is used to define the default values needed by the integration flows. Make sure the properties in the lookup are configured.

- 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

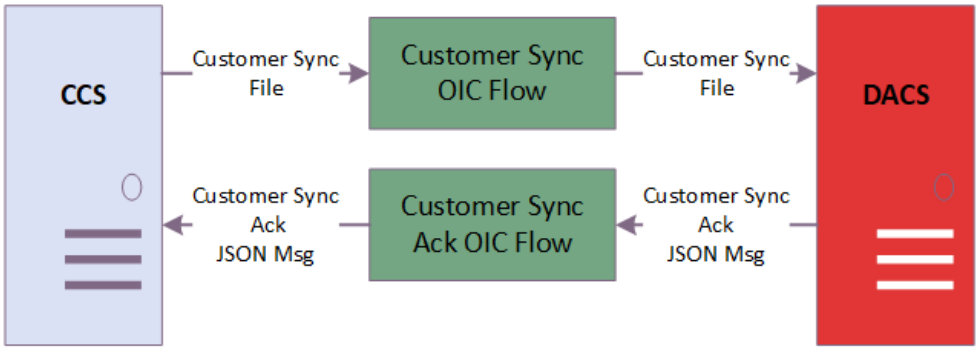
The one-way asynchronous integration process:

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 solution diagram for the integration between Oracle Utilities Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service is as follows:



Integration Flows

The integration supports the following processes:

- Customer Sync (Oracle Utilities Customer Cloud Service Initiated)
- Common Integration Flows
- File to File Transfer
- Common Child File Transfer Flows (Oracle Integration Cloud Initiated)
- Common Error Handler (Oracle Integration Cloud Initiated)

Customer Sync (Oracle Utilities Customer Cloud Service Initiated)

Oracle Utilities Customer Cloud Service manages customers (persons), accounts/service agreements (SAs), and service points (SPs). The customer data is extracted and sent to Oracle Utilities Digital Asset Cloud Service to maintain corresponding contacts, metered services, and metered service points.

Oracle Utilities Customer Cloud Service comprises two types of extraction processes:

- **Initial Load Synchronization**: The initial load is used to initially extract eligible Oracle Utilities Customer Cloud Service entities for loading into Oracle Utilities Digital Asset Cloud Service. The initial load process does not use synchronization requests in Oracle Utilities Customer Cloud Service. The batch job extracts the data straight to a file and no acknowledgement is expected for the initial load.
- **Incremental Synchronization**: The incremental synchronization process will extract additions/updates of eligible Oracle Utilities Customer Cloud Service entities to create or update in Oracle Utilities Digital Asset Cloud Service. When an eligible entity is added/updated, a synchronization request is created for the entity. The batch job will extract the entities to a file and the synchronization request is transitioned to "Awaiting Acknowledgement", where it waits for an acknowledgement from Oracle Utilities Digital Asset Cloud Service.

Tab-delimited records are created for each extracted Oracle Utilities Customer Cloud Service entity and the records are written to a csv file.

This integration process transfers the customer data file(s) from Oracle Utilities Customer Cloud Service's content server to Oracle Utilities Digital Asset Cloud Service's content server.

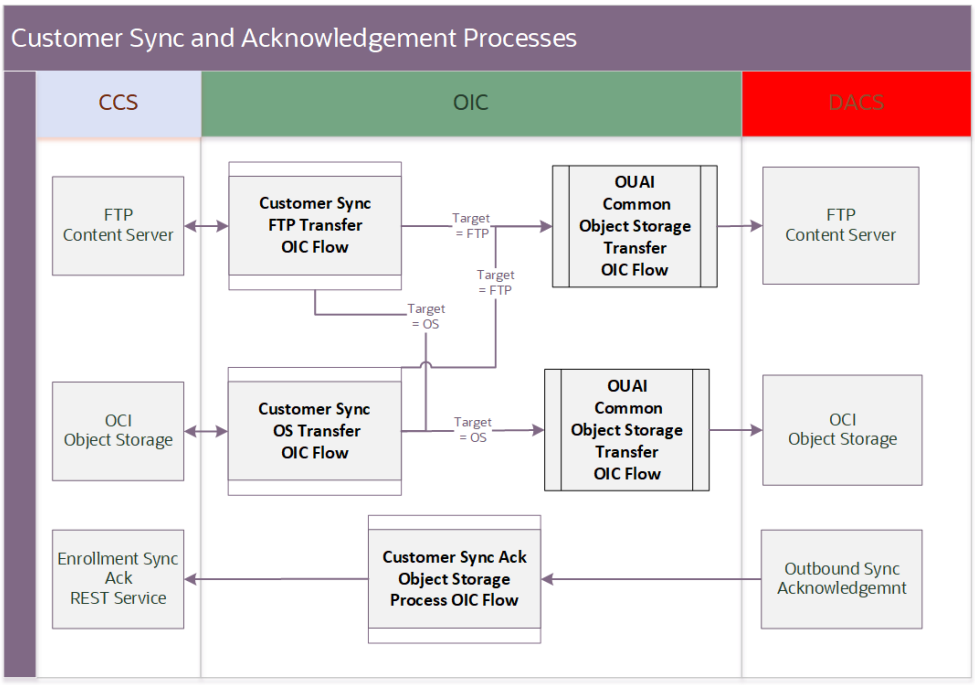
Oracle Utilities Customer Cloud Service can place the customer data files in an on-premises FTP server or in an Oracle Integration Cloud Object Storage location. Oracle Utilities Digital Asset Cloud Service can pick up the files in an on-premises FTP server or in an Oracle Integration Cloud Object Storage location.

Oracle Utilities Digital Asset Cloud Service process picks up the customer data synchronization files and process the synchronization requests and send the acknowledgments back to Oracle Utilities Customer Cloud Service.

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

- Customer Sync FTP Transfer (Oracle Utilities Customer Cloud Service Initiated)
- Customer Sync OS Transfer (Oracle Utilities Customer Cloud Service Initiated)
- Customer Sync Acknowledgment (Oracle Utilities Digital Asset Cloud Service Initiated)

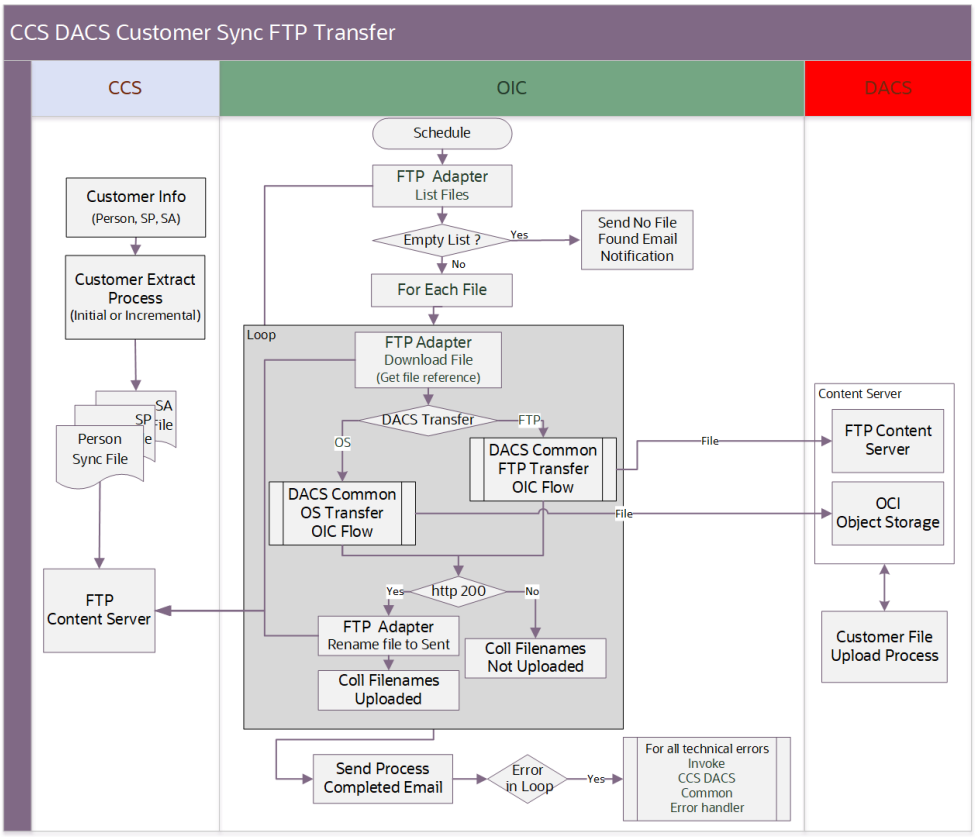
The following diagram shows a graphical representation of the Customer Sync related processes:



Customer Sync FTP Transfer (Oracle Utilities Customer Cloud Service Initiated)

This integration process retrieves the Customer Sync Data File(s) from an FTP content storage where Oracle Utilities Customer Cloud Service uploads files and transfers it to either an on-premises FTP server or to an OCI Object Storage location accessible from Oracle Utilities Digital Asset Cloud Service, where it will be read and processed later.

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



Processing Details

The integration process is 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.
2. It invokes the FTP adapter to list files located in the Oracle Utilities Customer Cloud Service on-premises locations obtained from the file path set in the `ccs.ftp.custsync.input.directory` property. It will retrieve files matching the prefix passed over the schedule "extractedFileNamePrefix" parameter.

   Note: The value passed to extractedFileNamePrefix should match the beginning of the parameter fileName used within Oracle Utilities Customer Cloud Service Batch C1-DCTEX, C1-DSPEX or C1-DMSEX.

   - If no file is found and `notification.email.process.nofile.flag` is *true* (by default it is true), it will send a 'no file found' email notification to `to.process.notification recipients` defined in the OUTL-BRT-CCS_DACS_Email_ID lookup.
   - If the files are found, it will continue to the next step.
3. For each file, do the following:
   a. Download the file using the FTP Adapter.

b. If Oracle Utilities Digital Asset Cloud Service is configured to receive the file via FTP (property `dacs.file.target.transfer.pref` equals "ftp"), it will invoke the "OU CCS DACS Common FTP Transfer" Oracle Integration Cloud child process passing the necessary information to transfer the file accordingly. The OU CCS DACS Common FTP Transfer Oracle Integration Cloud child process uploads the file to the FTP server content over the path set in the `dacs.ftp.custsync.output.directory` property.

Note: The `dacs.file.target.transfer.pref` property is defaulted to "ftp".

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

c. If Oracle Utilities Digital Asset Cloud Service is configured to receive the file via object storage (`dacs.file.target.transfer.pref` property equals "os"), invokes the "OU CCS DACS Common OS Transfer" Oracle Integration Cloud child process passing the necessary information to transfer the file accordingly.

The OU CCS DACS Common OS Transfer Oracle Integration Cloud child process uploads the file to the Oracle Utilities Digital Asset Cloud Service Object Storage under the namespace (`dacs.os.custsync.namespace`) and bucketname (`dacs.os.custsync.bucketname`).

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

4. After the successful transfer of all files, if the `notification.email.process.complete.flag` is *true*, a Process Completed email notification is sent to `to.process.notification` recipients defined in the `OUTL-BRT-CCS_DACS_Email_ID` lookup.
5. Error Handling.

For any errors encountered in this process:

- An error email notification with error details is sent via the "OU CCS DACS Common Error Handler" Oracle Integration Cloud child process to the users defined in the "to" property inside the `OUTL-BRT-CCS_DACS_Email_ID` lookup.
- If the error occurs while processing the list of files and `notification.email.process.complete.flag` is *true*, the Process Complete email notification is also sent out that contains the summary of files transferred and not transferred.

Technical Details

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

Artifacts	Value
Integration Process Name	OU CCS DACS Customer Sync FTP Transfer

Artifacts	Value
Integration Process Identifier	OUTL-BA-CCS_DACS_CUST_SYNC_FTP
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection (FTP Adapter)	OU FTP CCS for CCS-DACS
Target Connection (REST Adapter)	OU REST OIC for CCS-DACS (Connecting to internal OU CCS DACS Common FTP Transfer OIC flow or to internal OU CCS DACS Common OS Transfer OIC flow, passing the file as an attachment)
Local Integrations	• OU CCS DACS Common FTP Transfer • OU CCS DACS Common OS Transfer • OU CCS DACS Common Error Handler
OIC Lookups	• OUTL-BRT-CCS_DACS_ConfigProps • OUTL-BRT-CCS_DACS_Email_ID

Lookups Referenced

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

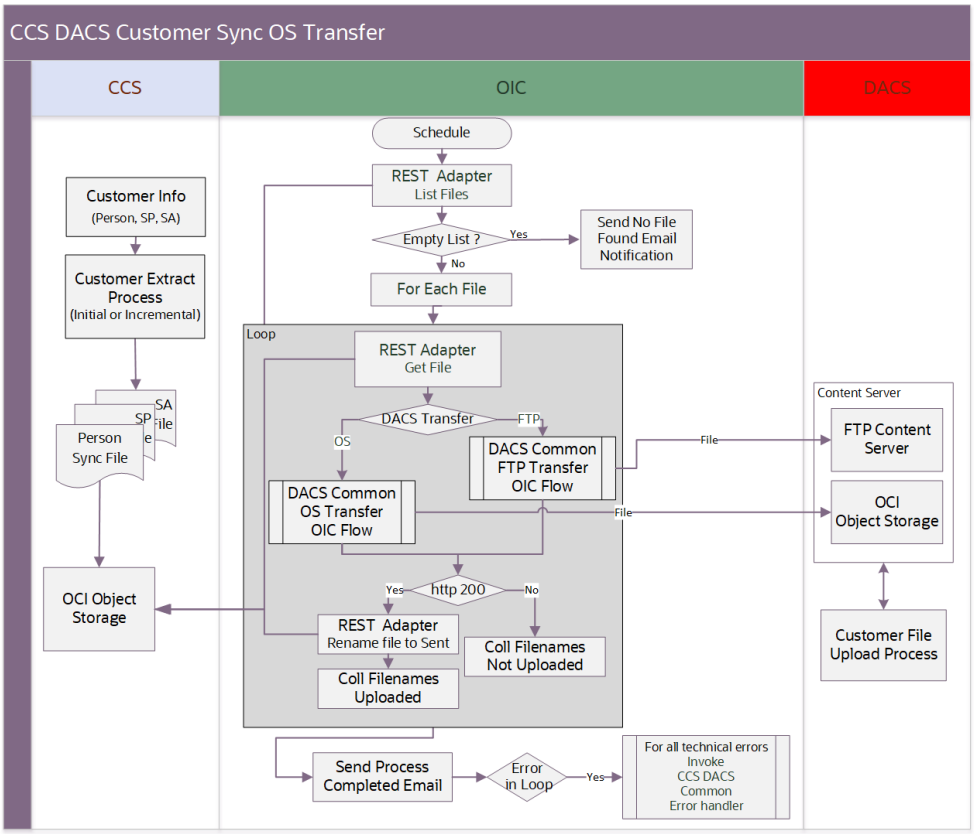
DVM	Property
OUTL-BRT-CCS_DACS_ConfigProps	• notification.type.email • notifcation.email.error.flag • notification.email.process.nofile.flag • notification.email.process.complete.flag • ccs.ftp.custsync.input.directory • ccs.prefixtag.fileuploaded • dacs.file.target.transfer.pref • dacs.os.custsync.bucketname • dacs.os.custsync.namespace • ccs.os.custsync.namespace • ccs.os.custsync.bucketname
OUTL-BRT-CCS_DACS_Email_ID	• from • to • to.process.notification

Customer Sync OS Transfer (Oracle Utilities Customer Cloud Service Initiated)

This integration process retrieves the Customer Sync Data File(s) from an Oracle Integration Cloud Object Storage location where Oracle Utilities Customer Cloud Service uploads files and transfer it to either an on-premises FTP server or to an OCI Object

Storage location accessible from Oracle Utilities Digital Asset Cloud Service, where it will be read and processed afterwards.

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



Processing Details

The integration process is 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.
2. It invokes the REST adapter to list files located in the Oracle Utilities Customer Cloud Service Object Storage Bucket set in the `ccs.os.custsync.namespace` and `ccs.os.custsync.bucketname` properties. It will retrieve files matching the prefix passed over the schedule parameter "extractedFileNamePrefix".

   Note: The value passed to extractedFileNamePrefix should match the beginning of the parameter fileName used within Oracle Utilities Customer Cloud Service Batch C1-DCTEX, C1-DSPEX, or C1-DMSEX.

   - If no file is found and `notification.email.process.nofile.flag` is *true* (by default it is true), it will send a 'no file found' email notification to `to.process.notification recipients` defined in the OUTL-BRT-CCS_DACS_Email_ID lookup.
   - If the files are found, it will continue to the next step.
3. For each file, do the following:
   a. Download the file using the REST Adapter.

b. If Oracle Utilities Digital Asset Cloud Service is configured to receive the file via FTP (property `dacs.file.target.transfer.pref` equals "ftp"), it will invoke the "OU CCS DACS Common FTP Transfer" Oracle Integration Cloud child process passing the necessary information to transfer the file accordingly. The OU CCS DACS Common FTP Transfer Oracle Integration Cloud child process uploads the file to the FTP server content over the path set in the `dacs.ftp.custsync.output.directory` property.

Note: The `dacs.file.target.transfer.pref` property is defaulted to "ftp".

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

c. If Oracle Utilities Digital Asset Cloud Service is configured to receive the file via object storage (`dacs.file.target.transfer.pref` property equals "os"), invokes the "OU CCS DACS Common OS Transfer" Oracle Integration Cloud child process passing the necessary information to transfer the file accordingly.

The OU CCS DACS Common OS Transfer Oracle Integration Cloud child process uploads the file to the Oracle Utilities Digital Asset Cloud Service Object Storage under the namespace (`dacs.os.custsync.namespace`) and bucketname (`dacs.os.custsync.bucketname`).

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

4. After the successful transfer of all files, if the `notification.email.process.complete.flag` is *true*, a Process Completed email notification is sent to `to.process.notification` recipients defined in the `OUTL-BRT-CCS_DACS_Email_ID` lookup.
5. Error Handling.

For any errors encountered in this process:

- An error email notification with error details is sent via the "OU CCS DACS Common Error Handler" Oracle Integration Cloud child process to the users defined in the "to" property inside the `OUTL-BRT-CCS_DACS_Email_ID` lookup.
- If the error occurs while processing the list of files and `notification.email.process.complete.flag` is *true*, the Process Complete email notification is also sent out that contains the summary of files transferred and not transferred.

Technical Details

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

Artifacts	Value
Integration Process Name	OU CCS DACS Customer Sync OS Transfer

Artifacts	Value
Integration Process Identifier	OUTL-BA-CCS_DACS_CUST_SYNC_OS
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection (REST Adapter)	OU REST CCS OS for CCS-DACS (Connecting to Object Storage)
Target Connection (REST Adapter)	OU REST OIC for CCS-DACS (Connecting to internal OU CCS DACS Common FTP Transfer OIC flow or to internal OU CCS DACS Common OS Transfer OIC flow, passing the file as an attachment)
Local Integrations	• OU CCS DACS Common FTP Transfer • OU CCS DACS Common OS Transfer • OU CCS DACS Common Error Handler
OIC Lookup	• OUTL-BRT-CCS_DACS_ConfigProps • OUTL-BRT-CCS_DACS_Email_ID

Lookups Referenced

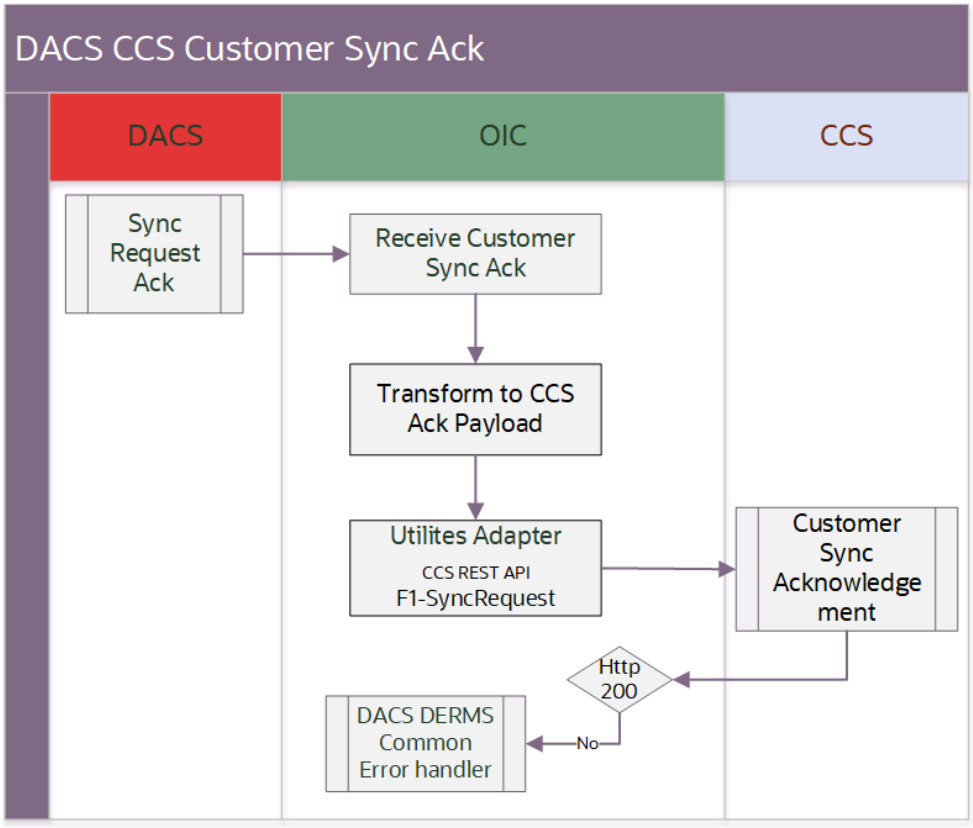
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-CCS_DACS_ConfigProps	• notification.type.email • notifcation.email.error.flag • notification.email.process.nofile.flag • notification.email.process.complete.flag • ccs.ftp.custsync.input.directory • ccs.prefixtag.fileuploaded • dacs.file.target.transfer.pref • dacs.os.custsync.bucketname • dacs.os.custsync.namespace • ccs.os.custsync.namespace • ccs.os.custsync.bucketname
OUTL-BRT-CCS_DACS_Email_ID	• from • to • to.process.notification

Customer Sync Acknowledgment (Oracle Utilities Digital Asset Cloud Service Initiated)

After Oracle Utilities Digital Asset Cloud Service processes each Customer Sync file received from Oracle Utilities Customer Cloud Service, it sends an acknowledgment message back to Oracle Utilities Customer Cloud Service through a REST web service.

The following diagram shows a graphical representation of the 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 enrollment acknowledgment message received into the Oracle Utilities Customer Cloud Service JSON format.
3. Invoke the Oracle Utilities Customer Cloud Service F1-SyncRequest REST endpoint to send the acknowledgment.
4. If the REST service returns Status 200 (OK), the integration process will respond synchronously with status Status 200 to Oracle Utilities Digital Asset Cloud Service.
5. For any errors encountered in this process:
    - An error email notification with error details is sent via the "OU CCS DACS Common Error Handler" Oracle Integration Cloud child process to the users defined in the property "to" inside the OUTL-BRT-CCS_DACS_Email_ID lookup.
    - The process will return a fault to Oracle Utilities Digital Asset Cloud Service.

Technical Details

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

Artifacts	Value
Integration Process Name	OU DACS CCS Customer Sync Ack
Integration Process Identifier	OUTL-BA-DACS_CCS_CUST_SYNC_ACK
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection (Oracle Utilities Adapter)	OU REST DACS for CCS-DACS
Target Connection (Oracle Utilities Adapter)	OU REST CCS for CCS-DACS
Local Integrations	OU CCS DACS Common Error Handler
OIC Lookup	• OUTL-BRT-CCS_DACS_ConfigProps • OUTL-BRT-CCS_DACS_Email_ID

Lookups Referenced

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

DVM	Property
OUTL-BRT-CCS_DACS_ConfigProps	• notification.email.error.flag • notifcation.type.email.flag • ccs.error.ack.messagecategory • ccs.error.ack.messagenumber
OUTL-BRT-CCS_DACS_Email_ID	• from • to • to.process.notification

Common Integration Flows

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

File to File Transfer

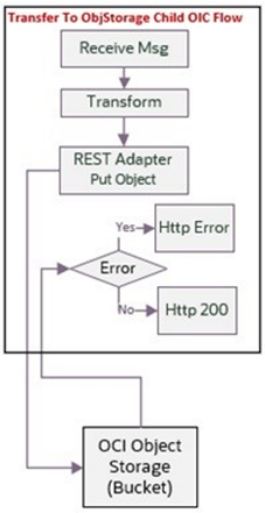
Many integrations move files from one application to another. Source and target locations can be a folder in an on-premises server or a cloud object storage. This is dependent on what the source and target applications support during the implementation.

Note: Currently, Oracle Utilities Customer Cloud Service and Oracle Utilities Digital Asset Cloud Service support both FTP and Object Storage as its content server.

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

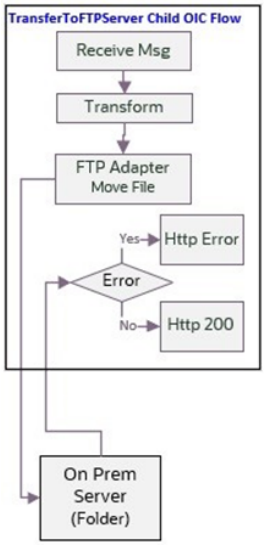
To allow customers to decide how to transfer files to a target location, a file target transfer preference property must be set to determine where to transfer the file. Valid values are "os" or "ftp".

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



Note: Each application's target object storage location has its own child Oracle Integration Cloud flow.

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



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

Common Child File Transfer Flows (Oracle Integration Cloud Initiated)

- OU CCS DACS Common OS Transfer
- OU CCS DACS Common FTP 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	Directory
Bucket Name	
File Reference	File Reference

Technical Details

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

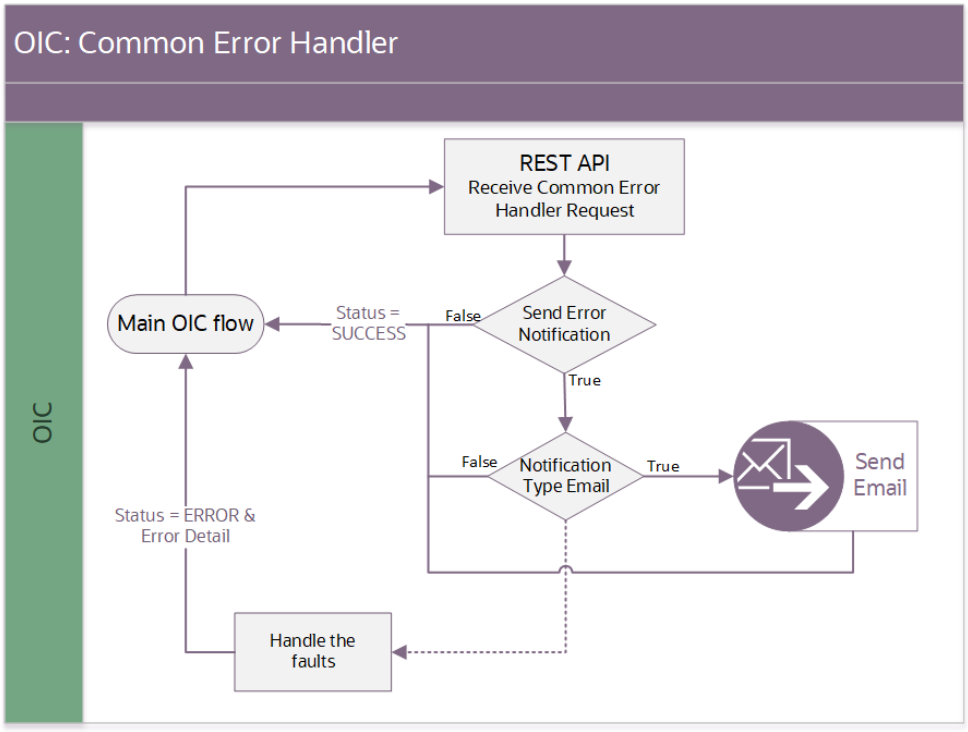
Artifacts	Value
Integration Process Name	OU CCS DACS Common OS Transfer
Integration Process Identifier	OUTL-BA-CCS_DACS_OS_TRANSFER
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection (REST Adapter-Trigger)	OU REST for CCS-DRMS
Target Connection (REST Adapter)	OU REST DACS OS for CCS-DACS

Artifacts	Value
Integration Process Name	OU CCS DACS Common FTP Transfer
Integration Process Identifier	OUTL-BA-OUAI_DACS_FTP_TRANSFER
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection (REST Adapter-Trigger)	OU REST for CCS-DRMS
Target Connection (FTP Adapter)	OU FTP DACS for CCS-DACS

Common Error Handler (Oracle Integration Cloud Initiated)

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

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



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

Technical Details

The following table describes the artifacts used in this integration process:

Artifacts	Value
Integration Process Name	OU CCS DACS Common Error Handler
Integration Process Identifier	OUTL-BA-CCS_DACS_ERR_HNDLR
Integration Package Name	outl.ba.ccs_dacs.01_23_3000
Source Connection	local integration

Artifacts	Value
trigger	/receiveMessage

Lookups Referenced

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

DVM	Property
OUTL-BRT-CCS_DACS_ConfigProps	• notifcation.type.email • notification.email.error.flag
OUTL-BRT-CCS_DACS_Email_ID	• From • To

Chapter 3

Configuring Oracle Utilities Customer Cloud Service

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

- Configuring Admin Data
- Scheduling the Batch Process
- Adding Oracle Integration Cloud Certificates

Configuring Admin Data

This section describes the admin data setup in Oracle Utilities Customer 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.

Feature Configuration

This section describes the feature configuration details for the integration. The following Feature Configurations are available in **Admin menu > [F or General] > Feature Configuration**.

Customer Information Options

Option Type: Use Legacy Person Phone and Email

This should be set to 'N'. The extract for Person will only consider the person contact details feature.

> **Note**: Most of the legacy Oracle Utilities Customer Cloud Service deployment is using the classic phone email feature. There is an existing upgrade job (C1-INPUS - Create Person Contact from Person Phone/ Email) that will move the classic phone/email details to the new contact details. For more information, see the Prerequisites section.

Schema Constants

Set up the following schema constants, if not yet configured. The values should be a valid Person Contact Type.

The following list shows *sample values* set for the respective Person Contact Type:

- Business Phone: BUSN
- Home Phone: HOME
- Mobile Phone: CELL
- Email Contact Type: EMAIL

Maintenance Object Audit Configuration

To capture incremental changes to the person, service point, and service agreement, an MO Audit algorithm must be plugged into the appropriate maintenance object.

For the **Person Maintenance Object**:

1. Navigate to the "PERSON" maintenance object and click the **Algorithms** tab.
2. Add a new **System Event**.

3. Select "Audit" as the **System Event** and "C1_DAPERSYNC" as the algorithm.

For the **SP Maintenance Object**:

1. Navigate to the "SP" maintenance object and click the **Algorithms** tab.
2. Add a new **System Event**.
3. Select "Audit" as the **System Event** and "C1_DASPSYNC" as the algorithm.

For the **SA Maintenance Object**:

1. Navigate to the "SA" maintenance object and click Algorithms tab.
2. Add a new **System Event**.
3. Select "Audit" as the **System Event** and "C1_DASASYNC" as the algorithm.

Scheduling the Batch Process

Scheduling the batch processes includes the following:

Initial Load

The initial load batch processes are used to extract eligible entities needed for the customer data. Execute the appropriate initial load batch process to extract the eligible entities. When the process is complete, the extract file will be created in the folder specified by the File Path batch parameter.

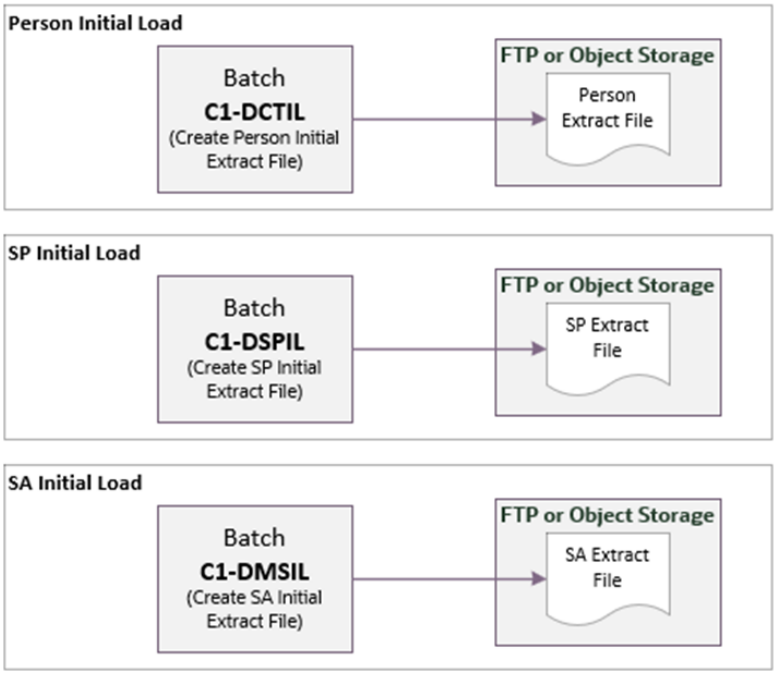
Batch Code	Description
C1-DCTIL	Migrates Person to DACS Contact. This job will only consider the person contact details feature.
C1-DSPIL	Migrate CCB SP to DACS Metered Service Point
C1-DMSIL	Migrates SA to DACS Metered Service

Batch Parameters	Parameter Description	Value
fileName	Required **Note**: Adding .zip to the .csv file will generate a zip file of records. Example: C1-DCTIL_0033_00.csv.zip	**{batchCode}_ {batchNumber}_ {rerunNumber}.csv** (Default)

Batch Parameters	Parameter Description	Value
filePath	Required Specify the file path where the file will be created.	
fileFormat	Specify the format of the file that will be created.	**FIXD** (Default)
overrideLowId Value	Optional Use to extract a range of eligible records instead of all eligible records.	**000000000000** (Default)
overrideHighId Value	Optional Use to extract a range of eligible records instead of all eligible records.	**999999999999** (Default)

Sequence of Events for Initial Load

The following diagram illustrates the sequence of events for an initial load batch process:



Incremental Load

The incremental load batch process is used to run the synchronization request. It is a generic batch process that is used for different synchronization processes. It has a couple of parameters that can be used to control which synchronization request business objects to process.

Batch Code	Description
F1-SYNRQ	Sync Request Monitor Process. This batch process runs the synchronization request. 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 BOs to process.

Batch Parameters	Parameter Description	Value
maintenance Object	Sync Request maintenance object	F1-SYNC REQ Default value
isRestrictedBy BatchCode	The value 'true' restricts processing to synchronize requests whose current state is linked to this batch code.	**true**
restrictToBusiness Object	Enter a business object code here to limit the process to synchronize requests linked to this business object.	• For Person Incremental Sync, set the value to X1-DASyncReqContact. • For SP Incremental Sync, set the value to X1-SyncReqMeteredSP. • For Person Incremental Sync, set the value to X1-DASyncReqMeteredService.
restrictToBO Status	Enter a status code here to limit the process to synchronize requests in this state.	PENDING Populate this value to only process synchronization request, in Pending status.

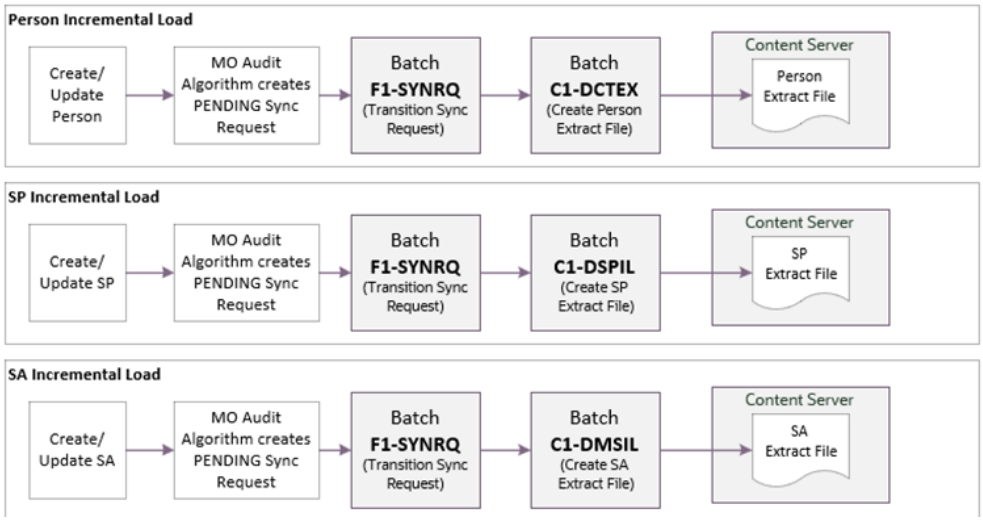
These incremental load batch processes are used to extract the eligible entities needed for customer data. Execute the appropriate initial load batch process to extract the eligible entities. When the process is complete, the extract file will be created in the folder specified by the File Path batch parameter.

Batch Code	Description
C1-DCTEX	Contact Incremental Sync Batch Control. It is a plug-in driven batch job that sends ongoing Oracle Utilities Customer Cloud Service Person updates to Oracle Utilities Digital Asset Cloud Service Contact.
C1-DSPIL	Migrate CCB SP to DACS MSP
C1-DMSIL	Migrates SA to DACS Metered Service

Batch Parameters	Parameter Description	Value
maintenance Object	Sync Request maintenance object.	**F1-SYNC REQ** Default value

Sequence of Events for Incremental Load

The following diagram illustrates the sequence of events for an incremental load batch process:



Adding Oracle Integration Cloud Certificates

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

For more information about configuration, refer to the Oracle Utilities Customer Cloud Service documentation at: https://docs.oracle.com/en/industries/energy-water/customer-cloud-service/index.html

Chapter 4

Configuring Oracle Utilities Digital Asset Cloud Service

This chapter includes information about the following:

- Configuring Admin Data
- Scheduling the Batch Process

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

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

Acknowledgements will be sent back to Oracle Utilities Customer Cloud Service. Configure a Message Sender for sending the messages to Oracle Utilities Customer Cloud Service.

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 checkbox.
   - **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
   - **HTTP URL 1**: https://oic.oraclecloud.com/api/integration/v1/oracleutilities/oicprocessflow

Sample Message Sender Setup For this Integration

Message Sender	Description	HTTP URL
SendAck	Send customer sync to CCS	https://inst1.oraclecloud.com/ic/api/integration/v1/flows /oracleutilities/OUTL-BA-DACS_CCS_CUST_SYNC_ACK/1.0/sendCustomerSyncAck

External System

The Acknowledgement outbound message needs to be configured on the Oracle Utilities Customer Cloud Service external system.

Create a new or update an existing external system to support the Oracle Utilities Digital Asset Cloud Service.

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 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-SYNREQACK (Send Sync Request Acknowledgement) 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

Sync Admin Data

Certain extendable lookups in Oracle Utilities Digital Asset Cloud Service are used to translate a Oracle Utilities Customer Cloud Service value to a Oracle Utilities Digital Asset Cloud Service value.

The following extendable lookups might need to be updated. Any value extracted from Oracle Utilities Customer Cloud Service must be in the table and it needs to be associated with a corresponding Oracle Utilities Digital Asset Cloud Service value.

- D1-CCBContactTypeLookup translation
  - PER_OR_BUS_FLG lookup > D1_CONTACT_TYPE (Program Subscription Contact Type)
- D1-CCBDivisionLookup translation
  - CI_CIS_DIVISION > D1_DIVISION

- D1-CCBLifeSupSensitiveLdLookup translation
  - LS_SL_FLG lookup > D1_LS_SL_FLG lookup
- D1-CCBSPTypeLookup translation
  - CI_SP_TYPE > D1_SP_TYPE (Metered Service Point Type)
- D2-CCBRateScheduleLookup translation
  - CI_RS > D2-CCBRateScheduleLookup extendable lookup
- D2-CCBSAStatusLookup translation
  - Already configured with valid SA status codes and not customizable
- D2-CCBSATypeLookup translation
  - CI_SA_TYPE > D1_US_TYPE (Metered Service Type)
- D1-CCBKeyLookup translation
  - KEY_SW (Y/N) > D1-KeyLookup
- D1-CCBOkToEnterLookup translation
  - OK_TO_ENTER_SW (Y/N) > D1-OkToEnterLookup
- D1-CCBSPInstructionLookup translation
  - CI_MR_INSTR > D1-SPInstructionLookup
- D1-CCBSPWarningLookup translation
  - CI_MR_WARN > D1-SPWarningLookup
- Device Location Codes - no translation
  - CI_MTR_LOC > D1-DeviceLocationLookup

Acknowledgement Configuration

Only incremental/ongoing updates can receive acknowledgements. No acknowledgements are sent for initial load.

Acknowledgements are only sent back to the application sending the incremental updates if the Outbound Message Type parameter is populated in the Create Acknowledgement algorithm (X1-CRESRACK).

1. Navigate to the "X1-CRESRACK" algorithm and click **Edit**.
2. Click the plus sign (**+**) to create a new set of parameters in the **Algorithm Versions** section.
3. Add the **Effective Date**.
4. Add "X1-SYNREQACK" value to **Parameter Outbound Message Type**.
5. Save the configuration.

Scheduling the Batch Process

Scheduling the batch processes includes the following:

- Upload File
- Transition Sync Request
- Load Data (Only for Initial Load)
- Sequence of Events for Customer Data Upload

Upload File

These batch processes are used to upload files for eligible entities needed for the customer data synchronization. Execute the appropriate batch process to upload the eligible entities. When the process is complete, the extract file will be created in the folder specified by the File Path batch parameter.

Batch Code	Description
X1-COUPL	Contact File Upload This batch control uploads contact data from a .tsv (tab delimited) file on the server or object storage. For each record in the file, the batch creates an X1-DASyncReqContact Inbound Sync Request record, which acts as a staging record for the conversion of the customer Person to Oracle Utilities Digital Asset Cloud Service Contacts. This upload job supports initial load and incremental changes.
X1-MSPUP	Metered Service Point File Upload This batch control uploads metered service point data from a .tsv (tab delimited) file on the server or object storage. For each record in the file, this batch creates an X1-SyncReqMeteredSP Inbound Sync Request record, which acts as a staging record for the conversion of the customer Metered Service Points to Oracle Utilities Digital Asset Cloud Service Metered Service Points. This upload job supports initial load and incremental changes.
X1-MSUPL	Metered Service File Upload This batch control uploads metered service data from a .tsv (tab delimited) file on the server or object storage. For each record in the file, this batch creates an X1-DASyncReqMeteredService Inbound Sync Request record, which acts as a staging record for the conversion of the customer Metered Service to Oracle Utilities Digital Asset Cloud Service Metered Service. This upload job supports initial load and incremental changes.

Batch Parameters	Parameter Description	Value
fileName	Required Defaults to {batchCode}_{batchNumber}_{rerunNumber}.csv **Note**: Adding .zip to the .csv file will generate a zip file of records. Example: C1-DCTIL_0033_00.csv.zip	Example: C1-DCTIL_0033_00.csv
filePath	Required Specify the file path where the file will be created.	
fileFormat	Specify the format of the file that will be created.	**FIXD** (Default)
overrideLowIdValue	Optional Use to extract a range of eligible records instead of all eligible records.	**000000000000** (Default)
overrideHighIdValue	Optional Use to extract a range of eligible records instead of all eligible records.	**999999999999** (Default)

Transition Sync Request

This batch process is used to run the synchronization request. It is a generic batch process used for different synchronization processes. It has a couple of parameters that can be used to control which synchronization request business objects to process. The inbound synchronization requests matching the batch parameters will be transitioned to the Transform/Validate state.

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

Batch Parameters	Parameter Description	Value
maintenance Object	Sync Request maintenance object	**F1-SYNCREQIN** Default value
isRestrictedByBatchCode	The value 'true' restricts processing to synchronization requests whose current state is linked to this batch code.	**true**
restrictToBusiness Object	Enter a business object code here to limit the process to synchronization requests linked to this business object.	• For Person Incremental Sync, set the value to **X1-DASyncReqContact**. • For SP Incremental Sync, set the value to **X1-SyncReqMeteredSP**. • For Person Incremental Sync, set the value to **X1-DASyncReqMeteredService**.
restrictToBO Status	Enter a status code here to limit the process to synchronization requests in this state.	**PENDING** Populate this value to only process synchronization request, in Pending status.

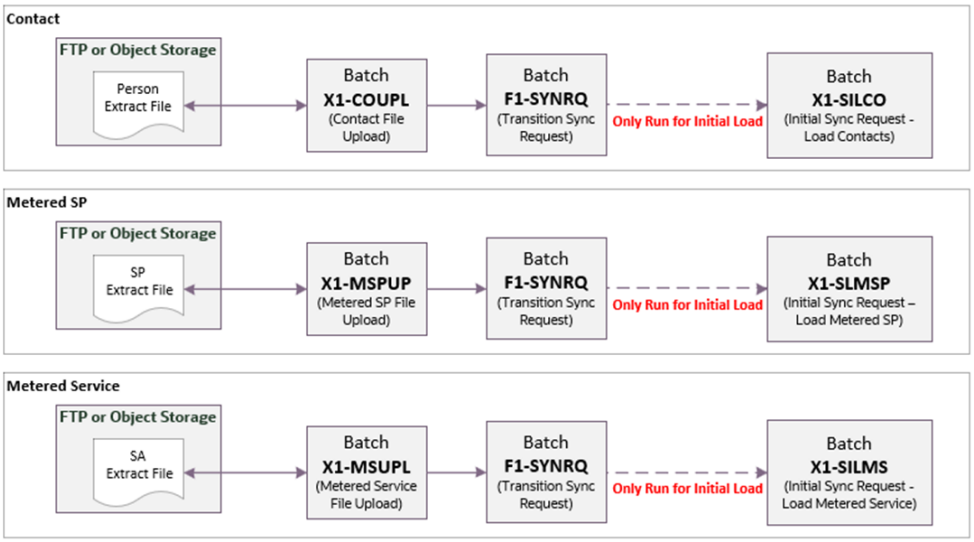
Load Data (Only for Initial Load)

These batch processes insert the appropriate inbound synchronization requests into the database and the synchronization request will be transitioned to LOADED. It is run for initial load.

Batch Code	Description
X1-SILCO	Initial Sync Request - Load Contacts
X1-SLMSP	Initial Sync Request - Load Metered SP
X1-SILMS	Initial Sync Request - Load Metered Service

Batch Parameters	Parameter Description	Value
fileName	Required Defaults to {batchCode}_{batchNumber}_{rerunNumber}.csv **Note**: Adding .zip to the .csv file will generate a zip file of records. Example: C1-DCTIL_0033_00.csv.zip	Example: C1-DCTIL_0033_00.csv
filePath	Required Specify the file path where the file will be created.	
fileFormat	Specify the format of the file that will be created.	**FIXD** (Default)
overrideLowIdValue	Optional Use to extract a range of eligible records instead of all eligible records.	**000000000000** (Default)
overrideHighIdValue	Optional Use to extract a range of eligible records instead of all eligible records.	**999999999999** (Default)

Sequence of Events for Customer Data Upload



Chapter 5

Importing, Configuring, and Testing Integration Connections

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

It includes the following sections:

Importing the Oracle Integration Cloud Package from Oracle Cloud Marketplace

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

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

1. Launch the Oracle Cloud Marketplace portal.

   https://cloudmarketplace.oracle.com/marketplace/en_US/homePage.jspx
2. Click **Applications**.
3. Search for "Oracle Utilities Customer Cloud Service".
4. Browse through the list of applications and select the pre-built integration package to import.
5. Click **GetApp**.
6. Review and accept "Oracle Standard Terms and Restrictions".
7. Click **Next**. My Oracle Support portal opens.
8. Download the integration package from My Oracle Support.
9. When prompted, select the server where the pre-built integration file should be uploaded.

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

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

To import a package in Oracle Integration Cloud:

1. Login to Oracle Integration Cloud.
2. Navigate to **Integrations** > **Designer** > **Packages**.
3. Click **Import**.
4. Select the .par file downloaded from Oracle Cloud Marketplace.
5. Verify if the package is imported is successfully.

Verifying the Package Import

To verify the package import was successful:

1. Make sure the following integrations are imported successfully:
   - OU CCS DACS Common Error Handler (1.23.3000)
   - OU CCS DACS Customer Sync FTP Transfer (1.23.3000)

- OU CCS DACS Customer Sync OS Transfer (1.23.3000)
- OU DACS CCS Customer Sync Ack (1.23.3000)
- OU DACS Common FTP Transfer (1.23.3000)
- OU DACS Common OS Transfer (1.23.3000)

2. Verify if the following connections are in place.
   - OU FTP CCS for CCS-DACS
   - OU REST CCS OS for CCS-DACS
   - OU FTP DACS for CCS-DACS
   - OU REST CCS OS for CCS-DACS
   - OU REST DACS for CCS-DACS
   - OU REST CCS for CCS-DACS
   - OU REST OIC for CCS-DACS
   - OU REST for CCS-DACS
3. Make sure that the following look ups are imported successfully.
   - OUTL-BRT-CCS_DACS_ConfigProps
   - OUTL-BRT-CCS_DACS_Email_ID

Configuring Connections in Oracle Integration Cloud

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

This section describes the procedure to configure the following connections:

- OU FTP CCS for CCS-DACS Connection
- OU REST CCS OS for CCS-DACS Connection
- OU FTP DACS for CCS-DACS Connection
- OU REST CCS OS for CCS-DACS Connection
- OU REST DACS for CCS-DACS Connection
- OU REST CCS for CCS-DACS Connection
- OU REST for CCS-DACS Connection
- OU REST OIC for CCS-DACS Connection

OU FTP CCS for CCS-DACS Connection

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

To configure the OU FTP CCS for CCS-DACS connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Set the FTP Server Host Address (xxxx.com).
3. Do not modify anything on the **FTP Server Port** and **SFTP Connection** tabs.

4. Select the **FTP Server Access** policy on the **Security Policy** tab and enter the Oracle Utilities Customer Cloud Service FTP Server username and password.
5. Configure the appropriate **Agent Group**, if applicable.
6. On the **Connection** page, click **Test**.
7. After the connection is tested successfully, click **Save**.

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

OU REST CCS OS for CCS-DACS Connection

This connection is used to communicate with Oracle Utilities Customer Cloud Service's Oracle Infrastructure Cloud Object Storage using the REST adapter.

To configure the OU REST CCS OS for CCS-DACS connection:

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

   Make sure the Connection URL follows this format:

   https:// objectstorage.{region}.oraclecloud.com

   Refer to the Oracle Cloud Infrastructure documentation/API Reference and Endpoints for information about Object Storage Service API and endpoints at: https:// docs.oracle.com/en-us/iaas/api/
2. In the **Security** section:
   a. Select the **OCI Signature Version 1** security policy.
   b. Provide the following Object Storage information:
      - Tenancy OCID
      - User OCID
      - Upload the private key
      - Fingerprint (obtained from object storage after register the public key for the appropriate user)

      For more information, refer to the **Object Storage Setup Guide 20C** at: https:/ / docs.oracle.com/cd/F35460_01/index.htm
3. After the connection is tested successfully, click **Save**.

OU FTP DACS for CCS-DACS Connection

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

To configure the OU FTP DACS for CCS-DACS connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Set the **FTP Server Host Address** (xxxx.com).
3. Do not modify anything on the **FTP Server Port** and **SFTP Connection** tabs.

4. Select the **FTP Server Access** policy on the **Security Policy** tab and enter the Oracle Utilities Digital Asset Cloud Service FTP Server username and password.
5. Configure the appropriate **Agent Group**, if applicable.
6. On the **Connection** page, click **Test**.
7. After the connection is tested successfully, click **Save**.

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

OU REST CCS OS for CCS-DACS Connection

This connection is used to communicate with Oracle Utilities Customer Cloud Service's Oracle Infrastructure Cloud Object Storage using the REST adapter.

To configure the OU REST CCS OS for CCS-DACS connection:

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

   Make sure the Connection URL follows this format: https:// objectstorage.{region}.oraclecloud.com

   Refer to the Oracle Cloud Infrastructure documentation/API Reference and Endpoints for information about Object Storage Service API and endpoints at: https:// docs.oracle.com/en-us/iaas/api/
2. In the **Security** section:
   a. Select the **OCI Signature Version 1** security policy.
   b. Provide the following Object Storage information:
      - Tenancy OCID
      - User OCID
      - Upload the private key
      - Fingerprint (obtained from object storage after register the public key for the appropriate user)

      For more information, refer to the **Object Storage Setup Guide 20C** at: https:/ / docs.oracle.com/cd/F35460_01/index.htm
3. After the connection is tested successfully, click **Save**.

OU REST DACS for CCS-DACS Connection

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

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Add the Oracle Utilities Digital Asset Cloud Service catalog URL in the **Catalog URL** field.
3. Select **Basic Auth** on the **Security** tab and enter the Oracle Utilities Digital Asset Cloud Service username and password.

4. Configure the appropriate **Agent Group**, if applicable.
5. On the **Connection** page, click **Test**.
6. After the connection is tested successfully, click **Save**.

OU REST CCS for CCS-DACS Connection

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

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Add the Oracle Utilities Customer Cloud Service catalog URL in the **Catalog URL** field.
3. Select **Basic Auth** on the **Security** tab and enter the Oracle Utilities Customer Cloud Service username and password.
4. Configure the appropriate **Agent Group**, if applicable.
5. On the **Connection** page, click **Test**.
6. After the connection is tested successfully, click **Save**.

OU REST for CCS-DACS Connection

This connection is used to communicate with and from connected applications using a REST adapter. This connection is used as the request connection for internal integrations. A REST trigger cannot be used if it has an agent configured.

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Select **OAuth 2.0** or **Basic Auth** for the **Security policy**.
3. On the **Connection** page, click **Test**.
4. After the connection is tested successfully, click **Save**.

OU REST OIC for CCS-DACS Connection

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

To configure this connection:

1. Login to Oracle Integration Cloud and navigate to the connection.
2. Select **Rest API Base URL** for the **Connection Type**.
3. Add the OIC connection URL in the **Connection URL** element.

   Example: https://OIC_CloundInstance.com)

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

The possible combination of an agent group is:

- Oracle Utilities Digital Asset Cloud Service on-premises and Oracle Utilities Digital Asset Cloud Service

Creating an Agent Group

Create an agent group in Oracle Integration Cloud before running the agent installer. When the on-premises agent is installed in the environment, the on-premises agent is associated with the agent group identifier. Only one on-premises agent can be associated with an agent group.

For a single Oracle Integration Cloud instance, you can create up to five agent groups. Creating the agent group also creates the necessary queues required for message exchange.

To create an agent group:

1. Login to Oracle Integration Cloud.
2. On the **Home** page, click **Agents**.
3. Click **Create Agent Group**.
4. Enter the following information:
   - Agent Group Name
   - Identifier

     Note: The agent group name and identifier must be same.
   - Agent Type: “Connectivity Agent”
   - Description
5. Click **Create**.

Downloading Agent Installer

Download the agent installer from Oracle Integration Cloud and run the installer to install the on-premises agent in your local environment. During the installation, associate the agent with the Agent Group Identifier generated when creating an agent group in Oracle Integration Cloud.

For more information on agent installer, see:

https://docs.oracle.com/en/cloud/paas/ integration-cloud/integrations-user/ downloading-and-running-premises-agentinstaller. html

Installing On-Premises Agent

To install an on-premises agent:

1. Login to Oracle Integration Cloud.
2. On the **Home** page, click **Agents**.
3. Click **Download**.
4. Select **Connectivity Agent**.
5. Select **Save File** when prompted to save the file to a directory location on your on-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 Customer 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 in the link below.
      https://docs.oracle.com/en/cloud/paas/integration-cloud/adapters/ you-begin-setting-oracle-utilities-adapter.html#GUID-7F770AD1-5B87-4C62-968A-3AB30D043835

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

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

   f. Provide the Oracle Integration Cloud credentials when prompted.

   g. Wait for a successful installation message to appear.

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

To verify if the agent instance was created:

1. Navigate to the **Agents** page in Oracle Integration Cloud.
2. Check if the agent count for your **Agent Group** is increased by one.
3. Click the number to view the agent details.

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

Setting up Certificates for Security

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

If there no valid certificates for this integration, download the Oracle Utilities Digital Asset Cloud Service/Oracle Utilities Customer Cloud Service certificates and upload them to Oracle Integration Cloud to handshake with Oracle Utilities Digital Asset Cloud Service/Oracle Utilities Customer Cloud Service.

To download the Oracle Utilities Digital Asset Cloud Service/Oracle Utilities Customer Cloud Service certificate:

1. Login to Oracle Utilities Customer Cloud Service/Oracle Utilities Digital Asset Cloud Service.
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 the lookups configuration, handling business and technical errors, sending email notifications, and customizations in this integration. It includes the following sections:

- Configuring Lookups
- Error Handling
- Email Notifications

Configuring Lookups

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

Lookup Name	Integration Name	Purpose
OUTL-BRT-CCS_DACS_ConfigProps	• OU CCS DACS Customer Sync FTP Transfer • OU CCS DACS Customer Sync OS Transfer • OU CCS DACS Common Error Handler • OU CCS DACS Common FTP Transfer • OU CCS DACS Common OS Transfer • OU DACS CCS Customer Sync Ack	Generic properties and default values used in the integration's business logic and mappings
OUTL-BRT-CCS_DACS_Email_ID	• OU CCS DACS Customer Sync FTP Transfer • OU CCS DACS Customer Sync OS Transfer • OU CCS DACS Common Error Handler	Provide email information to send the error details: • the **to** property contains email address(es) of people who handle technical issues, such as network connection issues, 401 unauthorize issues, etc. • **to.ProcessNotification** property contains email address(es) of business or application users in OUCCS and/ or OUDACS.

Editing Lookups

To edit a lookup:

1. Login to Oracle Integration for Cloud.
2. Navigate to **Integrations** > **Designer** > **Lookups**.
3. Select the lookup to edit and make the necessary changes.
4. Click **Save** and **Close**.

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

Lookup: OUTL-BRT-CCS_DACS_ConfigProps

Property Name	Sample Value	Description
notification.type.email	email	Default to email

Property Name	Sample Value	Description
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: true Also, set up the OUTL-BRT-CCS_DACS_Email_ID 'to' property for the users or administrators who should receive the email.
notification.email.process.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: true This is used by flows doing file processing. Also, set up the OUTL-BRT-CCS_DACS_Email_ID 'to.process.notification' property for the users who should receive the email.
notification.email.process.nofile.flag	true	If the value is set to 'true', email notification will be sent out when no file was found in the source location. Valid values: true/false Default: true This is used by flows doing file processing. Also, set up the OUTL-BRT-CCS_DACS_Email_ID 'to.process.notification' property for the users who should receive the email.
notification.type.email	email	Hardcoded value for the integrations to send to the 'common error handler' to decide how to send out the notifications. In future releases, this might be augmented with other types beside of 'email'.
ccs.ftp.custsync.input.directory	/sploutput/CCSEnv/CustomerSync	CCS FTP directory where Customer Sync files are stored for OIC to pick from. Required to be populated when CCS is on-premises.
ccs.prefixtag.file uploaded	SENT-	Prefix the filename from CCS that has been transferred successfully to the target location

Property Name	Sample Value	Description
ccs.os.custsync.namespace	ccsnamespace	CCS Object Storage namespace serves as a container for all buckets and objects. Defines the namespace where the buckets and objects extracted file resides. This property is required when CCS source location is on cloud storage.
ccs.os.custsync.bucketname	CCSDACS_CustomerSync	CCS directory where the Customer Sync files are stored. This property is required when CCS source location is on cloud storage.
dacs.file.target.transfer.pref	ftp	Type of file transfer that OIC will execute. Values: "os" or "ftp" The value will depend on where the target location for DACS is configured.
dacs.os.custsync.namespace	dacsnamespace	DACS Object Storage namespace serves as a container for all buckets and objects. Defines the namespace where the buckets and objects extract file resides. Required to populate this when transfer type is configured to "os".
dacs.os.custsync.bucketname	CCSDACS_CustomerSync	DACS directory where the Customer Sync files are stored. This property is required when the transfer type is "os".
ccs.error.ack.message category	11114	CCS Message Category number for integration errors.
ccs.error.ack.message number	11001	CCS Message Number use for displaying DACS error message.

Lookup: OUTL-BRT-CCS_DACS_ Email_ID

Property Name	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 the package.

Property Name	Value	Description
To	errorDist@myCy.com	The email address(es) who should receive any error notification. Multiple emails can be configured by using comma to separate the email IDs. These are likely the administrators or users who maintain the applications.
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 using comma to separate the email IDs. These are likely the business or application users.

Error Handling

This section provides information about 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: CSS DACS Customer Sync Transfer (applies to OIC flows FTP and OS)

Type of Error	Action	Notification Type	Retry
Technical Fault Example: Source FTP or Source Object Storage is not accessible or missing permissions to read source folder or write in the target folder	Process Stop	Error Email	Next scheduled run will pick up the files from CCS source content server or manually run the OIC process.

Type of Error	Action	Notification Type	Retry
Technical Fault - Partial Processing Example: One of the files sizes is bigger than 1 GB or a network connection issue.	• Files processed before the 1 GB file error is encountered are transferred to the target location. • When the error is encountered, process stops.	Error Email Process Complete Email (include the list of files transferred and not transferred)	Next scheduled run will pick up the files not transferred from CCS source content server or manually run the OIC process.
Business Fault N/A since the integration only transfer files	N/A		N/A

Integration Process: Customer Sync Ack

Type of error	Action	Notification Type	Retry
Technical Fault Example: CCS is not accessible.	Process Stop	Error Email	Resend message from DACS
Business Fault	N/A	N/A	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-CCS_DACS_ConfigProps** lookup.

   Change the `notification.email.error.flag` property value to *true*.
4. Edit the **OUTL-BRT-CCS_DACS_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-CCS_DACS_Email_ID** lookup, do not edit the values provided in the **Recipient** column.

Chapter 7

Customizations

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

- Adding New Mappings

Adding New Mappings

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

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

The supported cases are:

- **Case 1**: In the Oracle Utilities Customer Cloud Service application schema, elements exist but are not mapped in the Oracle Integration Cloud pre-built integration.
- **Case 2**: In Oracle Utilities Customer Cloud Service, properties exist, but are not mapped in the Oracle Integration Cloud pre-built integration.

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

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

To add custom mappings in Oracle Integration Cloud layer:

1. Login to Oracle Integration Cloud.
2. Identify the integration to add custom mappings.
3. Clone the integration.
4. Export the respective cloned integration from Oracle Integration Cloud to your local machine.
5. Unzip the .iar file and identify the mapping/XSL file in which the custom mappings have to be added.
6. This integration has all mappers as import XSL. To add any new mapping, edit the respective mapper/XSL file.

   Note: Mappings cannot be added using the Mapper Design view.
7. In all integration mappings, a template is added under every complex element. Any custom elements under that complex element can be added directly in the template provided.
8. Add the mapping under the respective customization template. Save the changes.
9. In Oracle Integration Cloud, click the integration to add the mapping for an extra element. Select the respective map activity.
10. Click **Import** and upload the updated mapper/XSL file.
11. Save and close and activate the integration to reflect the custom mappings.

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

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

Example:

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

Chapter 8

Activating and Testing the Integration Flows

This section provides an overview of how integration flows are activated and tested. It includes the following sections:

- Activating Integration Flows

Activating Integration Flows

To activate the integration flows:

1. Navigate to the integration to activate.
2. Drag the slider for that integration. When prompted to enable tracing, click **Yes** to view the instances.
3. Click **Activate**.

The integration takes time to get activated. The activated integration appears at the top of the integrations list.

Chapter 9

Monitoring and Troubleshooting

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

- Oracle Utilities Customer Cloud Service
- Oracle Integration Cloud

Oracle Utilities Customer Cloud Service

This section provides information about monitoring Oracle Utilities Customer Cloud Service.

Oracle Utilities Customer Cloud Service Error Logs

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

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

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

  Example: V27_CCS_ORA_WLS/logs/system\

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

Oracle Integration Cloud

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

Monitoring Integration Flows

Integration flows are monitored using the following:

- Dashboard
- Cloud Logs

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

1. Login to Oracle Integration Cloud.
2. On the **Home** page, click **Monitoring**.
3. Select any of the following as required:
   - **Dashboards**: To monitor the complete dashboard of integration.
   - **Integrations**: To monitor each integration.
   - **Tracking**: To monitor instance and flow trace/activity stream of the integration.
   - **Error**: To monitor the integrations in 'error' state. Re-submit the asynchronous integration flows.

To monitor the integration flows using Oracle Integration Cloud logs:

1. Login to Oracle Integration Cloud.
2. On the **Home** page, click **Monitoring**.

3. On the navigation pane, click **Dashboards** to view the overall success/failure rate of the integration.
4. Navigate to the **Logs** menu.
5. In the right pane, click the link to show options for downloading the Oracle Integration Cloud logs or diagnostics logs.
6. In case of any issues, attach the diagnostic logs to a service request for help.

Troubleshooting

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

To troubleshoot the activation error:

1. Click **Download Diagnostic Logs** to download the logs for diagnosing the issue.
2. Select **Enable Tracing**.

   TRACE ENABLED is displayed next to ACTIVE.

A few sample cases are as follows:

- For any connectivity errors while activating the integration, make sure the trigger connection is successful. Test the connection and refresh the metadata, and then activate the integration.
- If the integration (Oracle Utilities Customer Cloud Service initiated flows) is activated for the first time, make sure the Oracle Utilities Customer Cloud Service catalog is configured accurately.

Appendix A

Limitations and Workarounds

For a list of limitations and workarounds in this integration and in the respective edge applications, refer to the *Oracle Utilities Customer Cloud Service Integration to Oracle Utilities Digital Asset Cloud Service Release Notes* included in this release. The documentation is available on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/integrations-index.html