Oracle Utilities Network Management System Integration to Oracle Field Service

Configuration Guide

Release 24C

G19980-01

January 2025

ORACLE

Oracle Utilities Network Management System Integration to Oracle Field Service Configuration Guide

Contents

Preface

Welcome to the Oracle Utilities Network Management System Integration to Oracle Field Service Configuration Guide for release 24C.

The preface includes the following:

Audience

This document is intended for anyone implementing the Oracle Utilities Network Management System integration with Oracle Field Service.

Documentation and Resources

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

Product Documentation

Topic	Location
Oracle Utilities Network Management System Integration to Oracle Field Service documentation	https://docs.oracle.com/en/industries/energy-water/integrations-index.html
Oracle Utilities Network Management System documentation	https://docs.oracle.com/en/industries/energy-water/network-management-system/index.html
Oracle Field Service documentation	https://docs.oracle.com/en/cloud/saas/field-service/index.html

Other Documentation

Resource	Location
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches. Refer to the *Certification Matrix for Oracle Utilities Products (Doc ID 1454143.1)* on My Oracle Support to determine if support for newer versions of the listed products is included. For more information, refer to the Oracle Utilities Integrations page at http://my.oracle.com/site/tugbu/productsindustry/productinfo/utilities/integration/index.htm
Oracle Technology Network (OTN) Latest versions of documents	http://www.oracle.com/technetwork/index.html
Oracle University for training opportunities	http://education.oracle.com/

Documentation Accessibility

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

Access to Oracle Support

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

Conventions

The following text conventions are used in this document:

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

Acronyms

The following terms are used in this document:

Term	Expanded Form
OFS	Oracle Field Service
OIC	Oracle Integration Cloud
ICS	Integration Cloud Service
DVM	Domain Value Map (Lookup)
OUNMS	Oracle Utilities Network Management System
OMA	Operations Mobile Application
NMS	Network Management System

Chapter 1

Introduction

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

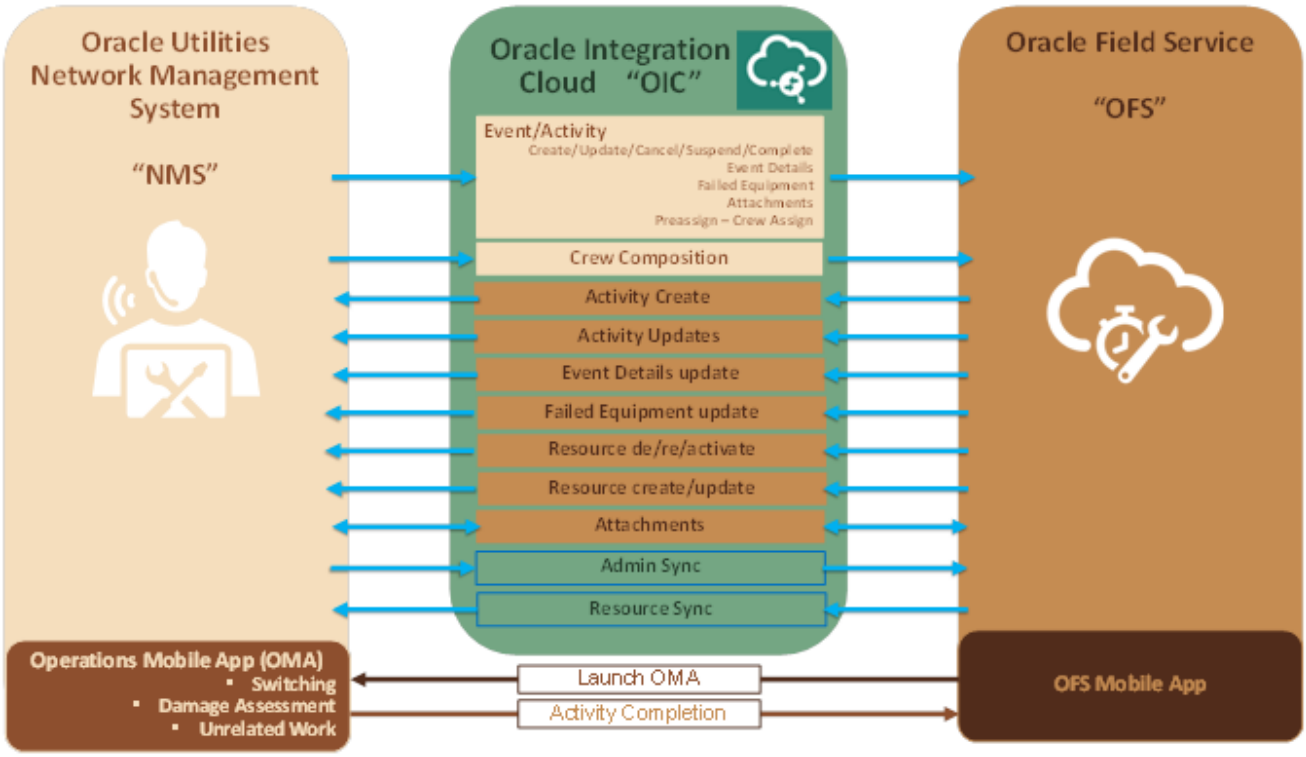
The chapter includes the following:

Overview of the Integration

Oracle Utilities Network Management System Integration to Oracle Field Service manages fieldwork (activities between Oracle Utilities Network Management System and Oracle Field Service. This integration can be leveraged to create/update/cancel/complete activities in the field using the Oracle Field Service solution.

Major business flows revolve around activities. Activities are created in Oracle Utilities Network Management System and sent to Oracle Field Service for the mobile worker to perform the activity. The field activity completion information is returned from Oracle Field Service to Oracle Utilities Network Management System where it is processed by Oracle Utilities Network Management System. In addition, the integration can send interim statuses of a field activity to Oracle Utilities Network Management System and sync the admin data between the systems.

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



About Oracle Utilities Network Management System

Oracle Utilities Network Management System processes the trouble calls from customers and analyzes them to determine the probable outage locations. It generates Estimated Restoration Times (ERTs) that can be provided back to the customers. Also, it keeps a history of all 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 assists the utility plan maintenance work or new construction that may impact existing customers. When Oracle Utilities Network

Management System generates detailed switching plans, customers are informed about planned outages that might impact them.

The Operations Mobile Application (OMA) is part of the Oracle Utilities Network Management System, providing crews with advanced GIS/Network schema, the ability to execute switching plans, and manage damage assessment reports from the field using mobile devices.

About Oracle Field Service

Oracle Field Service is built on time-based, self-learning, and predictive technology, empowering to solve business problems while evolving the field service organization. It has various modules to choose, such as forecasting, routing, capacity, mobility, collaboration, core manage, smart location, customer communication, and more. It leverages the performance pattern profiles to create optimal daily routes and schedules and continues to learn as employee work patterns change over time.

About Oracle Integration Cloud

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

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

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

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

Software Requirements

The following software is required for the integration to work:

- Oracle Utilities Network Management System
- Oracle Integration Cloud
- Oracle Field Service

For specific application versions, refer to the *Oracle Utilities Network Management System Integration to Oracle Field Service Release Notes* included in this release. The documentation is available on Oracle Help Center at: https://docs.oracle.com/en/industries/energy-water/integrations-index.html

Chapter 2

Solution Architecture

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

- Solution Diagram
- Business Flows

Solution Diagram

The technical aspects involved in Oracle Utilities Network Management System Integration to Oracle Field Service are:

- An integration between Oracle Utilities Network Management System and Oracle Field Service.
- The integration layer is made of integration processes deployed on Oracle Integration Cloud.
- It uses web services and REST APIs to facilitate communication between the two applications.
- In the Oracle Utilities Network Management System initiated processes, outbound messages are sent and Oracle Field Service uses REST APIs to receive the messages.
- In the Oracle Field Service initiated processes, events are triggered and Oracle Utilities Network Management System uses inbound web services (IWS) to receive the messages.

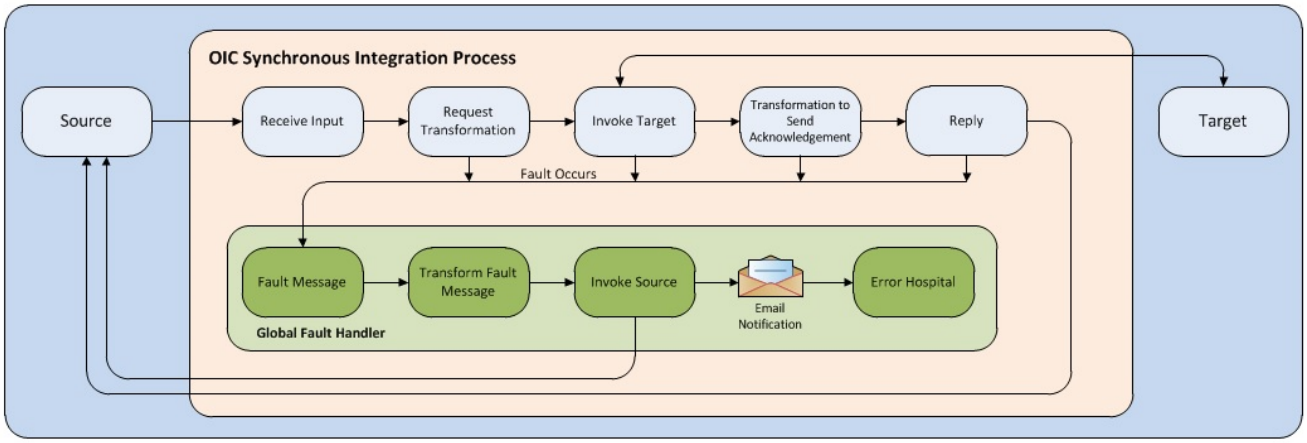
The integration patterns used in this solution are:

- Synchronous
- One-way Asynchronous

Synchronous

The synchronous integration process:

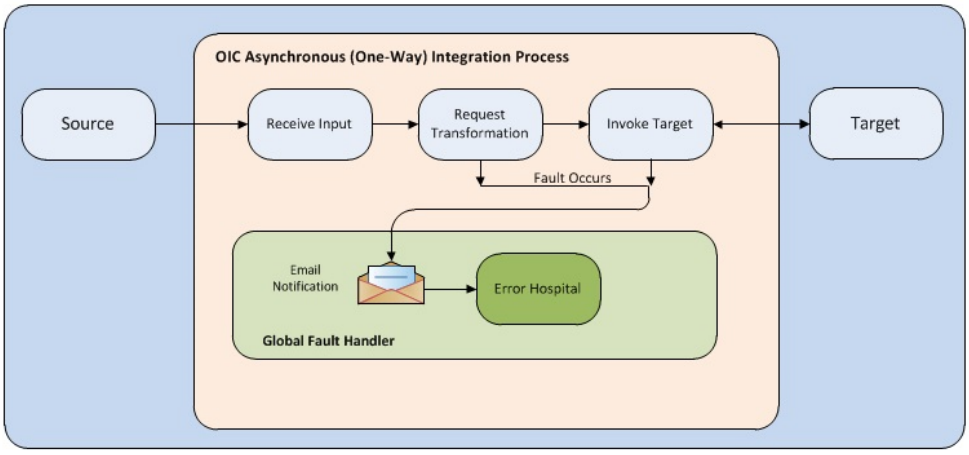
1. Receives request message from the source application.
2. Transforms the message from source format to the target format. Lookups are used for data translations.
3. Invokes the target application.
4. Transforms the message (after invoking the target application) from the target format back to the source format. It sends back an acknowledgment/synchronous response.
5. In case of any error, the global fault handler catches them and sends the transformed error message to the source application.
6. An optional email notification is sent to the respective users as configured.



One-way Asynchronous

The one-way asynchronous integration process:

1. Receives request message from the source application.
2. Transforms message from the source to the target format. Lookups are used for data translations.
3. Invokes target application to send the request message.
4. In case of any error, the global fault handler catches them.
5. The error instance can be re-submitted from Oracle Integration Cloud. Refer to the section in Configuring Lookups, Error Handling, and Email Notifications for more details.



Business Flows

The integration scope supports the following business processes:

- Administration
  - Admin Sync (Oracle Utilities Network Management System Initiated)
  - Resources 'Crew' Sync (Oracle Field Service Initiated)
- Activities
  - Order (Oracle Utilities Network Management System Initiated)
  - Order Async (OIC via Oracle Utilities Network Management System Initiated)
  - Order Complete (Oracle Utilities Network Management System Initiated)
  - Order Complete Async (OIC via Oracle Utilities Network Management System Initiated)
  - Crew Request (Oracle Utilities Network Management System Initiated)
  - Crew Request Async (OIC via Oracle Utilities Network Management System Initiated)
  - Activity Created (Oracle Field Service Initiated)
  - Activity Update (Oracle Field Service Initiated)
  - Event Details Update (Oracle Field Service Initiated)
  - Failed Equipment Updates (Oracle Field Service Initiated)
  - NMS Attachments (OIC Initiated)
  - OFS Attachments (OIC Initiated)
- Resources
  - Resources 'Crew' Create/Update (Oracle Field Service Initiated)
  - Resources 'Crew' Route (Oracle Field Service Initiated)
- Utilities
  - Ping (Oracle Utilities Network Management System Initiated)
  - Common Error Handler (OIC Initiated)
  - Chat Notification (OIC Initiated)
  - Find Resource Bucket (OIC Initiated)

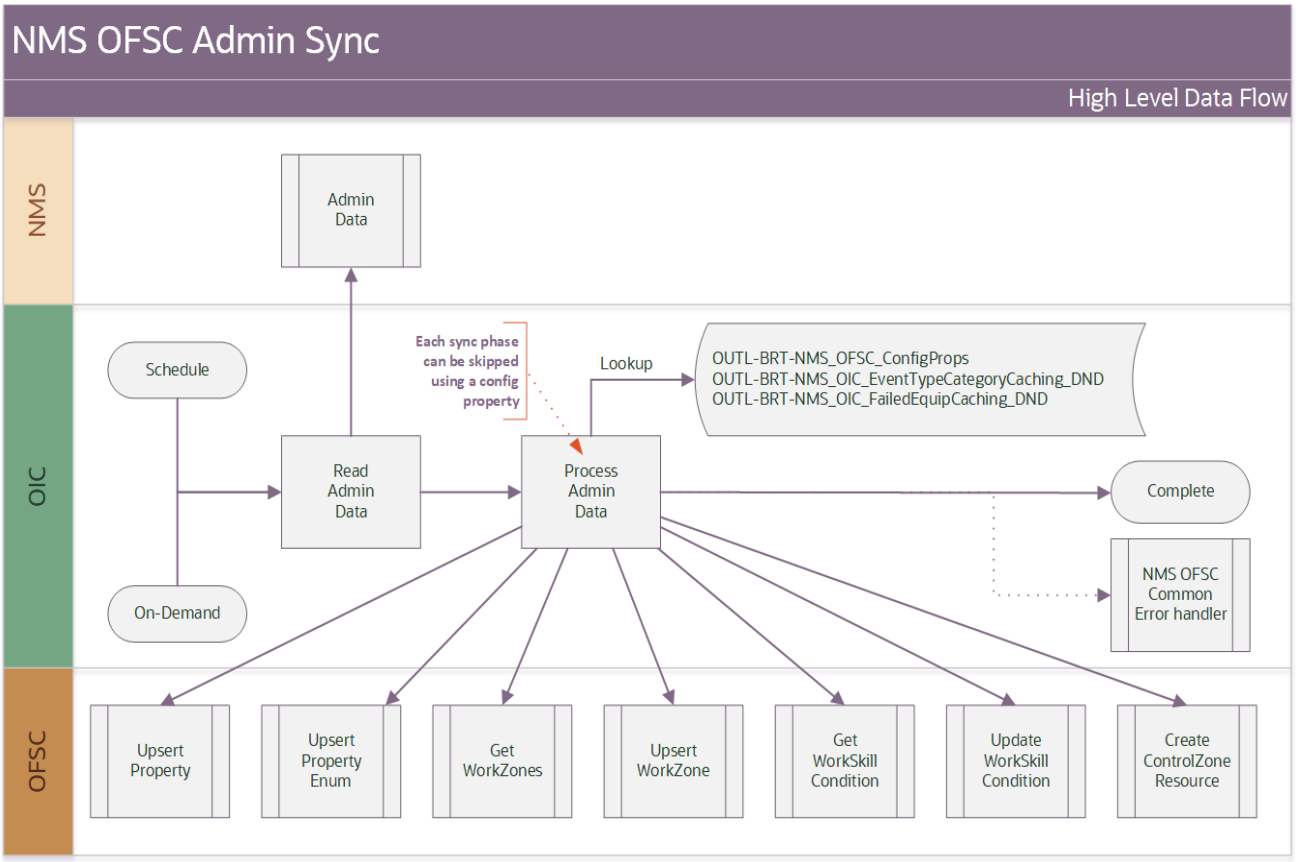
Admin Sync (Oracle Utilities Network Management System Initiated)

This integration process is used to sync the Oracle Utilities Network Management System admin data to Oracle Field Service. The sync will ensure that both systems are using the same data when communicating.

The following diagram shows a graphical representation of the Admin Sync integration process. At a high-level, this Admin Sync process runs through 10 sub-processes to sync the following Oracle Field Service data:

- Event Category “PickList”
- FailedEquipment

- Phases
- Manufacturers
- CrewTypes - WorkSkills
- ControlZones
- WorkZones
- EventType Category “PickListEnv”
- CustomerTypes



Business Processing

The integration process includes the following activities:

1. Integration process is triggered based on demand or schedule basis. Oracle Integration Cloud gets the Admin data from Oracle Utilities Network Management System and processes/transforms data in Oracle Integration Cloud, and then sends the create request to the Oracle Field Service via the integration process deployed on Oracle Integration Cloud.
2. If an error occurs during any of that above sub process, that error is captured and the process continues to the next sub process. After phases have been complete the common error handler will be called. Other errors are captured through the global fault handler.

3. An optional email notification with the error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup through a common error handler.
4. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps lookup to true to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Admin Sync
Integration Process Identifier	OUTL-BA-NMS_OFSC_ADMIN_SYNC
Integration Project Name	OU NMS OFS
OFSC BO/Operation	Resource/Create Resource
OFSC REST API(s)	• /ofscMetadata/v1/properties/{label} • /ofscMetadata/v1/properties/{enumProperty}/enumerationList • /ofscMetadata/v1/workSkillConditions • /ofscMetadata/v1/workSkills/{label} • /ofscMetadata/v1/workZones • /ofscMetadata/v1/workZones/{workZoneLabel}
NMS Utilities Adapter	getAdminData
OIC API(s)	/ic/api/integration/v1/lookups/{lookupName}

Lookups Referenced

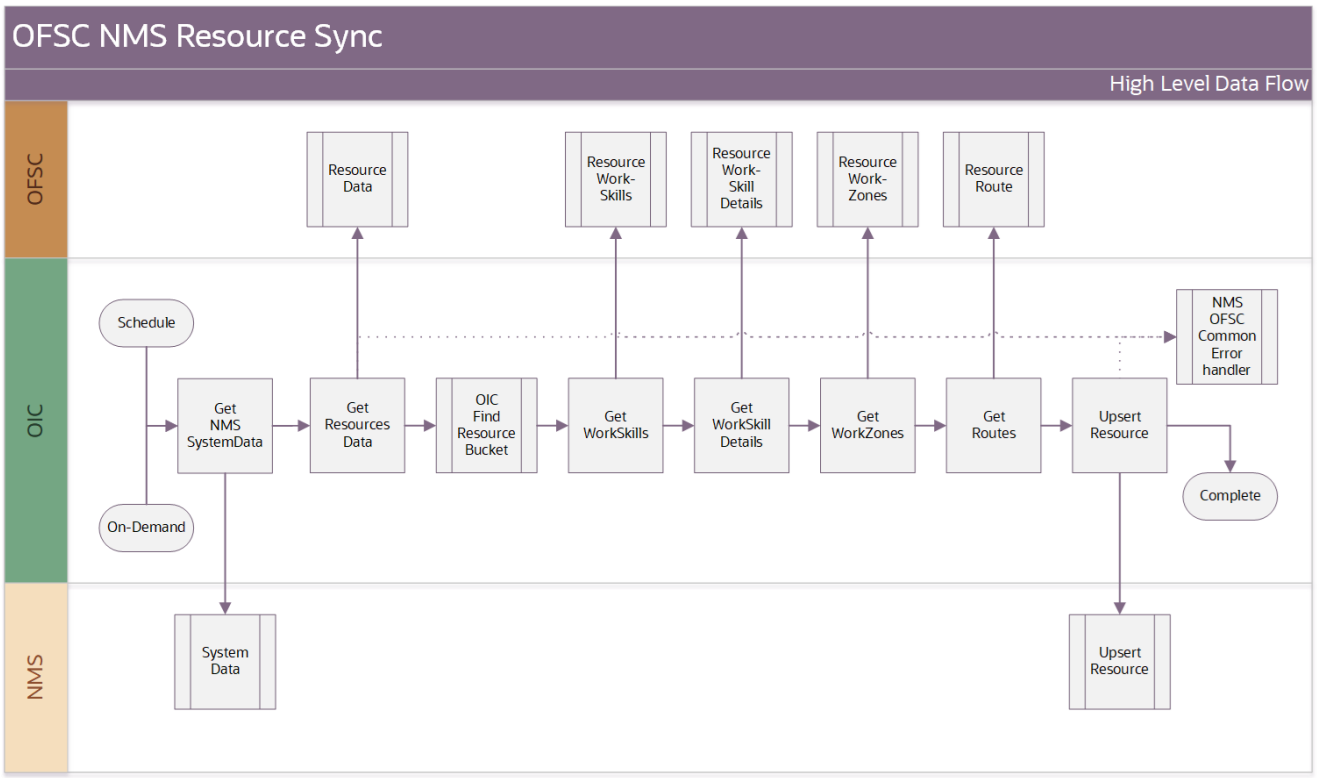
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• failedEquipment.enumProps • failedEquipment.nms.tableName • workSkillCond.actvtySameSkillMaxWorker.default • ofsc.workZone.default.NMSncgClass • ofsc.workZone.default.status • ofsc.workZone.default.travelArea • source.system • notification.type.email • activeFlag.default • ofs.language • workSkill.sharing.default • workSkillProperty.type.default • workSkillProperty.entity.default • workSkillProperty.gui.default • workSkillProperty.nameSuffix.default • workSkillCond.function.default • workSkillCond.actvtySameSkillMaxWorker.default • nms.adminSync.EventCategories • nms.adminSync.FailedEquipment • nms.adminSync.Phases • nms.adminSync.Manufacturers • nms.adminSync.CrewTypes • nms.adminSync.ControlZones • nms.adminSync.WorkZones • nms.adminSync.CustomerTypes • nms.adminSync.EventTypeCategories • parentBucket.default • bucket.timeZone.default • oic.project.identifier
OUTL-BRT-NMS_OFSC_InstanceIDToBucket	• OFSC_BucketID • NMS_ConnectionID

Resources 'Crew' Sync (Oracle Field Service Initiated)

This integration process is used to sync Oracle Field Service resource data to Oracle Utilities Network Management System. The sync will ensure that both systems are using the same data when communicating.

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



Business Processing

The integration process includes the following activities:

1. Integration process is triggered based on demand or schedule basis. Oracle Integration Cloud traverses through all the Oracle Field Service resource and if these are applicable to Oracle Utilities Network Management System, it will retrieve all the necessary information, processes/transforms data in Oracle Integration Cloud and then update the respective resource in Oracle Utilities Network Management System.
2. If an error occurs processing a resource the error is captured, and the process continues to the next found resource. After all resources have been processed the common error handler will be called if needed. Other errors are captured through the global fault handler and the process is halted with an error.

   Following is the special logic to determine if this is an active Oracle Utilities Network Management System crew:

   ```
   IF common_utilities_resource_code contains source.system property
      and resourceType in ofsc.resourceType.crew property
     THEN synchronize to NMS
   ENDIF
   ```

   Following is the special logic for setting Oracle Utilities Network Management System as 'active':

   ```
   IF ofsc.active = true
     THEN nms.timeActivated -> current time
     ELSE nms.timeDeactivated -> current time
   ```

```
ENDIF

Special logic for setting NMS 'shift status'
IF ofsc.routeEndTime THEN
  nms.timeOffShift = ofsc.routeEndTime
ELSE IF routeReactivationTime THEN
  nms.timeOnShift = ofsc.routeReactivationTime
ELSE IF routeStartTime THEN
  nms.timeOnShift = ofsc.routeStartTime
ELSE
  nms.timeOffShift = current time
ENDIF
```

Note that all the above Oracle Utilities Network Management System time fields are in UTC Epoch times.

3. An optional email notification with error details is sent via common error handler to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.
4. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps lookup to true to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Resource Sync
Integration Process Identifier	OUTL-BA-OFSC_NMS_RESOURCES_SYNC
Integration Project Name	OU NMS OFS
OFSC BO/Operation	• Resource/Get Resources • Resource/Get Resource • Resource/Get Resource Work Zones • Resource/Get Workskills
OFSC REST API(s)	• /ofscMetadata/v1/workSkills/{ workSkillId } • /ofscCore/v1/resources/{resourceId}/routes/{date}
NMS Utilities Adapter	• getAdminData • createUpdateCrews
Local Integrations	• OIC OFSC Find Resource Bucket • NMS OFSC Common Error Handler

Lookups Referenced

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

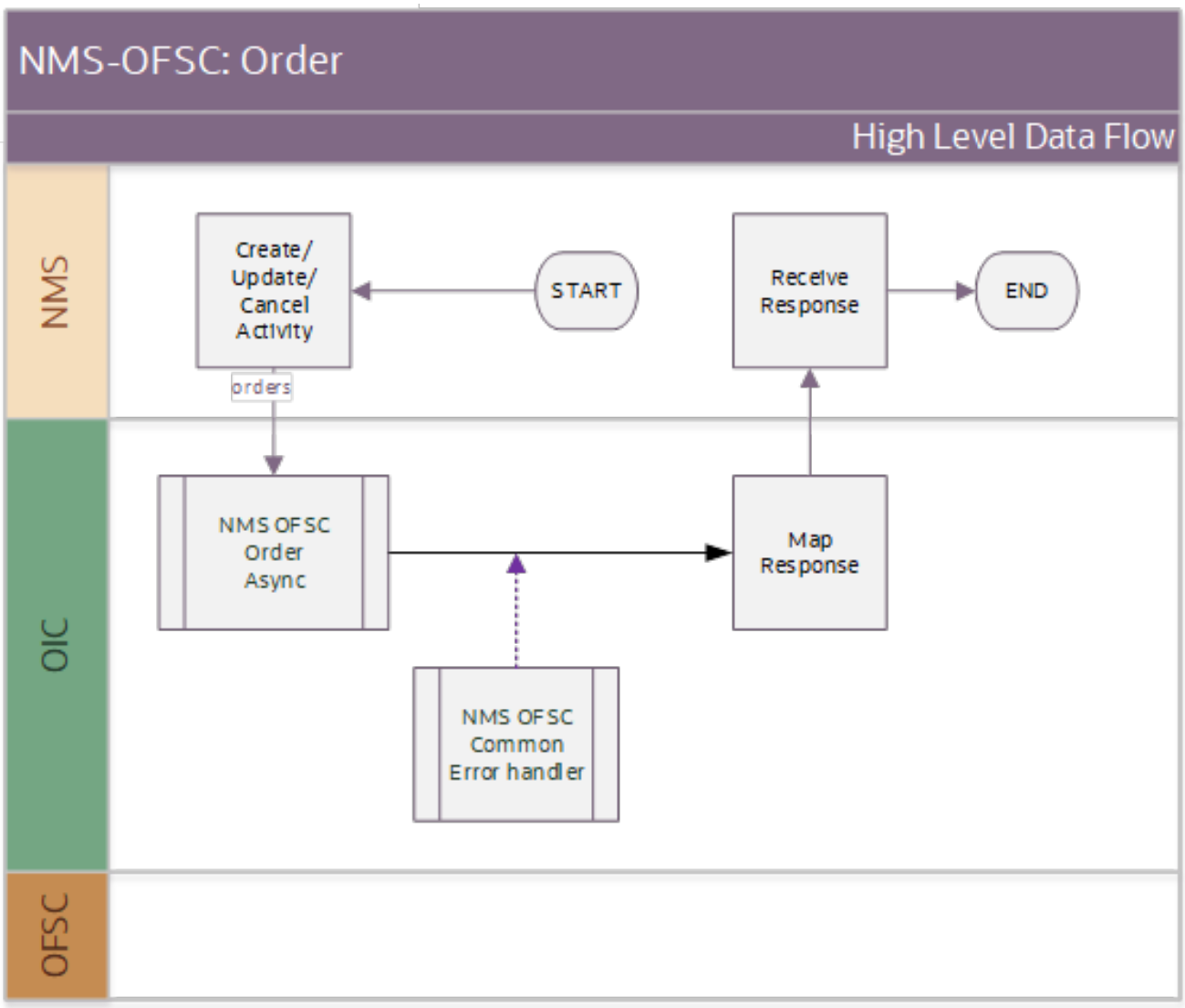
DVM	Property
OUTL-BRT-NMS_OFSC_ InstanceIDToBucket	• OFSC_BucketID • NMS_ConnectionID
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • ofsc.bucket • source.system • nms.crew.outOfRange • nms.crew.isAvailForOp • nms.crew.isMobileIntegrated • ofsc.resourceType.FieldResource • ofsc.resourceDetail.loopLimit • findInstance.oic.LookupName • findInstance.oic.LookupSourceColumnName • findInstance.oic.LookupTargetColumnName • findInstance.oic.LookupNotFoundValue • ofsc.resourceType.crew • ofsc.resourceType.delimiter

Order (Oracle Utilities Network Management System Initiated)

This integration process is used to accept request from Oracle Utilities Network Management System to create or update activities in Oracle Field Service. The information is sent from Oracle Utilities Network Management System, regardless of the activity type, and Oracle Integration Cloud responds with the response back.

The request itself is processed by the Order Async integration described later in this chapter.

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



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the create or update activity request to the Oracle Utilities NMS OFSC Order integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities NMS OFSC Order forwards the request to the Oracle Utilities NMS OFSC Order Async integration.
3. The integration will respond with a "DEFERRED" to Oracle Utilities Network Management System if the async integration was successfully triggered.
4. Any errors are reported back with a "FAILURE" to Oracle Utilities Network Management System through the fault handler. An optional email notification with error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Order
Integration Process Identifier	OUTL-BA-NMS_OFSC_ORDERS
Integration Project Name	OU NMS OFS
OFSC BO/Operation	N/A
OFSC API	N/A
Local Integrations	• NMS OFSC Order Async • NMS OFSC Common Error Handler

Lookups Referenced

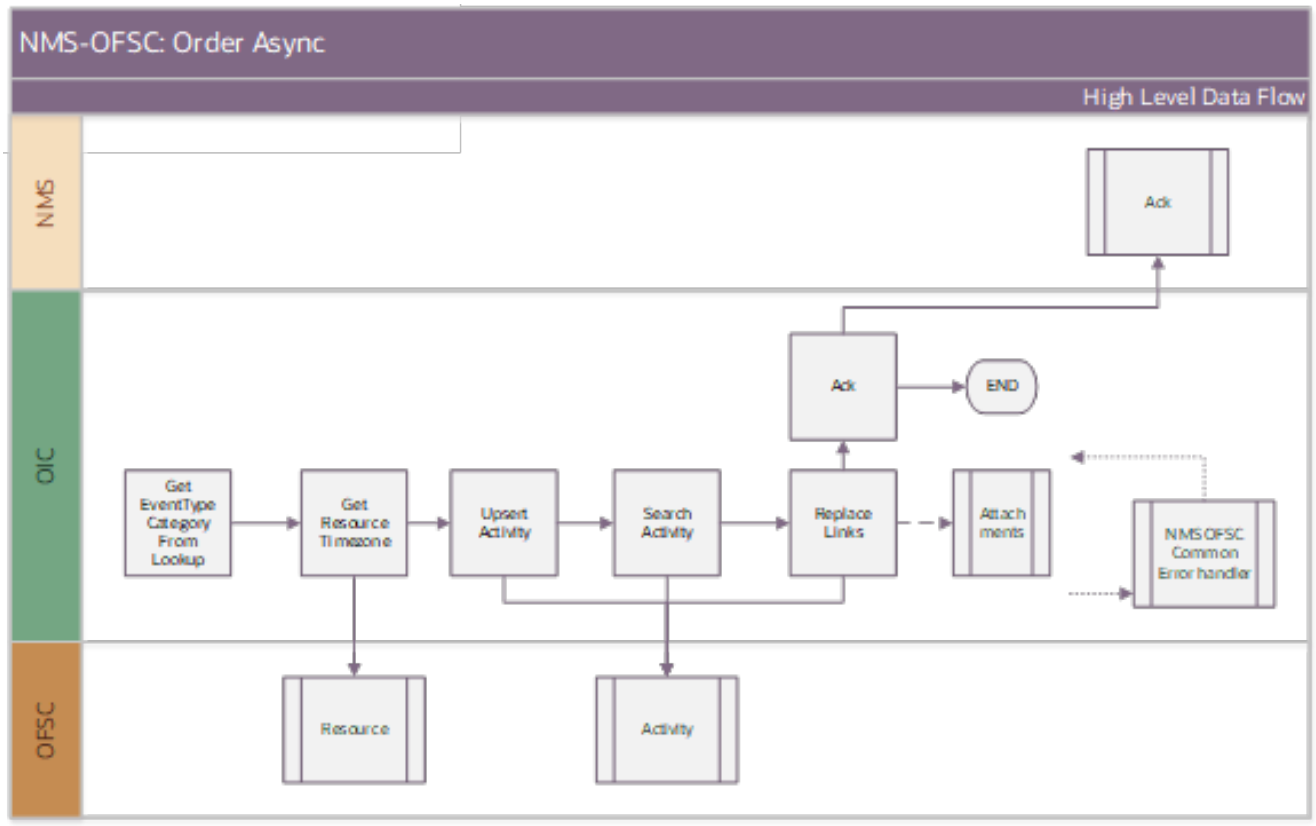
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email

Order Async (OIC via Oracle Utilities Network Management System Initiated)

This asynchronous integration process accepts the Oracle Utilities Network Management System request from the Order integration, completes the request to create or update activities in Oracle Field Service. After the completion an acknowledgment is sent to Oracle Utilities Network Management System with a corresponding response.

The following diagram shows a graphical representation of the Order Async integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the create or update activity request to the Oracle Utilities NMS OFSC Order integration process deployed on Oracle Integration Cloud. This request is forwarded to this Oracle Utilities NMS OFSC Order Async integration.

2. This integration transforms the create or update activity request message from Oracle Utilities Network Management System to the request message format in Oracle Field Service and invokes bulkUpdate API.

   Following is the special logic for determining 'ResourceId':

```
IF crewId is passed from NMS THEN
    use that to populate the resourceId
    IF ofsc.isScheduledForPreAssignedCrew = true THEN
        position = current date
    ELSE
    ENDIF
ELSE
    read the property isuseControlZoneFromNMS
    IF isuseControlZoneFromNMS = true THEN
        1-10
        map the control zone level
            (3 by default but read from config props)
        to populate the resourceId using incoming event/ncg
```

```
        ELSE
            IF not in 1-10 THEN
                use default bucket for resourceId
            ELSE
                use default bucket for resourceId
            ENDIF
        ENDIF
    ENDIF
```

3. After completing the request within Oracle Field Service, an acknowledgment "SUCCESS" ack is sent to Oracle Utilities Network Management System including the original "messageId".
4. Any errors are reported back with an "ERROR" ack to Oracle Utilities Network Management System through the fault handler. An optional email notification with error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Order Async
Integration Process Identifier	OUTL-BA-NMS_OFSC_ORDER_ASYNC
Integration Project Name	OU NMS OFS
OFSC BO/Operation	• Resource/Get Resource • Activity/Get Activity • Activity/Bulk Update Activity • Activity/Search Activity • Activity/Replace Activity Link
OFSC REST API(s)	N/A
NMS Utilities Adapter	ack
Local Integrations	• NMS OFSC Attachments • NMS OFSC Common Error Handler

Lookups Referenced

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

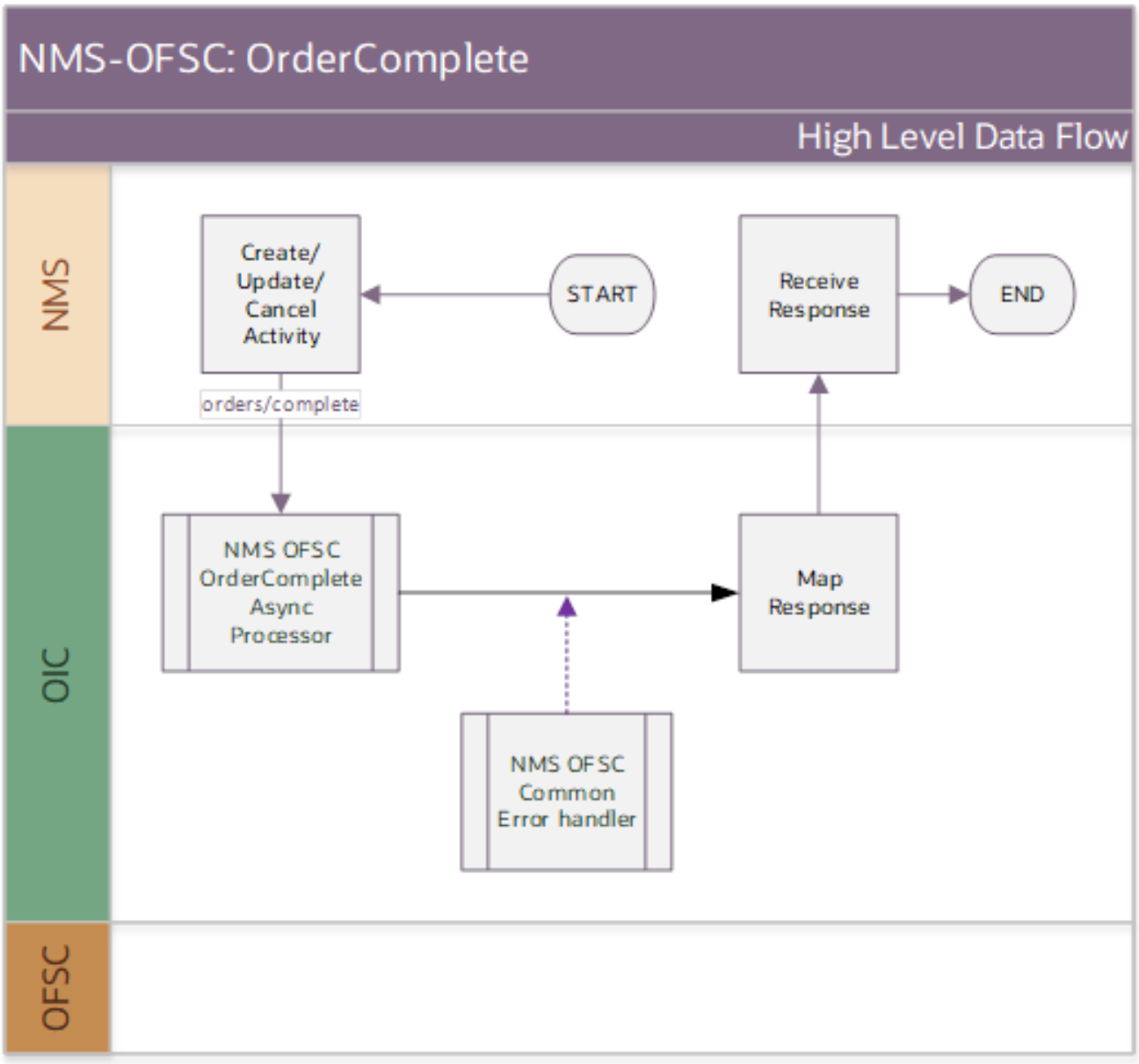
DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • ofsc.bucket • ofsc.controlZone • ofsc.useControlZoneFromNMS • ofsc.workZone.default.FuzzyType • source.system • activity.dateTimeFormat.default • activities.linktype • ofsc.isScheduledForPreAssignedCrew • ofsc.setPositionInRoute • dateTimeFormat.default.OFS • dateTimeFormat.default.NMS
OUTL-BRT-NMS_OIC_EventTypeCategoryCaching_DND	• First • Second
OUTL-BRT-NMS_OIC_FailedEquipCaching_DND	• NMS_FIELDNAME • OFS_FIELDNAME
OUTL-BRT-NMS_OFSC_OFSC_BucketID InstanceIDToBucket	• NMS_InstanceID • OFSC_BucketID • NMS_ConnectionID
OUTL-BRT-NMS_OFSC_ActivityStatusChange	• NMS-OFSC_ActivityStatus • NMS_ActivityEventStatus • OFSC_ActivityStatusNew
OUTL-BRT-OFSC_ActivityType NMS_OFSC_ActivityType	• NMS_ActivityType • OFSC_ActivityType

Order Complete (Oracle Utilities Network Management System Initiated)

This integration process is used to accept request from Oracle Utilities Network Management System to cancel activities from Oracle Field Service. The information is sent from Oracle Utilities Network Management System and Oracle Integration Cloud returns with a request received response.

The request itself is processed by the Order Complete Async Processor integration.

The following diagram shows a graphical representation of the Order Complete integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the cancel activity request to the Oracle Utilities NMS OFSC Order Complete integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities NMS OFSC Order Complete forwards the request to the Oracle Utilities NMS OFSC Order Complete Async.
3. The integration responds with a "DEFERRED" to Oracle Utilities Network Management System if the async process was successfully triggered.

4. Any errors are reported back with a "FAILURE" to Oracle Utilities Network Management System through the fault handler. An optional email notification with error details is sent to the users configured in OUTL-BRTNMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC OrderComplete
Integration Process Identifier	OUTL-BA-NMS_OFSC_ORDERS_COMPLETE
Integration Project Name	OU NMS OFS
OFSC BO/Operation	N/A
OFSC API	N/A
Local Integrations	• NMS OFSC OrderComplete Async • NMS OFSC Common Error Handler

Lookups Referenced

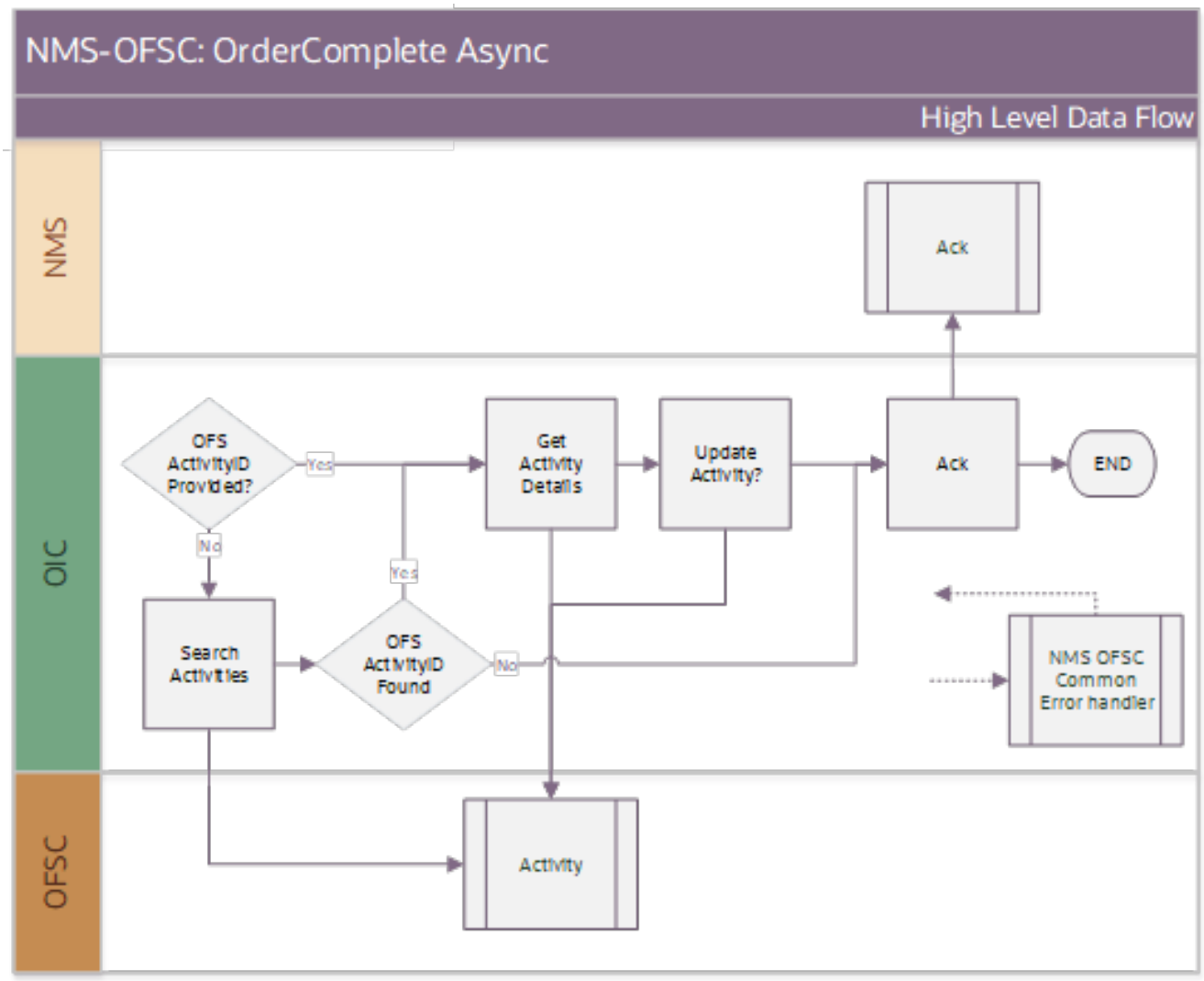
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email

Order Complete Async (OIC via Oracle Utilities Network Management System Initiated)

This asynchronous integration process accepts the Oracle Utilities Network Management System request from the Order Complete integration and completes the request to cancel activities from Oracle Field Service. After the completion, an acknowledgment is sent to Oracle Utilities Network Management System with a corresponding response.

The following diagram shows a graphical representation of the Order Complete Async integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the cancel activity request to the Oracle Utilities NMS OFSC Order Complete integration process deployed on Oracle Integration Cloud. This request is forwarded to Oracle Utilities NMS OFSC Order Complete Async integration.
2. This integration transforms the cancel activity request message from Oracle Utilities Network Management System to the request message format in Oracle Field Service and invokes the bulkUpdate API.
3. If the incoming request does not have the Oracle Field Service ActivityId stored in its ExternalId field, the integration searches Oracle Field Service for the respective activity.

4. After completing the request within Oracle Field Service, an acknowledgment "SUCCESS" ack is sent to Oracle Utilities Network Management System including the original "messageId".
5. Any errors are reported back with an "ERROR" ack to Oracle Utilities Network Management System through the fault handler. An optional email notification with error details is sent to the users configured in OUTL-BRTNMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC OrderComplete Async
Integration Process Identifier	OUTL-BA-NMS_OFSC_ORD_CMPL_ASYNC
Integration Project Name	OU NMS OFS
OFSC BO/Operation	• Activity/Get Activity • Activity/Bulk Update Activity • Activity/Search Activity
OFSC REST API(s)	N/A
NMS Utilities Adapter	ack
Local Integrations	NMS OFSC Common Error Handler

Lookups Referenced

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

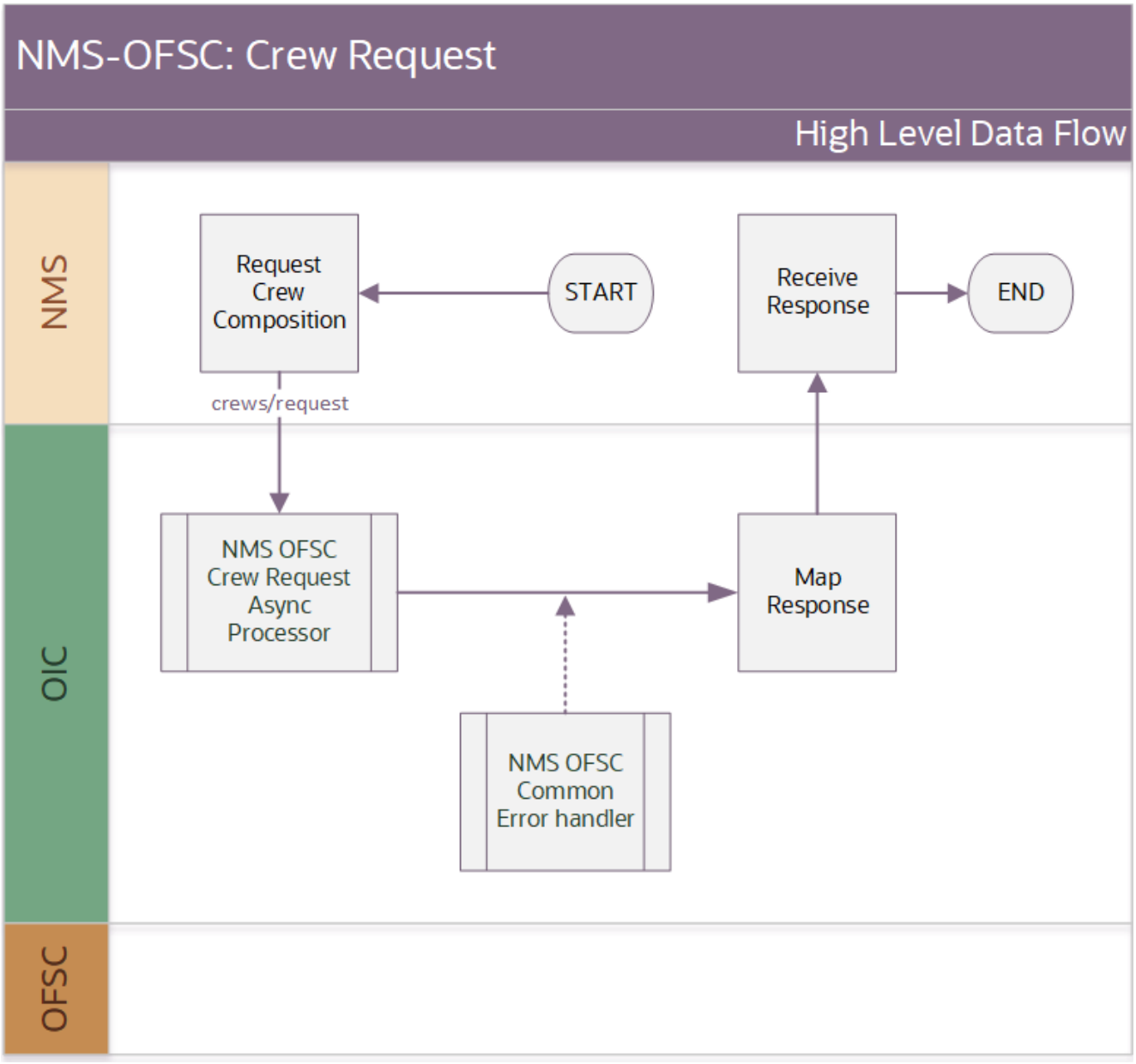
DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • dateTimeFormat.default.OFS • dateTimeFormat.default.NMS
OUTL-BRT-NMS_OFSC_OFSC_BucketID InstanceIDToBucket	• NMS_InstanceID • OFSC_BucketID • NMS_ConnectionID
OUTL-BRT-NMS_OFSC_ActivityStatusChange	• NMS-OFSC_ActivityStatus • NMS_ActivityEventStatus • OFSC_ActivityStatusNew

Crew Request (Oracle Utilities Network Management System Initiated)

This integration process is used to accept request from Oracle Utilities Network Management System to retrieve the crew composition from Oracle Field Service.

The request itself is processed by the Crew Request Async integration described next in this chapter.

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



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the crew request to the Oracle Utilities NMS OFSC Crew Request integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities NMS OFSC Crew Request forwards the request to the Oracle Utilities NMS OFSC Crew Request Async integration.
3. The integration will respond with an empty body to Oracle Utilities Network Management System if the async integration was successfully triggered.
4. Any errors are reported back with a "ERROR" to Oracle Utilities Network Management System through the fault handler. An optional email notification with error details are sent to the users configured in the OUTL-BRTNMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Crew Request
Integration Process Identifier	OUTL-BA-NMS_OFSC_CREW_REQ
Integration Project Name	OU NMS OFS
OFSC BO/Operation	N/A
OFSC API	N/A
Local Integrations	• NMS OFSC Crew Request Async • NMS OFSC Common Error Handler

Lookups Referenced

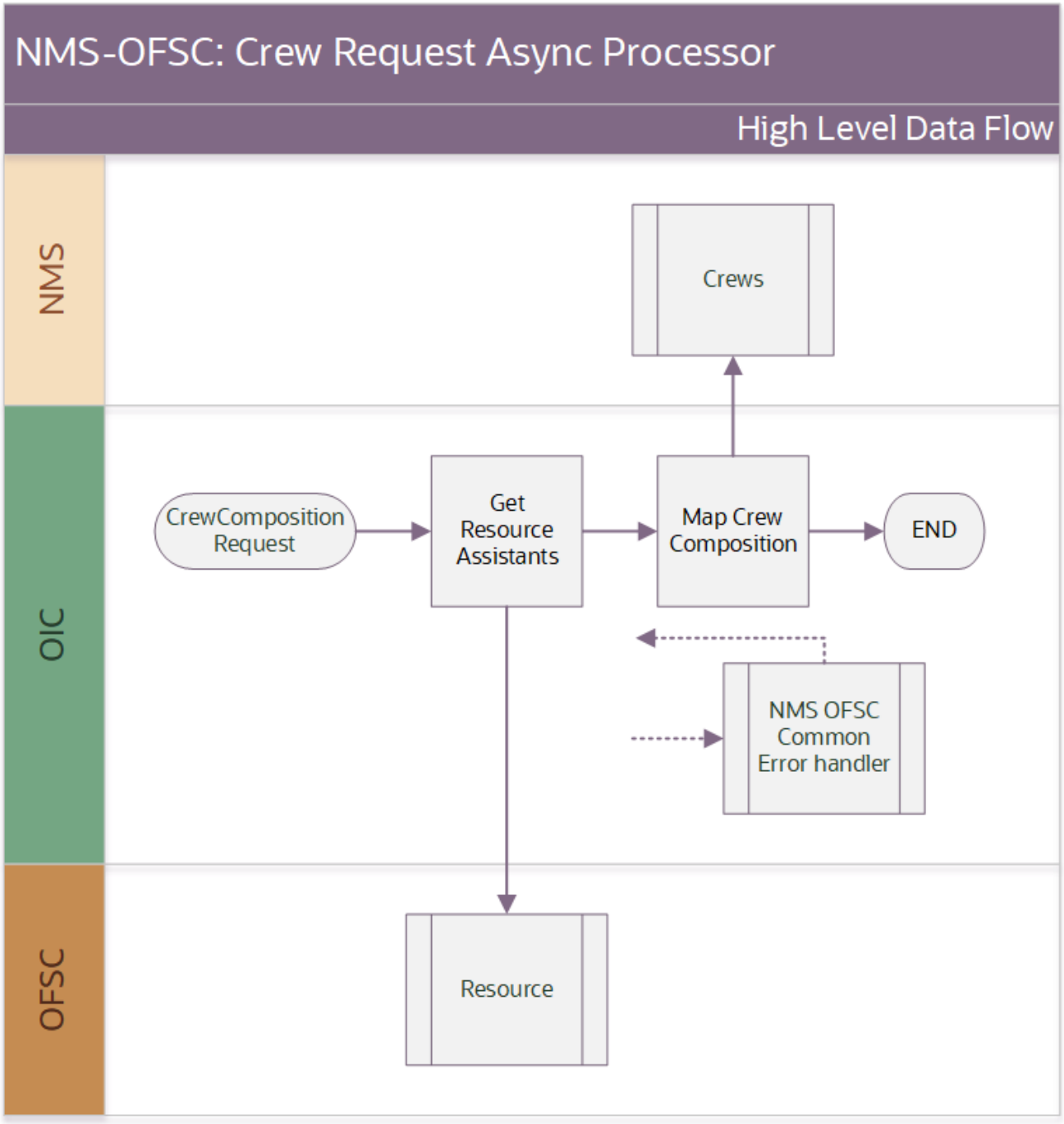
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	notification.type.email

Crew Request Async (OIC via Oracle Utilities Network Management System Initiated)

This asynchronous integration process accepts the Oracle Utilities Network Management System request from the Crew Request integration, completes the request to retrieve the crew composition from Oracle Field Service. After the retrieving the details, it will update the crew information in Oracle Utilities Network Management System with the crew members and vehicles.

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



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the crew request to the Oracle Utilities NMS OFSC Crew Request integration process deployed on Oracle Integration Cloud. This request is forwarded to this Oracle Utilities NMS OFSC Crew Request Async integration.
2. This integration creates the request to invoke the crew assistants API in Oracle Field Service.
3. After receiving the response from Oracle Field Service. It will transform the OFS response into a crew update request and invoke Oracle Utilities Network Management System.
4. If error occur Oracle Utilities Network Management System isn't updated but an optional email notification with error details are sent to the users configured in the OUTL-BRTNMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Crew Request Async
Integration Process Identifier	OUTL-BA-NMS_OFSC_CREW_REQ_ASYNC
Integration Project Name	OU NMS OFS
OFSC BO/Operation	N/A
OFSC REST API(s)	rest/ofscCore/v1/resources/{crewExternalId}/assistants
NMS Utilities Adapter	/nms-ofs/rest/v1/crews
Local Integrations	NMS OFSC Common Error Handler

Lookups Referenced

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

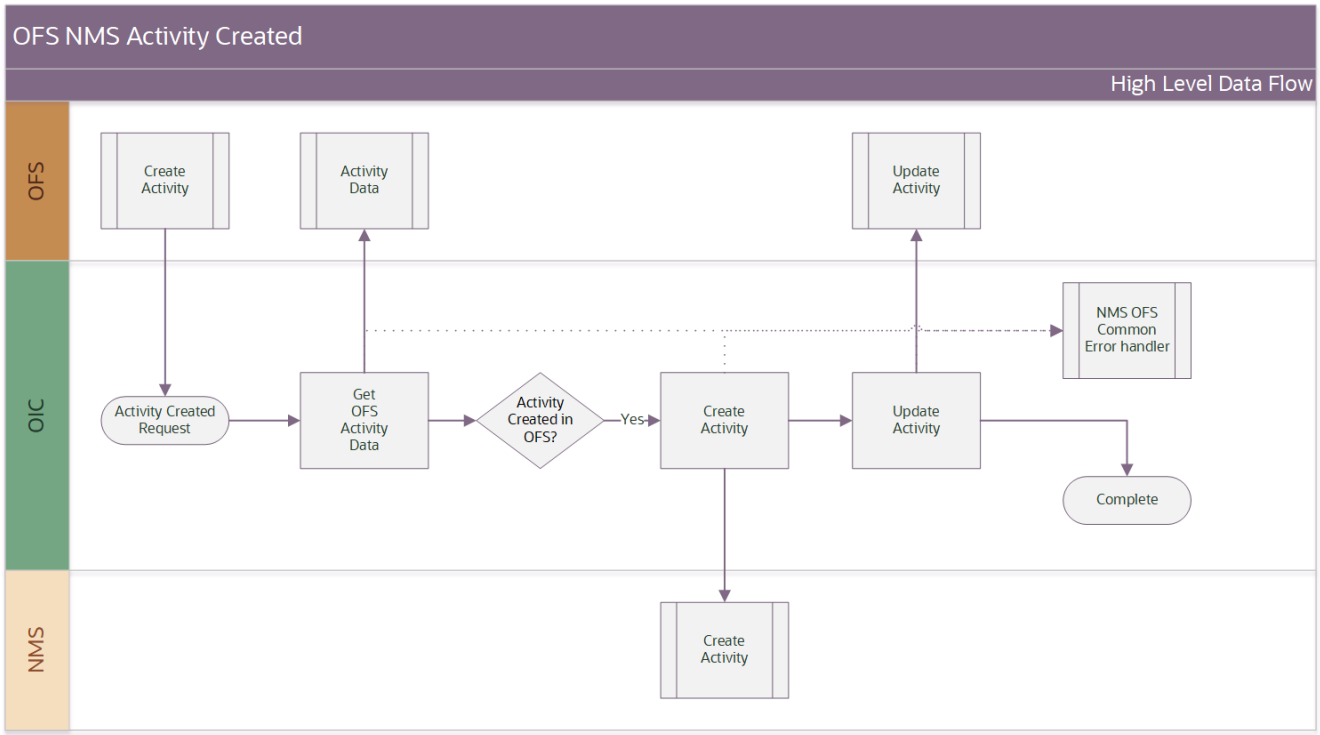
DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • ofsc.resourceType.crew • ofsc.resourceType.delimiter
OUTL-BRT-NMS_OFSC_InstanceIDToBucket	• NMS_InstanceID • NMS_ConnectionID

DVM	Property
OUTL-BRT-NMS_OFSC_CrewMemberClasses	• NMS_CrewMemberClass • OFS_ResourceTypeLabel
OUTL-BRT-NMS_OFSC_VehicleTypes	• NMS_VehicleType • OFS_ResourceTypeLabel

Activity Created (Oracle Field Service Initiated)

This integration process is used to send activity creations from Oracle Field Service to Oracle Utilities Network Management System.

The following diagram shows a graphical representation of the Activity Create integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Field Service triggers the activity created request to the Oracle Utilities Network Management System via the Activity Create Integration process deployed on Oracle Integration Cloud.
2. Oracle Utilities OFSC NMS Activity Create reads the activity details from Oracle Field Service and send a create activity request message to Oracle Utilities Network Management System. Following a successful response it triggers an update activity in the Oracle Field Service.
3. Any errors are reported back to Oracle Field Service through the global fault handler.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Activity Create
Integration Process Identifier	OUTL-BA-OFSC_NMS_ACTIVITY_CREATE
Integration Project Name	OU NMS OFS
OFSC Events	activityCreated
OFSC BO/Operation	• Activity/Activity Created • Activity/Get Activity • Activity/Update Activity
NMS Utilities Adapter	createActivities
Local Integrations	NMS OFSC Common Error Handler

Lookups Referenced

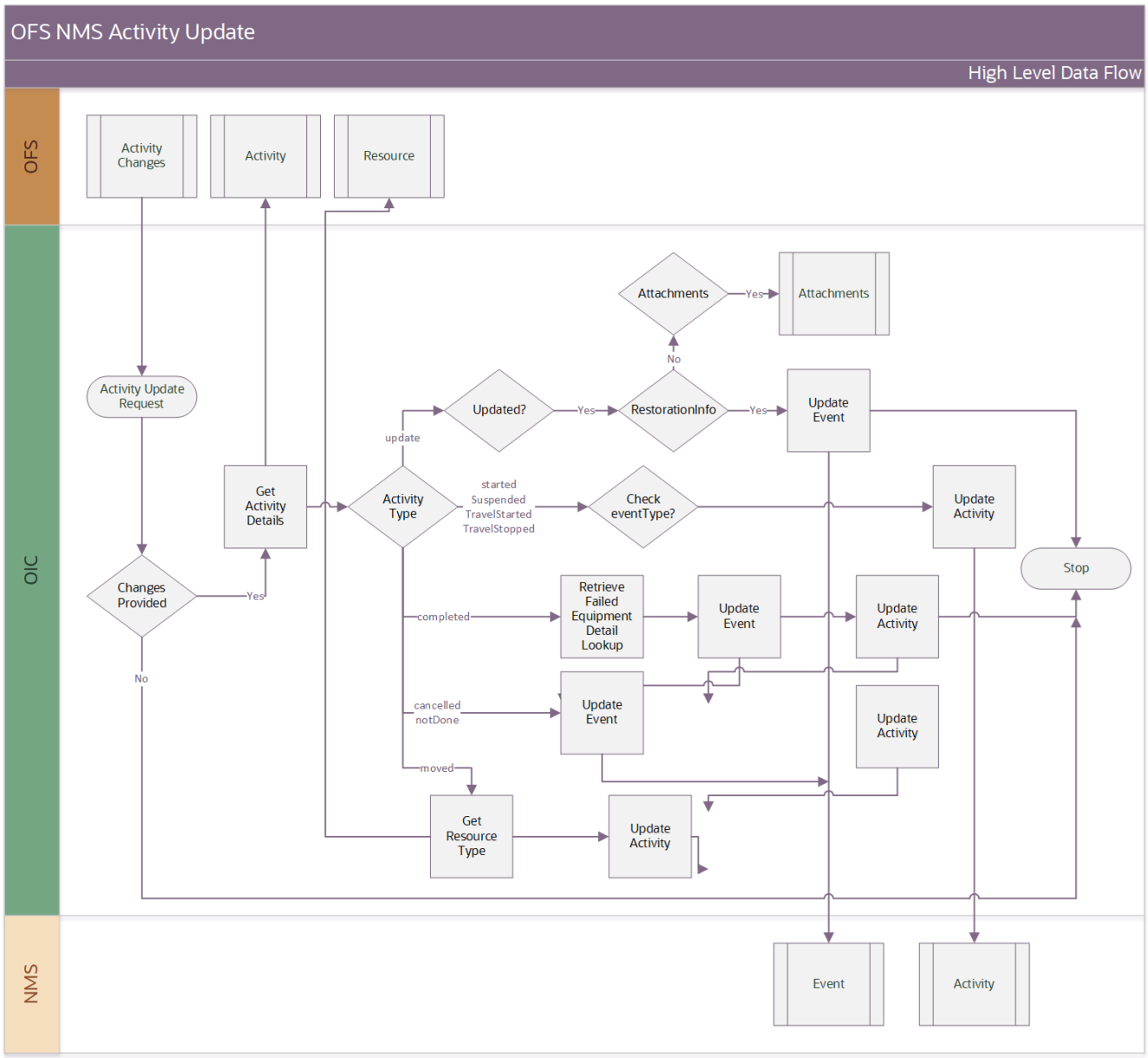
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system
OUTL-BRT-NMS_OFSC_InstanceIDToBucket	• NMS_InstanceID • NMS_ConnectionID

Activity Update (Oracle Field Service Initiated)

This integration process is used to send activity updates from Oracle Field Service to Oracle Utilities Network Management System.

The following diagram shows a graphical representation of the Activity Update integration process.



Business Processing

The integration process includes the following activities:

1. Oracle Field Service sends the update activity request to the Oracle Utilities Network Management System via the Activity Update Integration process deployed on Oracle Integration Cloud.
2. Oracle Utilities NMS OFSC Activity Update gets the details from Oracle Field Service when triggered and transforms the update activity request message from Oracle Field Service to the request message format in Oracle Utilities Network Management System and invokes the Event Update API.

3. Oracle Utilities Network Management System sends the failure response to the integration transformed and sent to Oracle Field Service.
4. Any errors are reported back to Oracle Field Service through the global fault handler.
5. An optional email notification with error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Activity Update
Integration Process Identifier	OUTL-BA-OFSC_NMS_ACTIVITY_UPD
Integration Project Name	OU NMS OFS
OFSC Events	• Activity Updated • Activity Started • Activity Suspended • Activity TravelStarted • Activity TravelStopped • Activity Completed • Activity Not Done • Activity Cancelled • Activity Moved
OFSC BO/Operation	• Activity/Get Activity • Resource/Get Resource
OFSC REST API(s)	/ofscMetaData/v1/resourceTypes
NMS Utilities Adapter	• updateEvents • updateActivities
Local Integrations	• NMS OFSC Attachments • NMS OFSC Common Error Handler
OIC API(s)	/ic/api/integrations/v1/Lookup/{name}

Lookups Referenced

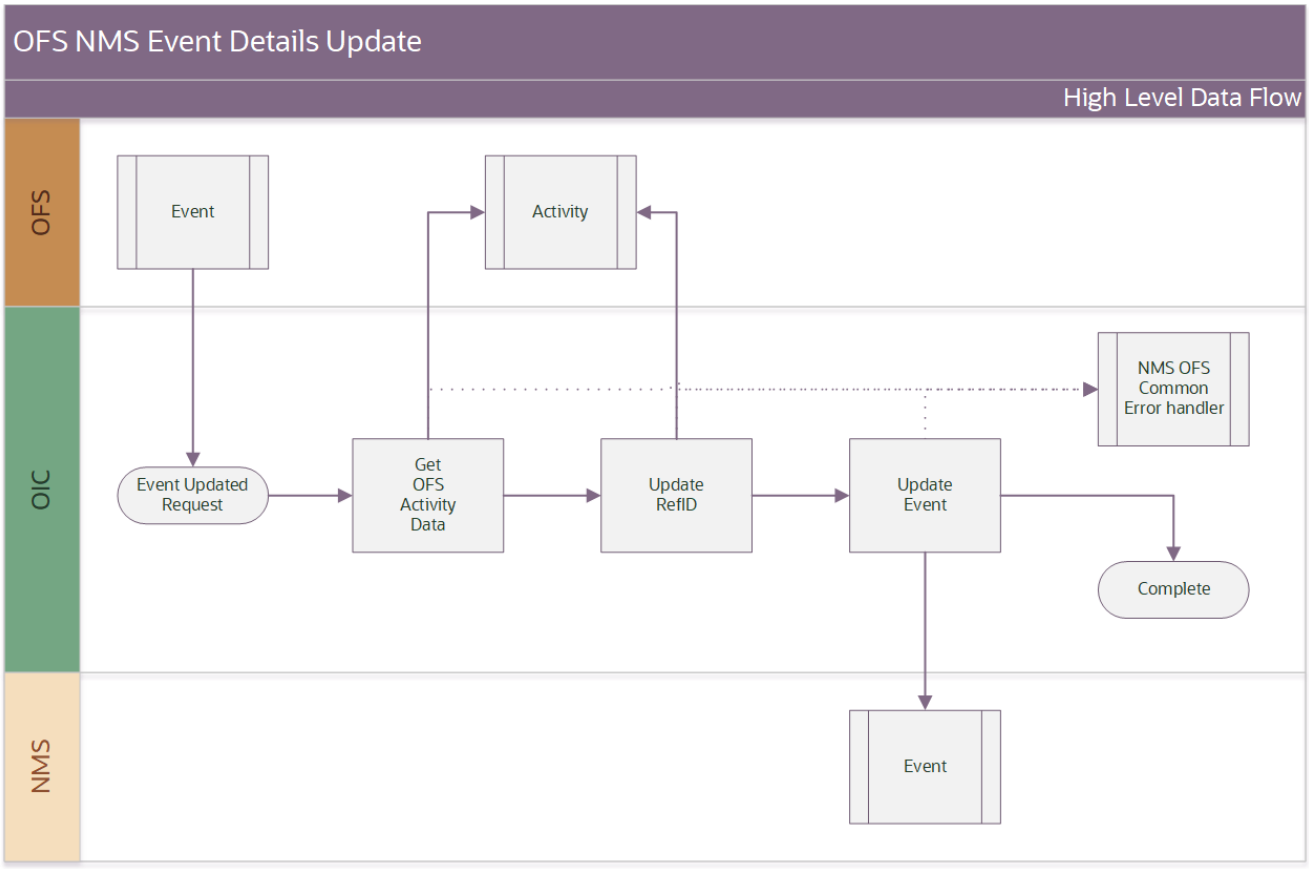
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system • dateTimeFormat.default.NMS • oic.project.identifier • ofsc.resourceType.bucket
OUTL-BRT-NMS_OIC_FailedEquipCaching_DND	• dynamic referenced in mapping
OUTL-BRT-NMS_OFSC_ ActivityStatus	• OFSC_EventType • NMS_ActivityStatus • NMS_ActionCode
OUTL-BRT-NMS_OFSC_ OFSC_BucketIDInstanceIDToBucket	• NMS_InstanceID • NMS_ConnectionID

Event Details Update (Oracle Field Service Initiated)

This integration process is used to send event details from Oracle Field Service to Oracle Utilities Network Management System.

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



Business Processing

The integration process includes the following activities:

1. Oracle Field Service sends the Update Event Details request to the Oracle Utilities OFSC NMS Event Details Update integration process deployed on Oracle Integration Cloud when the "Event details" form submitted event occurs.
2. The Oracle Utilities OFSC NMS Event Details Update process transforms the Event Details form data and get the activity details from Oracle Field Service by invoking Get Activity API.
3. This integration process updates the nms_REF-ID property in Oracle Field Service invoking the Update Activity Rest API.
4. This integration process invokes the /events REST Service URI in Oracle Utilities Network Management System to update the event details.
5. Any errors are captured through the global fault handler.
6. An optional email notification with error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.
7. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps Lookup to true to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Event Details Update
Integration Process Identifier	OUTL-BA-OFSC_NMS_ACT_EVTDTLUPD
Integration Project Name	OU NMS OFS
OFSC BO/Operation	• Activity/ Get Activity • Activity/ Update Activity
OFSC Event	Forms/Form Submitted (Event Details)
NMS Utility Adapter	updateEvents

Lookups Referenced

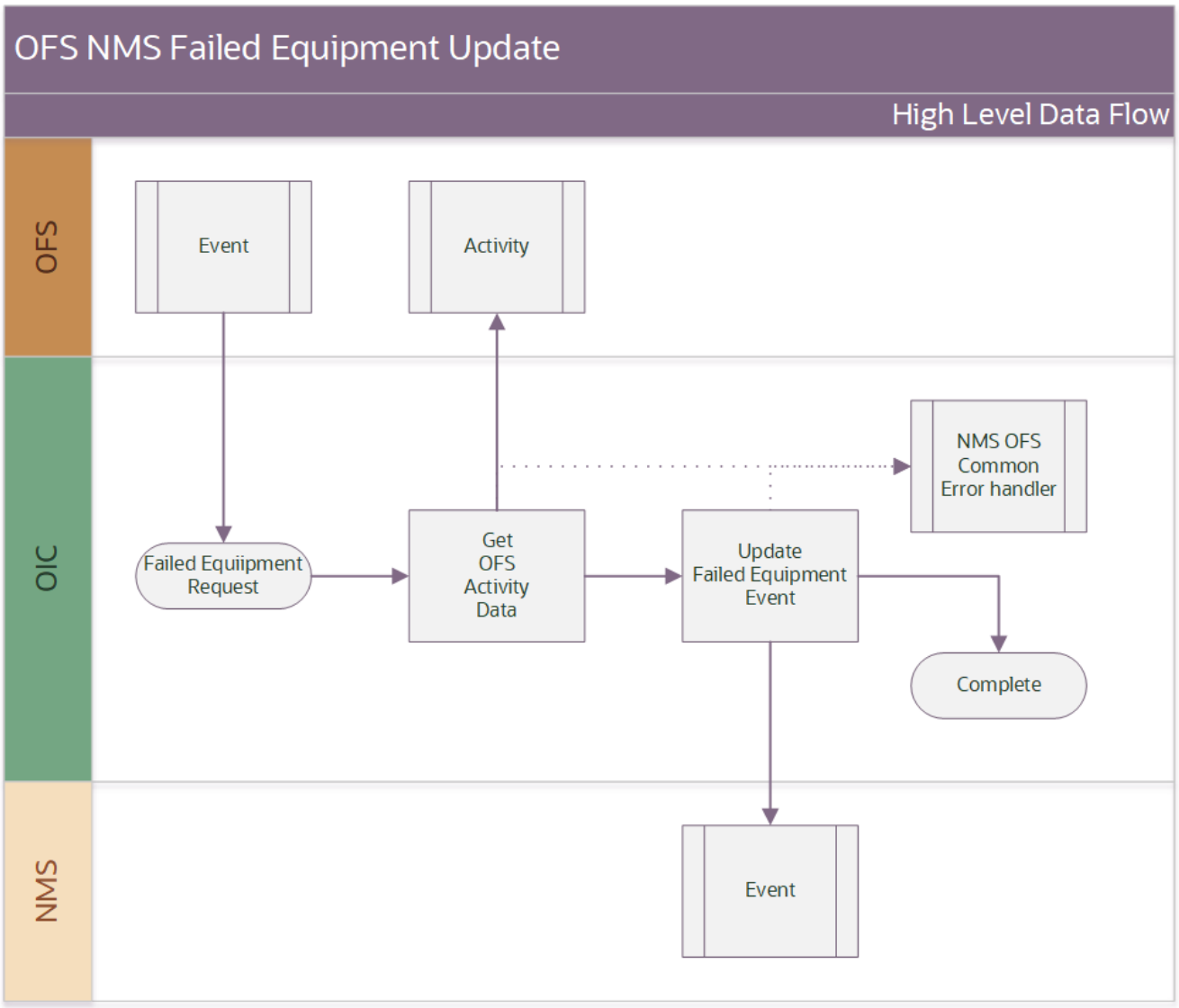
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system • operatorComments.eventDetails
OUTL-BRT-NMS_OFSC_InstanceIDToBucket	• OFSC_BucketID • NMS_InstanceID
OUTL-BRT-NMS_OFSC_ActivityStatus	• NMS_ActivityStatus • NMS_ActionCode

Failed Equipment Updates (Oracle Field Service Initiated)

This integration process is used to send the updated failed equipment details from Oracle Field Service to Oracle Utilities Network Management System.

The following diagram shows a graphical representation of the Failed Equipment Update integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Field Service sends the Update Failed Equipment Details request to the Oracle Utilities OFSC NMS Failed Equipment Update integration process deployed on Oracle Integration Cloud when the "Failed Equipment" form submitted event occurs.
2. Oracle Utilities OFSC NMS Failed Equipment Update process transforms the Failed Equipment form data and get the activity details from Oracle Field Service by invoking Get Activity API.

3. This integration process invokes the /events REST Service URI in Oracle Utilities Network Management System to update the Failed Equipment details.
4. Any errors are captured through global fault handler.
5. An optional email notification with the error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup through a common error handler.
6. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps Lookup to true to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Failed Equipment Update
Integration Process Identifier	OUTL-BA-OFSC_NMS_ACT_FEUPD
Integration Project Name	OU NMS OFS
OFSC BO/Operation	Activity/ Get Activity
OFSC Event	Forms/Form Submitted (Failed Equipment)
NMS Utility Adapter	updateEvents
Local Integrations	NMS OFSC Common Error Handler
OIC API(s)	/ic/api/integration/v1/lookups/{lookupName}

Lookups Referenced

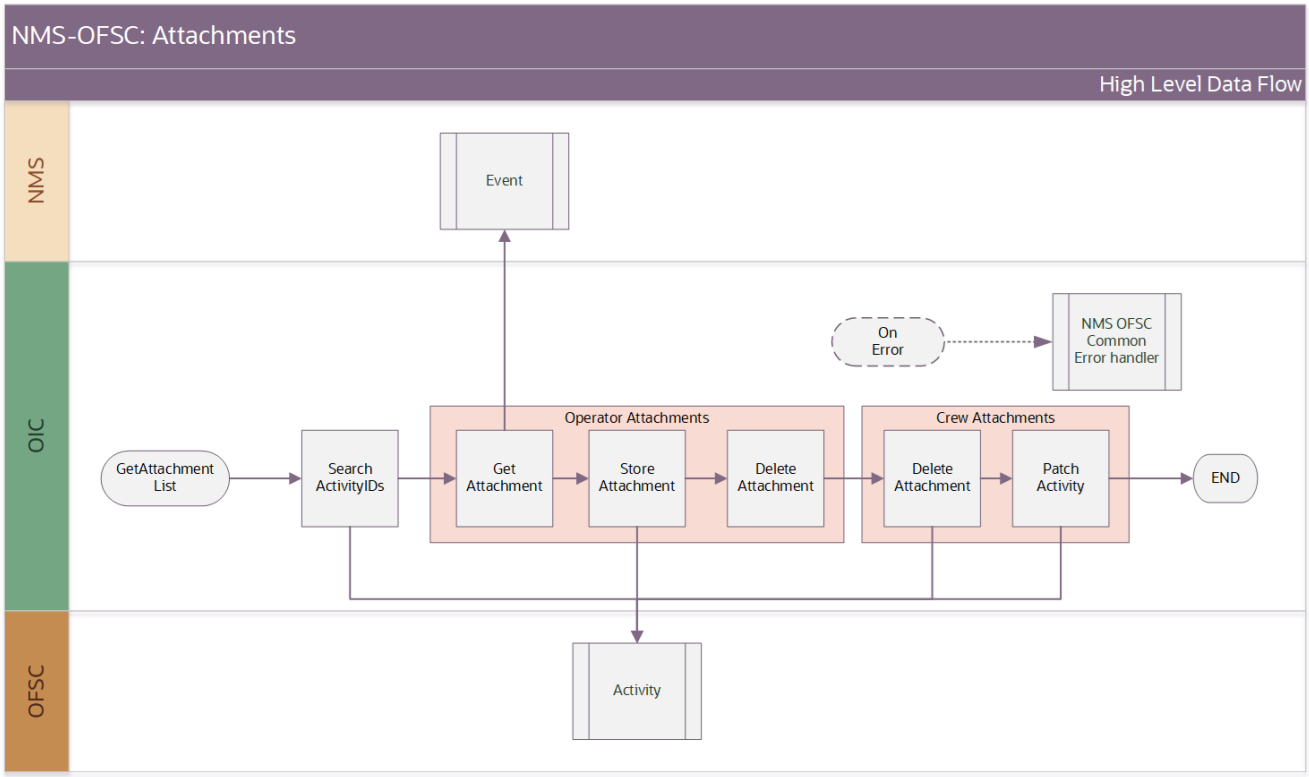
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications:

DVM	Property
OUTL-BRT-NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system • operatorComments.failedEquipment • dateTimeFormat.default.NMS
OUTL-BRT-NMS_OFSC_ InstanceIDToBucket	• NMS_InstanceID • NMS_ConnectionID
OUTL-BRT-NMS_ OIC_ FailedEquipCaching_DND	• dynamic referenced in mapping

NMS Attachments (OIC Initiated)

This integration will synchronize the event attachments to all linked activities. Attachments might have been added, removed, updated by the operator and need to be maintained in Oracle Field Service. This integration is called from within the Activity Async Processor and is called asynchronously. The operator also has the ability to remove any attachments that were added by the Oracle Field Service crew. The Oracle Field Service crew can only maintain attachments that were added for the activity they are responsible for.

The following diagram shows a graphical representation of the NMS Attachments integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends a create or update request to the Oracle Utilities NMS OFSC Activity Process. The request is forwarded to Oracle Utilities NMS OFSC Activity Async Process which will initiate the Oracle Utilities NMS OFSC Attachment integration to synchronize the attachments. The incoming request contains all the current list of attachments in the system.
2. For each linked activity, Oracle Utilities NMS OFSC Attachment will loop through the attached list and first refresh the Oracle Utilities Network Management System Operator attachments followed by deleting any Oracle Field Service Crew attachment if needed.

   Since Oracle Utilities Network Management System does not denote whether an attachment has been updated, therefore the integration first will remove all the operator attachments prior uploading a fresh pulled copy. Operator attachments are

stored with a configurable property 'nms_sourced_attachment_1' through 10 in Oracle Field Service.

Later, it will loop through the existing crew attachments and delete any if the operator has removed one or more of these attachments.

The number of attachments is limited to 10 in Oracle Utilities Network Management System and 10 per linked activity. Crew attachments filenames are renamed with the respective activity identifier and sequence number as a prefix. File size should be limited to 5MB per attachment. Accepted file extensions are shown in the next section.

3. Any errors that occur during the operator attachment processing are captured and forwarded (with the error details) to the common error handler. The integration will continue to process the next attachment.
4. An optional email notification with error details is sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps Lookup to 'true' to receive email notification when errors are encountered.

Technical Details

The following table describes integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Attachment
Integration Process Identifier	OUTL-BA-NMS_OFSC_ATTACHMENTS
Integration Project Name	OU NMS OFS
Source Connection	local integration
trigger	getAttachmentList
OFSC BO/Operation	• Activity: Search Activity • Activity: Get Activity • Activity: Set File Property • Activity: Update Activity
OFS REST URI	/rest/ofscCore/v1/activities/{activityId}/{propertyLabel}
NMS Utilities Adapter	getAttachmentData
Local Integrations	Oracle Utilities NMS-OFS Common Error Handler

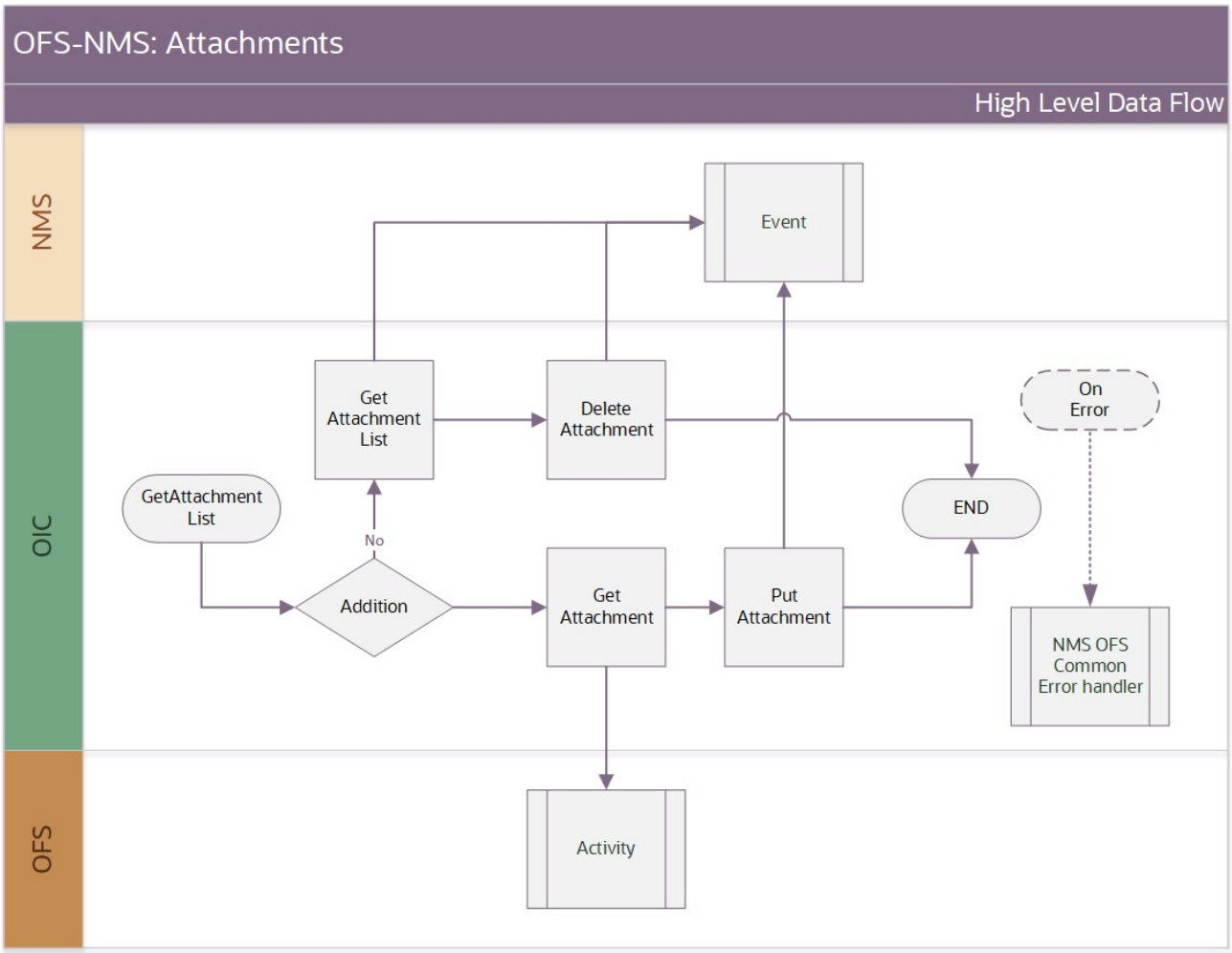
Lookups Referenced

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

DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.type.email • attachment.nms.limit • attachment.nms.file.prefix • NMS_InstanceID

OFS Attachments (OIC Initiated)

This integration will synchronize the Oracle Field Service Crew attachments to Oracle Utilities Network Management System. The Oracle Field Service crew might have added or deleted an attachment and this integration replicates that action in Oracle Utilities Network Management System. This integration is called asynchronously from within the OFSC NMS Activity Update. The Oracle Field Service crew can only maintain attachments that were added for the activity they are responsible for. The following diagram shows a graphical representation of the OFS Attachments integration process:



Business Processing

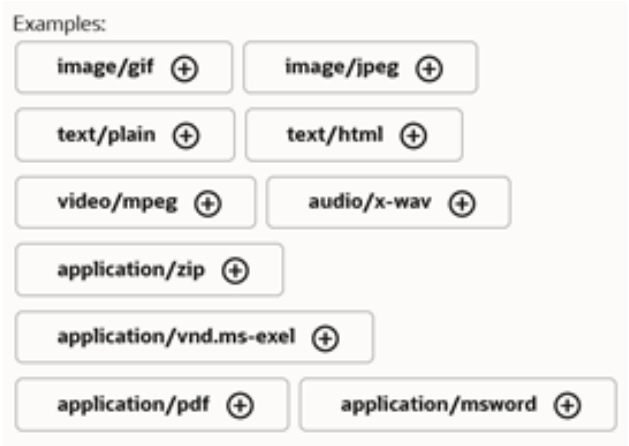
The integration process includes the following activities:

1. Oracle Utilities OFSC NMS Activity receives an activity update request which will initiate this Oracle Utilities OFSC NMS Attachments integration to synchronize the attachments. The incoming request contains only partial information about if an attachment was added or deleted. Therefore, it retrieves the necessary information to update the crew attachments in Oracle Utilities Network Management System.
2. After there is a new attachment, it is pulled from Oracle Field Service and uploaded in Oracle Utilities Network Management System. A deletion of a crew attachment does not provide the necessary file details, so the current Oracle Utilities Network Management System list is compared against the Oracle Field Service list. If not found, it is deleted in Oracle Utilities Network Management System.

   10 operator attachments can be stored in custom Oracle Field Service properties starting with 'nms_attachment_1' through 10. The Oracle Field Service Attachment plugin renames each crew attachment filename as "activityId_seqNo_originalFileName.extension".

   The {seqNo} will not be reused if deleted. The number will continue to increase after each uploaded attachment.

   For each attachment the size limit is 5MB and only the following attachment extensions are approved in Oracle Field Service.



   Crews can only delete the attachments they have uploaded.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Attachments
Integration Process Identifier	OUTL-BA-OFSC_NMS_ATTACHMENT
Integration Project Name	OU NMS OFS
Source Connection	local integration

Artifacts	Value
trigger	getAttachmentList
OFSC BO/Operation	Activity: Get File Property
NMS Utilities Adapter	• getEventAttachments • deleteAttachment • saveAttachment

Lookups Referenced

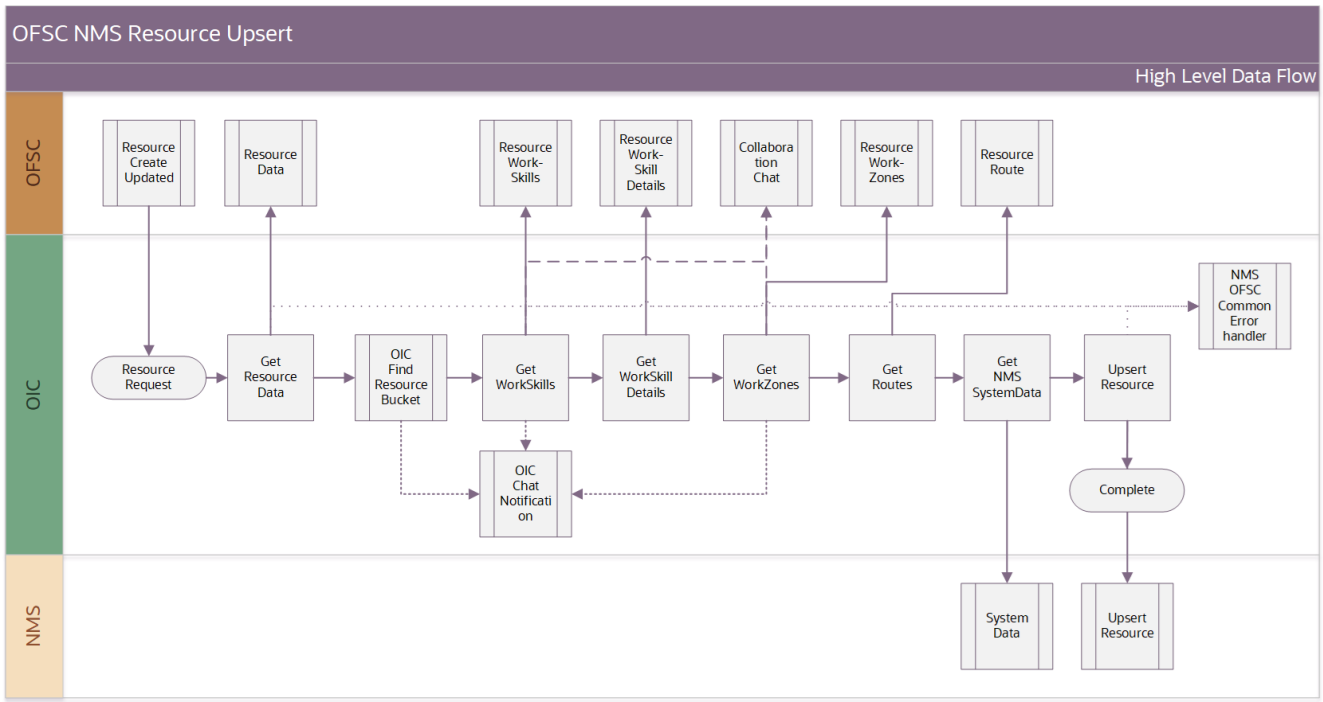
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• NMS_InstanceID • NMS_ConnectionID

Resources 'Crew' Create/Update (Oracle Field Service Initiated)

This integration process is used to receive resource created or updates details from Oracle Field Service and update corresponding details to Oracle Utilities Network Management System.

The following diagram shows a graphical representation of the Resource Create/Update integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Field Service sends the Resource Created or Updated Details request to the Oracle Utilities OFSC NMS Resource Create Update integration process deployed on Oracle Integration Cloud when the “Resource” form submitted event occurs.
2. Oracle Utilities OFSC NMS Resource Create Update process transforms the incoming resource data using resource details from Oracle Field Service and Oracle Utilities Network Management System.

   Following is the special logic to determine if this is an Oracle Utilities Network Management System crew:

   ```
   IF common_utilities_resource_code contains source.system property
      and resourceType in ofsc.resourceType.crew property
     THEN continue with the update
   ENDIF
   ```

   Following is the special logic for setting Oracle Utilities Network Management System to 'active':

   ```
   IF ofsc.active = true
       THEN nms.timeActivated -> current time
       ELSE nms.timeDeactivated -> current time
   ENDIF
   ```

   Following is the special logic for setting Oracle Utilities Network Management System to 'shift status':

   ```
   IF ofsc.routeEndTime THEN
       nms.timeOffShift = ofsc.routeEndTime
       ELSE IF routeReactivationTime THEN
       nms.timeOnShift = ofsc.routeReactivationTime
       ELSE IF routeStartTime THEN
       nms.timeOnShift = ofsc.routeStartTime
       ELSE
       nms.timeOffShift = current time
   ENDIF
   ```

   Note that all the above Oracle Utilities Network Management System time fields are in UTC Epoch time format.
3. Any errors are captured through global fault handler.
4. An optional email notification with error details are sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.
5. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps Lookup to ‘true’ to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Resource Create Update
Integration Process Identifier	OUTL-BA-OFSC_NMS_RESOURCE_CR_UPD
Integration Project Name	OU NMS OFS
OFSC Event	• resourceCreated • resourceUpdated
OFSC BO/Operation	• Resource/Get Resource • Resource/Get Resource Work Zones • Resource/Get Workskills
OFSC REST API	• /ofscMetadata/v1/workSkills/{ workSkillId } • /ofscCore/v1/resources/{resourceId}/routes/{date}
NMS Utility Adapter	• getAdminData • createUpdateCrew
Local Integrations	• NMS OFS Chat Notification • NMS OFSC Common Error Handler • OIC OFS Find Resource Bucket

Lookups Referenced

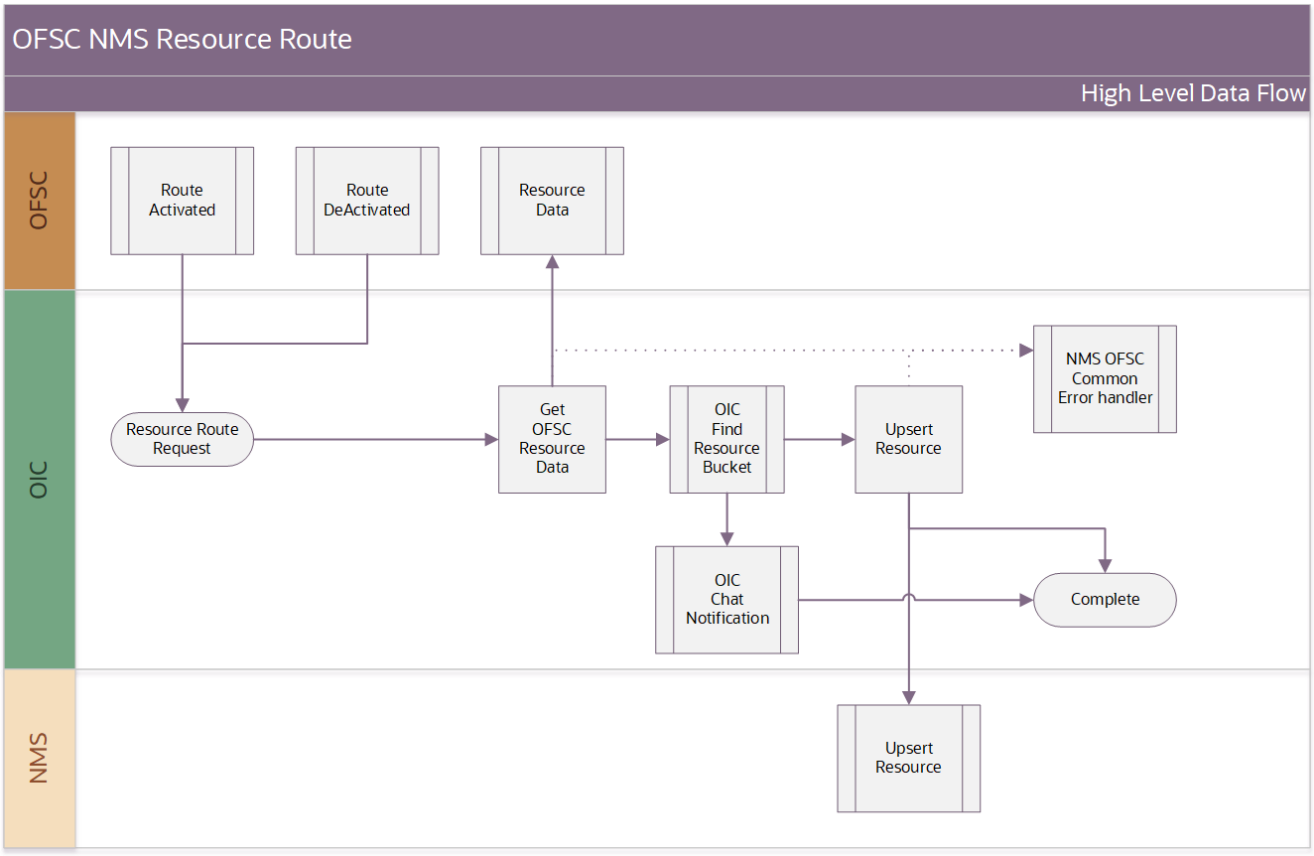
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system • ofsc.resourceType.FieldResource • nms.crew.outOfRange • nms.crew.isAvailForOp • nms.crew.isMobileIntegrated • findInstance.oic.LookupName • findInstance.oic.LookupSourceColumnName • findInstance.oic.LookupTargetColumnName • findInstance.oic.LookupNotFoundValue • ofsc.resourceType.crew • ofsc.resourceType.delimiter

Resources 'Crew' Route (Oracle Field Service Initiated)

This integration process is used to receive resource activate or deactivated details from Oracle Field Service and update corresponding details to Oracle Utilities Network Management System.

The following diagram shows a graphical representation of the Resource Activated/ Deactivated integration process:



Business Processing

The integration process includes the following activities:

1. Oracle Field Service sends the Resource Activated/Deactivated Details request to the Oracle Utilities OFSC NMS Resource Route integration process deployed on Oracle Integration Cloud.
2. Oracle Utilities OFSC NMS Resource Route process transforms the incoming resource data using resource details from Oracle Field Service for Oracle Utilities Network Management System.

   Following is the special logic to determine if this is an NMS crew:

   ```
   IF common_utilities_resource_code contains source.system property
      and resourceType in ofsc.resourceType.crew property
     THEN continue with the update
   ENDIF
   ```

3. Any errors are captured through global fault handler.

4. An optional email notification with error details are sent to the users configured in the OUTL-BRT-NMS_OFSC_Email_ID lookup.
5. Email notification is optional. Configure the property name email.flag in the OUTL-BRT-NMS_OFSC_ConfigProps Lookup to 'true' to receive email notification when errors are encountered.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC NMS Resource Route
Integration Process Identifier	OUTL-BA-OFSC_NMS_RESOURCE_ROUTE
Integration Project Name	OU NMS OFS
OFSC Event	• routeActivated • routeDeactivated • routeReactivated
OFSC BO/Operation	Resource/Get Resource
NMS Utilities Adapter	setCrewOnShift
Local Integrations	• NMS OFSC Chat Notification • NMS OFSC Common Error Handler • OIC OFSC Find Resource Bucket

Lookups Referenced

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

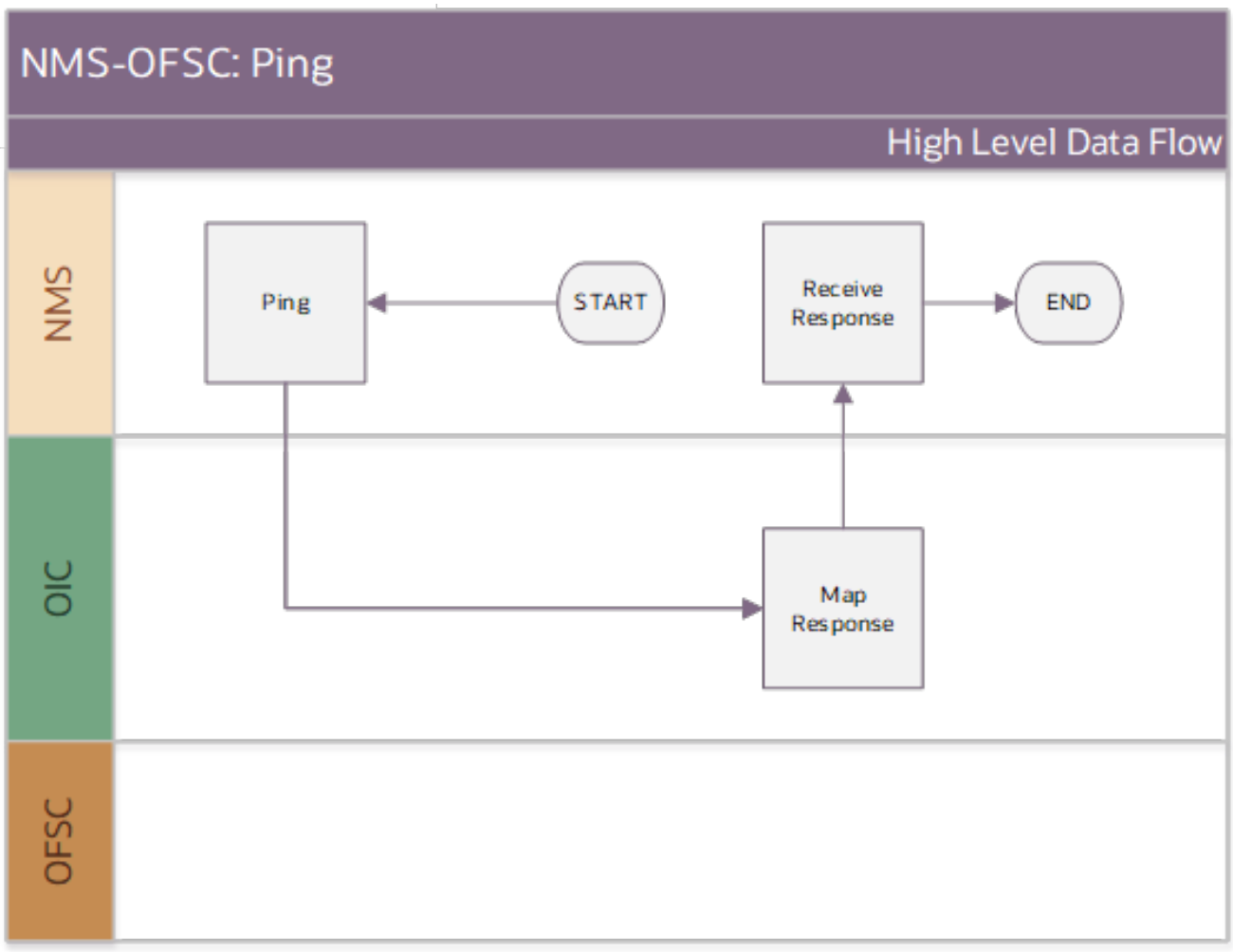
DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • source.system • dateTimeFormat.default.NMS • findInstance.oic.LookupName • findInstance.oic.LookupSourceColumnName • findInstance.oic.LookupTargetColumnName • findInstance.oic.LookupNotFoundValue • ofsc.resourceType.crew • ofsc.resourceType.delimiter

Ping (Oracle Utilities Network Management System Initiated)

This integration process is used to a accept a ping request from Oracle Utilities Network Management System to which Oracle Integration Cloud responds with an empty response.

The request itself denotes Oracle Utilities Network Management System that Oracle Integration Cloud is up and running to receive activity requests.

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



Business Processing

The integration process includes the following activities:

1. Oracle Utilities Network Management System sends the ping request to the Oracle Utilities NMS OFSC Ping integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities NMS OFSC Ping responds with an empty body to denote its ability to process activity requests.
3. If the integration is not activated or throws a fault to Oracle Utilities Network Management System, it will halt sending further requests.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Ping
Integration Process Identifier	OUTL-BA-NMS_OFSC_PING
Integration Project Name	OU NMS OFS
OFSC BO/Operation	N/A
OFSC API	N/A
Local Integration	N/A

Lookups Referenced

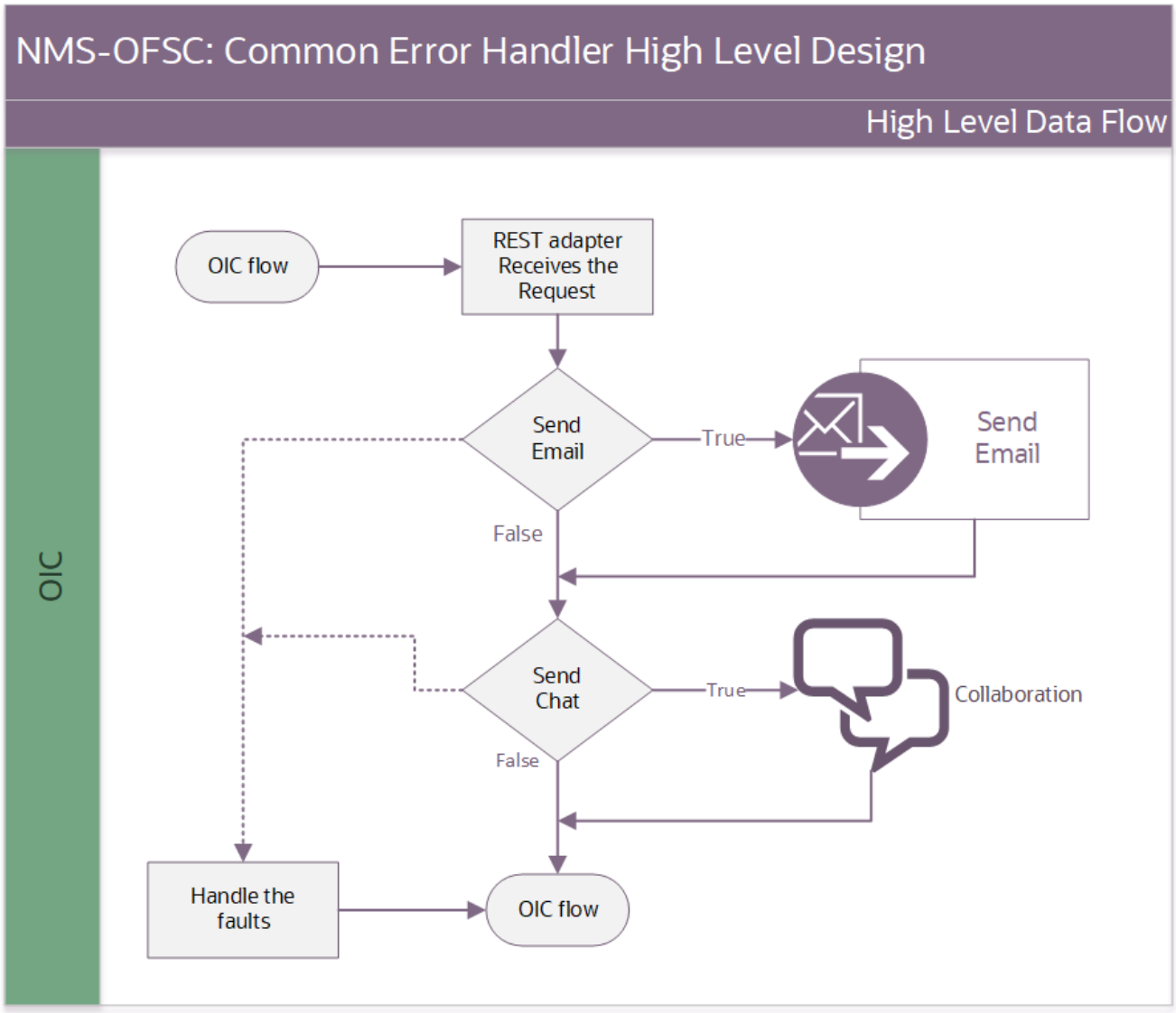
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
N/A	

Common Error Handler (OIC Initiated)

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

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



Business Processing

The integration process includes the following activities:

1. This process is invoked from other Oracle Integration Cloud flows internally when an error occurs in any of the integration process from global error handler. Common Error Handler flow is triggered.
2. Rest adapter receives the request and processes it based the property name email.flag in the OUTL- BRT-NMS_OFSC_ConfigProps lookup. Email notification will be sent.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Common Error Handler
Integration Process Identifier	OUTL-BA-NMS_OFSC_COMM_ERROR_HAND
Integration Project Name	OU NMS OFS
Source Connection	local integration
trigger	/receiveMessage
Local Integrations	NMS OFS Chat Notification

Lookups Referenced

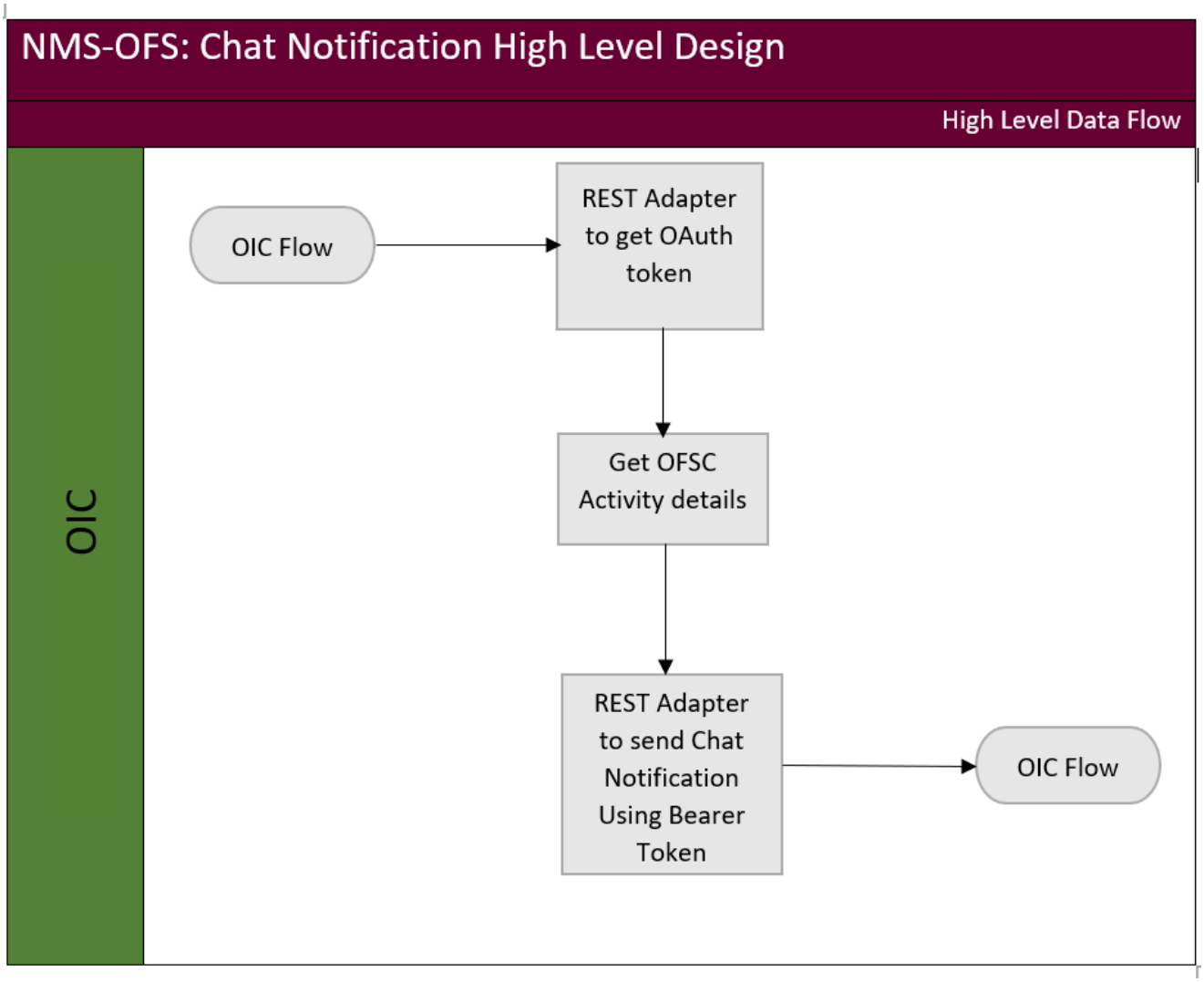
The following table describes the customized properties referenced in the integration. For more information about the lookup properties, refer to Configuring Lookups, Error Handling, and Email Notifications.

DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.type.email • notification.type.chat • notification.email.flag • notification.chat.flag
OUTL-BRT-NMS_OFSC_Email_ID	• From • To

Chat Notification (OIC Initiated)

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

The following diagram shows a graphical representation of the Chat Notification integration process:



Business Processing

The integration process includes the following activities:

1. This process is invoked from Common Error Handler flow internally when an error occurs in any of the Async integration process in Common Error Handler flow based the property name aysncErrorChatNotification.flag in the OUTL- BRT-NMS_OFSC_ConfigProps lookup Chat Notification flow is triggered.
2. In Chat Notification flow, Rest adapter receives the request and processes it to get OAuth token.
3. Resource ID is fetched using GetActivityDetailsFromOFSC is triggered based on activityId from input.

4. Rest Adapter receives the request and uses the Bearer token from the OAuth response and triggers the chat API.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities NMS OFSC Chat Notification
Integration Process Identifier	OUTL-BA-NMS_OFSC_CHAT_NOTIFICATN
Integration Project Name	OU NMS OFS
Source Connection	local integration
trigger	chatNotification
OFSC API(s)	• /ofscCore/v1/rest/oauthTokenService/v2/token • /ofscCore/v1/rest/ofscCollaboration/v1/chats

Lookups Referenced

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

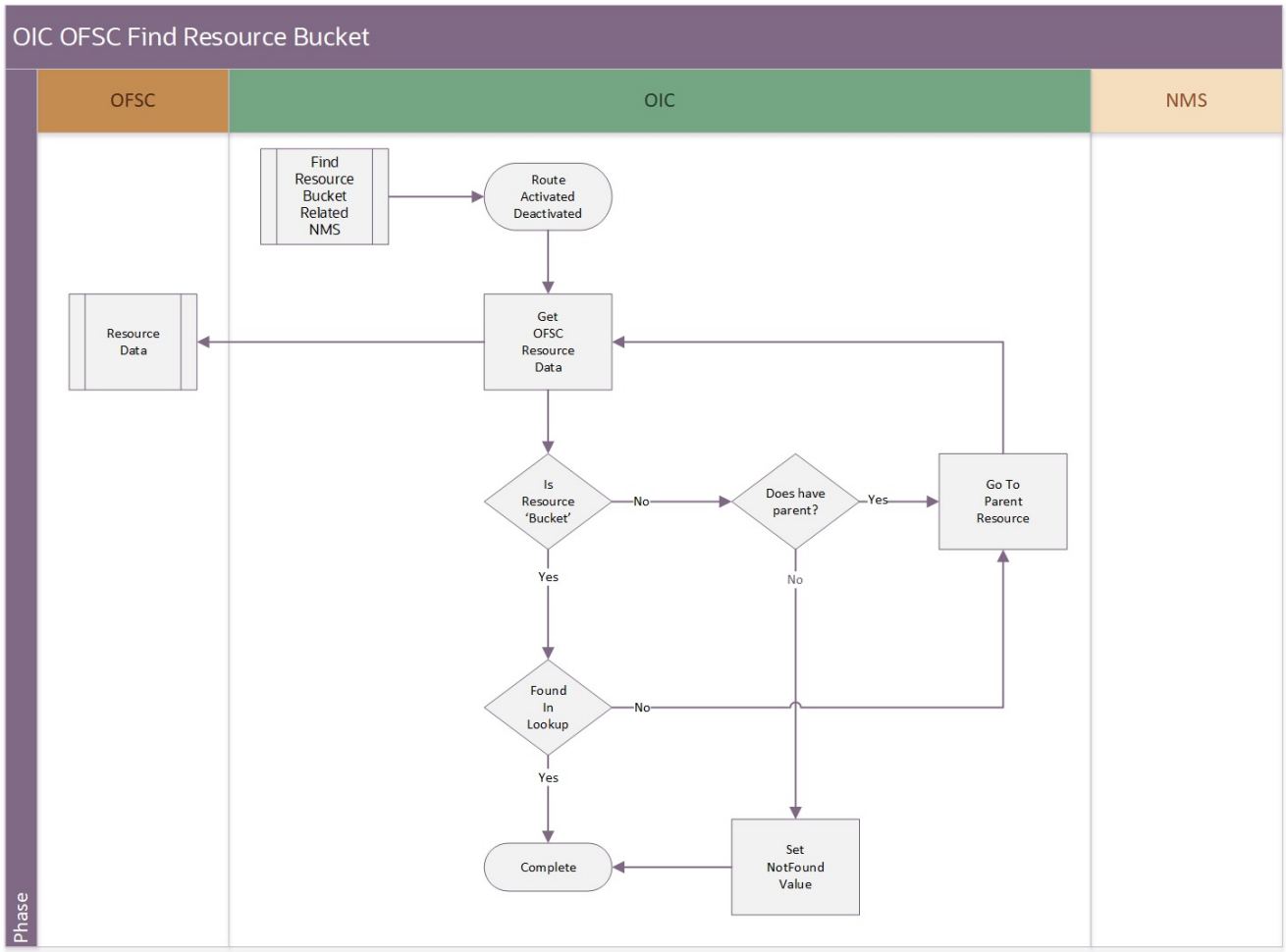
DVM	Property
OUTL-BRT NMS_OFSC_ConfigProps	• notification.chat.assertion • notification.chat.grantType • notification.chat.defaultDispatcher

Find Resource Bucket (OIC Initiated)

This Oracle Utilities Network Management System and Oracle Field Service integration can be implemented with a multi tenancy Oracle Utilities Network Management. Activities that have been originated in Oracle Utilities Network Management System will provide the Oracle Utilities Network Management System instance it originated from. However, some Oracle Field Service integrations are not tied to an activity, such as crew and routes. To send the request to the appropriate Oracle Utilities Network Management System instance, it was decided to link the Oracle Field Service resource's bucket to 1 Oracle Utilities Network Management System instance.

This internal integration will retrieve the resource bucket and match against the configured Oracle Field Service bucket property. If it does not match, it will check its parent bucket and continue the resource hierarchy until a match is found or the top level. If no match is found, the resource is incorrectly configured in Oracle Field Service and needs to be fixed.

The following diagram shows a graphical representation of the Chat Notification integration process:



Business Processing

The integration process includes the following activities:

1. OIC OFSC Find Resource Bucket receives the request and will first retrieve the resource data. If it is a bucket, it will verify if it is the configured bucket. If not, it will navigate to the parent hierarchy until it is found or reaches the top.

   Integration will return the 'not found' value when there is no match.

2. If an error occurs while calling the OFS Get Resource Details, the integration will return a 'not found' value to the calling integration that will handle this exception because all OFS Resources should be part of this configurable bucket.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Network Management System and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OIC OFSC Find Resource Bucket
Integration Process Identifier	OUTL-BA-OIC_OFSC_RESOURCE_BUCKET
Integration Project Name	OU NMS OFS
Source Connection	local integration
trigger	GetResourceId
OFSC REST API/Operation	rest/ofscCore/v1/resources/{resourceId}

Lookups Referenced

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

The name of the lookup, source and target columns are passed into the integration. This is the default values upon installation:

DVM	Property
OUTL-BRT-NMS_OFSC_ InstanceIDToBucket	• OSFC_BucketID • NMS_ConnectionId
OUTL-BRT NMS_OFSC_ConfigProps	ofsc.resourceType.bucket

Chapter 3

Configuring Oracle Utilities Network Management System

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

- Configuring Admin Data in Network Management System
- Adding Oracle Integration Cloud Certificates
- Configuring the Operations Mobile Application

Configuring Admin Data in Network Management System

To configure the Oracle Utilities Network Management System setup for the integration:

1. Log in to Oracle Utilities Network Management System.
2. Generate the certificates. Refer to the Adding Oracle Integration Cloud Certificates section for more details.
3. To establish the communication from Oracle Utilities Network Management System to Oracle Integration Cloud, update the NMS DB table with Oracle Integration Cloud details.

Table Name: ces_parameters	Insert or update the value with OIC flow end point url for Orders as <https://hostname:port/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS /OUTL-BA-NMS_OFSC_ORDERS/1.0> where the app like 'MWM%' and attrib='mwm.url.CreateUpdateOrder'
	Insert or update the value with OIC flow end point url for Orders Completed as <https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_ORDERS_COMPLETE/1.0> where the app like 'MWM%' and attrib='mwm.url.CompleteOrder'
	Insert or update the value with OIC flow end point url for Crew Request as <https://hostname:port /ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_CREW_REQ/1.0> where the app like 'MWM%' and attrib='mwm.url.RequestCrewInfo'
	Insert or update the value with OIC flow end point url <https://hostname:port/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_PING/1.0> where the app like 'MWM%' and attrib='mwm.url.PingURL'
	Insert or update the value with <oic username> where the app like 'MWM%' and attrib='mwm.username'
	Insert or update the value with <oic password> where the app like 'MWM%' and attrib='mwm.password'
	Insert or update the value as <false> where the app like 'MWM%' and attrib='config.suppress_ws_errors'
	Insert or update the value with <oic oauth token url> where the app like 'MWM%' and attrib='config.auth.token.url'

	Insert or update the value with < oic oauth token scope> where the app like 'MWM%' and attrib='config.auth.token.scope'
	Insert or update the value with <oic oauth token user> where the app like 'MWM%' and attrib= 'config.auth.token.user'
	Insert or update the value with <oic oauth token password> where the app like 'MWM%' and attrib= 'config.auth.token.pwd'

4. To establish the communication from Oracle Utilities Network Management System to Oracle Integration Cloud, update the NMS DB table with Oracle Integration Cloud details.
5. Update the NMS DB table to send more call details from Oracle Utilities Network Management System.

Table Name: ces_parameters	Insert or update the value with '<max number of call to send from NMS>'where the app like 'MWM%' and attrib='config.call_send_limit'

Note that the nms-ofs package should be deployed in the Oracle Utilities Network Management System environment to access the NMS REST APIs.

Adding Oracle Integration Cloud Certificates

Add the Oracle Integration for Cloud certificate to the Oracle Utilities Network Management System stores wherever applicable to send transactions to the Oracle Integration Cloud layer.

For more information about configuration, refer to the Oracle Utilities Network Management System documentation at: https://docs.oracle.com/en/industries/energy-water/network-management-system/NMS_25021_Guides.html

Configuring the Operations Mobile Application

For more information regarding installation, configuration, and deployment of the Operations Mobile Application, please refer to the Oracle Utilities Network Management System documentation at: https://docs.oracle.com/en/industries/energy-water/network-management-system/NMS_25021_Guides.html

Chapter 4

Configuring Oracle Field Service

This chapter includes information about the following:

Configuring Oracle Field Service

For necessary Oracle Field Service configuration information, refer to the *Oracle Field Service Configurations for Oracle Utilities Network Management System Integration to Oracle Field Service Setup Guide* on Oracle Help Center at:

https://docs.oracle.com/en/industries/energy-water/integrations-index.html

Configuring Network Management System Priority

Priority is mapped from Oracle Utilities Network Management System to Oracle Field Service in the nms_priority property.

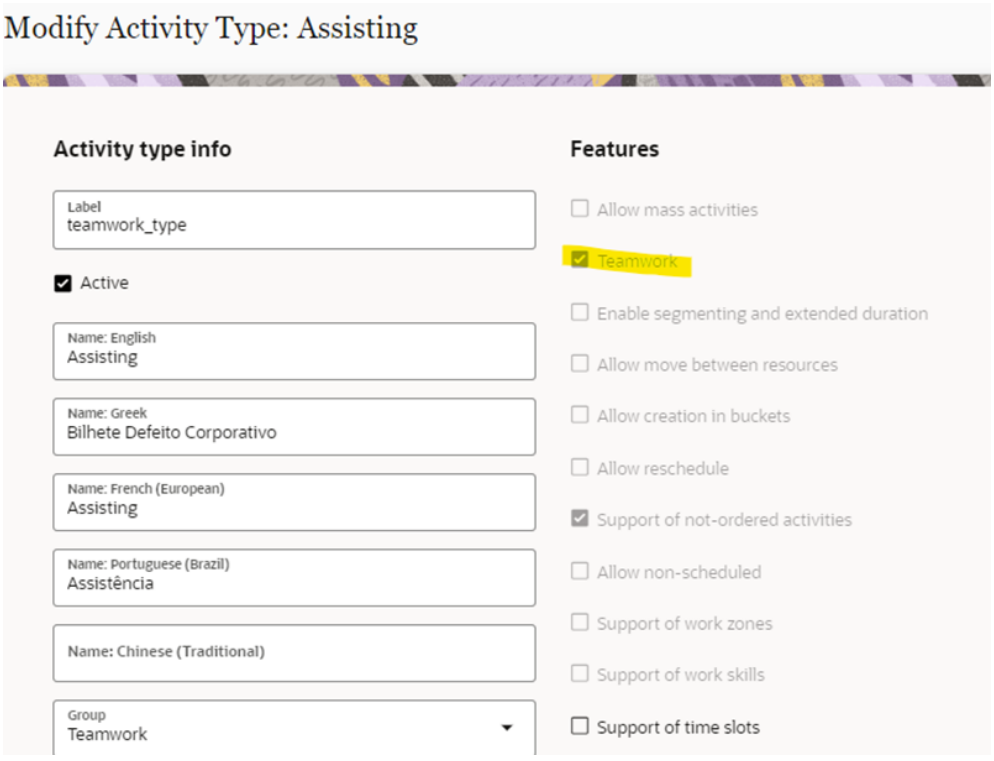
For information about configuring Activity Priority to assign an urgent activity, refer to the Oracle Field Service documentation on Oracle Help Center at:

https://docs.oracle.com/en/cloud/saas/field-service/22d/index.html

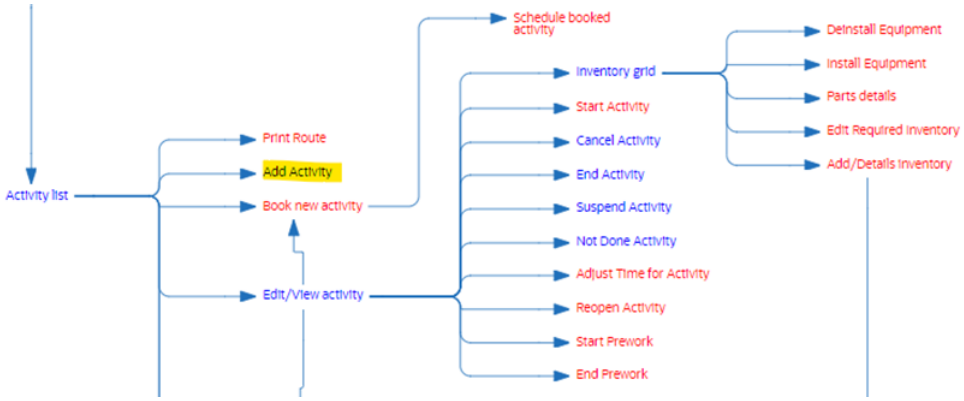
Configuring Activity Types

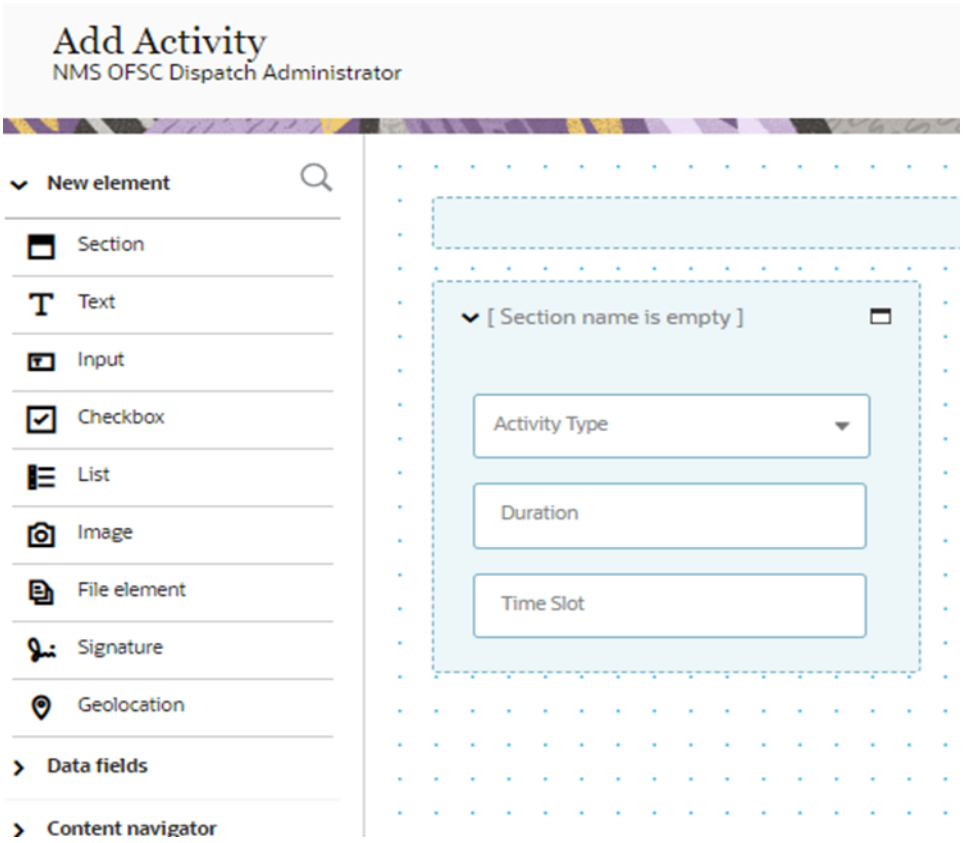
The OFS dispatcher need to have the ability to assign crew members and vehicle to the NMS crews.

Verify and if needed create an Activity Type with the feature **Teamwork** checked.



In the "dispatcher" user type screen configuration verify that the "activity type" is added to the **Add Activity** user interface.





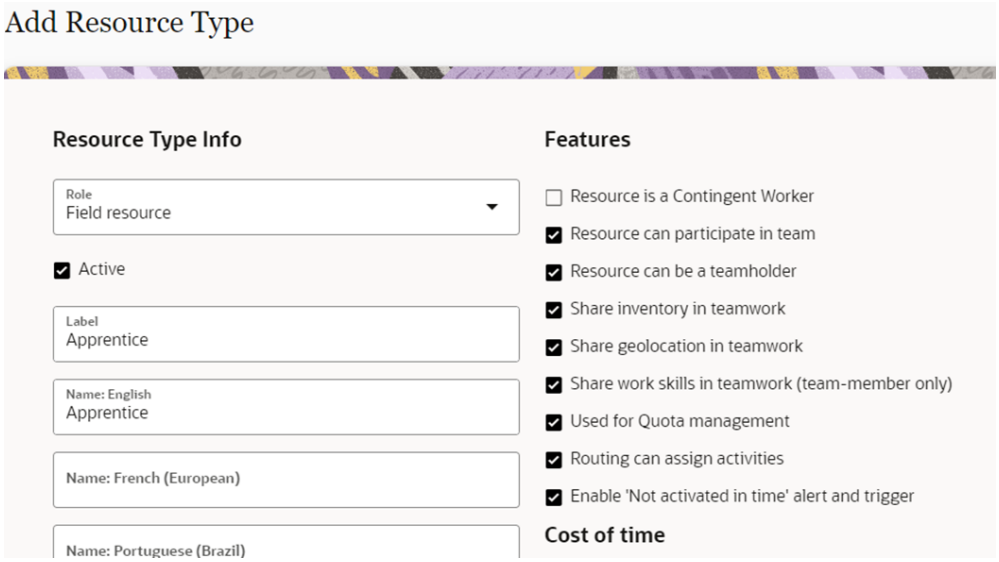
Configuring Resource Types

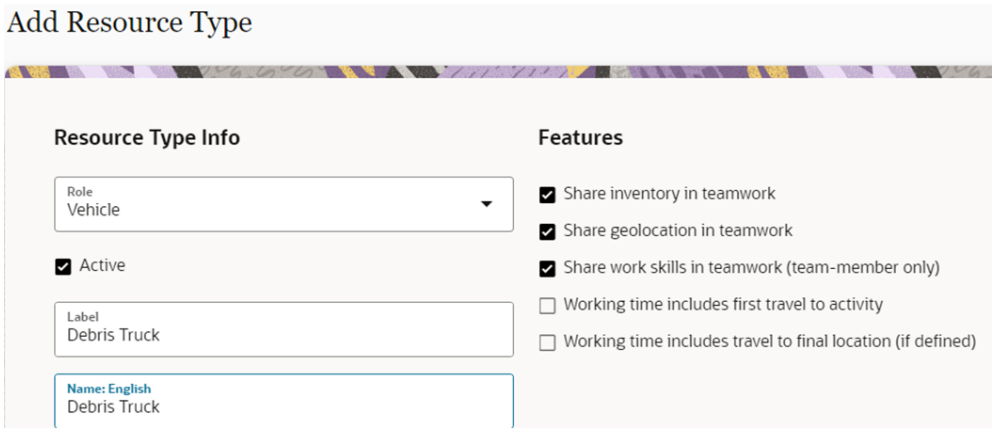
Oracle Utilities Network Management System has preset values configured for crew member classes and vehicle types. These values have to be replicated inside the Oracle Field Service resource types for the NMS Operator can see the crew composition.

Verify the NMS configured value in NMS and compare in the OIC lookup properties as described in the release notes.

Sign into OFS with an administrator user privileges. Go to Configuration Settings, Resource Types. For each crew member and vehicle type create a new Resource Type from the Field Resource role with the label/English name as shown in the NMS Admin data. Check all the applicable features for your installation. If OFS resource types already exist, modify all NMS resources to align with the new crew and vehicle types.

Ensure to verify and modify the OIC properties in the lookups accordingly.





Chapter 5

Importing, Configuring, and Testing Integration Connections

This chapter explains the process of importing an Oracle Accelerator Project, which imports the connections, integrations, lookups, and libraries into an Oracle Integration Cloud instance. This chapter also explains the configuration of the imported connections, agents, and security certificates. It includes the following sections:

- Importing the Oracle Accelerator Project from Oracle Cloud Marketplace
- Verifying the Project Import
- Configuring Connections in Oracle Integration Cloud
- Configuring Agent (if applicable)
- Setting up Certificates for Security

Importing the Oracle Accelerator Project from Oracle Cloud Marketplace

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

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

1. Launch the Oracle Cloud Marketplace portal.

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

2. Click **Applications**.
3. Search for "Utilities Network Management & Field Service Integration".
   a. Go to the marketplace link.
   b. Search for the description of the integration product.
   c. Use the integration product description to find "Utilities Network Management & Field Service Integration".
4. Download the NMS-OFS Business Accelerator Project file.
   a. Select the pre-built integration project.
   b. Click **GetApp**.
   c. Review and accept "Oracle Standard Terms and Restrictions".
   d. Click **Next**.

      My Oracle Support portal opens.

   e. From the integration artifacts table, click the **NMS-OFS Business Accelerator Project** (OUTL-BA-NMS_OFS-01.24.3000.car) download link.
5. Back up and clean up existing integration and package files.
   a. Back up existing customized integrations and lookups.
   b. Deactivate and delete existing flows, connections, lookups, and libraries used in the integration and the .par package file.

   Note: If your previous pre-built integration was Package based (.par file) which is identified by:

   - It is visible on the **Design-Packages** page in your Oracle Integration Cloud instance.
   - The individual integrations are visible on the **Design-Integrations** page. Each integration flow is designated with an Accelerator and BUILT BY ORACLE message displayed.
6. Import the NMS-OFS Business Accelerator Project (.car) file to your Oracle Integration Cloud instance.
   a. In the Navigation pane, click **Projects**.
   b. Click **Add**.
   c. Select **Import Project** and drag-and-drop the .car file downloaded from Oracle Cloud Marketplace.

      Note: Select the **Anyone can edit, view, and monitor** checkbox.

The new project will show up in the list but with a status of "Configured" due to the connections not being completed yet.

7. Verify, configure, and activate the integration.
    a. Click the **Project Edit** option and follow the verification and configuration steps documented in the sections below.
    b. If all configuration is complete, activate the integration by one of these methods.
        - Click **Activate** in **Design**.
        - Activate the latest deployment plan **Deploy**.

Verifying the Project Import

To verify the import was successful:

1. Verify that the following **integrations** are imported successfully as seen in the **Integrations** section of the project:
    - Oracle Utilities NMS OFSC Order
    - Oracle Utilities NMS OFSC Order Async
    - Oracle Utilities NMS OFSC OrderComplete
    - Oracle Utilities NMS OFSC OrderComplete Async
    - Oracle Utilities NMS OFSC Crew Request
    - Oracle Utilities NMS OFSC Crew Request Async
    - Oracle Utilities NMS OFSC Ping
    - Oracle Utilities NMS OFSC Admin Sync
    - Oracle Utilities NMS OFSC Attachment
    - Oracle Utilities NMS OFSC Common Error Handler
    - Oracle Utilities NMS OFSC Chat Notification
    - Oracle Utilities OFSC NMS Activity Create
    - Oracle Utilities OFSC NMS Activity Update
    - Oracle Utilities OFSC NMS Event Details Update
    - Oracle Utilities OFSC NMS Failed Equipment Update
    - Oracle Utilities OFSC NMS Resources Sync
    - Oracle Utilities OFSC NMS Resource Create Update
    - Oracle Utilities OFSC NMS Resource Route
    - Oracle Utilities OFSC NMS Attachment
    - Oracle Utilities OIC OFSC Find Resource Bucket
2. Verify that the following **connections** are imported successfully using the **Connections** section of the project.
    - Oracle Utilities REST NMS1 for NMS-OFSC

- Oracle Utilities REST OFSC for NMS-OFSC
- Oracle Utilities REST API OFSC for NMS-OFSC
- Oracle Utilities REST OIC for NMS-OFSC
- Oracle Utilities REST for NMS-OFSC

3. Verify that the following **lookups** are imported successfully using the **Lookup** section of the project.
   - OUTL-BRT-NMS_OFSC_Email_ID
   - OUTL-BRT-NMS_OFSC_ConfigProps
   - OUTL-BRT-NMS_OFSC_InstanceIDToBucket
   - OUTL-BRT-NMS_OFSC_ActivityType
   - OUTL-BRT-NMS_OFSC_ActivityStatus
   - OUTL-BRT-NMS_OFSC_ActivityStatusChange
   - OUTL-BRT-NMS_OFSC_CrewMemberClasses
   - OUTL-BRT-NMS_OIC_EventTypeCategoryCaching_DND
   - OUTL-BRT-NMS_OIC_FailedEquipCaching_DND
4. Verify all the integrations, connections, and lookups are correct.

Configuring Connections in Oracle Integration Cloud

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

This section describes the procedure to set up the following connections:

- Oracle Utilities REST NMS1 for NMS-OFSC
- Oracle Utilities REST OFSC for NMS-OFSC
- Oracle Utilities REST API OFSC for NMS-OFSC
- Oracle Utilities REST OIC for NMS-OFSC
- Oracle Utilities REST for NMS-OFSC

Configuring Oracle Utilities REST NMS1 for NMS-OFSC

This connection is used to trigger from or invoke to the Oracle Utilities Network Management System using the Oracle Utilities Adapter.

To configure the connection:

1. Add the Oracle Utilities Network Management System catalog URL.
   - **Format:** https://{NMS-Host}:{NMS-Port}/nms-ofs/rest/v1/catalog
2. On the **Security** section, select the applicable security policy to access the application.

   For more information about supported security policies, refer to the **Oracle Utilities Adapter** documentation.

3. When the connection is to the Oracle Utilities Network Management System on-premise application:
    a. Configure the appropriate **Agent Group**.
    b. Select the agent group from the list created in the Creating an Agent Group procedure.
4. On the **Connection** page, click **Test**.
5. After the connection is tested successfully, click **Save**.

This connection is used by the following integrations:

- Oracle Utilities NMS OFSC Ping
- Oracle Utilities NMS OFSC Order
- Oracle Utilities NMS OFSC Order Async
- Oracle Utilities NMS OFSC OrderComplete
- Oracle Utilities NMS OFSC OrderComplete Async
- Oracle Utilities NMS OFSC Crew Request
- Oracle Utilities NMS OFSC Crew Request Async
- Oracle Utilities NMS OFSC Attachment
- Oracle Utilities NMS OFSC Admin Sync
- Oracle Utilities OFSC NMS Activity Create
- Oracle Utilities OFSC NMS Activity Update
- Oracle Utilities OFSC NMS Attachments
- Oracle Utilities OFSC NMS Event Details Update
- Oracle Utilities OFSC NMS Failed Equipment Update
- Oracle Utilities OFSC NMS Resource Create Update
- Oracle Utilities OFSC NMS Resource Route
- Oracle Utilities OFSC NMS Resources Sync

Configuring Oracle Utilities REST OFSC for NMS-OFSC

This connection is used to communicate with Oracle Field Service using the Oracle Field Service adapter via a trigger or invoke.

Configure the Oracle Field Service connection with the required details:

1. Enter the **API URL** in the Oracle Field Service with this format:
    - https://<ofs instance id>.fs.ocs.oraclecloud.com/rest
2. Re-enter the **Instance ID**.
3. Select the appropriate **Security Policy**.
    - For more information about supported security policies, refer to the REST Adapter documentation.
4. Enter the appropriate credentials based on the selected security policy and click **Test**.

Note: Make sure to configure the client and client secret part of the username and password. Retrieve them by logging into Oracle Field Service.

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

This connection is used by these integrations:

- Oracle Utilities NMS OFSC Order Async
- Oracle Utilities NMS OFSC OrderComplete Async
- Oracle Utilities NMS OFSC Admin Sync
- Oracle Utilities NMS OFSC Attachment
- Oracle Utilities OFSC NMS Activity Create
- Oracle Utilities OFSC NMS Activity Update
- Oracle Utilities OFSC NMS Attachments
- Oracle Utilities OFSC NMS Event Details Update
- Oracle Utilities OFSC NMS Failed Equipment Update
- Oracle Utilities OFSC NMS Resource Create Update
- Oracle Utilities OFSC NMS Resource Route
- Oracle Utilities OFSC NMS Resources Sync

Configuring Oracle Utilities REST API OFSC for NMS-OFSC

This connection is used to sync invoke or get triggered from OFSC API using the REST adapter.

Configure the Oracle Utilities REST OFSC for NMS-OFSC connection with required details:

1. On the **Connection** page, select *REST API Base URL* from the **Connection Type** drop-down.
2. Enter the **API URL** in the Oracle Field Service with this format:
   - https://<ofs instance id>.fs.ocs.oraclecloud.com/rest
3. Select the TLS Version as **TLSV1.2**.
4. Select the appropriate **Security Policy**.
   - For more information about supported security policies, refer to the REST Adapter documentation.
5. Enter the appropriate credentials based on the selected security policy and click **Test**.
   - **Note**: Make sure to configure the client and client secret part of the username and password. Retrieve them by logging into Oracle Field Service.
6. After the connection is tested successfully, click **Save**.

   Note: This connection is used by the following processes:
   - Oracle Utilities NMS OFSC Admin Sync
   - Oracle Utilities NMS OFSC Crew Request Async
   - Oracle Utilities NMS OFSC Attachment

- Oracle Utilities NMS OFSC Chat Notification
- Oracle Utilities OFSC NMS Activity Update
- Oracle Utilities OFSC NMS Resources Sync
- Oracle Utilities OFSC NMS Resource Create Update
- Oracle Utilities OIC OFSC Find Resource Bucket

Configuring Oracle Utilities REST OIC for NMS-OFSC

This connection is used to communicate with Oracle Integration itself using REST adapter.

1. Select *REST API Base URL* from the **Connection Type** drop-down.
2. Enter "https://{OIC-Instance}:{OIC-Host} in the **Connection URL** field.
3. From the **Security Policy** drop-down, select **OAuth Client Credentials**.
4. Configure the **Access Token URI**, **Client ID**, and **Client Secret** fields respectively from the OIC instance.
5. Open the Optional Security fields and configure:
   - **Scope**
   - **Client Authentication** as *Send client credentials as basic auth header*
6. On the **Connection** page, click **Test**.
7. After the connection is tested successfully, click **Save**.

   Note: This connection is used by the following integrations:
   - Oracle Utilities NMS OFSC Admin Sync
   - Oracle Utilities OFSC NMS Activity Update
   - Oracle Utilities OFSC NMS Failed Equipment Update

Configuring Oracle Utilities REST for NMS-OFSC

This connection is used to design local integrations entry point and invoke these within Oracle Integration Cloud using the REST adapter.

To configure the connection:

1. Select *OAuth 2.0* or *Basic Authentication*
2. Verify that **Role** is set as *Trigger*.
3. Click **Save**.

This connection is used by these integrations:

- Oracle Utilities NMS OFSC Order Async Process
- Oracle Utilities NMS OFSC OrderComplete Async Processor
- Oracle Utilities NMS OFSC Crew Request Async
- Oracle Utilities NMS OFSC Attachment
- Oracle Utilities OFSC NMS Attachments

- Oracle Utilities NMS OFSC Common Error Handler
- Oracle Utilities NMS OFSC Chat Notification
- Oracle Utilities OIC OFSC Find Resource Bucket

Configuring Agent (if applicable)

Create an agent group in Oracle Integration Cloud and install agent on the on-premises server before creating/activating an integration in which messages are exchanged between the on-premises applications and Oracle Integration Cloud. The agent related configurations are needed only if the server points to an on-premises application.

This section includes:

Possible Combinations

The possible combination of an agent group is:

- Oracle Field Service on-premises and Oracle Field Service

Creating an Agent Group

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

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

To create an agent group:

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

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

Downloading Agent Installer

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

For more information on agent installer, see:

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

Installing On-Premises Agent

To install an on-premises agent:

1. Log in to Oracle Integration Cloud.
2. On the **Home** page, click **Design-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 Network Management System certificate and upload by running the below command from agent home directory.

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

9. Modify **InstallerProfile.cfg** to include the following information.
   a. Provide the oic_URL value with the OIC SSL host name.

      For example: https://OIC_host:OIC_port

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

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

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

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

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

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

   f. Provide the Oracle Integration Cloud credentials when prompted.

   g. Wait for a successful installation message to appear.

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

To verify if the agent instance was created:

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

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

Setting up Certificates for Security

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

If there no valid certificates for this integration, download the Oracle Field Service/ Oracle Utilities Network Management System certificates and upload them to Oracle Integration Cloud to handshake with Oracle Field Service/Oracle Utilities Network Management System.

To download the Oracle Field Service/Oracle Utilities Network Management System certificate:

1. Log in to Oracle Utilities Network Management System/Oracle Field Service.
2. Click the URL on the top-left corner.
3. On the **Security** tab, click **View Certificate**.
4. On the **Details** tab, click **Export**.
5. Save the certificate.

To upload the certificate to Oracle Integration Cloud:

1. Log in to Oracle Integration Cloud with Admin credentials.
2. Navigate to **Settings** > **Certificates**.
3. On the **Certificate** window, click **Upload**.
4. Select **Certificate Type** as **Trust Certificate**.
5. Provide the **Certificate Alias Name**.
6. Select the certificate to upload.
7. Click **Upload**.

Chapter 6

Configuring Lookups, Error Handling, and Email Notifications

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

Configuring Lookups

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

Lookup Name	Integration Name	Purpose
OUTL-BRT-NMS_OFSC_Email_ID	Oracle Utilities NMS OFSC Common Error Handler	Provide the email information to send the error
OUTL-BRT-NMS_OFSC_ConfigProps	• Oracle Utilities NMS OFSC Order • Oracle Utilities NMS OFSC Order Async • Oracle Utilities NMS OFSC OrderComplete • Oracle Utilities NMS OFSC OrderComplete Async • Oracle Utilities NMS OFSC Crew Request • Oracle Utilities NMS OFSC Crew Request Async • Oracle Utilities NMS OFSC Admin Sync • Oracle Utilities NMS OFSC Attachment • Oracle Utilities NMS OFSC Chat Notification • Oracle Utilities NMS OFSC Common Error Handler • Oracle Utilities OFSC NMS Activity Create • Oracle Utilities OFSC NMS Activity Update • Oracle Utilities OFSC NMS Event Details Update • Oracle Utilities OFSC NMS Failed Equipment Update • Oracle Utilities OFSC NMS Resource Create Update • Oracle Utilities OFSC NMS Resource Route • Oracle Utilities OFSC NMS Resources Sync • Oracle Utilities OIC OFSC Find Resource Bucket	Generic properties used in the integrations business logic and mappings
OUTL-BRT-NMS_OFSC_InstanceIDTo Bucket	• Oracle Utilities OFSC NMS Attachments • Oracle Utilities NMS OFSC Order Async • Oracle Utilities NMS OFSC OrderComplete Async • Oracle Utilities NMS OFSC Crew Request Async • Oracle Utilities NMS OFSC Admin Sync • Oracle Utilities NMS OFSC Attachment • Oracle Utilities OFSC NMS Activity Create • Oracle Utilities OFSC NMS Activity Update • Oracle Utilities OFSC NMS Event Details Update • Oracle Utilities OFSC NMS Failed Equipment Update • Oracle Utilities OFSC NMS Resources Sync	Retrieve the corresponding NMS and OFS instance connectionId or URL.
OUTL-BRT-NMS_OFSC_ActivityStatus	Oracle Utilities OFSC NMS Activity Update	OFS EventType in regards to NMS Activity Status and action
OUTL-BRT-NMS_OFSC_ActivityStatus Change	Oracle Utilities NMS OFSC OrderComplete Async	NMS Activity and Event Status translations to OFSC new activity status

Lookup Name	Integration Name	Purpose
OUTL-BRT-NMS_OFSC_ActivityType	Oracle Utilities NMS OFSC Order Async	Activity type in value match in NMS and OFS instance required
OUTL-BRT-NMS_OFSC_CrewMemberClasses	Oracle Utilities NMS OFSC Crew Request Async	The first row contains the delimited string of all OFS resource types that are approved NMS crew member types. Followed by OFS Resource type labels and translation to NMS crew member class.
OUTL-BRT-NMS_OFSC_VehicleTypes	Oracle Utilities NMS OFSC Crew Request Async	The first row contains the delimited string of all OFS resource types that are approved NMS vehicle types. Followed by OFS Resource type labels and translation to NMS vehicle types.
OUTL-BRT-NMS_OIC_FailedEquipCaching_DND	• Oracle Utilities NMS OFSC Admin Sync • Oracle Utilities NMS OFSC Order Async • Oracle Utilities OFSC NMS Activity Update	This lookup is refreshed in Admin Sync integration and the data is being used in the others. This should not be manually modified.
OUTL-BRT-NMS_OIC_EventTypeCategoryCaching_DND	• Oracle Utilities NMS OFSC Admin Sync • Oracle Utilities NMS OFSC Order Async	This lookup is refreshed in Admin Sync integration and the data is being used in the others. This should not be manually modified.

Editing Lookups

To edit a lookup:

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

Configuration Properties

Below are the lookup properties that can be defaulted in the integration.

Lookup: OUTL-BRT-NMS_OFSC_Email_ID

Property Name	Value	Description
from	nms-ofsc-administrator@yourdomain.com	Specify where the error email will be sent from.
to	mailID@yourdomain.com	Specify where the error email will be sent to.

Lookup: OUTL-BRT-NMS_OFSC_ConfigProps

Property Name	Value	Description
ofsc.bucket	OHMeter	Default OFS work bucket that is linked to this NMS instance
source.system	NMS	Used in several integrations to denote where the request is coming or going to.
activities.linktype	related_activity2	Default value. This value needs to match the label in the OFS Link Templates configuration for second "related activity".
failedEquipment.props		No longer used
failedEquipment.enumProps	MANUF_TEXT RATING_UNITS_OM THREE_PH_TOGGLE SINGLE_PH_TOGGLE	Denote what properties require extra processing in OFS to complete the form formats.
failedEquipment.dateProps		No longer used
ofs.language	en	Default value of OFSC request for language.
workSkill.sharing.default	summary	Default value
workSkillProperty.type.default	string	Default value
workSkillProperty.entity.default	activity	Default value
workSkillProperty.gui.default	text	Default value
workSkillProperty.nameSuffix.default	needed	Default value
workSkillCond.actvtySameSkillMaxWorker.default	1	Default value

Property Name	Value	Description
workSkillCond.function.default	in	Default value
activeFlag.default	true	Default value
bucket.timeZone.default	America/New_York	Default timezone in OFS
parentBucket.default	UGBU	Top level OFS bucket
ofsc.controlZone	3	Depth of zones that will be synced and used to assign activities
ofsc.useControlZoneFromNMS	true	Use the NMS provided control zones for preassigned activities
ofsc.resourceDetail.loopLimit	100	The amount of OFS resource read at once during traversing all resources.
ofsc.workZone.default.NMSncg Class	4802	Default work bucket value in NMS
ofsc.workZone.default.status	active	Default value
ofsc.workZone.default.travelArea	sunrise_enterprise	Default value for a work zone travel area
ofsc.workZone.default.Fuzzy Type	NO_OUTAGE	NMS value for work zone during admin sync process
failedEquipment.nms.tableName	PICKLIST_INFO_EQ_ FAIL	Failed Equipment schema name in NMS GetAdminData request
nms.crew.outOfRange	false	Default flag during crew updates in NMS
nms.crew.isAvailForOp	true	Default flag during crew updates in NMS
nms.crew.isMobileIntegrated	true	Default flag during crew updates in NMS
notification.chat.assertion	{JWT-Token}	JWT token received from creating assertion and used to request an OFS Access Token
notification.chat.grantType	urn:ietf:params:oauth:grant-type:jwt-bearer	Grant Type used in conjunction with jwt token to request the OFS Access Token
ofsc.resourceType.FieldResource	field_resource	Value of OFS ResourceType used when sending to NMS

Property Name	Value	Description
notification.type.chat	chat	Notification value for chat
notification.type.email	email	Notification value for email
notification.email.flag	true	Denotes if email notification to be sent if error occur
notification.chat.flag	true	Denotes if chat notification to be sent if error occur
ofsc.isScheduledForPreAssigned Crew	true	Default value
ofsc.setPositionInRoute	notOrdered	Default value
nms.adminSync.EventCategories	true	Process this phase during Admin Sync?
nms.adminSync.EventCategories	true	Process this phase during Admin Sync?
nms.adminSync.Failed Equipment	true	Process this phase during Admin Sync?
nms.adminSync.Phases	true	Process this phase during Admin Sync?
nms.adminSync.Manufacturers	true	Process this phase during Admin Sync?
nms.adminSync.CrewTypes	true	Process this phase during Admin Sync?
nms.adminSync.ControlZones	true	Process this phase during Admin Sync?
nms.adminSync.WorkZones	true	Process this phase during Admin Sync?
nms.adminSync.CustomerTypes	true	Process this phase during Admin Sync?
nms.adminSync.EventType Categories	true	Process this phase during Admin Sync?
notification.chat.default Dispatcher	{ofs default dispatcher} externalID	Default dispatcher that will receive error chats on generic requests
dateTimeFormat.default.OFS	[Y0001]-[M01]-[D01] [H01]:[m01]:[s01]	Default datetime format for OFS
dateTimeFormat.default.NMS	[Y0001]-[M01]-[D01]T[H01]:[m01]:[s01].000Z	Default datetime format for NMS

Property Name	Value	Description
failedEquipment.oic.Lookup Name	OUTL-BRT-NMS_OIC_FailedEquipCaching_DND	Name of cached failed equipment lookup, used for performance
eventTypeCategory.oic.Lookup Name	OUTL-BRT-NMS_OIC_EventTypeCategoryCaching_DND	Name of cached EventTypeCategory lookup, used for performance
findInstance.oic.LookupName	OUTL-BRT-NMS_OFSC_InstanceIDToBucket	Name of DVM to retrieve the NMS instance from an OFS resource
findInstance.oic.LookupSourceColumnName	OFSC_BucketID	Name of the source column that contains the OFS configured bucket
findInstance.oic.LookupTargetColumnName	NMS_ConnectionID	Name of the target column that points to the NMS connection instance
findInstance.oic.LookupNotFoundValue	NotFound	Value if the OFS Resource cannot be found returned by the Find Resource Bucket integration
attachment.nms.limit	10	Number if NMS Operator allowed attachments
attachment.ofs.limit	10	Number if OFS Operator configured attachments
attachment.nms.file.prefix	nms_sourced_attachment_	NMS attachment prefix inside OFS customized fields
operatorComments.eventDetails	Event Details updated [system-generated]	Static operator comment message when OFS forms were triggered
operatorComments.failedEquipment	Failed Equipment updated [system-generated]	Static operator comment message when OFS forms were triggered
oic.project.identifier	OU_NMS_OFS	Identifier of the OIC project where the application integrations are deployed

Property Name	Value	Description
ofsc.resourceType.crew	{ofs_ crew_member _resourceTypes }	Labels of the OFS Resource Types that define a crew. This concatenated string is delimited which is defined in the next property.
ofsc.resourceType.delimiter	'	Delimiter used in the ofsc.resourceType.crew property as well as the crew member classes and vehicle types lookups.
ofsc.resourceType.bucket	{ofs_ bucket _resourceType }	Label of the OFS Resource Type that defines a bucket.

Lookup: OUTL-BRT-NMS_OFSC_ InstanceIDToBucket

Match the Oracle Utilities Network Management System instance to the Oracle Field Service bucket. Oracle Utilities Network Management System InstanceID is used to send requests to the appropriate Oracle Utilities Network Management System instance. There can be multiple Oracle Utilities Network Management System instances but it has to be 1 Oracle Field Service bucket per 1 Oracle Utilities Network Management System instance.

NMS_InstanceID	OFSC_BucketID	NMS_InstanceID
NMS-	OHMeter	OUTL-BRT-NMS1_NMSOFSC

Lookup: OUTL-BRT-NMS_OFSC_ActivityStatus

OFSC_EventType	NMS_ActivityStatus	NMS_ActionCode
activityCreated	Initial	CREATE
activityStarted	STARTED	UPDATE
activitySuspended	SUSPENDED	UPDATE
activityNotDone	CANCELLED	UPDATE
activityCompleted	COMPLETE	UPDATE
activityCanceled	CANCELLED	UPDATE
activityUpdated		UPDATE
activityMoved	DISPATCHED	UPDATE
activityTravelStarted	EN_ROUTE	UPDATE
activityTravelStopped	DISPATCHED	UPDATE

Lookup: OUTL-BRT-NMS_OFSC_ActivityStatusChange

NMS_ActivityEventStatus	NMS-OFSCActivityStatus	OFSC_ActivityStatusNew
STARTED:SUS		suspended
SUSPENDED:SUS		suspended
	CANCELLED:started	notdone
	CANCELLED:enroute	notdone
	CANCELLED:cancelled	ERROR:Activity already in cancelled status in OFS
	CANCELLED:notdone	ERROR:Activity already in notdone status in OFS
	CANCELLED:completed	ERROR:Activity already in completed status in OFS
	CANCELLED:	ERROR:No matching OFS activity status found
	CANCELLED:pending	cancelled

Lookup: OUTL-BRT-NMS_OFSC_ActivityType

Convert Oracle Utilities Network Management System ActivityType into Oracle Field Service ActivityType value.

NMS_ActivityType	OFSC_ActivityType	Description
NMS_Trouble	NMS_Trouble	Default Value

Lookup: OUTL-BRT-NMS_OFSC_CrewMemberClasses

Defines what OFS Resource Type Labels or Codes are being targeted when requesting crew composition requests. The allowed NMS Crew Member Class are showing in the Admin Data and can be defined during NMS project configuration.

Translation from OFS labels to NMS crew member values.

NMS_CrewMemberClass	OFSC_ResourceTypeLabel	Description
ofs.crew.composition.crewmember	Apprentice, Foreman, Journeyman, …	Delimited string defining all the OFS resource types labels that will be filtered as part of a crew member list.
Apprentice Foreman Journeyman	Apprentice Foreman Journeyman	List all the OFS resource type labels with the corresponding NMS crew member class.

Lookup: OUTL-BRT-NMS_OFSC_VehicleTypes

Defines what OFS Resource Type Labels or Codes are being targeted when requesting crew composition requests. The allowed NMS Crew Vehicle Types are showing in the Admin Data and can be defined during NMS project configuration.

Translation from OFS labels to NMS crew vehicle types values.

NMS_VehicleType	OFSC_ResourceTypeLabel	Description
ofs.crew.composition.vehicle	Bucket Truck, Debris Truck, Eval Truck, ,…	Delimited string defining all the OFS resource types labels that will be filtered as part of a crew vehicles list.
Bucket Truck Debris Truck Eval Truck	Bucket Truck Debris Truck Eval Truck	List all the OFS resource type labels with the corresponding NMS crew vehicle types.

Error Handling

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

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

Error Handling Ways

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

- Synchronous Flow Error Handling
- Asynchronous Flow Error Handling

Synchronous Flow Error Handling

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

Technical Fault

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

Remote Fault

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

Business Fault

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

Asynchronous Flow Error Handling

Technical Fault

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

Remote Fault

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

Business Fault

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

Resubmitting the Error Instances in Oracle Integration Cloud

In this integration, the flows initiated are asynchronous flows. The **Resubmit** option is available only for asynchronous flows.

To resubmit the error instances in Oracle Integration Cloud:

1. Log in to Oracle Integration Cloud.
2. Navigate to **Integrations** > **Monitoring** > **Errors**.
3. Select the integration to resubmit.
4. Click the **Resubmit** icon.

Email Notifications

This pre-built integration includes a configurable email notification.

To receive an email notification:

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

   Change the **notification.email.flag** property value to 'true'.
4. Edit the **OUTL-BRT-NMS_OFSC_Email_ID** lookup.
   a. In the **from** field, enter the email ID to receive an email from.
   b. In the **to** field, enter the email ID to send the email to.

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

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

Chat Notifications

This pre-built integration includes a configurable chat notification that will be used by the Oracle Field Service dispatcher. Oracle Field Service sends requests asynchronously to Oracle Integration Cloud, and it cannot reply when an error occurs. Therefore, the chat notification will alert the default dispatcher or the crew of any errors that occur during processing.

1. Log in to Oracle Integration Cloud.
2. Navigate to **Integrations** > **Designer** > **Lookups**.
3. Edit the OUTL-BRT-NMS_OFSC_ConfigProps lookup. Change the notification.chat.flag property value to 'true'.

   Also edit the notification.chat.defaultDispatcher property to the Oracle Field Service default dispatcher externalID if no resource is being provided in the request.
4. Make sure that the Oracle Field Service dispatcher and crews are setup to receive chat notifications.

Chapter 7

Customizations

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

For more details on how to perform these changes, refer to the **Manage a Project** section of *Using Integrations in Oracle Integration 3* at https://docs.oracle.com/en/cloud/paas/application-integration/integrations-user/manage-project.html#GUID-A840E945-3F4E-4917-8DAF-5234840CF8F4. You can also refer to **Doc ID 3017378.1** (How To Extend Oracle Integration Cloud Gen3 Project) in My Oracle Support.

Chapter 8

Activating and Testing the Integration Flows

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

Activating Integration Flows

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 end point URLs for respective applications in which these endpoints need to be configured. Configure the same and perform an end-to-end testing.

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities NMS OFSC Admin Sync	N/A	Scheduled base or kicked off manually from OIC. OFS fields should mimic the NMS fields.
Oracle Utilities OFSC NMS Resources Sync	N/A	Scheduled base or kicked off manually from OIC. NMS crews should show the OFS 'NMS' assigned crews.
Oracle Utilities NMS OFSC Order Oracle Utilities NMS OFSC Order Async	https://OICHost:port/ic/api/integration/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_ORDERS/1.0/orders	Create an event in NMS and this will trigger this integration. Make sure the NMS ces_parameters have been setup.
Oracle Utilities NMS OFSC OrderComplete Oracle Utilities NMS OFSC OrderComplete Async	https://OICHost:port/ic/api/integration/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_ORDERS_COMPLETE/1.0/orders/complete	The above test will also trigger this integration and the activity should be in OFS if successful.

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities NMS OFSC Crew Request Oracle Utilities NMS OFSC Crew Request Async	https://OICHost:portic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_CREW_REQ/1.0/crews/request	Make sure the NMS ces_parameters have been setup. The crew composition is being is triggered from the NMS Web Workspace crew info tool interface and displays the composition when the integration has been completed.
Oracle Utilities NMS OFSC Ping	https://OICHost:port/ic/api/integration/v2/flows/oracleutilities/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_PING/1.0/ping	When NMS is starting up it will call this integration. Make sure the NMS ces_parameters have been setup.
Oracle Utilities NMS OFSC Chat Notification	https://OICHost:port/ic/api/integration/ic/api/integration/v2/flows/rest/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_CHAT_NOTIFICATN/1.0/chatNotificaiton	This integration will be triggered when the chat flag has been set in the lookup and an error occurs. It can be tested from the TEST menu or postman with: `{ "instanceId": "11111", "recipients": ["ofsUserExternalId"] , "errorCode": "500", "message": "Testing the chat integration" }` Leave recipients off and it will use the in lookup configured default dispatcher.
Oracle Utilities NMS OFSC Attachment	https://OICHost:port/ic/api/integration/v2/flows/rest/project/OUTL-BA-NMS_OFS/OUTL-BA-NMS_OFSC_ATTACHMENTS/1.0/process	After NMS to OFS flow has been confirmed. Add an attachment into an NMS Event and these will be sent to the OFS activity.

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities OFSC NMS Activity Create	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_ACTIVITY_CREATE/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. Assign an NMS Event to 2 crews will trigger this integration via OFS or create a linked activity in OFS.
Oracle Utilities OFSC NMS Activity Update	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_ACTIVITY_UPD/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. Making a change to the OFS activity such as start will kick off this integration.
Oracle Utilities OFSC NMS Event Details Update	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_ACT_EVTDTLUPD/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. Making a change to the Event Details form will trigger this integration and reflect in NMS.
Oracle Utilities OFSC NMS Failed Equipment Update	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_ACT_FEUPD/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. Making a change in the Failed Equipment form will trigger this integration and reflect in NMS.

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities OFSC NMS Attachments	https://OICHost:port/ic/api/integration/v2/flows/rest/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_ATTACHMENT/1.0/process	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. Adding attachments to the OFS activity will trigger this integration and reflect in NMS.
Oracle Utilities OFSC NMS Resource Create Update	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_RESOURCE_CR_UPD/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. When the OFS crew, such as adding a mobile phone, is updated by the administrator it will trigger this integration and reflected in NMS.
Oracle Utilities OFSC NMS Resource Route	https://OICHost:port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-NMS_OFS/OUTL-BA-OFSC_NMS_RESOURCE_ROUTE/1.0/notify	As OFS is event based, there is no need to configure the integration endpoint URLs. Subscription for the event will be created once the respective integration is activated. When the OFS crew activated its queue, it will trigger this integration and be reflected in NMS.
Oracle Utilities OIC OFSC Find Resource Bucket	https://OICHost:port/ic /ic/api/integration/v2/flows/rest/project/OUTL-BA-NMS_OFS/OUTL-BA-OIC_OFSC_RESOURCE_BUCKET/1.0/resourceBucket?bucketDVM=&resourceId=&targetColumn=&notFoundValue=&sourceColumn	This is an internal OIC call and will be triggered by the previous Oracle Utilities OFSC NMS Resource integrations to find the NMS instance.

Chapter 9

Monitoring and Troubleshooting

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

- Oracle Utilities Network Management System
- Oracle Integration Cloud

Oracle Utilities Network Management System

This section provides information about monitoring Oracle Utilities Network Management System.

Refer to the **Troubleshooting** section of the *Oracle Utilities Network Management* documentation for more information.

On-premise Application Logs

Application-related error logs can be viewed from:

- Errors related to the online integration invocation from Oracle Utilities Network Management System are stored in the NMS_ENVIRONMENT_NAME/logs/ or NMS_ENVIRONMENT_NAME/logs/system folder.

  For example: V27_NMS_ORA_WLS/logs/system\

For more information about errors and notifications, see the Oracle Utilities Network Management System 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:

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

To monitor the integration flows within a project:

1. Log in to Oracle Integration Cloud.
2. Click **Projects**.
3. Select the relevant project from the navigation pane.
4. Navigate to the **Observe** menu.
5. Check one of the following:
   - **Integrations**: For viewing the counts of various status of instances created per integration flows.
   - **Instances**: For viewing instances of integrations of the project.
   - **Future Runs:** For viewing all scheduled runs or started runs for scheduled integrations.
   - **Audit**: For viewing and downloading design-time audit logs.

Refer to the Monitor the Message Processing Status of Integrations in Projects section of *Using Integrations in Oracle Integration 3* for more information.

To monitor the integration flows from the Oracle Integration Cloud Observability menu option:

1. Log in to Oracle Integration Cloud.
2. From the navigation pane, click **Observability**.
3. Check one of the following:
    - **Dashboards**: Use to monitor the complete dashboard of integration. Get at-a-glance information about the number and status of projects, integrations, connections, and more.
    - **Integrations**: The **Monitor Integrations** page lets you view the message processing status of running integrations. The page shows the number of messages received and processed. The page shows the number of successful, erroneous, or aborted messages.
    - **Instances:** Use to filter and track the status of integration instances, and view track or activity streams of the integration.
    - **Errors:** Use to manage errors in Oracle Integrations, resubmit failed instances, discard failed instances, view message recovery status, and view basic and detailed error messages.

Refer to the Explore the Navigation Pane section of *Getting Started with Oracle Integration 3* for more information.

Troubleshooting

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

To enable DEBUG, complete these steps:

1. Select **Configure Activation** and select the **DEBUG** tracing level.
2. Run the integration.
3. Check the activity stream for runtime log details of the flow.
    - If an activation fails, the **Integrations** page displays an error. A few sample cases are as follows:
        - For any connectivity errors while activating the integration, make sure the trigger connection is successful. Test the connection and refresh the metadata, and then activate the integration.
        - If the integration (Oracle Utilities Network Management System initiated flows) is activated for the first time, make sure the Oracle Utilities Network Management System catalog is configured accurately.

Appendix A

Limitations and Workarounds

This appendix focuses on the limitations and workarounds in this integration and in the respective applications.

- Oracle Field Service
- Oracle Utilities Network Management System

Oracle Field Service

The known issues pertaining to in this integration are:

- While trying to update the datetime from Oracle Utilities Network Management System after moving an activity to a resource in Oracle Field Service, the activity is still with resource and not moved to bucket. It should be moved back to the bucket and is a known limitation in this integration.

Oracle Utilities Network Management System

For the list of known issues in Oracle Utilities Network Management System, refer to the *Oracle Utilities Network Management System Integration to Oracle Field Service Release Notes* included in this release.

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