

## **Oracle Utilities Notifications Hub**

Also applicable to:

Oracle Utilities Customer Cloud Service

Oracle Utilities Customer to Meter

Oracle Utilities Customer Care and Billing Cloud Service

Configuration Guide

Release 22A

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Oracle Utilities Notifications Hub Configuration Guide

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# Preface

Welcome to the Oracle Utilities Notifications Hub Configuration Guide.

The preface includes the following:

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

# Audience

This document is intended for anyone implementing the Oracle Utilities Notifications Hub integration.

## 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 Notifications Hub integration documentation	<a href="https://docs.oracle.com/en/industries/utilities/integrations-index.html">https://docs.oracle.com/en/industries/utilities/integrations-index.html</a>
Oracle Utilities Customer Cloud Service documentation	<a href="https://docs.oracle.com/en/industries/utilities/customer-cloud-service/">https://docs.oracle.com/en/industries/utilities/customer-cloud-service/</a>
Oracle Utilities Customer Care and Billing documentation	<a href="https://docs.oracle.com/en/industries/energy-water/ccb/">https://docs.oracle.com/en/industries/energy-water/ccb/</a>
Oracle Utilities Customer to Meter documentation	<a href="https://docs.oracle.com/en/industries/energy-water/c2m/">https://docs.oracle.com/en/industries/energy-water/c2m/</a>
Oracle Utilities Network Management System documentation	<a href="https://docs.oracle.com/cd/E72219_01/documentation.html">https://docs.oracle.com/cd/E72219_01/documentation.html</a>
Oracle Responsys documentation	<a href="https://docs.oracle.com/en/cloud/saas/marketing/responsys.html">https://docs.oracle.com/en/cloud/saas/marketing/responsys.html</a>

### Additional Documentation

Resource	Location
Oracle Integration Cloud Service documentation	Refer to the OIC documentation at: <a href="https://docs.oracle.com/en/cloud/paas/integration-cloud/index.html">https://docs.oracle.com/en/cloud/paas/integration-cloud/index.html</a>
Oracle Support	<p>Visit My Oracle Support at <a href="https://support.oracle.com">https://support.oracle.com</a> regularly to stay informed about updates and patches.</p> <p>Refer to the <i>Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1)</i> on My Oracle Support to determine if support for newer versions of the listed products is included.</p> <p>For more information, refer to the Oracle Utilities Integrations page at <a href="http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm">http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm</a></p>
Oracle University for training opportunities	<a href="http://education.oracle.com/">http://education.oracle.com/</a>

# Updates to Documentation

The complete Oracle Utilities Notifications Hub documentation set is available from Oracle Help Center at <https://docs.oracle.com/en/industries/utilities/index.html>.

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

## Documentation Accessibility

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

### Access to Oracle Support

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

## Conventions

The following text conventions are used in this document:

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

## Acronyms

The following terms are used in this document:

Term	Expanded Form
OUCCB/CCB	Oracle Utilities Customer Care and Billing
OUNMS	Oracle Utilities Network Management System
OIC	Oracle Integration Cloud
DVM	Domain Value Map (Lookup)
Responsys	Oracle Responsys
OCI Stream	Oracle Cloud Infrastructure Stream

# Chapter 1

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## Introduction

This chapter provides an overview about the integration between Oracle Utilities Customer Cloud Service and Oracle Utilities Network Management System using Oracle Integration Cloud. It focuses on software requirements, Oracle Integration Cloud and business standpoint of the integration.

The chapter includes the following:

- [Overview of the Integration](#)
- [About Oracle Utilities Customer Cloud Service](#)
- [About Oracle Utilities Customer to Meter](#)
- [About Oracle Utilities Customer Care Billing](#)
- [About Oracle Utilities Network Management System](#)
- [About Oracle Responsys](#)
- [About Oracle Integration Cloud](#)
- [About Oracle Cloud Infrastructure](#)
- [Software Requirements](#)
- [Prerequisites](#)

**Important!** This integration is also applicable to the following:

- Oracle Utilities Customer Cloud Service (CCS)
- Oracle Utilities Customer to Meter (C2M)
- Oracle Utilities Customer Care and Billing Cloud Service (CCBCS)

Please note that this integration applies to any Oracle product that includes Oracle Utilities Customer Care and Billing.



# Overview of the Integration

The Oracle Utilities Notifications Hub integration enables outbound, Oracle Utilities Customer Cloud Service-related and Oracle Utilities Network Management System (Outage)-related messages to be sent to customers via Oracle Responsys. The primary systems involved are Oracle Utilities Network Management System (NMS), Oracle Utilities Customer Cloud Service (CCS), Oracle Integration Cloud (OIC), and Oracle Responsys. In addition, Oracle Utilities Notifications Hub can be leveraged by other on-premises and cloud applications to send domain-specific messaging.

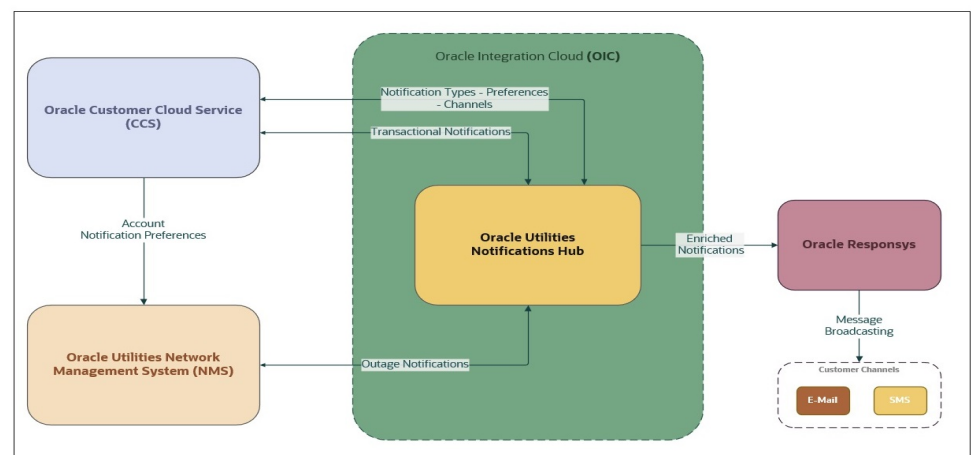
For any outage-related events (such as Outage Scheduled/Started, ERT updates, etc.) created in Oracle Utilities Network Management System, notification messages will be created for all accounts affected by a specific outage. Next, the integration will leverage customer account channel preferences from Oracle Utilities Customer Cloud Service to enrich and assemble the outage notification message content based on the desired target channels. The messages will then be sent to Oracle Responsys, where based on a previously configured e-mail and/or SMS campaigns, outage communications will be distributed to affected customers.

A separate synchronization process is used to update Oracle Utilities Network Management System's notification preferences (account-level), based on the account notification preferences specified in Oracle Utilities Customer Cloud Service.

For any Oracle Utilities Customer Cloud Service-related events (Bill Due/Past Due, Collection/Disconnect Warning, etc.), the integration will fetch outbound notification messages from Oracle Utilities Customer Cloud Service queues and send the complete messages to Oracle Responsys for distribution to customers' preferred channels, based on pre-configured email and/or SMS Campaigns.

This integration can be leveraged to:

- Send outage notifications/updates to customers across multiple channels.
- Send customer-related notifications to customers across multiple channels.
- Obtain customer notification and delivery preferences from Oracle Utilities Customer To Meter (notifications preferences/types, delivery channels).
- Utilize campaign management in Oracle Responsys, to create and customize e-mail/SMS campaigns based on utilities' needs.



## About Oracle Utilities Customer Cloud Service

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

## About Oracle Utilities Customer to Meter

Oracle Utilities Customer to Meter (C2M) brings together market-leading customer care and metering in a one solution, running on one database, accessed through one screen-to deliver connected operations and more valuable connections with your customers.

## About Oracle Utilities Customer Care Billing

Oracle Utilities Customer Care and Billing is a central repository for customer information, such as name, address, phone number, and so on which manages all aspects of the utility customer lifecycle.

Oracle Utilities Customer Care and Billing also supports sending notifications and the maintenance of communication preference for notification types owned by Oracle Utilities Customer Care and Billing and other edge applications, such as Oracle Utilities Network Management System.

## About Oracle Utilities Network Management System

Oracle Utilities Network Management System processes trouble calls from customers and analyzes them to determine probable outage locations. It can generate estimated restoration times (ERTs) that can then be provided back to customers.

Oracle Utilities Network Management System also keeps a history of all of the customer calls that were entered in the system, as well as a history of all events that were known to affect a customer even if the customer did not call in. In addition to responding to unplanned outages and non-outage problems, Oracle Utilities Network Management System can help a utility plan maintenance work or new construction that may impact existing customers. When the detailed switching plans are generated in Oracle Utilities Network Management System, information can be provided to customers about planned outages that will impact them.

## About Oracle Responsys

Oracle Responsys Campaign Management is a cross-channel campaign management platform that delivers advanced intelligence at scale so you can create personalized messages based on the individual interests and preferences of customers and prospects.

# About Oracle Integration Cloud

Oracle Integration Cloud is a unified platform to integrate the applications, automate processes, and create applications.

Using the Process Builder, the business processes can be rapidly designed, automated, and managed in the cloud. Using integrations connect the applications into a continuous business flow. The applications that are on cloud and on premises can be integrated using Oracle Integration Cloud. The lookups help to match application specific codes between the two applications.

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

## About Oracle Cloud Infrastructure

Oracle Cloud Infrastructure is a set of complementary cloud services that enable you to build and run a wide range of applications and services in a highly available hosted environment. Oracle Cloud Infrastructure (OCI) offers high-performance compute capabilities (as physical hardware instances) and storage capacity in a flexible overlay virtual network that is securely accessible from your on-premises network.

## Software Requirements

The following software is required for the integration to work:

- Oracle Utilities Customer to Meter
- Oracle Utilities Customer Cloud Service
- Oracle Integration Cloud
- Oracle Utilities Network Management System
- Oracle Responsys
- OCI Streaming

For specific application versions, refer to the *Oracle Utilities Notifications Hub Release Notes* included in this release.

## Prerequisites

The following are the prerequisites for this integration:

- This integration requires the Oracle Utilities Customer to Meter integration to Oracle Utilities Network Management System to be in place to sync customers and the integration patch 33936395 also is applied to the integration to include the flow that synchronizes notification type preferences for Oracle Utilities Network Management System notification types between Oracle Utilities Customer to Meter and Oracle Utilities Network Management System.

Refer to the *Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System Implementation Guide* for more information. It is available at:

[https://docs.oracle.com/cd/E72219\\_01/documentation.html](https://docs.oracle.com/cd/E72219_01/documentation.html)

- This integration requires two Oracle Integration Cloud Streams named SourceNotificationStream and TargetNotificationStream with atleast one partition.

Refer to <https://docs.oracle.com/en-us/iaas/Content/Streaming/home.htm> for more information on Oracle Integration Cloud Streaming.

# Chapter 2

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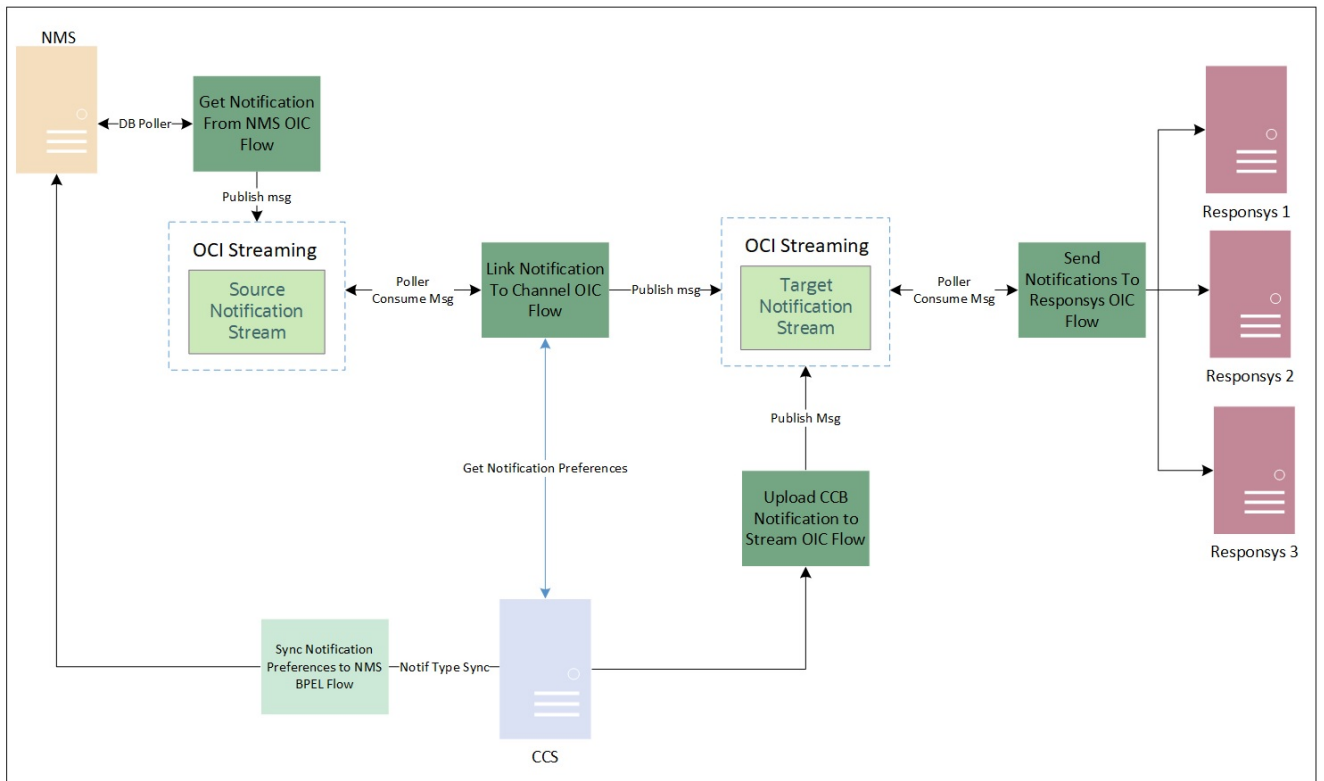
## Solution Architecture

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

- [Solution Diagram](#)
- [Business Flows](#)

# Solution Diagram

The following diagram provides a high-level representation of the integration.



## Business Flows

The integration scope supports the following business processes:

- [Link Notification and Channel Information Process \(Oracle Integration Cloud initiated\)](#)
- [Get Outage Notification From NMS \(Oracle Integration Cloud initiated\)](#)
- [Send Notifications to Responsys Process \(Oracle Integration Cloud initiated\)](#)
- [Oracle Utilities CCB OCI Streams Notifications Upload \(Oracle Integration Cloud initiated\)](#)

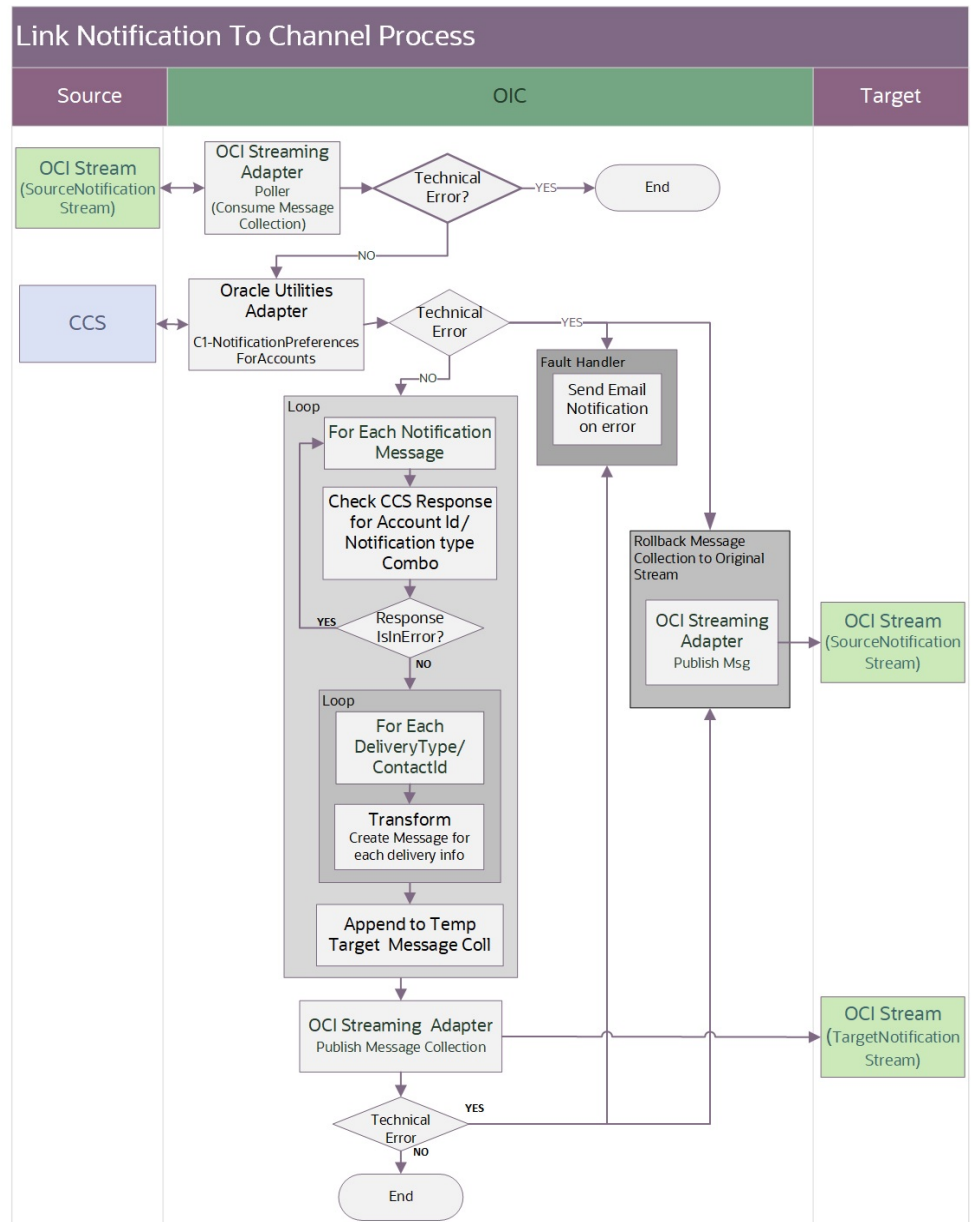
Refer to the *Oracle Utilities Customer To Meter Integration to Oracle Utilities Network Management System Implementation Guide* for information on Notification Preferences Sync BPEL flow. It is available at: [https://docs.oracle.com/cd/E72219\\_01/documentation.html](https://docs.oracle.com/cd/E72219_01/documentation.html)

## Link Notification and Channel Information Process (Oracle Integration Cloud initiated)

This integration process enhances the notification messages to be sent to the Oracle Responsys application.

It links the notifications coming from the source stream to the account's notification channel information coming from Oracle Utilities Customer Care and Billing. The combined information is published to the target stream to be processed by the Send Notifications to Responsys OIC process which sends the information to Oracle Responsys.

The following diagram shows a graphical representation of the Link Notification to Channel Information integration process.



## Processing Details

This integration process deployed on Oracle Integration Cloud performs the following activities:

1. Polls the Oracle Integration Cloud Stream 1 called “SourceNotification Stream”. This process consumes the notification messages by batches - the maximum records fetch is 200 and it polls the source stream every sixty (60) seconds.

**Note:** The **Maximum Number of Records to be fetched** and **Polling Frequency** are configured on the Oracle Integration Cloud Streaming Adapter as a Trigger (Poller) at design time.

2. Invoke the CCB REST service - C1-NotificationPreferencesForAccounts to get the notification preferences for the list of account id and notification type combination provided. This input list is the list of account Id and notification type combination coming from the messages consumed in the source stream.
3. For each message fetched from Oracle Integration Cloud Source Stream, do the following:
  - Find the corresponding **Account Id** and **Notification Type** record in the Oracle Utilities Customer Care and Billing response.
  - If the response for that account ID and notification type combination record:
    - Is in error, skip the notification message and process the next notification message.
    - Most of the time Oracle Utilities Customer Care and Billing returns an error response if the account ID and notification type combination is not found in Oracle Utilities Customer Care and Billing. This scenario will be encountered when the account's notification preference has changed, i.e. customer remove subscription to a notification type, and that information has not yet been synced to Oracle Utilities Network Management System.
    - No error, proceed to the next step.
  - For each delivery type and contact ID record in the collection:
    - Transform the notification message and Oracle Utilities Customer Care and Billing response record to the format needed by the Oracle Integration Cloud Stream 2 (TargetNotification Stream).

**Note:** Refer to [Chapter 10: Sample Messages](#) to understand what message is published to the target stream.

- Append to a temporary target message output collection.
4. When all the notification messages coming from the Source stream are processed, invoke Oracle Integration Cloud Streaming adapter to publish the notification messages in batches to Oracle Integration Cloud Target Stream.
  5. Error Handling for this integration process. Email notification is sent for any errors encountered in Oracle Integration Cloud. Email notifications are optional but by default it is enabled.

Refer to [Chapter 6: Configuring Lookups, Error Handling, and Email Notifications](#) for error handling information on error scenarios and retry options.

Refer to the *Oracle Utilities Notifications Hub Data Mapping Guide* about mapping information for data elements.



## Technical Details

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

Artifacts	Value
Integration Process Name	Oracle Utilities OCI Stream Notif linkChannel
Integration Package Name	outl.ba.notifications_hub.1.22.1000
OCI Streaming Adapter	<ul style="list-style-type: none"> <li>• Poller to Consume Message               <ul style="list-style-type: none"> <li>• Operation: Consume messages from Stream</li> <li>• Stream: Source Notification Stream</li> <li>• ConsumerGroup: SourceNotificationGroup</li> <li>• Partition: Default</li> <li>• Polling Frequency: 60 s</li> <li>• Maximum Number of records to Fetch: 200</li> <li>• Message Structure: JSON</li> </ul> </li> <li>• Publish to Stream               <ul style="list-style-type: none"> <li>• Operation: Publish messages to Stream</li> <li>• Stream: Target Notification Stream</li> <li>• Partition: Default</li> <li>• Message Structure: JSON</li> </ul> </li> </ul> <p>Connection Name: Oracle Utilities OCI Streaming for Notif Hub</p>
CCB REST IWS (REST Adapter)	<p>Web Service Name: C1-NotificationPreferencesForAccounts</p> <p>Computed URL: https://{host}:{port}/{tenant}/{domain}/ccs/rest/apis/customer/v-model/notificationPreferencesForAccounts</p> <p>Method: POST URI: /</p> <p>Connection Name:</p> <ul style="list-style-type: none"> <li>• Oracle Utilities REST CCB for Notif Hub</li> <li>• CCBDirectRESTNotifPref</li> </ul>
OIC Lookup	<p>OUTL-BRT-NOTIFHUB_ConfigProps</p> <p>OUTL-BRT-NOTIFHUB_Email_ID</p> <p>OUTL-BRT-NOTIFHUB_DeliveryRouting</p>

## Get Outage Notification From NMS (Oracle Integration Cloud initiated)

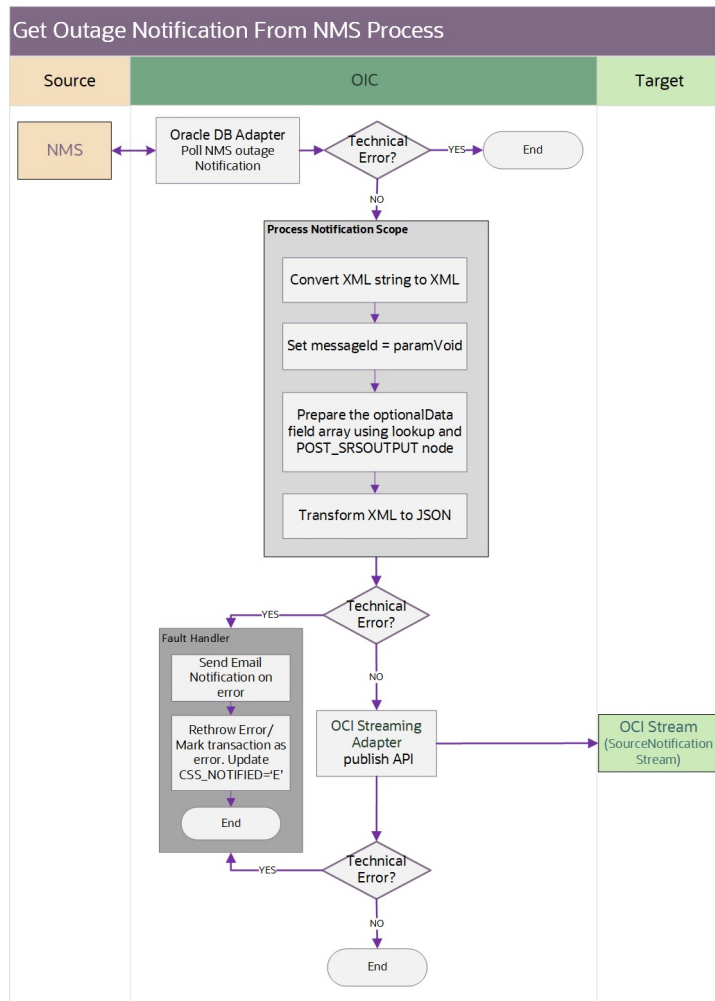
This integration process picks up the Oracle Utilities Network Management System notification messages from NMS MYC\_CSS\_PARAM\_VIO\_TEXT table, transforms the message and publish to OCI Source stream. The Oracle Utilities Network Management System notification message is transformed in two data categories - header and optional data. The accountId, notificationType, messageId, origin and

notificationTemplate are part of header and data with key value pair is part of the data section.

Note: Kindly refer a sample incoming XML message received from NMS and sample JSON message output shown under Sample Messages section.

**Note:** Refer to [Chapter 10: Sample Messages](#) for a sample incoming XML message received from Oracle Utilities Network Management System and sample JSON message output to understand what message is published to the target stream.

The following diagram shows a graphical representation of the Get Outage Notification from Oracle Utilities Network Management System integration process.



## Processing Details

This integration process deployed on Oracle Integration Cloud performs the following activities:

1. The integration is a DB poller and listens to the NMS MYC\_CSS\_PARAM\_VIO\_TEXT table for any notification record. The polling time is set to “1minute” by default.

2. Oracle Utilities Network Management System stores notification in XML format in MYC\_CSS\_PARAM\_VIO\_TEXT in database table. The column VIO\_TEXT contains the actual XML message.
3. The column CSS\_NOTIFIED is set to 'N' by Oracle Utilities Network Management System for integration to pick the notification record for further processing.
4. Once the poller receives a Oracle Utilities Network Management System notification record, the XML notification data is transformed to JSON format for OCI stream.
5. OCI stream requires the JSON in header and optional data format.
6. The JSON header information holds the following information:
  - accountId
  - notificationType
  - messageId
  - origin
  - notificationTemplate

The origin is defaulted to “NMS” as the notification is generated by Oracle Utilities Network Management System system. The notificationTemplate is defaulted to empty and the field is populated once the Get Notification preference process is completed.

Sample:

```
{
  "accountId": "6386568150",
  "notificationType": "ZZ-UOUT",
  "messageId": "2088",
  "origin": "NMS",
  "notificationTemplate": ""
}
```

7. The JSON “data” information is collection of key and value pairs. By default, Cause, CrewETA, Outagetime, EstRstTime, CompletionTime and CustomerOut are populated and provided as base. In addition, data elements under PICKLIST, AFFECTEDCUSTOMERLIST(CUSTOMERADDRESS1,2..) are also populated as key value pairs as part of base. The lookup OUTL-BRT-NOTIFHUB\_ConfigProps holds the default property list as below:

Lookup Name: OUTL-BRT-NOTIFHUB\_ConfigProps

PropertyName	Value
nms.datafield.propertylist	OUTAGETIME,CUSTOMERSOUT,CAUSE,ESTRESTTIME,CREWETA,COMPLETIONTIME

8. After the transformation, the JSON payload is generated as per the below format:

```
{
  "accountId": "6386568150",
  "notificationType": "ZZ-UOUT",
  "messageId": "2088",
  "origin": "NMS",
  "notificationTemplate": "",
  "data": [{
    "key": "CUSTOMERADDRESS1",
    "value": "10375 Newbury Ave NW, Uniontown, OH 44685"
  }]
}
```

```

    }, {
      "key": "CAUSE",
      "value": "TROUBLE_CALL"
    }, {
      "key": "CREWETA",
      "value": "0"
    }, {
      "key": "OUTAGETIME",
      "value": "1646921959"
    }, {
      "key": "ESTRESTTIME",
      "value": "1646926759"
    }, {
      "key": "COMPLETIONTIME",
      "value": "-1"
    }, {
      "key": "CUSTOMERSOUT",
      "value": "1"
    }
  ]
}

```

9. The integration then publishes the notification JSON to OCI source stream. The transaction is marked as success by updating the CSS\_NOTIFIED='Y'.
10. On technical error such as invalid XML message or OCI stream being down or unavailable, an email is sent with error details including Instance ID and Violation ID. The failed transaction is marked as error by updating the CSS\_NOTIFIED='E'.

Refer to [Chapter 6: Configuring Lookups, Error Handling, and Email Notifications](#) for error handling information on error scenarios and retry options.

Refer to the *Oracle Utilities Notifications Hub Data Mapping Guide* about mapping information for data elements.

## Technical Details

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

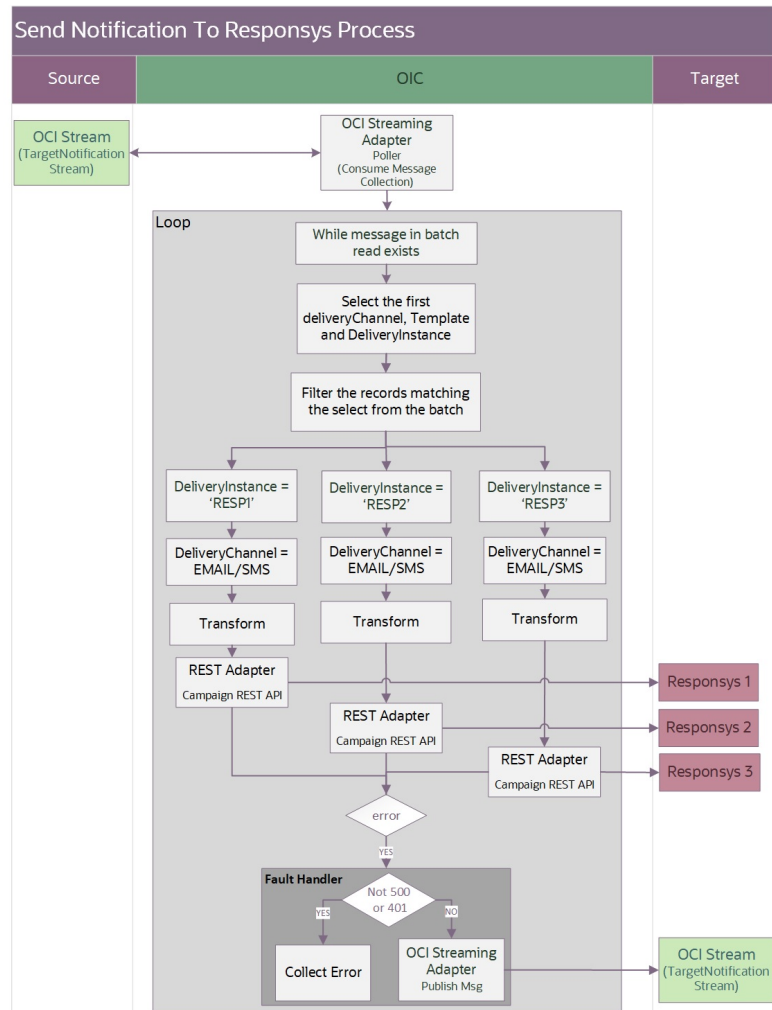
Artifacts	Value
Integration Process Name	Oracle Utilities NMS OCI Stream Notif Upload
Integration Package Name	outl.ba.notifications_hub.1.22.1000
Identifier	OUTL-BA-NMS_STREAM_NOTIF_UPLOAD
DB Adapter	DB Poller to consume NMS DB record
	Operation: select/update
	Polling Frequency: 60 s
	Message format: XML
	Connection Name: Oracle Utilities DB NMS for Notif Hub

Artifacts	Value
OCI Streaming Adapter	Publish message to source OCI stream  Operation: Publish messages to Stream Stream: Source Notification Stream Partition: Default Message Structure: JSON Connection Name: Oracle Utilities OCI Streaming for Notif Hub
OIC Lookup	OUTL-BRT-NOTIFHUB_ConfigProps OUTL-BRT-NOTIFHUB_Email_ID OUTL-BRT-NMS_STREAM_TROUBLE_CODE

## Send Notifications to Responsys Process (Oracle Integration Cloud initiated)

This integration process reads the final transformed notification messages from different application in the OCI Stream and sends to Oracle Responsys to be delivered via email or SMS.

The following diagram shows a graphical representation of the Send Notifications to Oracle Responsys process.



## Processing Details

The integration process includes the following activities:

1. This Oracle Integration Cloud process reads the final transformed notification messages dropped in the TargetNotificationStream through OCI Streaming Adapter poller. The messages are read in batches and assigned to “ConsumedNotifCollection” global variable through data stitch.
2. For each message in the ConsumedNotifCollection:
  - a. Assign the deliveryChannel, notificationTemplate and deliveryInstance from the first notification message to variables for sorting.
  - b. Iterate over messages in the ConsumedNotifCollection.
  - c. Sort the messages. If the messages match the sort parameters for deliveryChannel, notificationTemplate and deliveryInstance, copy them to the SortedNotifCollection global variable.
  - d. If the messages do not match the sort parameters, copy them to the UnprocessedNotifCollection global variable.

- e. The messages in SortedNotifCollection are checked for the Oracle Responsys instance by examining the deliveryInstance field.
- f. The grouped messages in the SortedNotifCollection are transformed to Oracle Responsys Email or SMS format based on the deliveryChannel of the group.
- g. Oracle Responsys API for the particular campaign identified by notification template is invoked.
- h. The error thrown during API invocation is handled by respective fault handlers.

Refer to [Chapter 6: Configuring Lookups, Error Handling, and Email Notifications](#) for error handling information on error scenarios and retry options.

Refer to the *Oracle Utilities Notifications Hub Data Mapping Guide* about mapping information for data elements.

## Technical Details

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

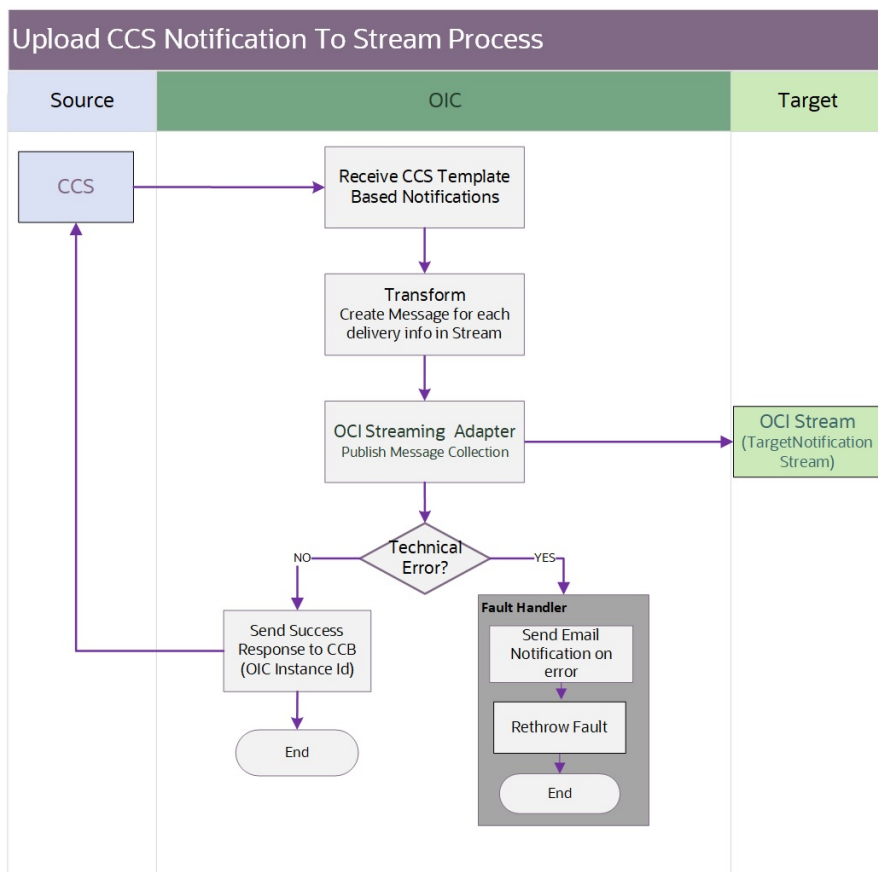
Artifacts	Value
Integration Process Name	Oracle Utilities OCI Stream Responsys Notif Send
Integration Package Name	outl.ba.notifications_hub.1.22.1000
OCI Streaming Adapter	<ul style="list-style-type: none"> <li>• Poller to Consume Message               <ul style="list-style-type: none"> <li>• Operation: Consume messages from Stream</li> <li>• Stream: TargetNotificationStream</li> <li>• Consumer Group: NotificationGroup</li> <li>• Partition: Default</li> <li>• Polling Frequency: 60 s</li> <li>• Maximum Number of records to Fetch: 200</li> <li>• Message Structure: JSON</li> </ul> </li> <li>• Publish to Stream               <ul style="list-style-type: none"> <li>• Operation: Publish messages to Stream</li> <li>• Stream: TargetNotificationStream</li> <li>• Partition: Default</li> <li>• Message Structure: JSON</li> <li>• Connection Name: Oracle Utilities OCI Streaming for Notif Hub</li> </ul> </li> </ul>
Responsys Web Service	<p>WebService:            /rest/api/v1.3/campaigns/{notificationTemplate}/email            /rest/api/v1.3/campaigns/{notificationTemplate}/sms</p> <p>Method: POST            Connection Name:            Oracle Utilities REST Responsys for Notif Hub            Oracle Utilities REST Responsys2 for Notif Hub            Oracle Utilities REST Responsys3 for Notif Hub</p>

Artifacts	Value
OIC Lookup	OUTL-BRT-NOTIFHUB_ConfigProps OUTL-BRT-NOTIFHUB_Email_ID OUTL-BRT-NOTIFHUB_DeliveryChannel OUTL-BRT-NOTIFHUB_DeliveryInstance

## Oracle Utilities CCB OCI Streams Notifications Upload (Oracle Integration Cloud initiated)

This integration process is used to process Oracle Utilities Customer Care and Billing notifications as outbound messages from Oracle Utilities Customer Care and Billing and publish it into Oracle OCI Streams. The information is sent synchronously from Oracle Utilities Customer Care and Billing, regardless of the notification type, and OIC sends back a synchronous response. Oracle Utilities Customer Care and Billing does not use the externalId sent as part of the response.

The following diagram shows a graphical representation of the CCB Notifications to OCI Stream process.





## Processing Details

The integration process includes the following activities:

1. Oracle Utilities Customer Care and Billing sends the notification template base outbound notification message to the Oracle OUTL-BA-CCB\_STREAM\_NOTIF\_UPLOAD integration process deployed on Oracle Integration Cloud.
2. The Oracle OUTL-BA-CCB\_STREAM\_NOTIF\_UPLOAD integration process transforms the outbound message from Oracle Utilities Customer Care and Billing to the standard message format of the OCI Target Notification Stream. There is a separate notification message created for each delivery info going into OCI Stream. The messages are published in bulk into OCI Target Notification Stream using the OCI Stream Adapter.
3. Oracle OCI Streams sends the success or failure response to the integration were it its transformed and sent to Oracle Utilities Customer Care and Billing.
4. In case of successful batch write to the OCI Streams the OIC instance ID is returned to Oracle Utilities Customer Care and Billing.

Refer to [Chapter 6: Configuring Lookups, Error Handling, and Email Notifications](#) for error handling information on error scenarios and retry options.

Refer to the *Oracle Utilities Notifications Hub Data Mapping Guide* about mapping information for data elements.

## Technical Details

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

Artifacts	Value
Integration Process Name	Oracle Utilities CCB OCI Stream Notif Upload
Identifier	OUTL-BA-CCB_STREAM_NOTIF_UPLOAD
Integration Package Name	outl.ba.notifications_hub.1.22.1000.par
CCB BO	C1-TMPLNTRFQ
Oracle Utilities Adapter Connection	OUTL-BRT-REST-CCB_NOTIF_HUB
Oracle Streams Adapter	OUTL-BRT-STREAM-NOTIF_HUB <ul style="list-style-type: none"> <li>• Publish to Stream               <ul style="list-style-type: none"> <li>• Operation: Publish messages to Stream</li> <li>• Stream: Target Notification Stream</li> <li>• Partition: Default</li> <li>• Message Structure: JSON</li> </ul> </li> </ul>
OIC Lookup	OUTL-BRT-NOTIFHUB_ConfigProps OUTL-BRT-NOTIFHUB_Email_ID OUTL-BRT-NOTIFHUB_DeliveryInstance

# Chapter 3

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## Configuring Oracle Utilities Customer Care and Billing

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

- [System Configuration](#)
- [Managing Web Service Catalog](#)

# System Configuration

To configure the Oracle Utilities Customer Care and Billing setup for the integration:

1. Login to Oracle Utilities Customer Care and Billing.
2. Set up notification types. Refer to the [Notification Types](#) section for details.
3. Set up message senders. Refer to the [Message Senders](#) section for details.
4. Set up an external system. Refer to the [External System](#) section for details.
5. Set up Bill and Collection Event algorithms. Refer to the [Bill and Collection Event Algorithms](#) section for more details.
6. Set up feature configuration. Refer to the [Feature Configuration](#) section for more details.
7. Set up Notification Preferences Master Configuration and Oracle Utilities Customer Care and Billing Self-Service Integration. Refer to the [Master Configuration](#) section for details.

## Notification Types

Define the notification types to be used in the integration process between Oracle Utilities Customer Care and Billing and Oracle Utilities Network Management System.

On the **Admin** menu, navigate to the **Notification Type** portal.

Add the following Oracle Utilities Network Management System notification types used for this integration:

- Planned Outage Started
- Outage Started
- Planned Outage Restored
- Outage Restored
- Planned Outage Canceled
- Outage Canceled
- Planned Outage Estimated Restoration Time (ERT) Update
- Outage Estimated Restoration Time (ERT) Update
- Planned Outage Scheduled

Add the following Oracle Utilities Customer Care and Billing notification types used for this integration:

- Bill Due Notification

On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a **Self-Service Task Type** with following details:

- Service Task Type Business Object: Bill Due Notification Task Type
- Related Transaction Object: Bill Due Notification Task
- Service Task Type Status: Active
- Service Task Class: Self-Service

On the **Admin** menu, navigate to the **Notification Type** page. Add a **Notification Type** with following details:

- Notification Type Business Object: Template-Based Subscription Notification Type
- Notification Type (Legacy): Bill Due Notification
- Use Service Task: Enabled
- Service Task Type: Service Task Type created for Bill Due Notification
- Template Data Algorithms: Bill Information Template Data
- Person Contact Types
- Delivery Types:
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System
- Late Payment Notification

On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a **Self-Service Task Type** with following details:

- Service Task Type Business Object: Late Payment Notification Task Type
- Related Transaction Object: Late Payment Notification Task
- Service Task Type Status: Active
- Service Task Class: Self-Service

On the **Admin** menu, navigate to the **Notification Type** page. Add a **Notification Type** with following details:

- Notification Type Business Object: Template-Based Subscription Notification Type
- Notification Type (Legacy): Late Payment Notification
- Use Service Task: Enabled
- Service Task Type: Service Task Type created for Late Payment Notification
- Template Data Algorithms: Bill Information Template Data
- Person Contact Types
- Delivery Types:
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System.
- Invite User Notification

On the **Admin** menu, navigate to the **Self-Service Task Type** page. Add a **Self-Service Task Type** with following details:

- Service Task Type Business Object: Web User Invitation Task Type
- Related Transaction Object: Web User Invitation Task
- Service Task Type Status: Active
- Service Task Class: Self-Service

On the **Admin** menu, navigate to the **Notification Type** page. Add a **Notification Type** with following details:

- Notification Type Business Object: Template-Based Subscription Notification Type
- Suppression Criteria: Always Suppressed (C1-ALWY-SUP)
- Override Delivery Information: Override Guest Delivery Information (C1OVINVGSTDI)
- Template Data Algorithms: Guest Notification Template Data
- Person Contact Types
- Delivery Types:
  - Delivery Type: Email
  - Template Name: Template Name as created in Notification Delivery System.
- Confirm Acceptance Notification

On the **Admin** menu, navigate to the **Notification Type** page. Add a **DSS-T Notification Type** with following details:

- Notification Type Business Object: Template-Based Parent Push Notification Type
- Person Contact Types
- Delivery Types: Email and/or SMS

On the **Admin** menu, navigate to the **Notification Type** page. Add a **Notification Type** with following details:

- Notification Type Business Object: Template-Based Individual Push Notification Type
- Parent Notification Type: Notification Type created for DSS-T notifications
- Template Data Algorithms: Guest Notification Template Data
- Delivery Types:
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System.
- Collection Notification

On the **Admin** menu, navigate to the **Notification Type** page. Add a parent **Notification Type** with following details:

- Notification Type Business Object: Template-Based Parent Push Notification Type
- Person Contact Types
- Delivery Types: Email and/or SMS

On the **Admin** menu, navigate to the **Notification Type** page. Add a **Notification Type** with following details:

- Notification Type Business Object: Template-Based Individual Push Notification Type

- Parent Notification Type: The Parent Notification Type created above
- Template Data Algorithms: Collection Notification Template Data
- Delivery Types:
  - Delivery Type: Email and/or SMS
  - Template Name: Template Name as created in Notification Delivery System

Notification types can be defined as Template-Based Parent/Individual Push or Template-Based Subscription. Refer to the respective product's online help for more information.

For Template-Based Notification Types, the Template Name defined for each Delivery Types must be a valid campaign in Oracle Responsys.

## Template Parameters

Template Data algorithms defined on Notification Types send a set of key/value pairs to the external system. Additional custom Template Data algorithms can be configured on the Notification Type to add more key/value pairs.

Use the following details to configure Notification Templates in Delivery System.

Template parameters sent by Bill Information Template Data algorithm:

- BILL\_ID
- BILL\_DT
- BILL\_DUE\_DATE
- AMOUNT\_DUE
- CURRENCY\_CODE
- CURRENCY\_SYMBOL
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

Template parameters sent by Guest Notification Template Data algorithm:

- WEB\_USER\_NAME
- OWNER\_FIRST\_NAME
- OWNER\_LAST\_NAME
- GUEST\_FIRST\_NAME
- GUEST\_LAST\_NAME
- GUEST\_EMAIL
- GUEST\_ACCESS\_ROLE
- GUEST\_ACCESS\_ROLE\_DESCR
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

Template parameters sent by Collection Notification Template Data algorithm:

- ARREARS\_AMOUNT
- ARREARS\_DATE
- CURRENCY\_CODE
- CURRENCY\_SYMBOL
- MAIN\_ACCOUNT\_ADDRESS
- SERVICE\_ADDRESS

## Message Senders

Define a message sender for sending Oracle Utilities Customer Care and Billing template-based notification preferences outbound messages.

On the **Admin** menu, navigate to the **Message Sender** page. Add a message sender for Oracle Utilities Customer Care and Billing template-based notification preferences with the following details:

- Invocation Type: Real Time
- Message Class: RTJSONSNDR (Sender for real-time HTTP / JSON messages)
- MSG Encoding: UTF-8 message encoding
- On the **Context** tab, provide the HTTP URL, Login User, Login Password, HTTP Method and HTTP Timeout to the integration layer.

## External System

For Oracle Utilities Customer Care and Billing Notifications, define an external system for Oracle Utilities Customer Care and Billing template-based notification preference messages.

On the **Admin** menu, navigate to the **External System** page. Add a external system for Oracle Utilities Customer Care and Billing template-based notification preference messages.

Add an outbound message type with the following details:

- Outbound Message Type: C1-TMPLNTRFQ (Template Based Notification Request)
- Processing Method: Real-time
- Message Sender: Template-based notification preferences message sender defined above
- Date/Time Format: XSD
- JSON Conversion Method: Base JSON Conversion

## Bill and Collection Event Algorithms

Define the Post Bill Completion algorithm.

1. On the **Admin** menu, navigate to the **Customer Class** page.
2. On the **Controls** tab, configure the following algorithm:
  - Post Bill Completion: Set Bill Notifications for Self-Service (WX-SSBNOTIFY)

Define the Collection Event algorithm:

1. On the **Admin** menu, navigate to the **Algorithm** page.
2. Add the Collection Event Notification algorithm with the following details:
  - Algorithm Type: Collection Event Notification (C1COLLEVTNOT)
  - Notification Type: Notification Type defined for Collection Event Notification
3. On the **Admin** menu, navigate to **Collection Event Type** for the notification.
4. Configure the Collection Event Notification algorithm in the **Collection Event Algorithm** field.

## Feature Configuration

To setup Invite Guest User and Confirm Acceptance notifications, enable the **Is CX Installed** feature.

1. On the **Admin** menu, navigate to **Feature Configuration**.
2. Add or edit the **General System Configuration** with following options:
  - Is CX Installed: Y

## Master Configuration

For Oracle Utilities Customer Care and Billing notifications, define the Notification Preferences master configuration:

1. On the **Admin** menu, navigate to the **Master Configuration** portal.
2. Add or edit the **Notification Preferences** master configuration.
3. In the **Default External Communication** section, add the **Default External System** and **Default Outbound Message Type** as defined above for template-based notification messages. **External System** and **Outbound Message Type** can also be configured separately for each notification type in the **Override External Communication** section.

Define the Oracle Utilities Customer Care and Billing Self-Service Integration master configuration:

1. On the **Admin** menu, navigate to the **Master Configuration** portal.
2. Add or edit the Oracle Utilities Customer Care and Billing Self-Service Integration master configuration. Refer to the product specific online and embedded help for more information on defining each section.



3. In the **Notification Service Tasks** section, add the following notification types:
  - Bill Due Notification: Notification Type defined for Bill Due Notification
  - Late Payment Notification: Notification Type defined for Late Payment Notification
4. In the **Guest User Invitation Notification Types** section, add the following notification types:
  - Invite User: Notification Type defined for Invite Guest Notification
  - Confirm Acceptance: Notification Type defined for Confirm Acceptance Notification

## 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 Catalog URL in the Oracle Integration Cloud connection.

To configure the catalog in Oracle Utilities Customer Cloud Service:

1. Login to Oracle Utilities Customer Cloud Service.
2. Navigate to the **Web Service Catalog** page either from the **Admin > [W or Integration]** menu or from the **Search** menu.
3. Select **REST Web Service Class**.
4. Add the REST inbound web services mentioned below to the catalog.

Service Type	Service Name	Description
Inbound Web Service	C1-NotificationPreferencesForAccounts	Notification Preferences for Accounts

5. For outbound messages, add the External System that was set up previously.

For more information about the configuration, refer to the Oracle Utilities Customer Cloud Service documentation.

# Chapter 4

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## Configuring Oracle Utilities Network Management System

The Oracle Utilities Network Management System implementation needs to include Service Alert module. Notifications are generated by the Service Alert Service.

For additional information about configuring Oracle Utilities Network Management System services, refer to the **Services Configuration** chapter in the *Oracle Utilities Network Management System Configuration Guide*.

# Chapter 5

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## Importing, Configuring, and Testing Integration Connections in Oracle Integration Cloud

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

- [Importing the Oracle Integration Cloud Package from Oracle Cloud Marketplace](#)
- [Verifying the Package Import](#)
- [Configuring Connections in Oracle Integration Cloud](#)
- [Configuring Agent](#)
- [Setting up Certificates for Security](#)

# Importing the Oracle Integration Cloud Package from Oracle Cloud Marketplace

All integration points are shipped as part of single package (outl.ba.notifications\_hub.1.22.1000.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](https://cloudmarketplace.oracle.com/marketplace/en_US/homePage.jspx)
2. Click **Applications**.
3. Browse through the list of applications and select the pre-built integration package to import.

Alternatively, you can search for “Oracle Utilities” and select the **Notifications Hub** integration option.

4. Click **GetApp**.
5. Review and accept the “Oracle Standard Terms and Restrictions”.
6. Click **Next**. The My Oracle Support portal opens.
7. Download the integration package from My Oracle Support.
8. When prompted, select the server where the pre-built integration file should be uploaded.

The pre-built integration is imported as a package file (.par) that is visible on the **Packages** page in Oracle Integration Cloud.

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

## To import a package in Oracle Integration Cloud:

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

## Verifying the Package Import

To verify the package import was successful:

1. Verify whether the following integrations are imported successfully.
  - Oracle Utilities NMS OCI Stream Notif Upload
  - Oracle Utilities OCI Stream Notif linkChannel
  - Oracle Utilities CCB OCI Stream Notif Upload
  - Oracle Utilities OCI Stream Responsys Notif Send
2. Verify if the following connections are in place.
  - Oracle Utilities REST CCB for Notif Hub

- Oracle Utilities OCI Streaming for Notif Hub
  - Oracle Utilities DB NMS for Notif Hub
  - CCBDirectRESTNotifPref
  - Oracle Utilities REST Responsys for Notif Hub
  - Oracle Utilities REST Responsys2 for Notif Hub
  - Oracle Utilities REST Responsys3 for Notif Hub
3. Make sure that the following look ups are imported successfully.
- OUTL-BRT-NOTIFHUB\_ConfigProps
  - OUTL-BRT-NOTIFHUB\_Email\_ID
  - OUTL-BRT-NOTIFHUB\_DeliveryChannel
  - OUTL-BRT-NOTIFHUB\_DeliveryInstance
  - OUTL-BRT-NOTIFHUB\_DeliveryRouting
  - OUTL-BRT-NOTIFHUB\_NMS\_CCB\_NotifTypes

## Configuring Connections in Oracle Integration Cloud

After the packages are imported and verified, the respective connections have to be configured.

This section describes the procedure to set up the connections.

- [Configuring Oracle Utilities REST CCB for Notif Hub Connection](#)
- [Configuring Oracle Utilities OCI Streaming for Notif Hub Connection](#)
- [Configuring Oracle Utilities Notif DB Connection](#)
- [Configuring CCBDirectRESTNotifPref Connection](#)
- [Configuring Oracle Utilities REST Responsys for Notif Hub Connection](#)

### Configuring Oracle Utilities REST CCB for Notif Hub Connection

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

To configure the Oracle Utilities REST CCB for Notif Hub connection:

1. Add the Oracle Utilities Customer Care and Billing REST web catalog to the **catalogURL** section.

The REST Catalog URL follows this format:

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

2. From the **Security Policy** drop-down list, select the **Basic Authentication** policy.
3. Provide **Username** and **Password** to connect to Oracle Utilities Customer Cloud Service.
4. Click **Test** on the upper-right corner.
5. After the connection is tested successfully, click **Save**.

## Configuring Oracle Utilities OCI Streaming for Notif Hub Connection

This connection is used to communicate with Oracle Cloud Infrastructure (OCI) Streams using the OCI Streaming adapter.

To configure Oracle Utilities OCI Streaming for Notif Hub connection:

1. Add the Bootstrap Server.  
Know the host and port of the bootstrap server to use to connect to a list of Oracle Cloud Infrastructure Streaming Services.
2. From the **Security Policy** drop-down list, select the **SASL PLAIN Over SSL OSS** policy.
3. Provide the SASL **Username** and **Password**.
4. Provide the **TrustStore**.
5. Provide the **Agent Group**.
6. Click **Test** on the upper-right corner.
7. After the connection is tested successfully, click **Save**.

Refer to <https://docs.oracle.com/en/cloud/paas/integration-cloud/stream-service-adapter/create-streaming-service-adapter-connection.html> for more information.

## Configuring Oracle Utilities Notif DB Connection

This connection is used to communicate with the Oracle Utilities Network Management System database using the Oracle DB adapter.

To configure Oracle Utilities Notification Hub DB connection:

1. Add the **Database Host, Port** and **Service Name**.  
Know the host and port for the Oracle Utilities Network Management System database to connect to.
2. From the **Security Policy** drop-down list, select the **Username Password Token** policy.
3. Provide the **Username** and **Password**.
4. Provide the **Agent Group**.
5. Click **Test** at the upper-right corner.
6. After the connection is tested successfully, click **Save**.

## Configuring CCBDirectRESTNotifPref Connection

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

To configure the CCBDirectRESTNotifPref connection:

1. Select **Connection Type REST API Base URL**.
2. Add the **Connection URL**.
3. From the **Security Policy** drop-down list, select the **Basic Authentication** policy.
4. Provide the **Username** and **Password**.

5. Click **Test** at the upper-right corner.
6. After the connection is tested successfully, click **Save**.

## Configuring Oracle Utilities REST Responsys for Notif Hub Connection

This connection is used to communicate with Oracle Responsys using the REST adapter.

To configure the Oracle Utilities REST Responsys for Notif Hub connection:

1. Select **Connection Type REST API Base URL**.
2. Add the **Connection URL**.
3. From the **Security Policy** drop-down list, select the **OAuth Custom Two Legged Flow** policy.
4. Provide **Access Token Request**.
5. A sample Access Token Request is as below:
 

```
-X POST https://host/rest/api/v1.3/auth/token -H "Content-Type: application/x-www-form-urlencoded" -d "user_name=oic_api@oracleuti&password=1234&auth_type=password"
```
6. The **user\_name** and **password** should be a API user and password.
7. Specify **\$access\_token as authToken**.
8. Specify **access\_token\_usage** as **-H Authorization: \${access\_token}**.
9. Click **Test** at the upper-right corner.
10. After the connection is tested successfully, click **Save**.

**Note:** The Oracle Utilities OCI Stream Responsys Notif Send integration process invokes three Oracle Responsys instances out of the box. Hence, this Oracle Integration Cloud process requires three Oracle Responsys connections to be configured. Oracle Utilities REST Responsys2 for Notif Hub Connection and Oracle Utilities REST Responsyse3 for Notif Hub Connections can be configured to different Oracle Responsys instances following the same connection configurations.

The Oracle Integration Cloud process validates all the configured connections during activation. If fewer than three different Oracle Responsys instances are used, then same connection configurations should be duplicated in the unused connection to have valid connections in the flow.

# Configuring Agent

Create an agent group in Oracle Integration Cloud and install agent on the on-premises server before creating/activating an integration in which messages are exchanged between the on-premises applications (example: Oracle Utilities Network Management System, Oracle Utilities Customer to Meter) and Oracle Integration Cloud. The agent related configurations are needed only if the server points to an on-premises application and to access OCI Streaming.

**Note:** A direct connection from Oracle Integration to the private endpoint OCI Streaming Service does not work. You must install the connectivity agent on the same network (a virtual machine (VM) created on the same virtual cloud network (VCN) and subnet).

This section includes:

- [Creating an Agent Group](#)
- [Downloading Agent Installer](#)
- [Installing On-Premises Agent](#)

## 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.

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-agent-installer.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 Care and Billing certificate. Upload it by running the following command from the 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 page.

<https://docs.oracle.com/en/cloud/paas/integration-cloud/utilities-adapters/you-begin-setting-oracle-utilities-adapter.html#GUID-7F770AD1-5B87-4C62-968A-3AB30D043835>

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

```
java -jar connectivityagent.jar
```
- f. Provide the Oracle Integration Cloud credentials when prompted.
- g. Wait for a successful installation message to appear.

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

To verify if the agent instance was created:

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

3. Click the number to view the agent details.

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

## Setting up Certificates for Security

**Important!** Please 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 Customer Care and Billing certificates or Oracle Utilities Network Management System application and upload them to Oracle Integration Cloud to handshake with Oracle Utilities Customer Care and Billing.

To download the Oracle Utilities Customer Care and Billing certificate:

1. Login to Oracle Utilities Customer Care and Billing.
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

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## Configuring Lookups, Error Handling, and Email Notifications

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

- [Configuring Lookups](#)
- [Configuration Properties](#)
- [Error Handling](#)
- [Email Notifications](#)

## Configuring Lookups

The following table lists the lookups and integration processes where these lookups are used.

Lookup Name	Integration Name	Purpose
OUTL-BRT- NOTIFHUB_ DeliveryChannel	Oracle Utilities OCI Stream Responsys Notif Send	Maps CCB Delivery Type to the Integration-defined delivery type of “sms” or “email”.
OUTL- BRT- NOTIFHUB_ DeliveryInstance	Oracle Utilities OCI Stream Responsys Notif Send	<p>Maps the Integration-defined Oracle Responsys delivery instance ID to the actual Oracle Responsys identifier. The ResponsysId can be anything that identifies a Oracle Responsys instance.</p> <p>Example: Description, URL, Instance ID, etc.</p> <p>This Responsys ID is used in the error email notifications sent to identify the Oracle Responsys instance where the invocation failed.</p> <p><b>Note:</b> The values in the Intg_DeliveryInstanceId should be RESP1,RESP2,RESP3.</p>
OUTL-BRT- NOTIFHUB_ DeliveryRouting	<ul style="list-style-type: none"> <li>Oracle Utilities OCI Stream Notif linkChannel</li> <li>Oracle Utilities CCB OCI Stream Notif Upload</li> </ul>	<p>Maps CCB CIS Division to the Oracle Responsys delivery Instance to route the message. The three Oracle Responsys instance connections provided out of the box are identified as RESP1 , RESP2 and RESP3 in the DeliveryInstance column.</p> <p><b>Note:</b> These values should not be renamed to a different name as these names are referenced as is in the OIC flow.</p>

Lookup Name	Integration Name	Purpose
OUTL-BRT- NOTIFHUB_ ConfigProps	<ul style="list-style-type: none"> <li>Oracle Utilities OCI Stream Responsys Notif Send</li> <li>Oracle Utilities OCI Stream Notif linkChannel</li> <li>Oracle Utilities CCB OCI Stream Notif Upload</li> <li>Oracle Utilities NMS OCI Stream Notif Upload</li> </ul>	Maps the PropertyName column to the respective Value column. Do not change the value in the PropertyName column.
OUTL-BRT- NOTIFHUB_Email_ID	<ul style="list-style-type: none"> <li>Oracle Utilities OCI Stream Notif linkChannel</li> <li>Oracle Utilities CCB OCI Stream Notif Upload</li> <li>Oracle Utilities NMS OCI Stream Notif Upload</li> <li>Oracle Utilities OCI Stream Responsys Notif Send</li> </ul>	Maps the “from” and “to” recipient values to the mentioned email IDs. Configure multiple emails using a comma to separate the email IDs.

Lookup Name	Integration Name	Purpose
OUTL-BRT- NOTIFHUB_NMS_CCB _NotifTypes		<p>Maps the CCB Notification Types to the NMS Trigger Code and Planned/Unplanned Flag values. The DVM column, TriggerCode_Planned is combination of two parts. The first part is a number which represents NMS trigger code and the second is the planned or unplanned flag Y or N. “N” means unplanned outage and “Y” mean Planned outages.</p> <p>For example: “1N” means Unplanned outage started and “4N” means Unplanned outage cancelled. The flags are case sensitive and must be in uppercase.</p> <p>The following are the NMS trigger codes and can be combined with Planned or Unplanned outages flags:</p> <ul style="list-style-type: none"> <li>1 - Outage started</li> <li>2 - Outage restored</li> <li>3 - Outage scheduled</li> <li>4 - Outage scheduled</li> <li>5 - Outage updated ERT</li> </ul> <p><b>Note:</b> “Unplanned outage schedule (3N) is not supported”.</p>

## Editing Lookups

To edit a lookup to add or update any value in it:

1. Login to Oracle Integration for Cloud.
2. Navigate to **Integrations > Designer > Lookups**.
3. Click the look up to edit.
4. Make the necessary changes.
5. Click **Save** and **Close**.

**Note:** While editing a lookup, if the changes are not reflected during the runtime, make sure to deactivate and activate the integration that is using the edited DVM for the changes to reflect. Refer to the [Activating Integration Flows](#) section for more details.

# Configuration Properties

OUTL-BRT-NOTIFHUB\_ConfigProps.dvm contains the properties that can be defaulted in the integration. It also contains a flag to enable email notifications.

Property Name	Sample Value	Description	Used in Integration Process Name
nms.datafield.propertylist	OUTAGETIME,CUSTOMERSOUT,CAUSE,ESTRESTTIME,CREWETA,COMPLETIONTIME		Oracle Utilities NMS OCI Stream Notif Upload
email.flag	True	If this value is set to true, an email notification will be sent out.  Valid values: true/false Default: true	<ul style="list-style-type: none"> <li>Oracle Utilities OCI Stream Responsys Notif Send</li> <li>Oracle Utilities NMS OCI Stream Notif Upload</li> <li>Oracle Utilities OCI Stream Notif linkChannel</li> <li>Oracle Utilities OCI Stream Notif Upload</li> </ul>
resp.email.permission	OPTOUT	Merges the rule corresponding to “defaultPermissionStatus” field in Oracle Responsys API. Do not change.	Oracle Utilities OCI Stream Responsys Notif Send
resp.reject.channel.empty	E,M	Merges the rule corresponding to “rejectRecordIfChannel Empty” field in Oracle Responsys. Do not change.	Oracle Utilities OCI Stream Responsys Notif Send
resp.optout.value	O	Merges the rule corresponding to “optoutValue” field in Oracle Responsys.	Oracle Utilities OCI Stream Responsys Notif Send
resp.optin.value	I	Merges the rule corresponding to “optinValue” field in Oracle Responsys.	Oracle Utilities OCI Stream Responsys Notif Send
resp.update.on.match	REPLACE_ALL	Merges the rule corresponding to “updateOnMatch” field in Oracle Responsys. Controls how the existing record should be updated.	Oracle Utilities OCI Stream Responsys Notif Send
resp.match.operator	NONE	Merges the rule corresponding to “matchOperator” field in Oracle Responsys. Operator to join the match column names.	Oracle Utilities OCI Stream Responsys Notif Send

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# Error Handling

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

- [Error Handling Ways](#)
- [Summary of Integration Error Handling](#)
- [Resubmitting the Error Instances in Oracle Integration Cloud](#)

## Error Handling Ways

In this integration, the errors are handled in different ways in Oracle Integration Cloud.

- [Synchronous Flow Error Handling](#)
- [Asynchronous Flow Error Handling](#)

### Synchronous Flow Error Handling

As part of this error handler the errors are sent back to the respective source system in the same flow.

#### Technical Fault

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

#### Remote Fault

This fault occurs when there is a connectivity issue. For example, the target system is down. When this error occurs the flow immediately goes to global fault handler and the fault is sent back to the respective system.

#### Business Fault

This fault occurs only when the error occurs in the target system due to invalid data. When this error occurs the fault is thrown to the respective source system.

### Asynchronous Flow Error Handling

#### Technical Fault

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

#### Remote Fault

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



**Business Fault**

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

**Summary of Integration Error Handling****Integration Process: Oracle Utilities OCI Stream linkChannel**

Type of Error	Action	Notification Type	Retry
Source Stream is down	The process is not invoked.	No Notification	Once Source Stream is up, the poller picks up the messages on the stream run.
Technical or Remote (CCB or Target Stream is unreachable)	Message is published to Source Stream (Rolling back the messages)	Email (optional)	<p>Poller picks up the messages on the next run.</p> <p><b>Note:</b> Inactivate this integration process until all applications (CCB, Stream) are up to avoid the continuous reprocessing of messages that would fail.</p>

**Integration Process: Oracle Utilities NMS OCI Stream Notif Upload**

Type of Error	Action	Notification Type	Retry
NMS DB down/unavailable	The process is not invoked.	No Notification	Once DB connection is successful, the poller picks up the XML records from MYC_CSS_PARAM_VIO_TEXT with CSS_NOTIFIED='N'.
Technical or Remote (Source OCI Stream is unreachable)	NMS table MYC_CSS_PARAM_VIO_TEXT is updated with CSS_NOTIFIED='E'.	Email (optional)	<p>Retry/Resubmission should be performed at NMS DB level.</p> <p>Retry by marking the CSS_NOTIFIED flag to 'N' from 'E' for the errored violation id. 'E' means the transaction has been marked as faulted and its retrievable.</p>

### Integration Process: Oracle Utilities OCI Stream Responsys Notif Send

Type of Error	Action	Notification Type	Retry
Not 401 or 500 error status when Responsys API is invoked	Error messages from each invoke in a batch for a particular Oracle Responsys instance, along with account ID, template name and delivery channel is collected in a collection.	A separate email is sent for errors in each Oracle Responsys instance.	These notification messages cannot be recovered.
Error status that is 500 or 401 when Responsys API is invoked	Error messages from each invoke in a batch for a particular Oracle Responsys instance, along with account ID, template name and delivery channel is collected in a collection.	A separate email is sent with error collection of each Responsys instance.	These notification messages are republished back to TargetNotificationStream, until the issue is resolved. <b>Note:</b> If the resolution takes a while, inactivate the process to avoid receiving emails and republishing.
Technical or Remote (TargetNotificationStream OCI Stream is unreachable)	During polling, if the OCI Stream is unreachable, the OIC instance is not instantiated.	Email (optional)	Poller will pick up the messages on next try.
Invalid delivery channel or Oracle Responsys instance	Error messages from each invoke in a batch for a particular Oracle Responsys instance, along with account ID, template name and delivery channel is collected in a collection.	An email is sent with the error collection for each batch.	These notification messages cannot be recovered.

### Integration Process: Oracle Utilities CCB OCI Stream Notif Upload

Type of Error	Action	Notification Type	Retry
Technical or Remote (Target Stream is unreachable)	<ul style="list-style-type: none"> <li>Fault is logged in the OIC Instance.</li> <li>Fault is rethrown to Global handler.</li> </ul>	No Notification	CCB must resend the notification outbound message to OIC.
Any Global	Fault is rethrown back to CCB.	Email (Optional)	CCB must resend the notification outbound message to OIC.

## Resubmitting the Error Instances in Oracle Integration Cloud

In this integration, the flows initiated by Oracle Utilities Network Management System are asynchronous flows, and 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.

**Note:** Retry or Resubmission error instance from the **OIC Monitoring** page may not be applicable for the Oracle Utilities NMS OCI Stream Notif Upload integration flow. Refer to the [Summary of Integration Error Handling](#) section on how to retry/resubmitted errored transactions/record.

## Email Notifications

This pre-built integration includes a configurable email notification.

To receive an email notification:

1. Login to Oracle Integration Cloud.
2. Navigate to **Integrations > Designer > Lookups**.
3. Edit the **OUTL-BRT-NOTIFHUB\_ConfigProps** lookup.
  - a. Change the **send.email.flag** property value to 'true'.
4. Edit the **OUTL-BRT-NOTIFHUB** 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- NOTIFHUB\_Email\_ID** lookup, do not edit the values provided under the **Recipient** column.

# Chapter 7

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## Customizations

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

- [Cloning an Integration](#)
- [Cloning a Connection](#)
- [Adding New Mappings](#)
- [Linking to Multiple NMS Instances](#)
- [Linking to Additional Oracle Responsys Instances](#)

**Note that** the images/screenshots in this chapter correspond to Oracle Integration Cloud V22.2.1.

# Cloning an Integration

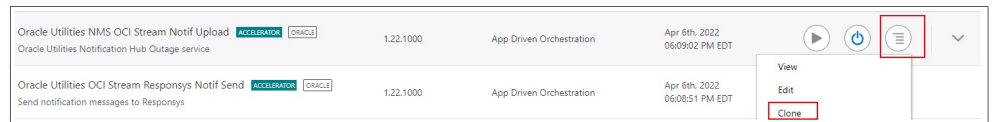
All customizations to the Oracle Integration Cloud flows are done through cloning the flows.

To clone an Oracle Integration Cloud flow:

1. Login to Oracle Integration Cloud.
2. Navigate to **Integrations**.
3. Select the Oracle Integration Cloud flow.

Example: Oracle Utilities NMS OCI Stream Notif Upload

4. Right-click the hamburger menu on the right and click **Clone**.



5. Enter the necessary details. As a best practice, do the following:
  - Change only the **Name** (Example: Oracle Utilities NMS OCI Stream Notif Upload CM) and **Identifier** (Example: OUTL-NMS\_STREAM\_NOTIF\_UPLOAD\_CM).
  - Retain the same version as the base flow. This makes sure that no new version conflicts with future releases.
  - Provide a package name. This will help to export all the custom integrations and lookups between different environments.

 A screenshot of the "Clone Integration" dialog box. The title bar says "Clone Integration". Below the title, it shows the source integration: "Oracle Utilities NMS OCI Stream Notif Upload (1.22.1000)" and "Triggered By Application Event or Business Object". A note states: "Quickly create a brand new integration by copying the one you already have. The two integrations are not connected and have independent lifecycles." Below this, it asks "What is it called?" and provides instructions: "Best to provide a new name, although you can change it later. The identifier and version can be set only now and their combination must be unique." The form contains the following fields:
 

- \* Name: Oracle Utilities NMS OCI Stream Notif Custom
- \* Identifier: ORAC\_UTIL\_NMS\_OCI\_STRE\_NOTI\_CUST
- \* Version: 01.22.1000
- Documentation URL: Enter Documentation URL
- Keywords: notification, notification\_hub
- Package: Type a new or select an existing package name
- Description: Oracle Utilities Notification Hub Outage service

 At the bottom, it shows "976 characters left" and "Cancel" and "Clone" buttons.

6. Click **Clone**.
7. This will create a custom OIC flow “Oracle Utilities NMS OCI Notif Upload”.
8. The flow is editable and can be customized as desired.

# Cloning a Connection

To clone a connection:

1. Login to Oracle Integration Cloud.
2. Navigate to **Connections**.
3. Select the connection.

Example: Oracle Utilities DB NMS for Notif Hub

4. Right-click the hamburger menu on the right and click **Clone**.



5. Enter the necessary details and click **Clone**.

**Quickly create a brand new connection by copying the one you already have.**

**Credentials**  
A clone will not contain the credentials set in the original connection. You must provide this data before the cloned connection can be used.

What is it called?  
Best to provide a new Name, although you can change it later. The Identifier can be set only now and it must be unique.

\* Name

\* Identifier

Keywords

Description   
987 characters left

6. Enter the necessary configurations for the connection. Refer to [Chapter 5: Importing, Configuring, and Testing Integration Connections in Oracle Integration Cloud](#) for more information.

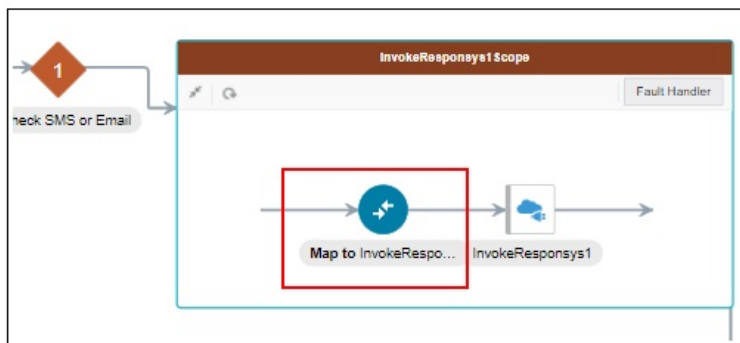
## Adding New Mappings

This section provides the steps to add new mappings to an Oracle Integration Cloud flow.

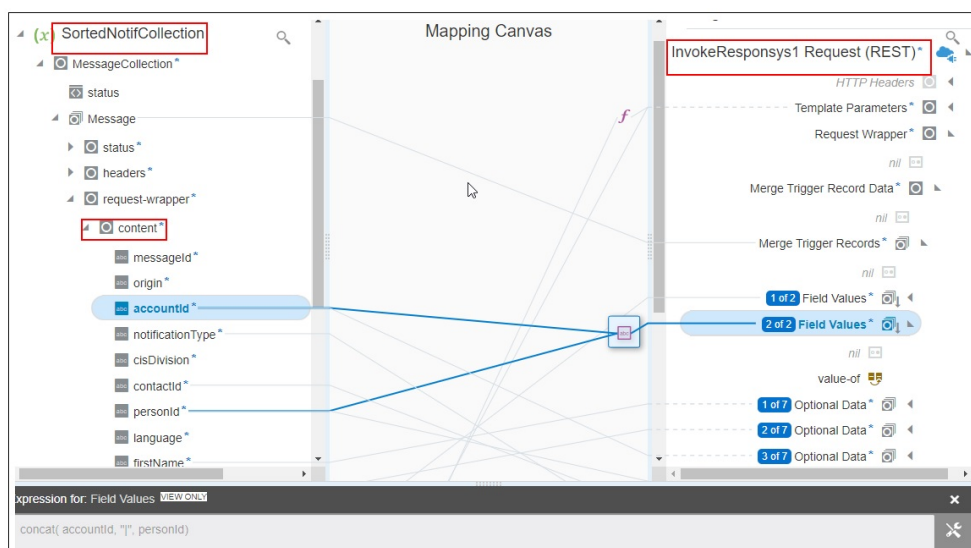
### Example 1

To map unmapped elements from notification messages as optional data going into Responsys1:

1. Clone the Oracle Utilities OCI Steam Responsys Notif Send integration. For steps to create a custom flow, refer to the [Cloning an Integration](#) section.
2. Click the newly created custom flow. This opens the flow in edit mode.
3. Click the mapper in **InvokeResponsys1Scope**.



4. Add new mappings or remap as desired in the mapper.



Refer to the *Oracle Utilities Notifications Hub Data Mapping Guide* for more information about the out-of-the-box mappings.

5. Save and close the integration.
6. Deactivate the base Oracle Utilities OCI Steam Responsys Notif Send flow and activate the newly created custom flow.

### Example 2

To add additional outage fields in the NMS Notification message to OIC source stream as part of optional data:

1. Navigate to the lookup section and select **OUTL-BRT-NOTIFHUB\_ConfigProps** for edit.
2. In the **Property Name** field, look for “nms.datafield.propertylist” and its property value.
3. The propertylist nms.datafield.propertylist has OUTAGETIME,CUSTOMERSOUT,CAUSE,ESTRESTTIME,CREWETA,COMPLETIONTIME value as default.
4. Add the required property value to provide additional outage fields in the Oracle Utilities Network Management System notification message. Each property value needs to be in uppercase and separated with a comma (,) with no whitespaces in between.

Example: If troublecode and incidenttype should be passed as addition information to Oracle Utilities Network Management System notification message to Oracle Integration Cloud source stream, the value in propertylist.nms.datafield.propertylist should be as below.

```
OUTAGETIME,CUSTOMERSOUT,CAUSE,ESTRESTTIME,CREWETA,COMPLETIONTIME,TROUBLECODE,INCIDENTTYPE
```

- The outage fields can be any element under MYC\_SPECIFIC\_CUST\_UNPLANNED\_OUTAGE\DATAAREA\POST\_SRSO UTPUT.

Refer to [Chapter 10: Sample Messages](#) for complete Oracle Utilities Network Management System notification xml message.

- After updating the propertylist value, save the changes.
- The lookup changes will take effect immediately.

## Linking to Multiple NMS Instances

To link multiple Oracle Utilities Network Management System instances:

- Clone the Oracle Utilities NMS OCI Steam Notif Upload integration. For steps to create a custom flow, refer to the [Cloning an Integration](#) section.
- Click the newly created custom flow. This opens the flow in edit mode.
- Clone the Oracle Utilities DB NMS for Notif Hub connection. For steps, refer to the [Cloning a Connection](#) section.
- Configure the connection details to point to the new Oracle Utilities Network Management System instance.

Refer to [Chapter 5: Importing, Configuring, and Testing Integration Connections in Oracle Integration Cloud](#) for more information.

- Right-click the hamburger menu on the right of the newly created custom integration flow to invoke the menu. Click **Configure**. A list of custom integrations, connections and the respective lookups is displayed.
- In the **Connections** section, click **Replace** against the Oracle Utilities DB NMS for Notif Hub connection.

Name	Usage	Status
Oracle Utilities DB NMS for Notif Hub	3 Integrations	Configured
Oracle Utilities OCI Streaming for Notif Hub	12 Integrations	Configured

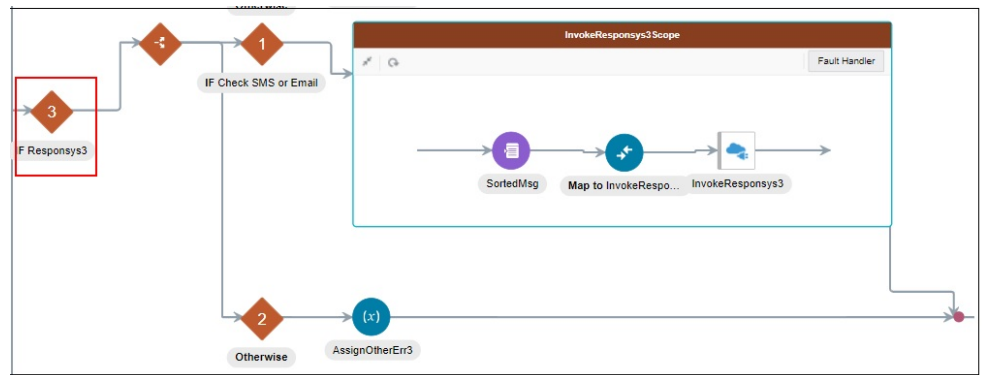
- Replace the connection. Select the newly created custom connection. The custom integration flow now refers to the new custom connection.
- Deactivate the bae integration flow and activate the newly created custom flow.



# Linking to Additional Oracle Responsys Instances

To link additional Oracle Responsys instances:

1. Clone the Oracle Utilities OCI Steam Responsys Notif integration. For steps to create a custom flow, refer to the [Cloning an Integration](#) section.
2. Click the newly created custom flow. This opens the flow in edit mode.
3. Clone Oracle Utilities REST Responsys for Notif Hubconnection. For steps, refer to the [Cloning a Connection](#) section.
4. Configure the connection details to point to the new Oracle Responsys instance.  
Refer to [Chapter 5: Importing, Configuring, and Testing Integration Connections in Oracle Integration Cloud](#) for more information.
5. Update the OUTL-BRT-NOTIFHUB\_DeliveryRouting lookup to map the desired CIS Division to the new Oracle Responsys instance “RESP4”.
6. Update OUTL-BRT-NOTIFHUB\_DeliveryInstance to map this Oracle Responsys instance (RESP4) to Response ID value to represent the new Oracle Responsys instance. The value in the **ResponsysId** column is populated on the error notifications sent out for this Oracle Responsys instance.
7. Click the newly created custom flow. The flow opens in the edit mode.
8. Add a new branch to evaluate the new Oracle Responsys Instance 4.
9. Add the condition to check for \$responsysId = “RESP4” in the new branch.
10. Refer to the SMS and email checks, scope, mapping and error handling as is done for other Oracle Responsys instances to replicate the logic.



11. Save and deactivate the base flow and activate the custom flow.

# Chapter 8

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## Activating and Testing the Integration Flows

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

- [Prerequisites](#)
- [Activating Integration Flows](#)
- [Testing the Integration Flows](#)

## Prerequisites

Make sure the catalog in Oracle Utilities Customer Care and Billing is configured completely to activate an integration process.

## 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.

## Testing the Integration Flows

The following table lists the integration end point URLs and the respective applications in which these endpoints need to be configured. Configure the same and perform end-to-end testing.

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities CCB OCI Stream Notif Upload	https://OIC_Host:OIC_Port/ ic/api/integration/v1/flows/oracleutilities/OUTL-BA-CCB_STREAM_NOTIF_UPLOAD/1.0/notifications	Oracle Utilities Customer Care and Billing
	<p><b>Note:</b> If the base flow is cloned for customization and the customized flow is used, replace OUTL-BA-CCB_STREAM_NOTIF_UPLOAD in the URL with identifier of the cloned flow.</p>	

# Chapter 9

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## Monitoring and Troubleshooting

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

- [Oracle Utilities Customer Care and Billing](#)
- [Oracle Integration Cloud](#)

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# Oracle Utilities Customer Care and Billing

This section provides information about monitoring Oracle Utilities Customer Care and Billing.

## Oracle Utilities Customer Care and Billing 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 Care and Billing:

- Errors related to the online integration invocation from Oracle Utilities Customer Care and Billing are stored in the CCB\_ENVIRONMENT\_NAME/logs/system folder.

For example: V27\_CCB\_ORA\_WLS/logs/system\

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

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.
- If the integration (Oracle Utilities Customer Care and Billing initiated flows) is activated for the first time, ensure the Oracle Utilities Customer Care and Billing catalog is configured accurately.

# Chapter 10

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## Sample Messages

This chapter includes the following sample messages:

- [Sample Message Flow from NMS through Link Notification and Channel Information Process](#)
- [Sample CCB Notification Message to the TargetNotificationStream OCI Stream](#)
- [Sample Outage NMS Notification Message to SourceNotificationStream OCI Stream Message](#)

## Sample Message Flow from NMS through Link Notification and Channel Information Process

Message Consumed from Source Notification Stream	Message To and From Oracle Utilities Customer Care and Billing	Message Published to Target Stream
<pre>{   "accountId": "123456789",   "notificationType": "OUTAGE",   "messageId": "111",   "origin": "NMS",   "notificationTemplate": "",   "data": [     {       "key": "REASON",       "value": "STORM"     },     {       "key": "ERT",       "value": "12-10-2021T10:00AM"     }   ] }</pre>	<p><b>Input:</b></p> <pre>{   "ClAccntfPref": {     "accounts": [       {         "sequence": "10",         "accountId": "123456789",         "notificationType": "OUTAGE"       }     ]   } }</pre> <p><b>Output:</b></p> <pre>{   "ClAccntfPref": {     "accounts": [       {         "sequence": "10",         "accountId": "123456789",         "notificationType": "OUTAGE",         "cisDivision": "OH",         "notificationPreferences": [           {             "notificationPreferenceId": "18384304332111",             "deliveryType": "EMAIL",             "personContact": {               "personId": "PerId123",               "contactId": "Cont111",               "language": "ENG",               "firstName": "ABC Business",               "lastName": "",               "contactValue": "abcbus@email.com",               "template": "OUTEMAIL"             }           }         ],         "notificationPreferenceId": "18586367394027",         "deliveryType": "SMS",         "personContact": {           "personId": "PerId123",           "contactId": "Cont333",           "language": "ENG",           "firstName": "Ben",           "lastName": "Baker",           "contactValue": "19734445678",           "template": "OUTSMS"         }       }     ]   } }</pre>	<p>Two messages are published in this sample.</p> <p><b>Message 1</b></p> <pre>{   "messageId": "111-Cont111",   "origin": "NMS",   "accountId": "123456789",   "notificationType": "OUTAGE",   "cisDivision": "OH",   "contactId": "Cont111",   "personId": "PerId123",   "language": "ENG",   "firstName": "ABC Business",   "lastName": "",   "deliveryChannel": "EMAIL",   "deliveryValue": "abcbusemail.com",   "notificationTemplate": "OUTEMAIL",   "deliveryInstance": "RESP1",   "data": [     {       "key": "REASON",       "value": "STORM"     },     {       "key": "ERT",       "value": "12-10-2021T10:00AM"     }   ] }</pre> <p><b>Message 2</b></p> <pre>{   "messageId": "111-Cont333",   "origin": "NMS",   "accountId": "123456789",   "notificationType": "OUTAGE",   "cisDivision": "OH",   "contactId": "Cont333",   "personId": "PerId123",   "language": "ENG",   "firstName": "Ben",   "lastName": "Banter",   "deliveryChannel": "SMS",   "deliveryValue": "19734445678",   "notificationTemplate": "OUTSMS",   "deliveryInstance": "RESP1",   "data": [     {       "key": "REASON",       "value": "STORM"     },     {       "key": "ERT",       "value": "12-10-2021T10:00AM"     }   ] }</pre>



## Sample CCB Notification Message to the TargetNotificationStream OCI Stream

### CCB Outbound Message

### Message Published to TargetNotificationStream

```

{
  "sendDetail": {
    "accountId": "4128974892",
    "cisDivision": "CA",
    "notificationType": "BILLDUE",
    "syncRequestId": null,
    "deliveryInfo": [
      {
        "deliveryType": "SMS",
        "contactValue": "10000000000",
        "templateName": "BILLDUE-SMS",
        "dndStartTime": "",
        "dndEndTime": "",
        "firstName": "John",
        "lastName": "Doe",
        "language": "ENG",
        "personId": "9251189340",
        "contactId": "9252198992",
        "overrideDND": "",
        "notificationPreferenceId": ""
      }
    ],
    "templateParm": [
      {
        "key": "AMOUNT_DUE",
        "value": "6080.05"
      },
      {
        "key": "BILL_DT",
        "value": "2022-01-01"
      },
      {
        "key": "BILL_DUE_DATE",
        "value": "2022-01-17"
      },
      {
        "key": "BILL_ID",
        "value": "412219634128"
      },
      {
        "key": "CURRENCY_CODE",
        "value": "USD"
      },
      {
        "key": "CURRENCY_SYMBOL",
        "value": "$"
      },
      {
        "key": "MAIN_ACCOUNT_ADDRESS",
        "value": " Street, San Francisco, CA,94104, USA,
Single family home,6206198576"
      },
      {
        "key": "SERVICE_ADDRESS",
        "value": " Street, San Francisco, CA,94104, USA,
Single family home,6206198576"
      }
    ]
  }
}

```

```

{
  "messageId": null,
  "origin": "CCB",
  "accountId": "4128974892",
  "notificationType": "BILLDUE",
  "cisDivision": "CA",
  "contactId": "9252198992",
  "personId": "9251189340",
  "language": "ENG",
  "firstName": "John",
  "lastName": "Doe",
  "deliveryChannel": "SMS",
  "deliveryValue": "10000000000",
  "notificationTemplate": "BILLDUE-SMS",
  "deliveryInstance": "RESP1",
  "data": [
    {
      "key": "AMOUNT_DUE",
      "value": "6080.05"
    },
    {
      "key": "BILL_DT",
      "value": "2022-01-01"
    },
    {
      "key": "BILL_DUE_DATE",
      "value": "2022-01-17"
    },
    {
      "key": "BILL_ID",
      "value": "412219634128"
    },
    {
      "key": "CURRENCY_CODE",
      "value": "USD"
    },
    {
      "key": "CURRENCY_SYMBOL",
      "value": "$"
    },
    {
      "key": "MAIN_ACCOUNT_ADDRESS",
      "value": " Street, San Francisco, CA, 94104,
USA, Single family home, 6206198576"
    },
    {
      "key": "SERVICE_ADDRESS",
      "value": " Street, San Francisco, CA, 94104,
USA, Single family home, 6206198576"
    }
  ]
}

```

# Sample Outage NMS Notification Message to SourceNotificationStream OCI Stream Message

## NMS Notification Message (XML)

```
<MYC_SPECIFIC_CUST_UNPLANNED_OUTAGE>
<CNTRLAREA>
.
.
.
</CNTRLAREA>
<DATAAREA>
<POST_SRSOUTPUT>
<CAUSE> </CAUSE>
<CREWETA>0</CREWETA>
<OUTAGETIME>1646767718</OUTAGETIME>
<ESTRESTTIME>1646772518</ESTRESTTIME>
<COMPLETIONTIME>1646767814</COMPLETIONTIME>
<CUSTOMERSOUT>1</CUSTOMERSOUT>
<FEEDER>2414</FEEDER>
<PARTITION>1043</PARTITION>
<NUMB>113253</NUMB>
<RULESET>omstest 1</RULESET>
<DEVICEIDX>2139</DEVICEIDX>
<DEVICEAPP>0</DEVICEAPP>
<DEVICELOCATION/>
<DEVICEALIAS/>
<DEVICECLASSNAME/>
<DESCRIPTION/>
<TROUBLECODE/>
  <TROUBLEQUEUE/>
<STATUS>NEW</STATUS>
<OPERATORCOMMENT/>
<TAGS>N</TAGS>
<ESTSOURCE>I</ESTSOURCE>
<EXTERNALID/>
<CREWID/>
<CREWETASTR/>
<OUTAGETIMESTR/>
<FIRSTINCTIME/>
<FIRSTINCTIMESTR/>
<ESTRESTTIMESTR/>
<COMPLETIONTIMESTR/>
<SRSCONDDSTATUS>1</>
<CONDPHASES>1</CONDPHASES>
<USERCUSTOUT>1</USERCUSTOUT>
<SRSPRIORITY>0</SRSPRIORITY>
<CUSTCALL>1</CUSTCALL>
<CUSTOMERNAME/>
<ADDRBUILDING/>
<ADDRSTREET/>
<ADDRCITY/>
<CUSTOMERPHONE/>
<XREF>2272097.105982</XREF>
<YREF>482359.865069</YREF>
<DISPADDRESS/>
<GROUPTYPE/>
<DEVCLNAME>Overhead Transformer</DEVCLNAME>
<EMERGENCY> </EMERGENCY>
<INCIDENTTYPE>OUT</>
</POST_SRSOUTPUT>
<PARAMTRIGGERCODE>2</>
<PARAMPLANNED>N</PARAMPLANNED>
<PARAMVIOLATIONLIST>
.
.
.
</PARAMVIOLATIONLIST>
<AFFECTEDCUSTOMERLIST>
<AFFECTEDCUSTOMER>
<CUSTOMERACCOUNT>7596864630</CUSTOMERACCOUNT>
<CUSTOMERNAME>Hoffman,David</CUSTOMERNAME>
<CUSTOMERADDRESS>10469 Newbury Ave NW, Uniontown, OH 44685</
CUSTOMERADDRESS>
</AFFECTEDCUSTOMER>
</AFFECTEDCUSTOMERLIST>
<PICKLIST>
<ABN_FLAG/>
<ACTION_TEXT/>
<ADV_ENVIRON_OM>Unselected</ADV_ENVIRON_OM>
<ADV_WEATHER_OM>Unselected</ADV_WEATHER_OM>
<BREAKER_TEXT/>
<CAUSE_OM>Unselected</CAUSE_OM>
<CLEAR_FLAG>Y</CLEAR_FLAG>
<CONTROL_ZONE_TEXT>OPAL Stark Lake Lake Sub 2414</
CONTROL_ZONE_TEXT>
```

## SourceNotificationStream (JSON)

```
{
  "accountId": "6386568150",
  "notificationType": "ZZ-UOUT",
  "messageId": "2088",
  "origin": "NMS",
  "notificationTemplate": "",
  "data": [
    {
      "key": "CUSTOMERADDRESS1",
      "value": "10375 Newbury Ave NW,Uniontown, OH 44685"
    },
    {
      "key": "CAUSE",
      "value": "TROUBLE_CALL"
    },
    {
      "key": "CREWETA",
      "value": "0"
    },
    {
      "key": "OUTAGETIME",
      "value": "1646921959"
    },
    {
      "key": "ESTRESTTIME",
      "value": "1646926759"
    },
    {
      "key": "COMPLETIONTIME",
      "value": "-1"
    },
    {
      "key": "CUSTOMERSOUT",
      "value": "1"
    }
  ]
}
```

---

**NMS Notification Message (XML)****SourceNotificationStream (JSON)**

---

```
<CUST_CALL/>
<DEF_EQUIP_OM>Unselected</>
<DEVICE_TEXT>T10606</DEVICE_TEXT>
<DISTRICT_TEXT/>
<DIVISION_TEXT/>
<DTR_TEXT/>
<EMERG_SW_ORDER_TEXT/>
<EST_OUT_OM/>
<EXCEPTION_FLAG/>
<FAILURE_OM>Unknown</FAILURE_OM>
<FEEDER_TEXT/>
<FOREIGN_INTERF_OM>Unselected</FOREIGN_INTERF_OM>
<HUMAN_ELEM_OM>Unselected</HUMAN_ELEM_OM>
<INTERRUPT_DEV_OM>Unselected</INTERRUPT_DEV_OM>
<LAST_UPDATE_TIME>03/08/2022 13:30:15</LAST_UPDATE_TIME>
<NO_DTR_FLAG>N</NO_DTR_FLAG>
<OFFICE_TEXT/>
<OTHER_CAUSE_OM>Unselected</OTHER_CAUSE_OM>
<PRIMARY_CAUSE_OM>Defective Equipment</PRIMARY_CAUSE_OM>
<READ_BY_DATAMART/>
<REF_ID>1022</REF_ID>
<REMEDY_OM>Component Replaced</REMEDY_OM>
<REVISION>3</REVISION>
<SCHEDULED_DEV_OM>Unselected</SCHEDULED_DEV_OM>
<SYSTEM_OM>Unselected</SYSTEM_OM>
<TRANS_TEXT/>
<TYPE_OM>Unselected</TYPE_OM>
<UPDATE_USER>nms7</UPDATE_USER>
<VEGETATION_OM>Unselected</VEGETATION_OM>
</PICKLIST>
<NOTIFICATIONLIST>
  .
  .
  .
</NOTIFICATIONLIST>
</DATAAREA>
</MYC_SPECIFIC_CUST_UNPLANNED_OUTAGE>
```

---