Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service

Configuration Guide

Release 24C

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Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service Configuration Guide

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Preface

Welcome to the Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service Configuration Guide for release 24C.

The preface includes the following:

Audience

This document is intended for anyone implementing the integration of the following products with Oracle Field Service:

- Oracle Utilities Work and Asset Cloud Service

Documentation and Resources

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

Product Documentation

Topic	Location
Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service documentation	https://docs.oracle.com/en/industries/energy-water/integrations-index.html
Oracle Utilities Work and Asset Cloud Service documentation	https://docs.oracle.com/en/industries/energy-water/work-asset-cloud-service/index.html
Oracle Field Service documentation	https://docs.oracle.com/en/cloud/saas/field-service/index.html

Additional Documentation

Resource	Location
Oracle Support	Visit My Oracle Support at https://support.oracle.com regularly to stay informed about updates and patches.
Oracle Technology Network (OTN) for latest versions of documents	http://www.oracle.com/technetwork/index.html
Oracle University for training opportunities	http://education.oracle.com/

Updates to Documentation

The complete Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service documentation set is available from Oracle Help Center at https://docs.oracle.com/en/industries/energy-water/index.html.

Visit My Oracle Support for additional and updated information about the product.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website.

Access to Oracle Support

Oracle customers have access to electronic support for the hearing impaired. Visit My Oracle Support or Oracle Accessibility Learning and Support for more information.

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)
WACS	Oracle Utilities Work and Asset Cloud Service

Chapter 1

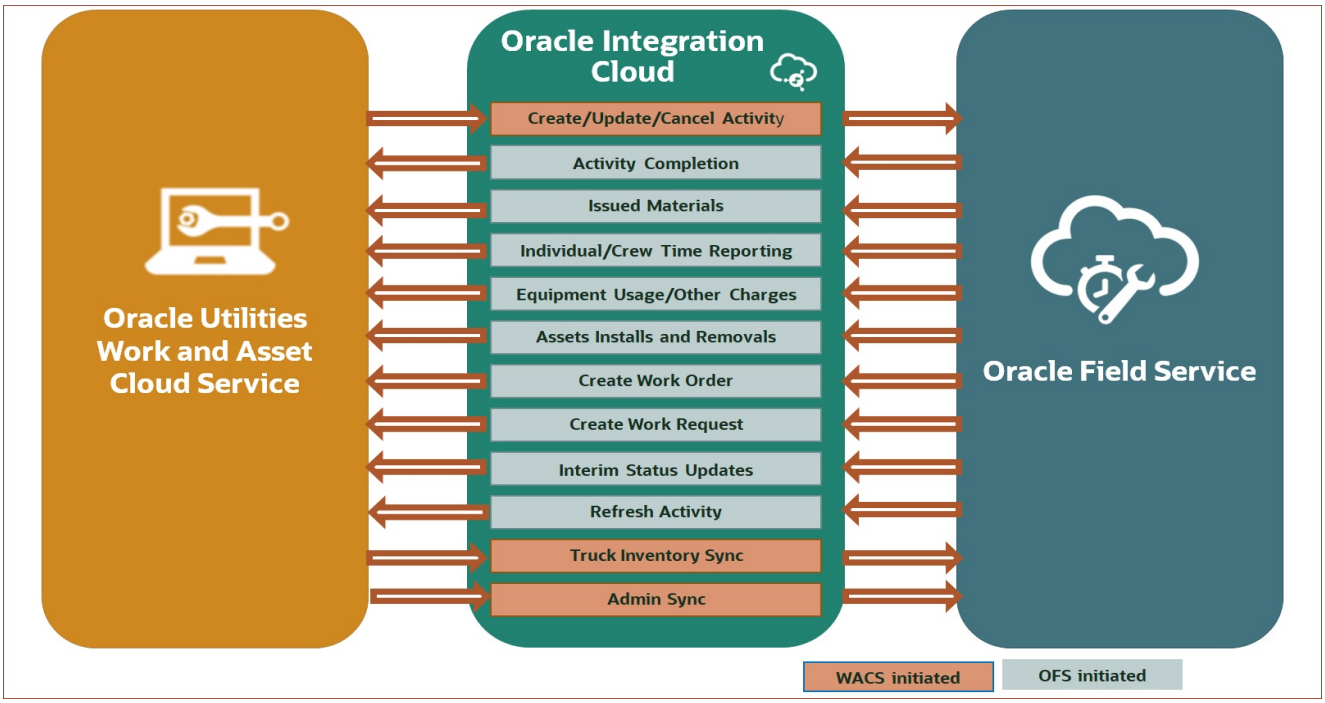
Introduction

This chapter provides an overview about Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service using Oracle Integration Cloud. It focuses on software requirements, Oracle Integration Cloud and business standpoint of the integration. It includes the following:

Overview of the Integration

Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service helps to manage a fieldwork originated in the Oracle Utilities Work and Asset Cloud Service solution in Oracle Field Service. The integration can be leveraged to create /update/ cancel and complete activities in the field using the Oracle Field Service solution.

The major business flows revolve around activities and usage reporting. The activities are created in Oracle Utilities Work and Asset Cloud Service and sent to Oracle Field Service for the mobile worker to perform the activity. The field activity completion information is sent from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. In addition, the integration supports admin sync from Oracle Utilities Work and Asset Cloud Service to Oracle Field Service.



About Oracle Utilities Work and Asset Cloud Service (WACS)

Oracle Utilities Work and Asset Cloud Service efficiently manages asset lifecycles, streamlines maintenance operations, maximizes supply chain performance, enhances safety, and improves regulatory compliance.

About Oracle Field Service (OFS)

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 (OIC)

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

Using Process Builder the business processes can be rapidly designed, automated, and managed in the cloud. Using integrations connect the applications into a continuous business flow. The integrations can be quickly developed and activated between both the applications that live in the cloud; and the applications still live on premises. The lookups help to match application specific codes between the two applications.

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

Software Requirements

The following software is required for the integration to work:

- Oracle Utilities Work and Asset Management (on-premises). The integration works but the functionality will be limited.
- Oracle Utilities Work and Asset Cloud Service
- Oracle Integration Cloud
- Oracle Field Service

For specific application versions, refer to the *Oracle Utilities Work and Asset Cloud Service 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/cloud-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 Work and Asset Cloud Service Integration to Oracle Field Service are:

- An integration between Oracle Utilities Work and Asset Cloud Service and Oracle Field Service.
- The integration layer is made up 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 Work and Asset Cloud Service initiated processes, outbound messages are sent and Oracle Field Service uses REST API to receive the messages.
- In the Oracle Field Service initiated processes, events are triggered and Oracle Utilities Work and Asset Cloud Service uses inbound web services (IWS) to receive the messages.

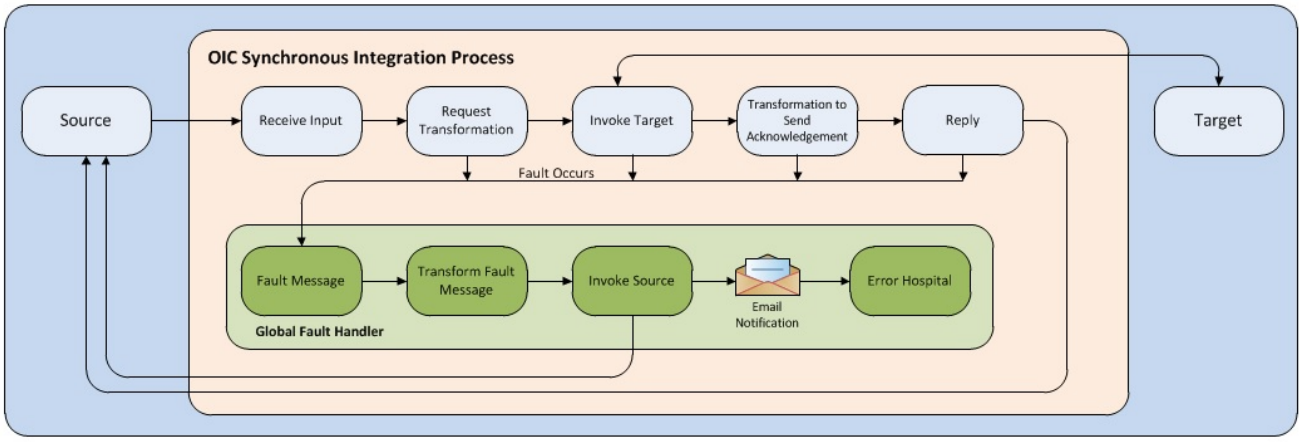
The integration patterns used in this solution are:

- Synchronous
- One-way Asynchronous

Synchronous

The synchronous integration process:

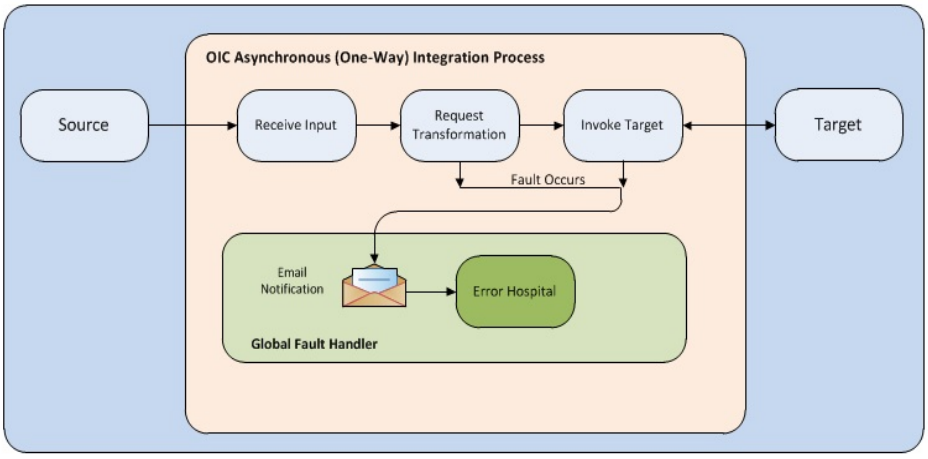
1. Receives request message from Oracle Utilities Work and Asset Cloud Service.
2. Transforms the message from Oracle Utilities Work and Asset Cloud Service format to the target format. Lookups are used for data translations.
3. Invokes Oracle Field Service.
4. Transforms the message (after invoking Oracle Field Service) from the Oracle Field Service 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 Oracle Utilities Work and Asset Cloud Service.
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 Oracle Field Service.
2. Transforms message from the source to the Oracle Utilities Work and Asset Cloud Service format. Lookups are used for data translations.
3. Invokes target application to send the request message.
4. No acknowledgement/response is sent to source.
5. In case of any error, the global fault handler catches them.
6. An optional email notification is sent to the respective users as configured.
7. The error instance can be re-submitted from Oracle Integration Cloud. Refer to the Error Handling section in Configuring Lookups, Error Handling, and Email Notifications for more details.



Business Flows

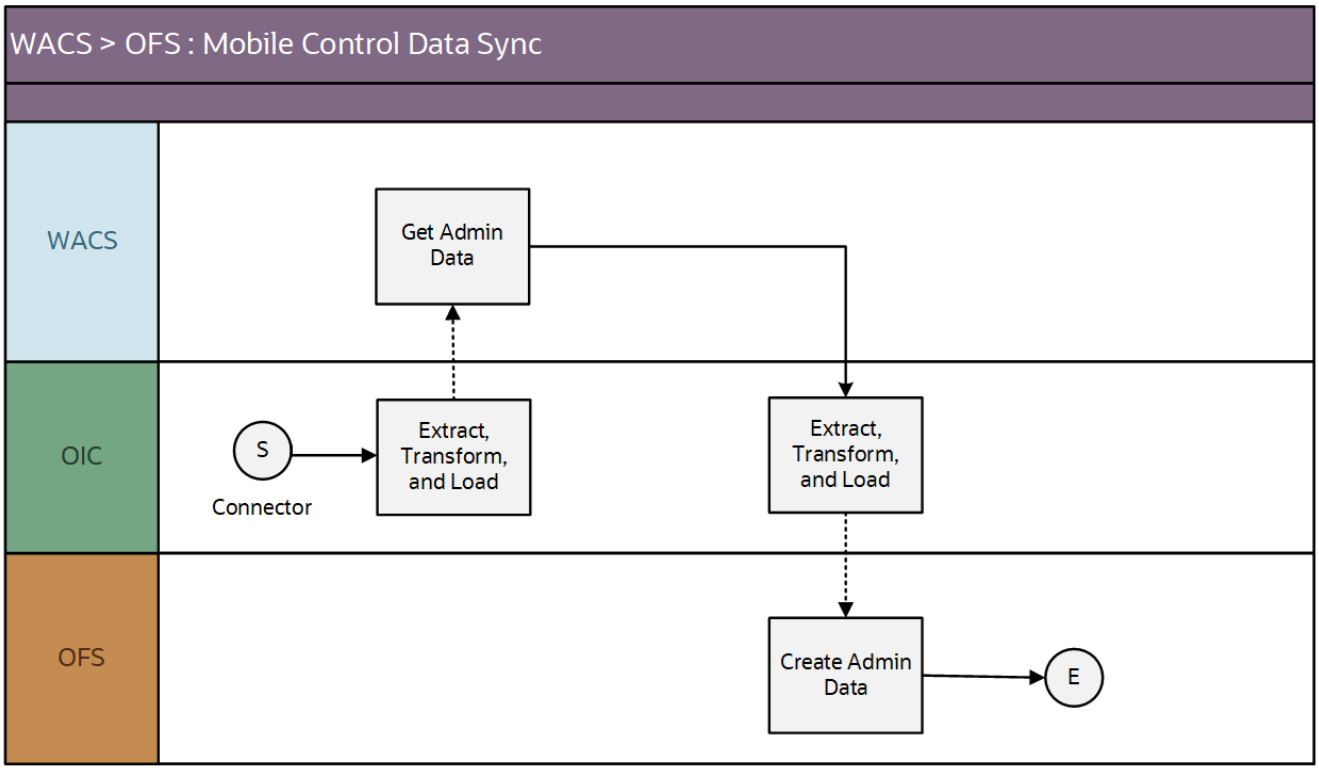
The integration scope supports the following business processes:

- Mobile Control Data Sync (Oracle Utilities Work and Asset Cloud Service Initiated)
- Process Activity (Oracle Utilities Work and Asset Cloud Service Initiated)
- Activity Completion (Oracle Field Service Initiated)
- Resource Usage (Oracle Field Service Initiated)
- Interim Status Updates (Oracle Field Service Initiated)
- Asset Installs and Removals and History (Oracle Field Service Initiated)
- Pick Up Order (Oracle Field Service Initiated)
- Truck Storeroom Admin Sync (Oracle Utilities Work and Asset Cloud Service Initiated)
- Truck Storeroom Inventory Snapshot Sync/Update (Oracle Field Service Initiated)
    - Oracle Utilities OFSC WACS Route Activation
    - Oracle Utilities OFSC WACS Storeroom Sync
    - Oracle Utilities WACS OFSC Schedule Storeroom Sync
- Activity Pull Update (Oracle Field Service Initiated)

Mobile Control Data Sync (Oracle Utilities Work and Asset Cloud Service Initiated)

This integration process is used to sync the control data from Oracle Utilities Work and Asset Cloud Service to Oracle Field Service. It also creates the work skill related configurations needed in Oracle Field Service to match activities with resources and for crew tracking. It is run on initial installation or on a need only basis when new control data from Oracle Utilities Work and Asset Cloud Service or work skill related configurations needs to be created or updated in Oracle Field Service.

The following diagram shows a graphical representation of the Mobile Control Data Sync integration process.



Process Details

This synchronous integration process includes the following activities:

1. Oracle Utilities WACS OFSC Admin Data Sync integration process deployed on Oracle Integration Cloud is run to retrieve the control data from Oracle Utilities Work and Asset Cloud Service needed in the Oracle Field Service application. This includes codes and descriptions of selected admin entities, asset attributes, characteristic types, characteristic type valid values and extendable lookup values. It also includes craft, equipment and other direct changes, whose resource type is internal, needed to support timesheet and resource usage.

   The integration is enhanced to allow skipping the sync for some properties based on the category. Control data from Oracle Utilities Work and Asset Cloud Service have six categories: controlDataEntities, resourceTypes, assetAttributes, workClass, serviceHistoryCategory, and serviceClass. The controlDataEntities.default, assetAttributes.default, and resourceTypes.default properties in the **WAMOFSC_ConfigProps** lookup can be used to control this synchronization based on the flag value. By default, this is set to "yes". WorkClass, serviceHistoryCategory, and serviceClass will always be synchronized to Oracle Field Service.

   Equipment work skill creation is optional. It is controlled by property createEquipmentWorkSkills.flag in WAMOFSC_ConfigProps lookups. By default, this is set to "no".

   > **Note**: Once a resource is created in Oracle Utilities Work and Asset Cloud Service, the resource code (craft code, equipment code and other

resource code) cannot be changed. This sync integration process uses the resource codes to create the enumeration values for equipment, craft and other resource property in Oracle Field Service. Slash (/) also cannot be part of the resource code.

2. Run this integration sync process manually from Oracle Integration Cloud by scheduling the integration process to run on a scheduled date or selecting **Submit Now** from the menu of the activated sync integration process to initiate an instance of the integration. An optional language parameter can be entered to determine the description to retrieve from Oracle Utilities Work and Asset Cloud Service and to know in which language code the property name should be created in Oracle Field Service. The language parameter entered should be an ISO 2 letter language code; if the language parameter is not populated or blank, it is defaulted to English (en).
3. It populates the enumeration values for the following Oracle Field Service properties if the integration properties specified below are set to 'yes'.

Property in WAMOFSC_ConfigProps Lookup	**Oracle Field Service Properties**
controlDataEntities.default = 'yes'	• Crew Shift Types • Downtime Reason • Labor Earning Type • Material Unit of Measure • Measurement Meter Reason • Measurement Gauge Reason • Overtime Type • Resource Unit of Measure • Stock Item Category • Pickup Work Category • Pickup Location Type • Pickup Work Type • Pickup Work Priority
resourceTypes.default = 'yes'	• Craft • Equipment Type • Other Resource Type
assetAttributes.default = 'yes'	• WAM Map Asset Attribute List • WAM Map Attribute Valid Value • WAM Map Valid Values Description
None. These are always synchronized to Oracle Field Service.	• Pickup Work Class • Service History Category Description • Service Class Description • Activity Type To PSH

The enumeration values are obtained from the corresponding Oracle Utilities Work and Asset Cloud Service admin information.

OFS Property Label	Synced WACS Information
wam_actType_psh	Activity Type To PSH
wam_craft	Activity Type To PSH
wam_crew_shift_type	Crew Shift Type
wam_downtime_reason	Downtime Reason
wam_equipment_type	Equipment
wam_labor_earning_type	Labor Earning Type
wam_material_stockitemCategory	Stock Item Category
wam_material_uom	Material Unit of Measure
wam_measurement_gauge_reason	Measurement Gauge Reason
wam_measurement_meter_reason	Measurement Meter Reason
wam_other_resource_type	Other Resource
wam_overtime_type	Overtime Type
wam_pickup_location_type	Pickup Location Type
wam_resource_uom	Unit of Measure-Resource
wam_work_category	Pickup Work Category
wam_work_class	Pickup Work Class
wam_work_priority	Pickup Work Priority
wam_work_type	Pickup Work Type
wam_map_assetAttribute	Asset Attributes
wam_map_attribute_validValue	Asset Attributes Valid Values
wam_map_validValue_description	Asset Attributes Valid Value Description
wam_service_history_category	Service History Category Description
wam_service_class	Service Class Description

Note: If admin data is deleted in Oracle Utilities Work and Asset Cloud Service, the enumeration value will not be deleted in Oracle Field Service. The sync integration process cannot delete enumeration values added to a property in Oracle Field Service; the OFSC REST API that updates the enumeration values of a property does not allow it. The only way to delete an enumeration value(s) in a property is by deleting the property, recreating the property, and run the sync to get the latest values.

4. If Property resourceTypes.default in WAMOFSC_ConfigProps Lookup is set to 'yes', it creates a work skill and work skill property for each craft retrieved from Oracle Utilities Work and Asset Cloud Service.

- The label format for Work Skill created in Oracle Field Service is:
  - W_ + WAM craftcode

    Example: Label is W_Carpenter
- The label format for Work Skill property created in Oracle Field Service is:
  - W_ + WAM craftcode + _Nd

    Example: Work Skill Property Label is W_Carpenter_Nd
- The name format for Work Skill property created in Oracle Field Service is:
  - WAM Craft Code Description + value of property workSkillProperty.nameSuffix.default from WAMOFSC_ConfigProps Lookup.

    Example: WAM Craft Code description is Carpenter. workSkillProperty.nameSuffix.default value is needed. Work Skill Property Name is Carpenter Needed.

5. It also creates the work skill conditions based on the craft and the property value of workSkillCond.actvtySameSkillMaxWorker.default from WAMOFSC_ConfigProps Lookup.

   In this example: For work skill = Carpenter and workSkillCond.actvtySameSkillMaxWorker.default = 3, there will be 3 work skill conditions created.

   - Work skill name: Carpenter, Required level: 1; Preferable level: 1; Condition: carpenters_needed In 1
   - Work skill name: Carpenter, Required level: 2; Preferable level: 2; Condition: carpenters_needed In 2
   - Work skill name: Carpenter, Required level: 3; Preferable level: 3; Condition: carpenters_needed In 3
6. If Properties resourceTypes.default and createEquipmentWorkSkills.flag in WAMOFSC_ConfigProps Lookup are set to 'yes', it creates a work skill and work skill property for each equipment retrieved from Oracle Utilities Work and Asset Cloud Service.
   - The label format for Work Skill created in Oracle Field Service is:
     - WE_ + WAM equipmentcode

       Example: Label is WE_Backhoe
   - The label format for Work Skill property created in Oracle Field Service is:

     WE_ + WAM equipmentcode + _Nd

     Example: Work Skill Property Label is WE_Backhoe_Nd
   - The name format for Work Skill property created in Oracle Field Service is:

     WAM Equipment Code Description + value of property workSkillProperty.nameSuffix.default from WAMOFSC_ConfigProps Lookup.

     Example: WAM Equipment Code description is Backhoe. workSkillProperty.nameSuffix.default value is Needed. Work Skill Property Name is Backhoe Needed.

7. It also creates work skill conditions based on the equipment and property value of workSkillCond.actvtyMaxEquipment.default from WAMOFSC_ConfigProps lookup.

   In this example: For work skill = Backhoe and workSkillCond.actvtyMaxEquipment.default = 3, there will be 3 work skill conditions created.

   - Work skill name: Backhoe, Required level: 1; Preferable level: 1; Condition: backhoe_needed In 1
   - Work skill name: Backhoe, Required level: 2; Preferable level: 2; Condition: backhoe_needed In 2
   - Work skill name: Backhoe, Required level: 3; Preferable level: 3; Condition: backhoe_needed In 3

8. It also synchronizes the activity types from Oracle Utilities Work and Asset Cloud Service to Oracle Field Service. Activity types define the categories of the activity supported by Oracle Field Service (in this case, Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service). If any Activity type already exists in Oracle Field Service, it is skipped from syncing to avoid overriding of Activity type settings in Oracle Field Service.
9. If Property assetAttributes.default in WAMOFSC_ConfigProps Lookup is set to "yes", it populates the enum values for asset attributes predefined characteristics types and its valid values in Oracle Field Service.
10. If a technical fault is encountered, when Oracle Utilities Work and Asset Cloud Service or Oracle Field Service is down, it will stop the process and send an optional email notification with error details to the users configured in the WAMOFSC_Email_ID lookup.
11. If any error occurs in the flow when creating or update the record(s) in Oracle Field Service, it will continue the process and send an email notification to the users configured in the WAMOFSC_Email_ID lookup of what record was not created/ updated.
12. Email notification is optional. Configure the property name email.flag in the WAMOFSC_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 Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

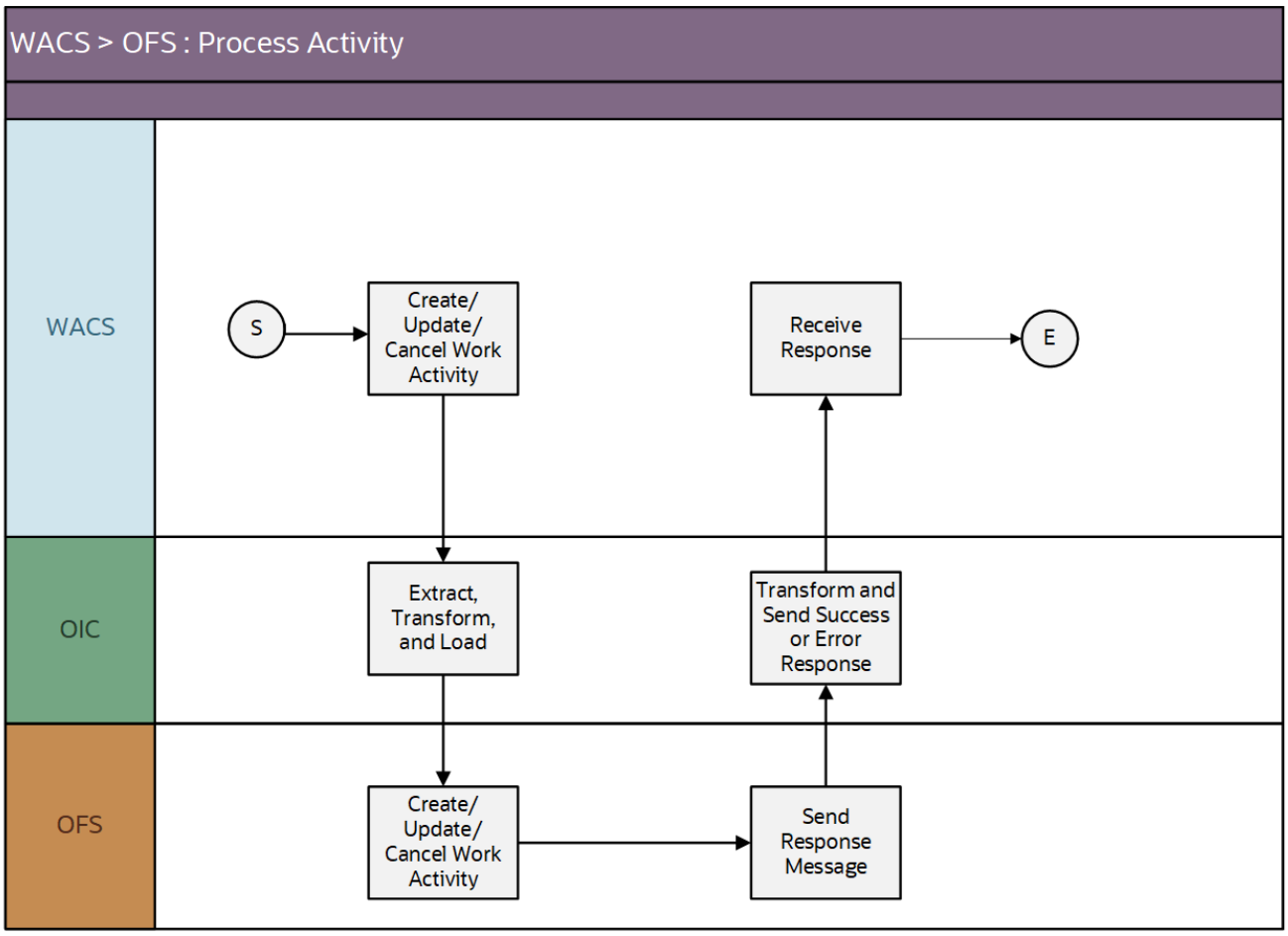
Artifacts	Value
Integration Process Name	OracleUtilitiesWACS OFSCAdminData Sync
Integration Project Name	OU WACS OFSC

Artifacts	Value
OFSC REST URI	To update or replace enumeration values for a property: Method: PUT URI: /rest/ofscMetadata/v1/properties/{label}/enumerationList To create or replace a WorkSkill: Method: PUT URI: /rest/ofscMetadata/v1/workSkills/{label} To create or replace a property for WorkSkill: Method: PUT URI: /rest/ofscMetadata/v1/properties/{label} To replace WorkSkill conditions: Method: PUT URI: /rest/ofscMetadata/v1/workSkillConditions To create Activity Type: Method: PUT URI:/rest/ofscMetadata/v1/activityTypes/{activityType} To retrieve a Activity Type Group: Method: GET URI:/rest/ofscMetadata/v1/activityTypeGroups/{label}
WACS SOAP IWS	• W1-ExtMobileControlData • W1-ExtMobileActivityTypes

Process Activity (Oracle Utilities Work and Asset Cloud Service Initiated)

This integration process is used to accept request from Oracle Utilities Work and Asset Cloud Service to create, update, or cancel activities in Oracle Field Service. The activity details message also include the list of issued assets if any. The asset details include the asset attributes details in the asset location asset list, issued asset list, and installed asset list. The information is sent synchronously from Oracle Utilities Work and Asset Cloud Service, regardless of the activity type, and Oracle Field Service sends back a response.

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



Process Details

The integration process includes the following activities:

1. Oracle Utilities Work and Asset Cloud Service sends the create/update/cancel activity request to the Oracle Utilities WACS OFSC Activity Process integration process deployed on Oracle Integration Cloud.
2. If Oracle Utilities Work and Asset Cloud Service sends create or update activity/ construction work activity request and the attachments are validated, the Oracle Utilities WACS OFSC Activity Process transforms the request message from Oracle Utilities Work and Asset Cloud Service to the request message format in Oracle Field Service and invokes bulkUpdate API.
3. Oracle Field Service sends the success or failure response to the integration.
4. If the activity creation is successful in Oracle Field Service, the activity dependencies for the new activity are checked. If there are no predecessor activities, the integration process does the following:
    a. Transforms the attachments data from Oracle Utilities Work and Asset Cloud Service (if any) and invokes "Set File Property" OFSC REST API.

   b. Transforms the labor data from Oracle Utilities Work and Asset Cloud Service (if any) and invokes "Update activity" OFSC REST API.

5. Transforms and sends the success/failure response from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service.
6. If Oracle Utilities Work and Asset Cloud Service sends the cancel activity/ construction work activity request, the Oracle Utilities WACS OFSC Activity Process transforms the request message from Oracle Utilities Work and Asset Cloud Service to the request message format in Oracle Field Service and invokes Cancel API.
7. In Oracle Field Service, the activity status will get updated to "cancelled". The activity should be in "pending" or "en route" status for success response.
8. Oracle Field Service sends the success or failure response to the integration transformed and sent to Oracle Utilities Work and Asset Cloud Service.
9. Any errors are reported back to Oracle Utilities Work and Asset Cloud Service through the global fault handler.
10. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
11. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps Lookup to true to receive email notification when errors are encountered.

Technical Details

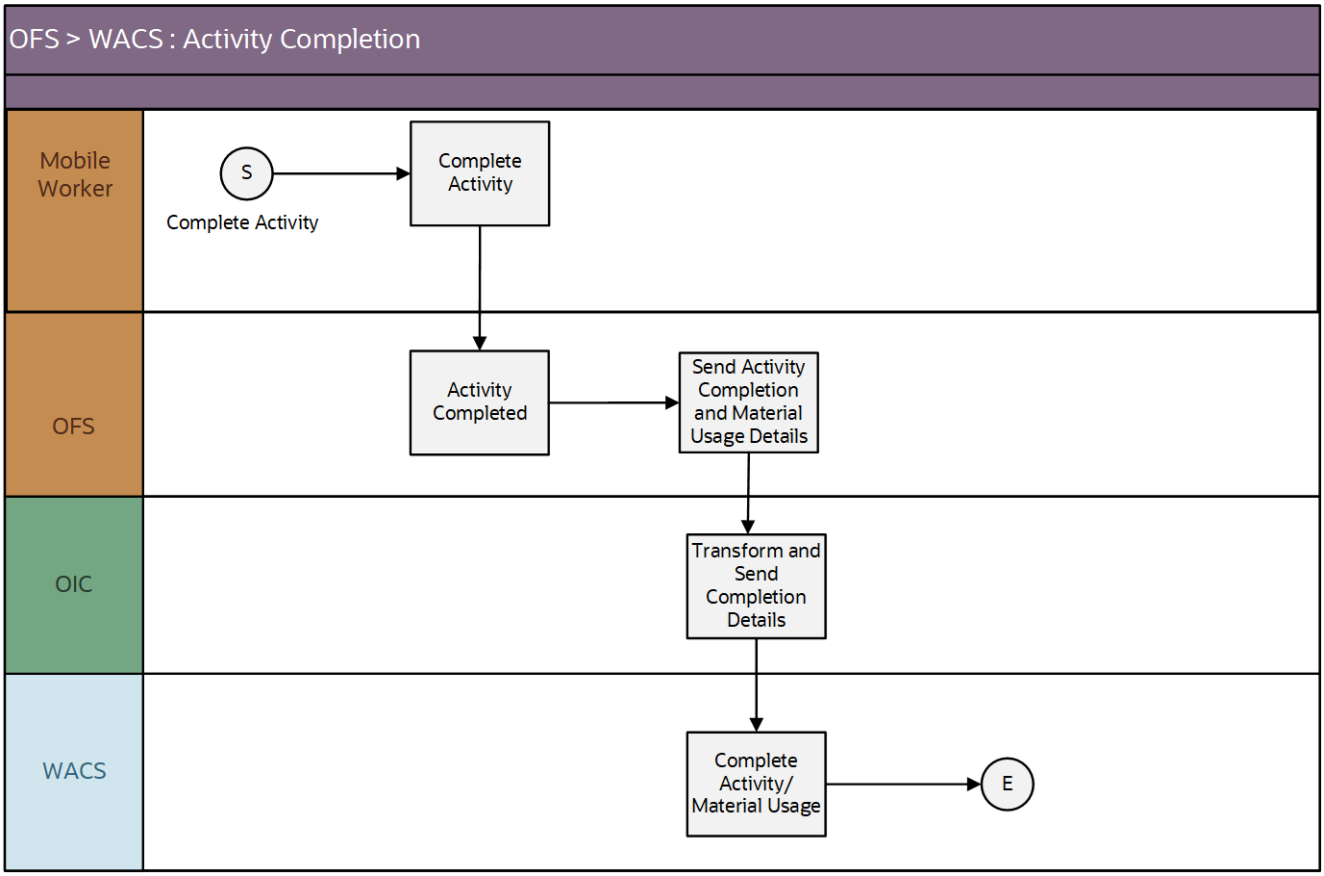
The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities WACS OFSC Activity Process
Integration Project Name	OU WACS OFSC
OFSC BO/Operation	• Activity / Bulk Update Activity • Activity / Set File Property • Activity / Update activity
OFSC API	bulkUpdate
WACS BO	W1-WOActivityActiveOutboundMsg

Activity Completion (Oracle Field Service Initiated)

This integration process is used to send the field activity completion and material usage details from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. Oracle Field Service sends the activity completion details, material usage details along with the completion status, to complete the activity in Oracle Utilities Work and Asset Cloud Service.

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



Process Details

The integration process includes the following activities:

1. Oracle Field Service sends the activity completion and material usage details to the Oracle Utilities OFSC WACS Activity Complete integration process deployed on Oracle Integration Cloud, when the "Activity Completed" event occurs.
2. The Oracle Utilities OFSC WACS Activity Complete process transforms the completion event data and get the activity and material usage details from Oracle Field Service by invoking the getActivity API.
3. The integration process gets the asset/inventory details from a file property by invoking the getActivityFileProperty Oracle Field Service API, also gets the service history attachment(s) data if any by invoking the same Oracle Field Service API.
4. The integration process transforms the activity completion message from Oracle Field Service to the message format in Oracle Utilities Work and Asset Cloud Service and invokes the W1-MblActCom inbound web service.
5. The integration process transforms the activity material usage message from Oracle Field Service to the message format in Oracle Utilities Work and Asset Cloud Service and invokes the W1-ActivityMaterialUsage inbound web service.

6. Any errors are captured through the global fault handler.
7. An optional email notification with error details are sent to the users configured in the WAMOFSC_Email_ID lookup.
8. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps Lookup to true to receive email notification when errors are encountered.

Technical Details

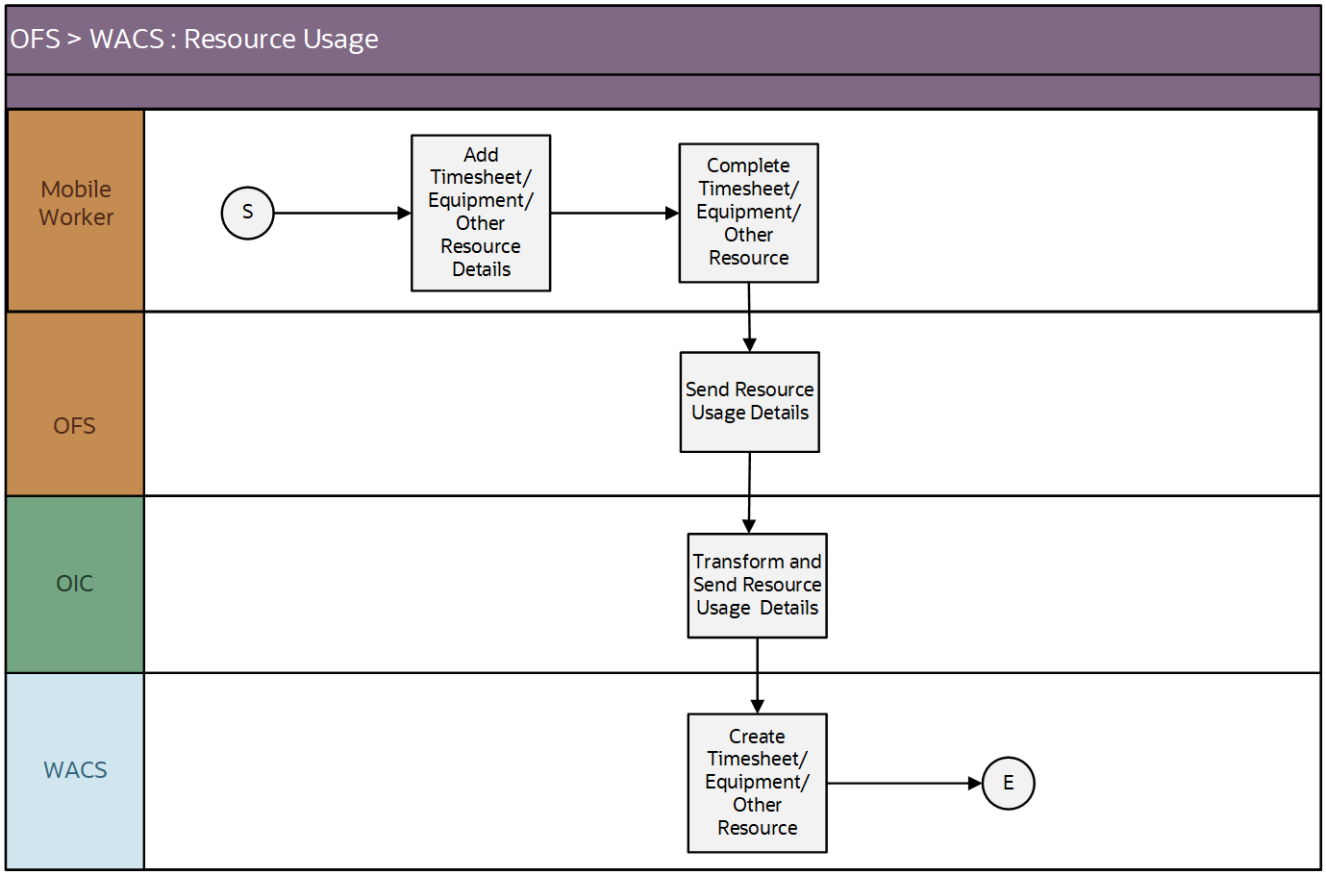
The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Activity Complete
Integration Project Name	OU WACS OFSC
OFSC Event	Activity/Activity Completed
OFSC BO/Operation	Activity/Get Activity
OFSC API	getFileProperty
WACS IWS	• W1-MblActCom • W1-ActivityMaterialUsage

Resource Usage (Oracle Field Service Initiated)

This integration process is used to send the resource usage details from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. Oracle Field Service sends the details either before the completion or after the completion of the activity.

The following diagram shows a graphical representation of the Resource Usage integration process.



Process Details

The integration process includes the following activities:

1. Oracle Field Service sends the resource usage details that can include either the individual time sheet or crew time sheets by supervisor or equipment usage or other equipment usage to the Oracle Utilities OFSC WACS Resource Usage Details integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities OFSC WACS Resource Usage Details process transforms the message from Oracle Field Service to the message format in Oracle Utilities Work and Asset Cloud Service and invokes the W1-IntTMSDtl inbound web service if its individual time sheet or crew time usage submitted by supervisor or invokes the W1-IntODCDtl inbound web service if its equipment usage or other equipment usage information.
3. Any errors are captured through the global fault handler.
4. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
5. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps Lookup to true to receive email notification when errors are generated.

Technical Details

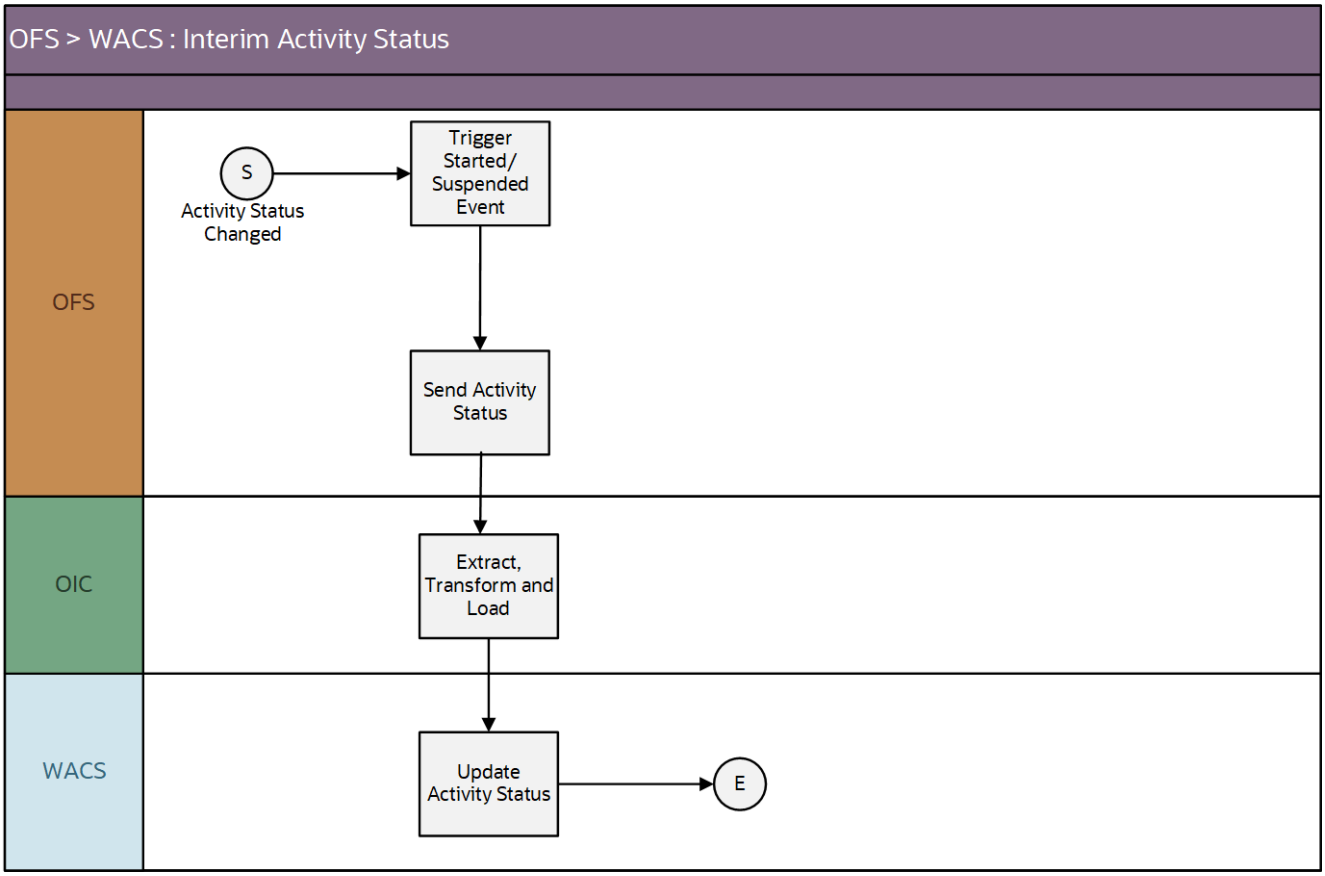
The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Resource Usage Details
Integration Project Name	OU WACS OFSC
OFSC Entity	Custom Plugin: Resource Usage
WACS SOAP IWS	• W1-IntTMSDtl • W1-IntODCDtl

Interim Status Updates (Oracle Field Service Initiated)

This integration process is used to send the interim status details of the Work Activity from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. Oracle Field Service sends the details before the completion of the activity.

The following diagram shows a graphical representation of the Interim Status Updates integration process:



Process Details

The integration process includes the following activities:

1. Oracle Field Service sends the interim activity status to the Oracle Utilities OFSC WACS Activity Interim Status integration process deployed on Oracle Integration Cloud.
2. Oracle Utilities OFSC WACS Activity Interim Status integration process transforms the message and invokes W1-UpdateActivityStatus inbound web service and updates the activity status in Oracle Utilities Work and Asset Cloud Service.
3. Any errors are caught in the global fault handler.
4. An optional email notification with error details are sent to the users configured in the WAMOFSC_Email_ID lookup.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Activity Interim Status
Integration Project Name	OU WACS OFSC
OFS Events	• Activity Started • Activity Suspended
WACS SOAP IWS	W1-UpdateActivityStatus

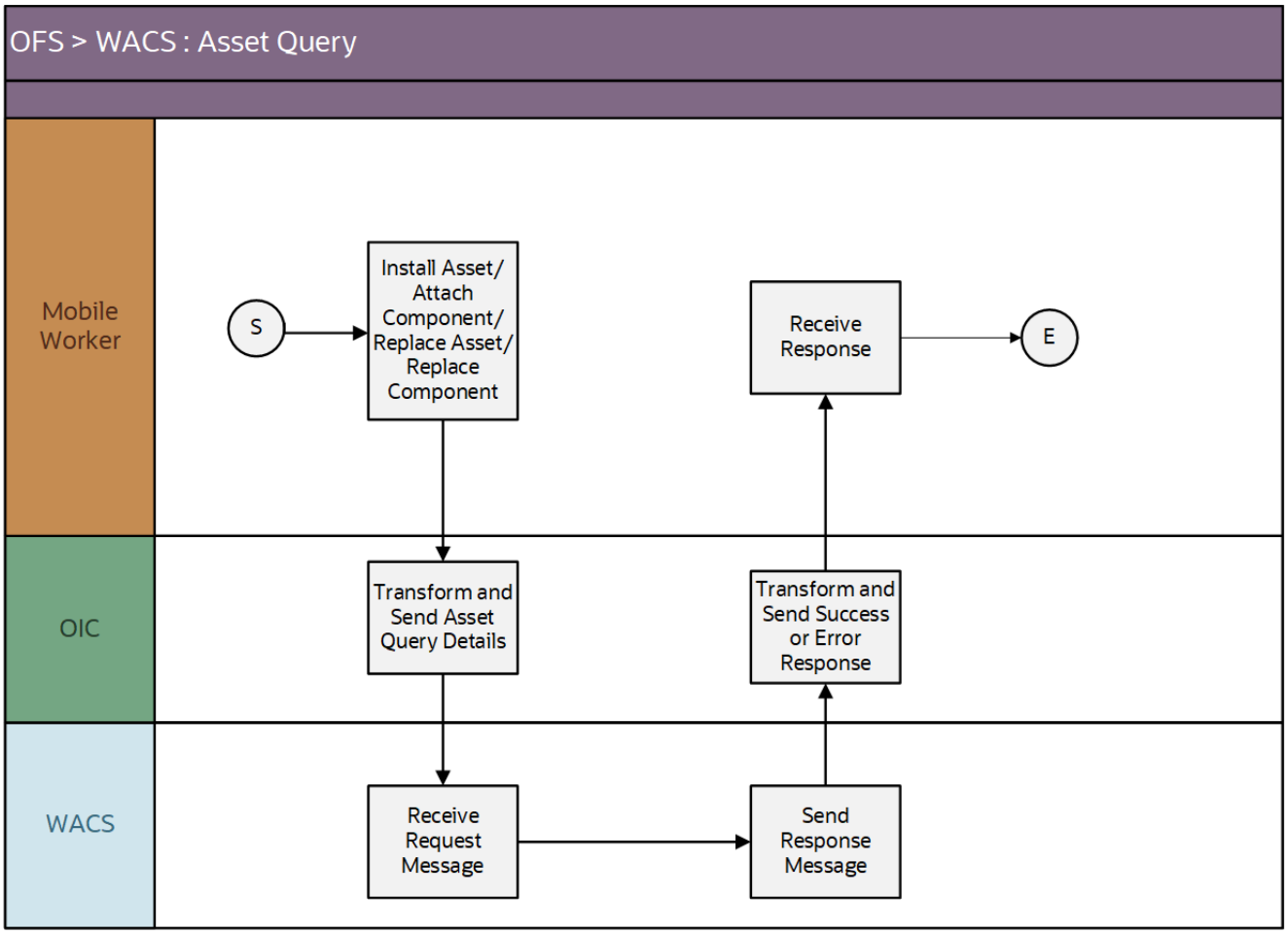
Asset Installs and Removals and History (Oracle Field Service Initiated)

This integration process is used to perform various operations from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. Oracle Field Service sends the details either before the completion or after the completion of the activity. Also, this process is used to retrieve the asset history details from Oracle Utilities Work and Asset Cloud Service.

These operations can be performed on Assets and Components using the Oracle Utilities OFSC WACS Asset Query integration flow.

- Install Asset
- Attach Component
- Replace Asset
- Replace Component

The following diagram shows a graphical representation of the Asset Installs and Removals integration process:



The following operations can be performed on Assets and Components from Oracle Field Service, independent of the Asset Query Integration process:

- Asset Removal
- Asset Out of Service
- Component Removal
- Undo Install
- Undo Remove
- Undo Attach
- Undo Replace
- Back to Service

Additionally, the asset history details can also be retrieved from Oracle Utilities Work and Asset Cloud Service for Oracle Field Service.

Process Details

The integration process includes the following activities:

1. For Install Asset, Attach Component, and Replace operations, Oracle Field Service sends the Asset Query details which include Asset ID, Badge Number, and location ID to the Oracle Utilities OFSC WACS Asset Query integration process deployed on Oracle Integration Cloud.
2. The Oracle Utilities OFSC WACS Asset Query process transforms the message from Oracle Field Service to the message format in Oracle Utilities Work and Asset Cloud Service and invokes the W1GAstDtlBNo inbound web service.
3. Oracle Utilities Work and Asset Cloud Service responds with all the asset details if the call is successful, else it responds with an error message. If the response succeeds, the installed asset/attached component moves to the installed pool. When an asset or component is replaced, the replaced asset or component moves to the deinstalled pool.
4. Remove and Out of Service operations are directly performed in Oracle Field Service. After performing these operations, the asset moves to deinstalled pool.
5. Every operation on the Asset or Component can be undone using their corresponding Undo operations.
6. The data about the performed operations is sent from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service after activity completion.
7. For Asset History details, Oracle Field Service sends only Asset ID to this integration process. It uses the "serviceHistorySearch.months", "measurementSearch.months", and "activitySearch.months" property values from the **WAMOFSC_ConfigProps** lookup.
8. The Oracle Utilities OFSC WACS Asset Query process transforms the message from Oracle Field Service to the message format in Oracle Utilities Work and Asset Cloud Service and invokes the W1GAstDtlBNo inbound web service.
9. Oracle Utilities Work and Asset Cloud Service responds with the asset details including Service Histories, Measurements, and Activity History if the call is successful. Else, it responds with an error message. If the response succeeds, these details will be displayed on the **Asset History** plugin screen.
10. Any errors are captured through the global fault handler.
11. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
12. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps Lookup to true to receive email notification when errors are generated.

Technical Details

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

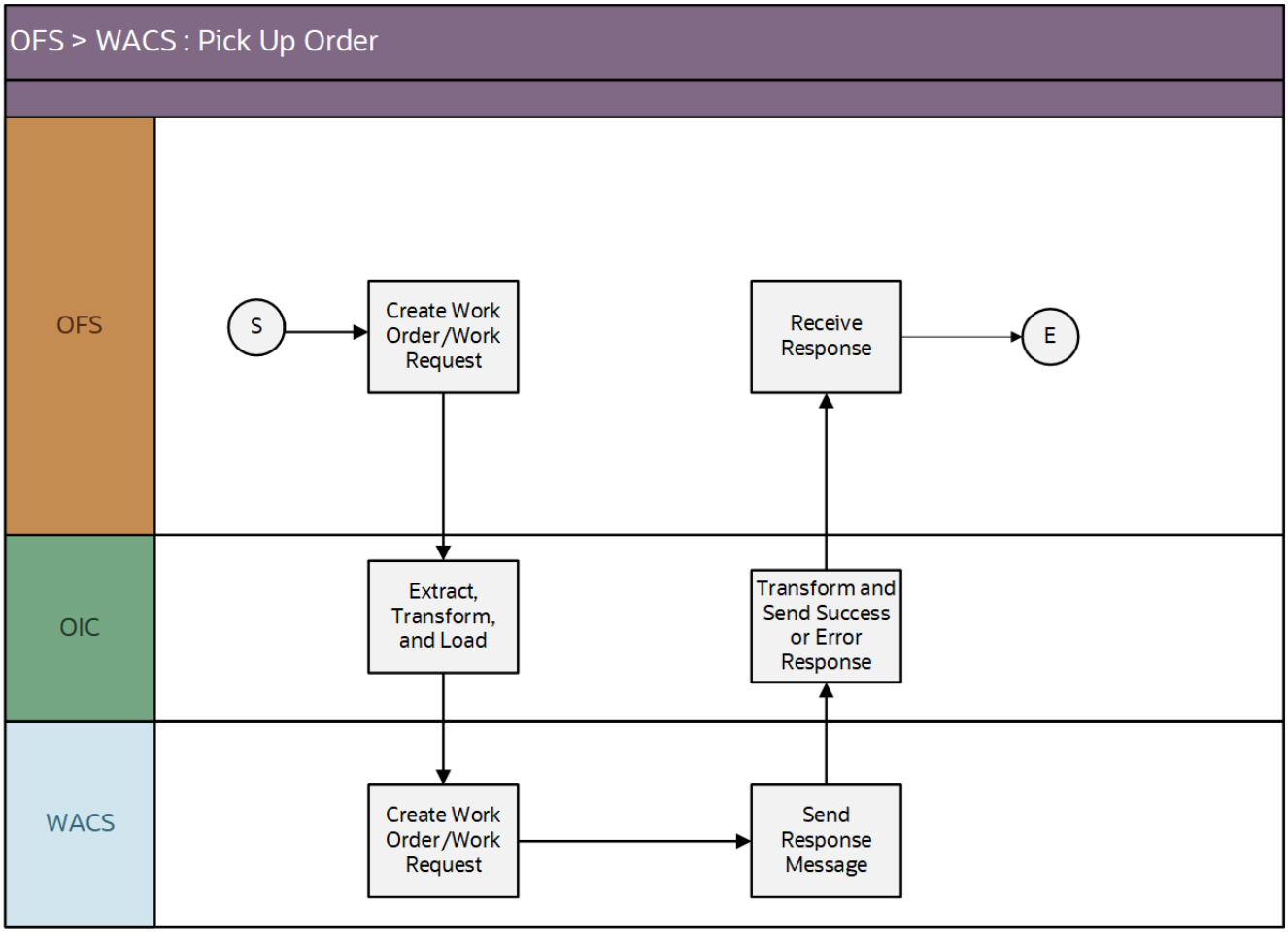
Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Asset Query

Artifacts	Value
Integration Project Name	OU WACS OFSC
OFSC Entity	• Custom Plugin: Asset Component Install Exchange Undo • Custom Plugin: Asset History
WACS SOAP IWS	W1GAstDtlBNo

Pick Up Order (Oracle Field Service Initiated)

This integration process is used to perform various operations including creation of Work Order and Work Request from Oracle Field Service to Oracle Utilities Work and Asset Cloud Service. For querying assets invoke the Oracle Utilities OFSC WACS Asset Query integration flow providing badge number/location type as the search criteria from Oracle Utilities Work and Asset Cloud Service.

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



Process Details

The integration process includes the following activities:

1. Oracle Field Service sends the work order create activity request to Oracle Utilities OFSC WACS Work Order integration process deployed on Oracle Integration Cloud.
2. Oracle Field Service sends the work request create to Oracle Utilities OFSC WACS Work Request integration process.
3. This will create related work order/work request in Oracle Utilities Work and Asset Cloud Service.
4. Any errors are captured through the global fault handler.
5. An optional email notification with error details are sent to the users configured in the WAMOFSC_Email_ID lookup.
6. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps lookup to 'true' to receive email notification when errors are generated.

Technical Details

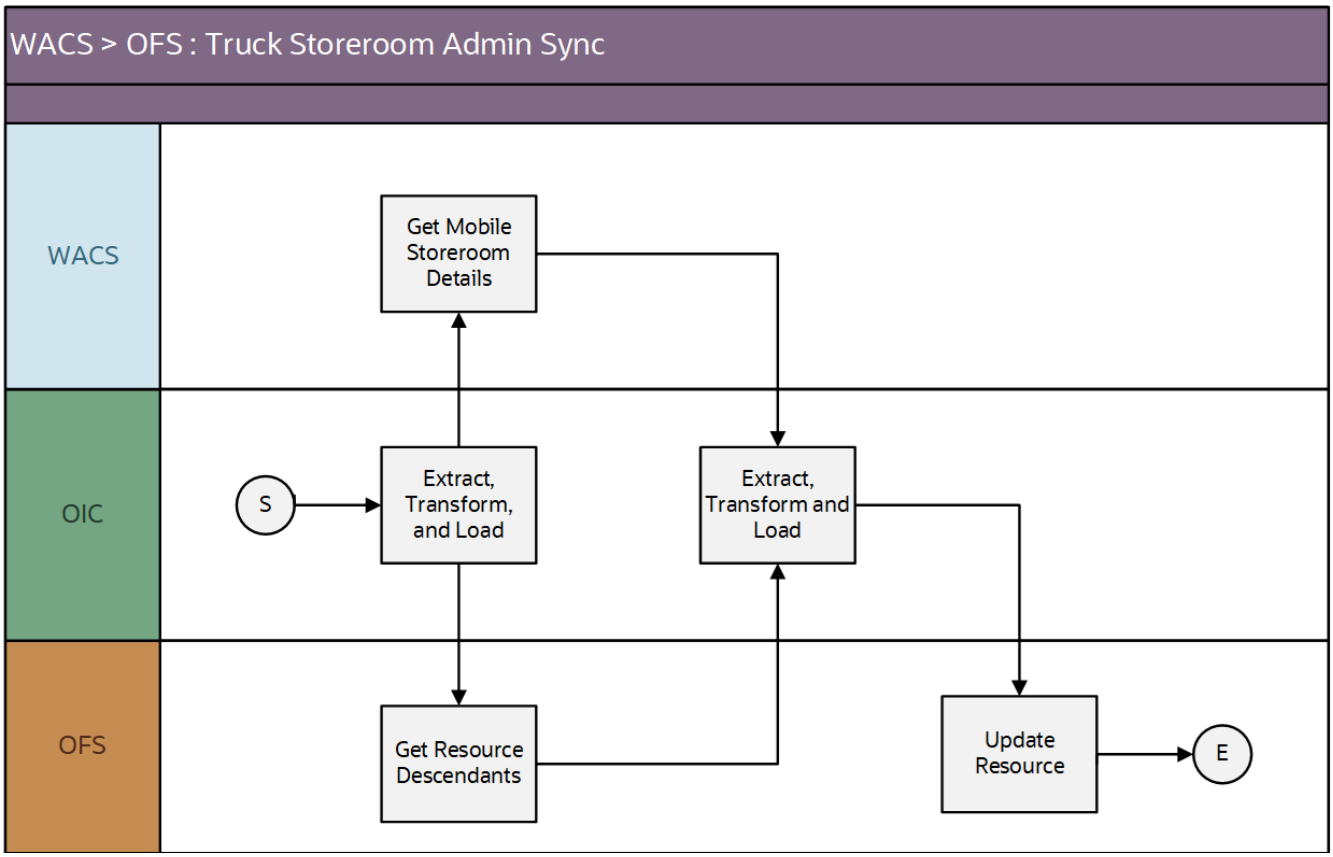
The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	• Oracle Utilities OFSC WACS Work Order • Oracle Utilities OFSC WACS Work Request • Oracle Utilities OFSC WACS Asset Query
Integration Project Name	OU WACS OFSC
OFSC Entity	Custom Plugin: pickUpWork
WACS SOAP IWS	• W1-CreateMobileWorkOrder • W1-CreMoblWR • W1-AssetQuery • W1-GetAssetLocationDetails

Truck Storeroom Admin Sync (Oracle Utilities Work and Asset Cloud Service Initiated)

This integration process is used to sync storeroom data from Oracle Utilities Work and Asset Cloud Service to Oracle Field Service where the storeroom type is Truck. Oracle Utilities Work and Asset Cloud Service will send only the active storerooms data at this time.

The following diagram shows a graphical representation of the Storeroom admin sync integration process:



Process Details

The integration process includes the following activities:

1. The Oracle Utilities WACS OFSC Storeroom Admin Sync integration process deployed on Oracle Integration Cloud is run to retrieve the active truck storeroom data from Oracle Utilities Work and Asset Cloud Service and send it to Oracle Field Service.
2. Run this integration process manually from Oracle Integration Cloud by scheduling the integration process to run on a scheduled date or clicking **Submit Now** from the menu of the activated sync integration process to initiate an instance of the integration. An optional language parameter can be entered to determine the description to retrieve from Oracle Utilities Work and Asset Cloud Service and to know in which language code the property name should be created in Oracle Field Service. The language parameter entered should be an ISO 2 letter language code; if the language parameter is not populated or blank, it is defaulted to English (en).
3. The integration process invokes the Oracle Utilities Work and Asset Cloud Service Synchronize Mobile Storeroom Details service to get the list of storerooms.
4. The integration process invokes Resource OFSC BO to get the list of existing resources for a specific bucket.

5. For each storeroom from the storeroom list returned by Oracle Utilities Work and Asset Cloud Service, filter only storerooms of TRUCK type and compare each storeroom with the list of existing resources from Oracle Field Service.
    a. If the resource from the list in Oracle Field Service does not exist in Oracle Utilities Work and Asset Cloud Service storeroom list, update the resource status as 'inactive' and send it to Oracle Field Service.
    b. If the resource from the list in Oracle Field Service exists in Oracle Utilities Work and Asset Cloud Service storeroom list, update the corresponding data in Oracle Field Service.
    c. If the storeroom from Oracle Utilities Work and Asset Cloud Service does not exist in Oracle Field Service, create a new record in Oracle Field Service.
    d. Invoke Resource OFSC BO to update the resource details in Oracle Field Service.
6. Any errors are captured through global fault handler.
7. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
8. Email notification is optional. Configure the property name email.flag in the WAMOFSC_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 Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities WACS OFSC Storeroom Admin Sync
Integration Project Name	OU WACS OFSC
OFSC BO/ Operation	• Resource/Get Resource Descendants • Resource/Update Resource
WACS SOAP IWS	W1-SynchronizeMobileStoreroomDetails

Truck Storeroom Inventory Snapshot Sync/Update (Oracle Field Service Initiated)

This integration process is used to sync inventory of each storeroom in Oracle Utilities Work and Asset Cloud Service into Oracle Field Service. The truck storeroom inventory can be sync in multiple ways:

Option 1: Storeroom Sync on Route Activation

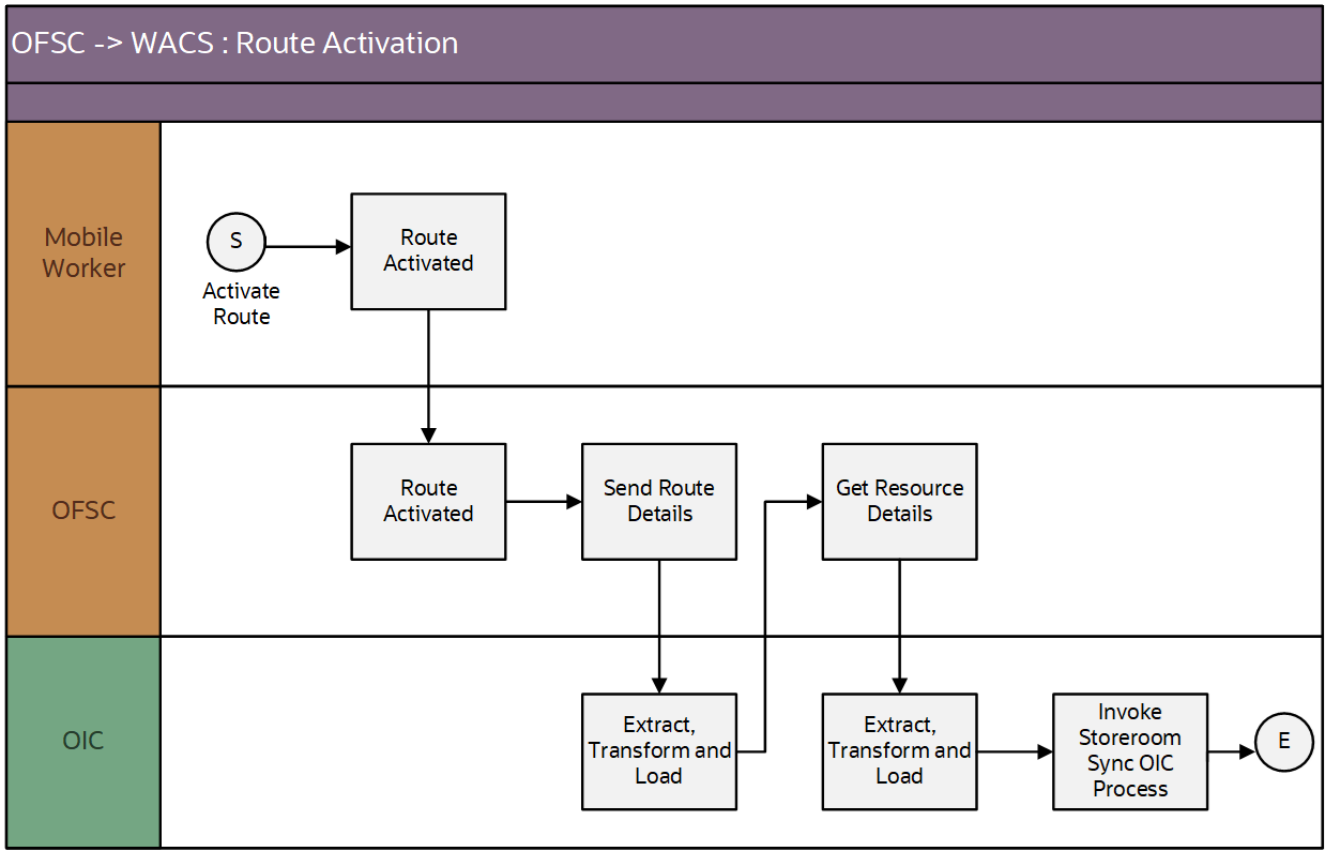
On route activation of a crew or an individual, check if there are any trucks associated with that crew or an individual. Then, sync the initial storeroom inventory.

The following Oracle Integration Cloud integration processes are involved to achieve this functionality:

- Oracle Utilities OFSC WACS Route Activation
- Oracle Utilities OFSC WACS Storeroom Sync

Oracle Utilities OFSC WACS Route Activation

The following diagram shows a graphical representation of the Oracle Utilities OFSC WACS Route Activation integration process.



Process Details

The integration process includes the following activities:

1. Oracle Field Service invokes Oracle Utilities OFSC WACS Route Activation process deployed on Oracle Integration Cloud when the "Route Activated" business event occurs (when a crew or an individual's route is activated in Oracle Field Service).

2. Integration process invokes “Resource Types” OFSC REST endpoint to get the resource type using REST Adapter.
3. If resource type is CR (Crew) or PR (Person), invoke OFSC “Resource” business object to get more details about the resource using Oracle Field Service adapter.
4. Invoke “Activity” OFSC business object to get all activities and check if this is a teamResourceId using the Oracle Field Service adapter. If the response is not empty, form a list of allresourceIds.
5. For each unique resourceId from the above list, invoke the “Resource” OFSC business object to get the resource information.
    a. If resource type is 'TR' and resource source is 'WACSTR' invoke Oracle Utilities OFSC WACS Storeroom Sync integration process with input parameters resourceId, resourceType and lastSyncDateTime as empty.
6. Else, process the next resource.
7. Any errors are captured through global fault handler.
8. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
9. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps Lookup to true to receive email notification when errors are encountered.

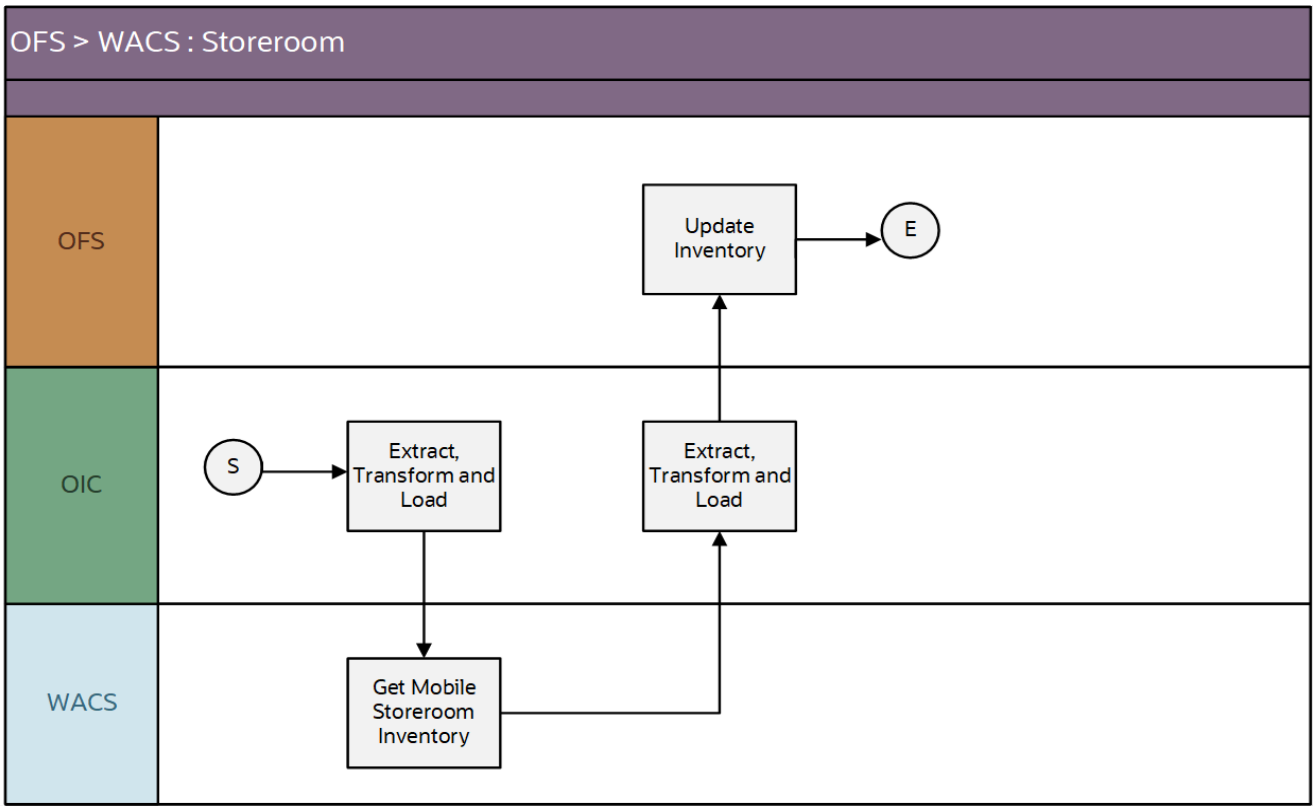
Technical Details

The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Route Activation
Integration Project Name	OU WACS OFSC
OFSC BO/ Operation	• Resource/Get Resource • Activity/Get Activities
OFSC REST URI	• URI: /rest/ofscMetadata/v1/resourceTypes • Method: GET
Target OIC integration process name	Oracle Utilities OFSC WACS Storeroom Sync

Oracle Utilities OFSC WACS Storeroom Sync

The following diagram shows a graphical representation of the Oracle Utilities OFSC WACS Storeroom Sync integration process:



Process Details

The integration process includes the following activities:

1. Oracle Utilities OFSC WACS Storeroom Sync integration process is invoked by another integration process and it takes these three input parameters: resourceId, resourceType and lastSyncDateTime.
2. If the resource type is 'TR' invoke W1-MobileStoreroomInventory WACS IWS to get the details of the resource using Oracle Utilities adapter.
3. If lastSyncDateTime is empty:
   a. Transform the data from Oracle Utilities Work and Asset Cloud Service to Oracle Field Service format.
   b. Invoke "bulkUpdateInventories" OFSC REST API to sync the truck storeroom inventory.

   Note: If lastSyncDateTime is empty, it is an initial sync.
4. If lastSyncDateTime is not empty:
   a. Invoke "Resource" OFSC business object to get resource inventory of a particular resourceId using the Oracle Field Service adapter.
   b. For each inventory entry from Oracle Utilities Work and Asset Cloud Service, check if the inventory exists in the list returned from Oracle Field Service in the above call.

a. If it exists in the list, then get the quantity retrieved from Oracle Field Service for this inventory and add or remove the quantity from Oracle Utilities Work and Asset Cloud Service and create a new entry for the new request to be made to Oracle Field Service bulkUpdateInventories.

b. If it does not exist in the list, add it to bulkUpdateInventories.

c. Invoke bulkUpdateInventories OFSC REST API with the new bulkUpdateInventory.

d. Invoke Resource OFSC BO for the resource merging existing inventory details with latest from Oracle Utilities Work and Asset Cloud Service.

5. Any errors are captured through global fault handler.
6. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
7. Email notification is optional. Configure the property name email.flag in the WAMOFSC_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 Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process.

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Storeroom Sync
Integration Project Name	OU WACS OFSC
OFSC BO/ Operation	Resource / Update Resource
OFSC REST URI	• URI: /rest/ofscCore/v1/resources/custom-actions/bulkUpdateInventories • Method: POST
WACS SOAP IWS	W1-MobileStoreroomInventory

Option 2: Scheduled Storeroom Sync

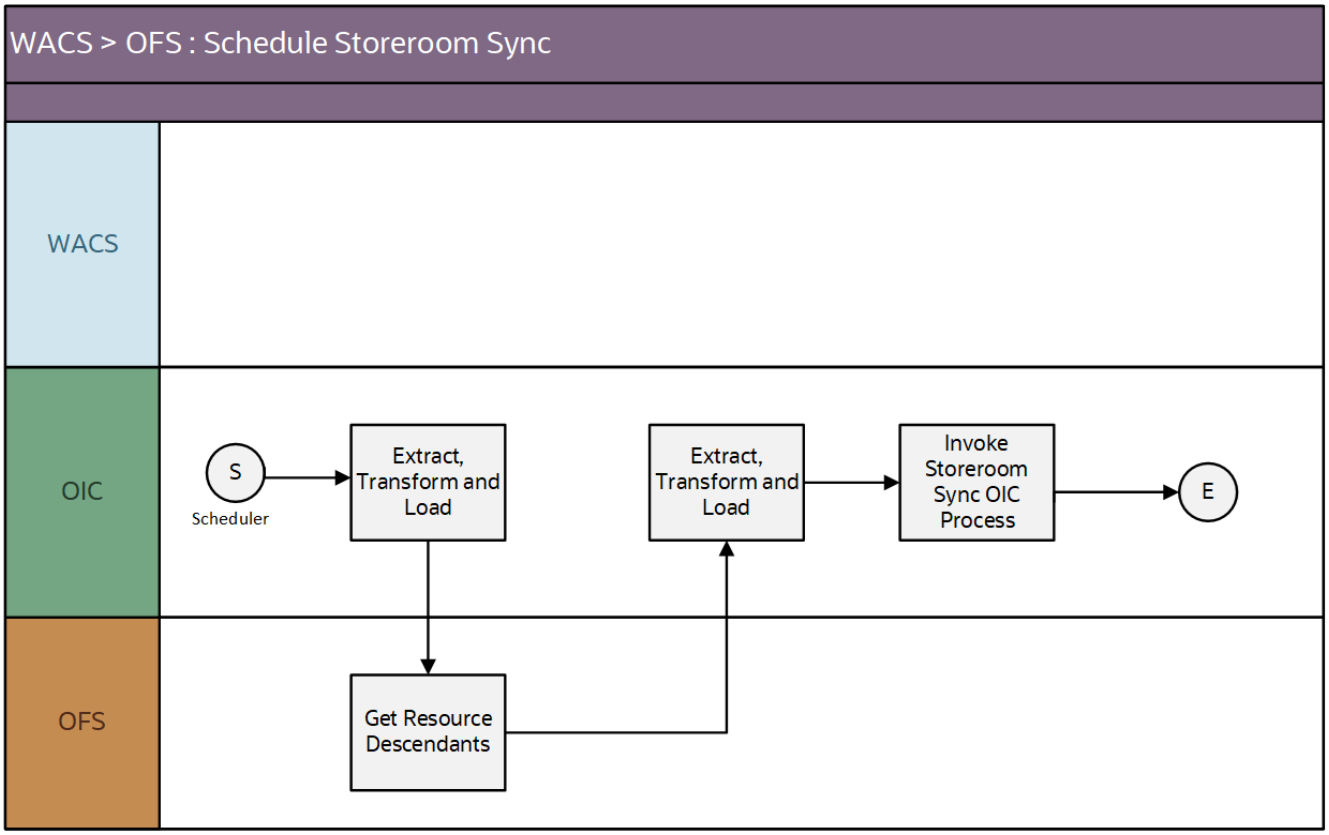
Batch scheduled from Oracle Integration Cloud to run at a specific time of day/week/month to run snapshot sync of all trucks synced between Oracle Utilities Work and Asset Cloud Service and Oracle Field Service.

The following Oracle Integration Cloud integration processes are involved to achieve this functionality:

- Oracle Utilities WACS OFSC Schedule Storeroom Sync
- Oracle Utilities OFSC WACS Storeroom Sync

Oracle Utilities WACS OFSC Schedule Storeroom Sync

The following diagram shows a graphical representation of the Oracle Utilities WACS OFSC Schedule Storeroom Sync integration process:



Process Details

The integration process includes the following activities:

1. Oracle Utilities WACS OFSC Schedule Storeroom Sync is a batch process deployed on Oracle Integration Cloud and scheduled to run on a regular basis or as needed basis or turned off.
2. Integration process invokes Oracle Field Service to get the list of resources that are descendants of the respective Oracle Field Service bucket configured in the system.
3. For each descendant check if the resource type of "TR" and "wam_resource_source": "WACSTR"
4. If the resourcetype is truck, invoke Oracle Utilities OFSC WACS Storeroom Sync OIC integration process with the resourceId, resourceType and lastUpdatedDateTime as empty as input parameters.
5. Any errors are captured through global fault handler.
6. An optional email notification with error details is sent to the users configured in the WAMOFSC_Email_ID lookup.
7. Email notification is optional. Configure the property name email.flag in the WAMOFSC_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 Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities WACS OFSC Schedule Storeroom Sync
Integration Project Name	OU WACS OFSC
OFSC REST URI	• URI: /rest/ofscCore/v1/resources/OHMeter/descendants • Method: GET
Target OIC integration process name	Oracle Utilities OFSC WACS Storeroom Sync

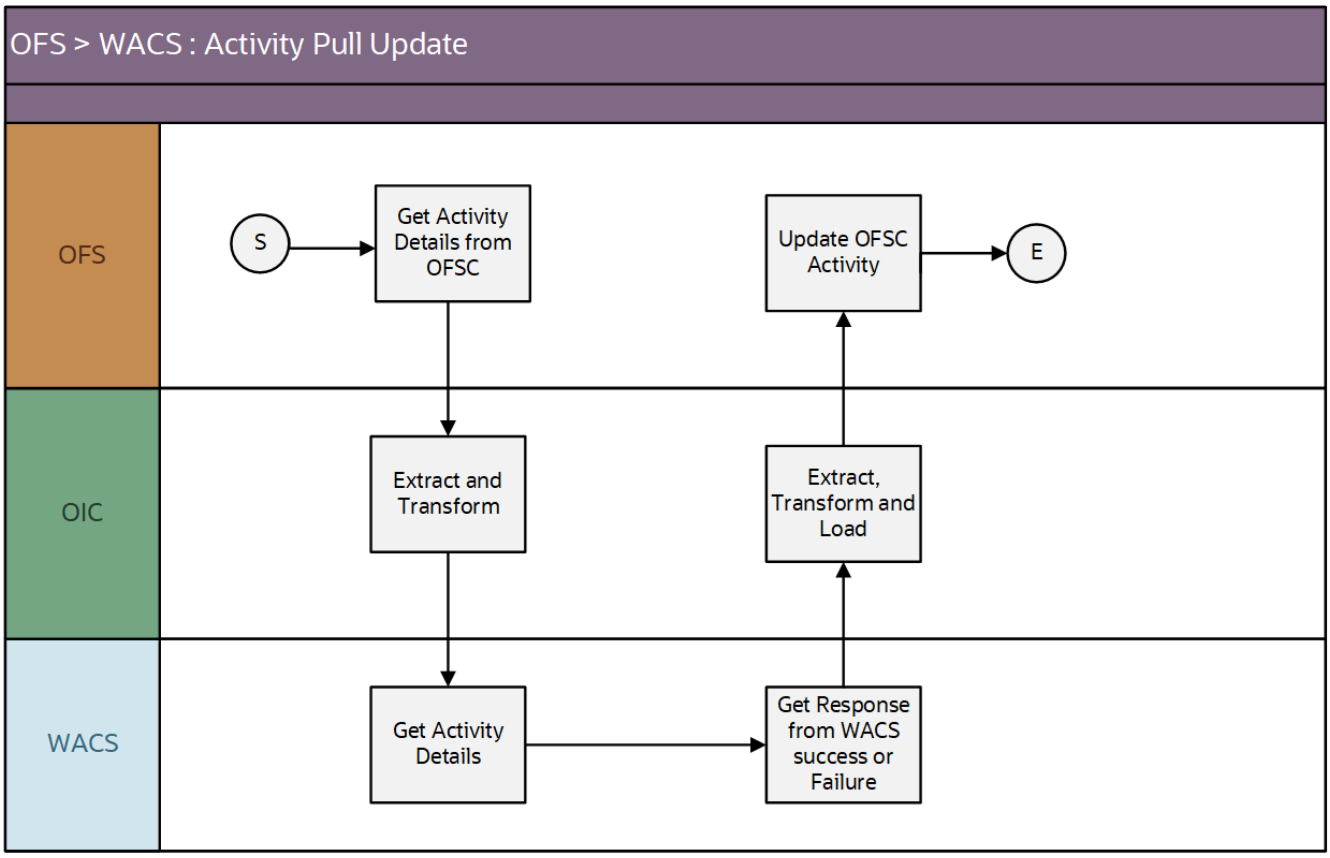
Oracle Utilities OFSC WACS Storeroom Sync

For information about the Oracle Utilities OFSC WACS Storeroom Sync integration process, refer to the Oracle Utilities OFSC WACS Storeroom Sync section.

Activity Pull Update (Oracle Field Service Initiated)

This integration process can be initiated by the crew from Oracle Field Service to pull the latest activity details including issued assets for which a material request was issued on the activity in Oracle Utilities Work and Asset Cloud Service.

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



Process Details

The integration process includes the following activities:

1. Oracle Utilities OFSC WACS Activity Pull Update is an event-based process deployed on Oracle Integration Cloud.
2. Oracle Field Service fetches the work activity details using "Get activity" OFSC BO. Transforms the request message from Oracle Field Service Cloud to request message for Oracle Utilities Work and Asset Cloud Service and invokes W1-WOActivityDetails inbound web service.
3. Transform the response from Oracle Utilities Work and Asset Cloud Service to request message for Oracle Field Service and invoke "Bulk Update Activity" OFSC BO.
4. Transform the response from Oracle Utilities Work and Asset Cloud Service to request message for Oracle Field Service and invoke "Bulk Update Activity" OFSC BO.
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 WAMOFSC_Email_ID lookup.
7. Email notification is optional. Configure the property name email.flag in the WAMOFSC_ConfigProps lookup to true to receive email notification when errors are generated.

Technical Details

The following table describes the integration processes and the respective Oracle Utilities Work and Asset Cloud Service and Oracle Field Service artifacts used in this integration process:

Artifacts	Value
Integration Process Name	Oracle Utilities OFSC WACS Activity Pull Update
Integration Project Name	OU WACS OFSC
OFS BO/Operation	• Activity/Get Activity • Activity/Bulk Update Activity • Inventory/Update Inventory
WACS SOAP IWS	W1-WOActivityDetails

Chapter 3

Configuring Oracle Utilities Work and Asset Cloud Service

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

- Configuring Admin Data
- Adding Oracle Integration Cloud Certificates
- Managing Catalog Services

Configuring Admin Data

To configure the Oracle Utilities Work and Asset Cloud Service setup for the integration:

1. Login to Oracle Utilities Work and Asset Cloud Service.
2. Create message senders. Refer to the Message Senders section for details.
3. Create outbound message types. Refer to the Outbound Message Types section for details.
4. Create an external system. Refer to the External System section for details.
5. Complete the master configuration.
6. Create activity types. Refer to the Admin Entities section for details.
7. Generate certificates. Refer to the Adding Oracle Integration Cloud Certificates section for more details.
8. Add the required Admin types.

Message Senders

Create a new message sender for each integration service initiated from Oracle Utilities Work and Asset Cloud Service.

To create a message sender:

1. Navigate to the **Message Sender** page from the **Admin** menu or from the **Search** menu.
2. Enter a unique message sender and its description.
3. Populate the following values:
   - Invocation Type: Real-time
   - Message Class: SOAPSNDR
   - Active: Select the checkbox.
   - MSG Encoding: UTF-8 message encoding
4. Select the **Context** tab and set values for the following context types:
   - HTTP Header: SOAPAction:"<operation name in Oracle Integration for Cloud Activated Integration wsdl url>"
   - HTTP Method (POST/GET): POST
   - HTTP Timeout: 60
   - HTTP Transport Method: SendReceive
   - HTTP URL 1: Set the Activated Integration end point URL by removing the ?wsdl from the URL.

     If the URL value does not fit, use the additional HTTP URL types to set the complete URL.
   - Message Namespace URI: Provide the namespace of the schema in the respective integration process.

     Important! Make sure the namespace does not include any extra spaces. Copy the namespaces into Notepad to check for any extra spaces.

5. In addition to the above values, from the following security types, add the corresponding security policy specific context types.
   - For Basic Auth Security type:
     - HTTP Login User: User ID to access the Oracle Integration Cloud flow.
     - HTTP Password: Password to access the Oracle Integration Cloud flow.
     - Sender Security Type: Basic
   - If the security policy used is OAuth Client Credentials, the additional configuration for the context types should be as follows:
     - OAuth Access Token URL : Identity service token url to retrieve the OAuth token for Oracle Integration Cloud Instance.

       The Token URL is of format: https://<idcs-tenant>/oauth2/v1/token
     - OAuth Client ID: OAuth Client ID for Client Credentials grant type of Oracle Integration Cloud Instance.
     - OAuth Client Secret: OAuth Client Secret for Client Credentials grant type of Oracle Integration Cloud Instance.
     - OAuth Grant Type: client_credentials
     - OAuth REST API Scope: OAuth Scope for Client Credentials grant type of Oracle Integration Cloud Instance.
     - Sender Security Type: OAUTH

Message sender configuration for integration services

Message Sender	Description	Message Namespace URI	HTTP Header	HTTP URL
Process Activity (create/update/cancel)				
WD_WO_PA	WAM process activity create/update message sender OFSC	http://ouaf.oracle.com/outbound/W1-WOActivityActiveOutboundMsg	SOAPAction: "OFSC_INT_WO_PA"	@EXT_PUB@OIC_Host:OIC_Port/ic/ws/integration/v2/flows/oracleutilities/project/OUTL-BA-WACS_OFSC_ACTIVITY_PROC/1.0/
WD_WO_CAN	WAM process activity cancel message sender for OFSC	http://ouaf.oracle.com/outbound/W1-WOActivityActiveOutboundMsg	SOAPAction: "OFSC_INT_WO_PA"	@EXT_PUB@OIC_Host:OIC_Port/ic/ws/integration/v2/flows/oracleutilities/project/ OUTL-BA-WACS_OFSC/OUTL-BA-WACS_OFSC_ACTIVITY_PROC/1.0/

Outbound Message Types

The following outbound message types are provided for each integration process.

On the **Admin** menu, navigate to the **Outbound Message Type** page. You can also navigate from the **Search** menu.

Add the following details to "create/update activity" outbound message type:

- **Outbound Message Type**: W1-WOACTAMSG
- **Description**: Process Activity (create/update activity) Outbound Message Type
- **Outbound Message BO**: W1-WOActivityActiveOutboundMsg
- **Priority**: 50

Add the following details to "cancel activity" outbound message type

- **Outbound Message Type**: W1-WOACTFMSG
- **Description**: Cancel Work Order Activity
- **Outbound Message BO**: W1-WOActivityFinalOutboundMsg
- **Priority**: 50

External System

To create a new external system to support the integration:

1. Navigate to the **External System** page from the **Admin** menu or from the **Search** menu.
2. Enter a unique external system and description.

   Example: Name = WD-EXT-ACT, Description = OFSC External System
3. Set the **Our Name in Their System** field to “WAM”.
4. Associate the outbound message types and message senders created to the external system.

   For each outbound message type, set the following:

   - **Outbound Message Type**: Outbound message type for the respective integration service
   - **Processing Method**: Real-time
   - **Message Sender**: Set the message sender created for the integration service
   - **Date/Time Format**: XSD
   - **Namespace Option**: Configured on sender

For more information about message senders and outbound message type for each integration service, refer to the Message Senders and External System sections respectively.

External system configuration for integration services

Example External System - WD-EXT-ACT

Integration Service	Outbound Message Type	Message Sender
Process Activity(create/ update)	W1-WOACTAMSG	WD_WO_PA
Process Activity(cancel)	W1-WOACTFMSG	WD_WO_CAN

Admin Entities

This section describes the entities required to support the integration.

The definition of each Activity Type for work activities that are interfaced to Oracle Field Service should include the following configuration:

- Outbound Activity Information
  - External System: <Created above> WD-EXT-ACT
    - Outbound Message Type: W1-WOACTAMSG, Usage: Add(W1AD)
    - Outbound Message Type: W1-WOACTFMSG, Usage: Cancel(W1CA)
    - Outbound Message Type: W1-WOACTAMSG, Usage: Update(W1UP)
- An optional list of Planned Service History
- The following completion events:
  - Create Any Service History (W1-CrAnyServiceHistComplEvtTyp)
  - Create Operational Reading (W1-CreateOperationalRead)
  - Update Worked Assets (W1-MobileUpdateWorkedAssets)
  - Remove Non-Tracked Asset (W1-RemoveNonTrackedAsset)
  - Remove Tracked Asset (W1-RemoveTrackedAsset)
  - Attach Component (W1-AttachComponent)
  - Install Non-Tracked Asset (W1-InstallNonTrackedAsset)
  - Install Tracked Asset (W1-InstallTrackedAsset)

Adding Oracle Integration Cloud Certificates

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

Managing Catalog Services

The catalog service is used by Oracle Integration Cloud to communicate with the respective application. It is configured in the **Catalog URL** field in the Oracle Integration Cloud connection page of Adapters.

To configure the catalog service in Oracle Utilities Work and Asset Cloud Service:

1. Login to Oracle Utilities Work and Asset Cloud Service.
2. Navigate to the **Web Service Catalog** page either from the **Admin** menu or the **Search** menu.

   The external system and inbound web services mentioned in the table in step 3 are added to the catalog.
3. To get the catalog URL, append "webservices/builtin/ServiceCatalog?wsdl" to the on-premises application.

   Example: http(s)://<WAM_HOST>:<WAM_PORT>/<ContextRoot>/webservices/builtin/ServiceCatalog?wsdl

   If you are using Oracle Utilities Work and Asset Cloud Service, the format should be: https://{host}:{port}/{tenant}/{domain}/{appName}/soap/api/iws/ServiceCatalog?WSDL

Following is the list of artifacts to be included in web service catalog:

Service Type	Service Name	Device Verification
External System	WD-EXT-ACT	WD-EXT-ACT External System - Field Work System
Inbound Web Service	W1-ExtMobileControlData	External Mobile Control Data
Inbound Web Service	W1-IntODCDtl	Interface Other Direct Charge Details
Inbound Web Service	W1-IntTMSDtl	Interface Timesheet Details
Inbound Web Service	W1-MblActCom	Mobile Activity Completion
Inbound Web Service	W1GAstDtlBNo	Get Asset Details by Badge Number
Inbound Web Service	W1-WOActivityDetails	Get Activity Details
Inbound Web Service	W1-ActivityMaterialUsage	Activity Material Usage
Inbound Web Service	W1-UpdateActivityStatus	Update Activity Status
Inbound Web Service	W1-CreateMobileWorkOrder	Create Mobile Work Order
Inbound Web Service	W1-CreMoblWR	Create Mobile Work Request
Inbound Web Service	W1-SynchronizeMobileStoreroomDetails	Synchronize Mobile Storeroom Details
Inbound Web Service	W1-MobileStoreroomInventory	Mobile Storeroom Inventory
Inbound Web Service	W1-AssetQuery	Asset Query
Inbound Web Service	W1-GetAssetLocationDetails	Get Asset/Location Details
Inbound Web Service	W1-ExtMobileActivityTypes	External Mobile Activity Types

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

Chapter 4

Configuring Oracle Field Service

For Oracle Field Service configuration information refer to the *Oracle Field Service Configurations for Oracle Utilities Work and Asset Cloud Service Integration to Oracle Field Service* included in this release. The documentation is available on Oracle Help Center.

Chapter 5

Importing, Configuring, and Testing Integration Connections

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

- Importing the Oracle Integration Cloud 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 Integration Cloud Project from Oracle Cloud Marketplace

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

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

1. Launch the Oracle Cloud Marketplace portal.
2. Click **Applications**.
3. Search for "Oracle Utilities Work and Asset Cloud Service".
4. Browse through the list of applications and select the pre-built integration project to import.
5. Click **GetApp**.
6. Review and accept "Oracle Standard Terms and Restrictions".
7. Click **Next**. My Oracle Support portal opens.
8. From the integration artifacts table, click the link to download WACS-OFSC Business Accelerator Project (OUTL-BA-WACS_OFSC-01.24.3000.car).
9. Perform these steps before importing the new Accelerator Project (.car) file into your Oracle Integration Cloud instance.
    a. Take a backup of the existing customized integrations and lookups.
    b. Perform cleanup by deactivating and deleting the existing flows, connections, lookups, and libraries used in the integration and the .car project file.

    Note: If your previous pre-built integration was project based (.car file), you will see:

    - The project is visible on the **Projects** page in your Oracle Integration Cloud instance.
    - The individual integration flows are visible on the Design-Integrations. Each integration flow is designated with an Accelerator and BUILT BY ORACLE message.
10. On the **Integrations** page, the individual integrations of the imported project file that are designated with a BUILT BY ORACLE message are displayed.

To import a project in Oracle Integration Cloud:

1. Login to Oracle Integration Cloud.
2. Navigate to **Projects**.
3. Click **Add**.
4. Select **Import Project** and drag-and-drop the .car file downloaded from Oracle Cloud Marketplace.

    Note: Make sure to select the **Anyone can edit, view, and monitor** checkbox.
5. The new project will show up in the list but with a "Configured" status due to the connections not being completed yet.
6. Click **Project Edit** and follow the verification and configuration steps documented in the sections below.

7. If all configurations are complete, activate the integration by:
   - Clicking **Activate** in the Design.
   - Or activating the latest deployment plan in the Deploy.
8. Verify if the OU WACS OFSC project is imported successfully.

Verifying the Project Import

To verify the OU WACS OFSC project import was successful:

1. Verify whether the following integrations having version 1.24.3000 are imported successfully, as seen in the **Integrations** section of the project:
   - Oracle Utilities WACS OFSC Activity Process
   - Oracle Utilities WACS OFSC Admin Data Sync
   - Oracle Utilities OFSC WACS Activity Complete
   - Oracle Utilities OFSC WACS Resource Usage Details
   - Oracle Utilities OFSC WACS Asset Query
   - Oracle Utilities OFSC WACS Activity Interim Status
   - Oracle Utilities OFSC WACS Work Request
   - Oracle Utilities OFSC WACS Work Order
   - Oracle Utilities OFSC WACS Activity Pull Update
   - Oracle Utilities OFSC WACS Route Activation
   - Oracle Utilities OFSC WACS Storeroom Sync
   - Oracle Utilities WACS OFSC Schedule Storeroom Sync
   - Oracle Utilities WACS OFSC Storeroom Admin Sync
2. Verify if the following connections are imported successfully, as seen in the **Connections** section of the project.
   - Oracle Utilities REST for WACS-OFSC
   - Oracle Utilities REST OFSC for WACS-OFSC
   - Oracle Utilities OFSC for WACS-OFSC
   - Oracle Utilities SOAP WACS for WACS-OFSC
3. Verify that the following lookups are imported successfully, as seen in the **Lookups** section of the project:
   - WAMOFSC_ActivityType
   - WAMOFSC_Email_ID
   - WAMOFSC_ConfigProps
   - WAMOFSC_Language
   - WAMOFSC_AttachmentBO
   - WAMOFSC_ActivityStatus

- WAMOFSC_SegmentedActivityTypes
- WAMOFSC_ActivityTypeConfigProps
- WAMOFSC_ActivityLinkType
- WAMOFSC_BacklogGroup
- WAMOFSC_ServiceArea

4. Verify that the following libraries are imported successfully, as seen in the **Libraries** section of the project:
   - WAMOFSC_AddOffsetToDateTime
   - WAMOFSC_ConcatAddress
   - WAMOFSC_ReplaceSpecialCharacters

Configuring Connections in Oracle Integration Cloud

After the projects are imported and verified, the respective connections must be configured.

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

- Configuring Oracle Utilities SOAP WACS for WACS-OFSC Connection
- Configuring Oracle Utilities OFSC for WACS-OFSC Connection
- Configuring Oracle Utilities REST for WACS-OFSC Connection
- Configuring Oracle Utilities REST OFSC for WACS-OFSC Connection

Configuring Oracle Utilities SOAP WACS for WACS-OFSC Connection

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

To configure the Oracle Utilities SOAP WACS for WACS-OFSC connection:

1. Add the Oracle Utilities Work and Asset applications catalog to the **CatalogURL** field on the Oracle Integration Cloud **Connection** page.

   In the on-premises applications, make sure that the catalog is in the following format:

   http(s)://<WAM_HOST>:<WAM_PORT>/<ContextRoot>/webservices/builtin/ServiceCatalog?wsdl

   If you are using Oracle Utilities Work and Asset Cloud Service, the format should be: https://{host}:{port}/{tenant}/{domain}/{appName}/soap/api/ iws/ ServiceCatalog?WSDL

2. On the **Security policy** tab, select the respective security policy from the drop-down list.
3. If you are using Basic Authentication policy in the Message Sender configured in Oracle Utilities Work and Asset Cloud Service:
   a. Select Basic Authentication from the drop-down list.

b. Enter the username and password authenticating the catalog configured for the application.

4. If the security policy used is OAuth Client Credentials in the Message Sender configured in Oracle Utilities Work and Asset Cloud Service:
   a. Select OAuth Client Credentials from the options.
   b. Make sure the OAuth client configuration is completed in Oracle Identity Cloud Service and have the respective OAuth Credentials details for your application.
      - Access Token URI: The URL from which to obtain the access token for authenticating application catalog.
      - Client ID: The client identifier issued to the client application during registration process.
      - Client Secret: The client secret of the client application.
      - Scope: The scope of the client application
        - For on-premises: https://host:port/ouaf/*
        - For cloud: ugbucs-<product>-<environment>-<domain_name>/*

        Example: ugbucs-WAC-DEV01-Z915U1/*
      - Auth Request Media Type: This is an optional parameter that can be kept blank.
      - Client Authentication: This is an optional parameter. By default, it takes the Send client credentials as basic auth header.
        - Send client credentials as basic auth header: Pass the client ID and client secret in the header as basic authentication.
        - Send client credentials in body: Pass the client ID and client secret in the body as form fields.
5. In case of Oracle Utilities Work and Asset on-premises, configure the agent in the connection.
   a. In the **Agent Group** section, click **Configure Agents**.
   b. Select the agent group from the list created in Creating an Agent Group.
6. Click **Test** at the upper-right corner to test the connection.
7. After the connection is tested successfully, click **Save**.

Configuring Oracle Utilities OFSC for WACS-OFSC Connection

This connection is used to communicate with Oracle Field Service using the Oracle Field Service adapter.

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

1. Enter the API URL in the **Field Service Cloud API URL** field on the Oracle Integration Cloud **Connection** page.
2. Enter the **Instance ID** of the Oracle Field Service application.
3. From the **Security Policy** drop-down list, select **Client Credentials**.

Note: Please note that **Basic Authentication** is deprecated in this release.

4. Provide **ClientID** and **Client Secret** (you can retrieve them from the Oracle Field Service environment).

   Note: For more information, refer to the Oracle Field Service documentation.

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

Configuring Oracle Utilities REST for WACS-OFSC Connection

This connection is used to communicate with Oracle Field Service using the REST adapter. It is used in the Resource usage flows (Oracle Field Service initiated flows triggered by Oracle Field Service).

Edit the Oracle Utilities REST for WACS-OFSC connection and test it to make sure it is successful. Click **Save**.

Configuring Oracle Utilities REST OFSC for WACS-OFSC Connection

This connection is used to communicate with the OFSC API using the REST adapter. It is used in the Admin sync flow inbound to Oracle Field Service.

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

1. On the **Connection** page, from the **Connection Type** drop-down list, select **REST API Base URL**.
2. Do not configure the **TLS version**.
3. Enter "https://<ofs-instance>.fs.ocs.oraclecloud.com/rest" in the **Connection URL** field.
4. From the **Security Policy** drop-down list, select **Basic Authentication**.
5. Enter the user name and password authenticating the connection URL configured for Oracle Field Service. Click **Test** to test the connection.
6. After the connection is tested successfully, click **Save**.

Configuring Agent (if applicable)

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

This section includes:

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

Possible Combinations

The possible combination of an agent group is:

- Oracle Utilities Work and Asset Cloud 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.

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

To create an agent group:

1. Login to Oracle Integration Cloud.
2. On the **Home** page, navigate to **Integration** > **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.
   - Description
5. Click **Create**.

Downloading and Installing On-Premises Agent

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, refer to the **Download and Run the Connectivity Agent Installer** section in the Oracle Integration Cloud documentation.

To install an on-premises agent:

1. Login to Oracle Integration Cloud.
2. On the **Home** page, navigate to **Integration** > **Agents**.
3. Click **Download**.
4. Select **Connectivity Agent**.
5. Select **Save File** when prompted to save the file to a directory location on your on-on-premises host.
6. Navigate to that directory and unzip **oic_connectivity_agent.zip**.
7. Change the file permissions to be executable.

8. Download the Oracle Utilities Work and Asset Cloud Service certificate and upload it to agent. Run the following command from the agent Home directory.

   ```
   keytool -import -file directoryPath/sample.crt -alias SampleCert -
   keystore <Agent_Home>/agenthome/agent/cert/keystore.p12
   ```

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

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

      Example: https://OIC_host:OIC_port

   b. Add the username and password in the config file itself.

   c. Provide the agent_GROUP_IDENTIFIER. It should be the Agent Group Identifier generated when creating an agent group created in Oracle Integration Cloud.

   d. Set the proxy parameters if the connectivity agent is used with a proxy in the on-premises environment. Save the InstallerProfile.cfg file.

   e. 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 Oracle Utilities Adapter with Oracle Integration documentation.

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

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

   g. Provide the Oracle Integration Cloud credentials when prompted, if they are not added in the InstallerProfile.cfg file.

   h. Wait for a successful installation and "Agent started successfully" 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 **Integration** > **Agents** in Oracle Integration Cloud.
2. Check if the agent count for your **Agent Group** is increased by one.
3. Click the number to view the agent details.

For more details, refer to Oracle Integration Cloud documentation.

Setting up Certificates for Security

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

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

To download the Oracle Utilities Work and Asset Cloud Service certificate:

1. Login to Oracle Utilities Work and Asset Cloud Service.
2. Click the URL on the top-left corner.

3. On the **Security** tab, click **View Certificate**.
4. On the **Details** tab, click **Export**.
5. Save the certificate.

To upload the certificate to Oracle Integration Cloud:

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

Chapter 6

Configuring Lookups, Error Handling, and Email Notifications

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

Configuring Lookups

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

Lookup Name	Integration Name	Purpose
WAMOFSC_AttachmentBO	Oracle Utilities OFSC WACS Activity Complete	Translates OFSC attachment MIME type to WAM BO name. **Note**: Only on the edit of a service history, can we add an attachment to a service history. If a specific file type cannot be attached at service history, check if the corresponding file type is mentioned in this lookup; add it if is missing. Also, verify if the respective MIME type is available in OFSC properties wam_upload_attachment_1 to wam_upload_attachment_5.
WAMOFSC_ActivityLinkType	Oracle Utilities WACS OFSC Activity Process	Translates the WAM Activity Link Type to OFSC Activity Link Type. **Note**: Configure the OFSC second activity link label.
WAMOFSC_ActivityType	• Oracle Utilities WACS OFSC Activity Process • Oracle Utilities OFSC WACS Activity Pull Update	Translates the WAM Activity Type to OFSC Activity Type.

Lookup Name	Integration Name	Purpose
WAMOFSC_Email_ID	• Oracle Utilities OFSC WACS Activity Interim Status • Oracle Utilities WACS OFSC Activity Process • Oracle Utilities OFSC WACS Resource Usage Details • Oracle Utilities OFSC WACS Work Order • Oracle Utilities OFSC WACS Activity Complete • Oracle Utilities WACS OFSC Admin Data Sync • Oracle Utilities OFSC WACS Work Request • Oracle Utilities OFSC WACS Asset Query • Oracle Utilities OFSC WACS Activity Pull Update • Oracle Utilities OFSC WACS Route Activation • Oracle Utilities WACS OFSC Schedule Storeroom Sync • Oracle Utilities OFSC WACS Storeroom Sync • Oracle Utilities WACS OFSC Storeroom Admin Sync	Used to configure the email IDs of the respective users. Under the Email_Id column where the value of Recipient is "to", add comma separated email IDs to send an email to multiple users. Do not change or add any values under the Recipient column.

Lookup Name	Integration Name	Purpose
WAMOFSC_ConfigProps	• Oracle Utilities OFSC WACS Resource Usage Details • Oracle Utilities OFSC WACS Activity Complete • Oracle Utilities WACS OFSC Admin Data Sync • Oracle Utilities OFSC WACS Activity Interim Status • Oracle Utilities WACS OFSC Activity Process • Oracle Utilities OFSC WACS Activity Pull Update • Oracle Utilities OFSC WACS Work Order • Oracle Utilities OFSC WACS Work Request • Oracle Utilities OFSC WACS Route Activation • Oracle Utilities OFSC WACS Storeroom Sync • Oracle Utilities WACS OFSC Storeroom Admin Sync • Oracle Utilities WACS OFSC Schedule Storeroom Sync • Oracle Utilities OFSC WACS Asset Query	Used for configurable properties.
WAMOFSC_Language	Oracle Utilities WACS OFSC Admin Data Sync	Translates the language code from WAM to OFSC.
WAMOFSC_ActivityStatus	Oracle Utilities OFSC WACS Activity Interim Status	Translation between WAM Activity status and the OFSC status.
WAMOFSC_ SegmentedActivityTypes	Oracle Utilities WACS OFSC Admin Data Sync	Used to identify activity types in OFSC that needs segmentation.
WAMOFSC_ActivityTypeConfigProps	Oracle Utilities WACS OFSC Admin Data Sync	Used to sync between the two systems
WAMOFSC_SimplifiedWAMActivityStatus	Oracle Utilities OFSC WACS Asset Query	Translation between WAM Activity Status to simplified OFS Activity Status.
WAMOFSC_BacklogGroup	Oracle Utilities WACS OFSC Activity Process	Maps backlog group to the bucket name. An OFS activity's initial resource bucket is derived from the WACS activity's backlog group if the wam.bucket.assignment.group property of the WAMOFSC_ConfigProps lookup is set to "BACKLOG".

Lookup Name	Integration Name	Purpose
WAMOFSC_ServiceArea	Oracle Utilities WACS OFSC Activity Process	Maps service area to the bucket names. An OFS activity's initial resource bucket is derived from the WACS service area if the wam.bucket.assignment.group property of the WAMOFSC_ConfigProps lookup is set to "SERVICE_AREA"

Editing Lookups

To edit a lookup:

1. Login to Oracle Integration for Cloud.
2. Navigate to **Project**s > **OU WACS OFSC** > **Lookups**.
3. Select the look up to edit.
4. Make the necessary changes.
5. Click **Save** and **Close**.

Configuration Properties

WAMOFSC_ConfigProps lookup contains the properties that can be defaulted in the integration. It also contains a flag to enable email notifications.

Property Name	Sample Value	Description	Used in Integration Process Name
source.system	WAM	Defines the WAM product code	Oracle Utilities WACS OFSC Activity Process Oracle Utilities OFSC WACS Activity Complete
asset.inventory.type	Asset	Defines asset inventory type	Oracle Utilities WACS OFSC Activity Process
email.flag	true	Configures the optional email notification. If the value is set to true, email notification will be sent to the configured users.	Oracle Utilities WACS OFSC Admin Data Sync Oracle Utilities WACS OFSC Activity Process Oracle Utilities OFSC WACS Resource Usage Details Oracle Utilities OFSC WACS Activity Complete

Property Name	Sample Value	Description	Used in Integration Process Name
mat.inventory.type	Material	Inventory Type	Oracle Utilities WACS OFSC Activity Process Oracle Utilities OFSC WACS Activity Complete
ofsc.bucket	OHMeter	Configures the bucket name available in OFSC to assign the tasks. Records the OFS resource bucket name that is used if a bucket name cannot be derived from the WACS service area (when the wam.bucket.assignment.group property is set to "SERVICE_AREA") or the WACS activity's backlog group (when the wam.bucket.assignment.group property is "BACKLOG")	Oracle Utilities WACS OFSC Activity Process
activeFlag.default	true	Used for enumeration property values and workskill creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkill.sharing.default	summary	Default sharing used for workskill creation	Oracle Utilities OFSC WACS Activity Complete Oracle Utilities WACS OFSC Activity Process Oracle Utilities WACS OFSC Admin Data Sync
workSkillProperty.type.default	string	Default type used for workskill property creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkillProperty.entity.default	activity	Default entity used for workskill property creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkillProperty.gui.default	text	Default GUI used for workskill property creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkillProperty.nameSuffix.default	needed	Name suffix default used for workskill property creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkillCond.actvtySameSkillMaxWorker.default	3	Default value for maximum number of people with the same work skill allowed to work simultaneously in an activity used for workskill condition creation	Oracle Utilities WACS OFSC Admin Data Sync
workSkillCond.function.default	in	Default function used for workskill condition creation	Oracle Utilities WACS OFSC Admin Data Sync

Property Name	Sample Value	Description	Used in Integration Process Name
wam.handleTextFileDecoding	true	Default value used for Decoding	Oracle Utilities OFSC WACS Activity Complete
wam.timeZoneIANA	America/Los_Angeles	Default value for timezone	Oracle Utilities OFSC WACS Activity Complete
default.user.flag	false	Default value of user flag	Oracle Utilities OFSC WACS Work Order
default.userId	OFSCUSER	Default user ID	Oracle Utilities OFSC WACS Work Order
issuedAsset.inventory.type	issuedAsset	Inventory type for issued Asset	Oracle Utilities WACS OFSC Activity Process
mobileStoreroom.language.default	en	Default language value	Oracle Utilities WACS OFSC Storeroom Admin Sync
mobileStoreroom.timeZone.default	America/New_York	Default timezone	Oracle Utilities WACS OFSC Storeroom Admin Sync
issuedComponent.inventory.type	issuedComponent	Inventory type for issued component	Oracle Utilities WACS OFSC Activity Process
mobileStoreroom.resource.type	TR	Truck type	Oracle Utilities WACS OFSC Storeroom Admin Sync
mobileStoreroom.resource.source	WACSTR	Truck resource	Oracle Utilities WACS OFSC Storeroom Admin Sync
mobileStoreroom.organization	default	Default value for mobile storeroom	Oracle Utilities WACS OFSC Storeroom Admin Sync
controlDataEntities.default	yes	Default type used to check whether to sync controlDataEntity properties to OFSC. By default, it is set to 'yes'.	Oracle Utilities WACS OFSC Admin Data Sync
resourceTypes.default	yes	Default type used to check whether to sync resourceTypes properties to OFSC. By default, it is set to 'yes'.	Oracle Utilities WACS OFSC Admin Data Sync
assetAttributes.default	yes	Default type used to check whether to sync asset attributes characteristics to OFSC. By default, it is set to 'yes'.	Oracle Utilities WACS OFSC Admin Data Sync
search.dateFrom	(2022-03-01)yyyy-mm-dd	Default value used to store date for searching activity in OFSC	Oracle Utilities WACS OFSC Activity Process
createEquipmentWorkSkills.flag	no	Flag used to check whether to create equipment workskills in OFSC. By default, it is set to 'no'.	Oracle Utilities WACS OFSC Admin Data Sync

Property Name	Sample Value	Description	Used in Integration Process Name
workSkill.Equipment.sharing.default	summary	Default sharing used for equipment workskill creation	Oracle Utilities WACS OFSC Admin Data Sync
gis.integration.enabled	false	Flag used to check whether to enable ArcGIS-OFS integration	Oracle Utilities WACS OFSC Activity process
workSkillCond.actvtyMaxEquipment.default	3	Default value for maximum number of equipment with the same work skill allowed to work simultaneously in an activity used for workskill condition creation.	Oracle Utilities WACS OFSC Admin Data Sync
wam.active.default	true	Default value used for active status	Oracle Utilities WACS OFSC Activity Process
lock.functionality	true	Default value used to enable the lock functionality in OFSC.	Oracle Utilities WACS OFSC Activity Process
lock.functionality	true	Default value used to enable the lock functionality in OFSC.	Oracle Utilities WACS OFSC Activity Process
construction.inventory.type	construction_tasks	Default label of construction inventories	Oracle Utilities WACS OFSC Activity Process
construction.completed.inventory.type	finished_tasks	Default label of construction work completed task inventories	Oracle Utilities WACS OFSC Activity Process
ofsc.attachments.limit	1	Default value of number of attachments that can be added in OFS	Oracle Utilities WACS OFSC Activity Process
serviceHistorySearch.months	24	Default number of months and this is used to retrieve service histories that are available for last number of months as specified for an asset.	Oracle Utilities OFSC WACS Asset Query
measurementSearch.months	24	Default number of months and this is used to retrieve measurements that are available for last number of months as specified for an asset.	Oracle Utilities OFSC WACS Asset Query
activitySearch.months	24	Default number of months and this is used to retrieve activities for last number of months as specified for an asset.	Oracle Utilities OFSC WACS Asset Query

Property Name	Sample Value	Description	Used in Integration Process Name
wam.bucket.assignment.group	BACKLOG	Default value used in order to assign activity to bucket in OFS. Determines whether an OFS activity's initial resource bucket is derived from the WACS service area or the WACS activity's backlog group. If the property's value is "BACKLOG", the backlog group is used to derive the initial resource bucket. If the property's value is "SERVICE_AREA", the service area is used to derive the initial resource bucket	Oracle Utilities WACS OFSC Activity Process

Error Handling

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

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

Error Handling Ways

In this integration, the errors are handled in different ways 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 the respective system in the same 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 error information is sent back to the respective system as a fault.

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.

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 fault occurs, the error information is sent to the source system and an optional email notification is sent to the respective user.

Summary of Integration Error Handling

Integration Process: Oracle Utilities WACS OFSC Admin Data Sync

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WAM IWS or OFS API is not accessible	Process Stop	Email	Resubmit the flow from OIC.

Integration Process: Oracle Utilities WACS OFSC Activity Process

Type of Error	Action	Notification Type	Retry
Business Fault Example: Invalid activity type	Continue	Email	Make sure the activity type exists in WACS and OFS, and then resend the request from WACS.
Remote Fault Example: Child integration flow is not active	Process Stop	Email	Ensure "Activity Pull Update" integration flow is active and then resend the request from WACS.
Remote fault Ex: OFS API invocation error	Process Stop	Email	Resend the request from WACS.
Attachment file size exceeded	Process Stop	No notification is sent. Error message is replied to WACS.	Resend the request from WACS after fixing the attachment size issue.

Type of Error	Action	Notification Type	Retry
Attachment count exceeded	Process Stop	No notification is sent. Error message is replied to WACS.	Resend the request from WACS after addressing the attachments count issue.

Integration Process: Oracle Utilities OFSC WACS Activity Complete

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WAM IWS or OFS API is not accessible	Process Stop	Email	Resubmit the flow from OIC.

Integration Process: Oracle Utilities OFSC WACS Resource Usage Details

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS invocation error	Process stop	Email	Once the service is up, resend the request from the respective OFS screen.

Integration Process: Oracle Utilities OFSC WACS Activity Interim Status

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS invocation error	Process stop	Email	Resubmit the error instance from OIC once WACS IWS is accessible.

Integration Process: Oracle Utilities OFSC WACS Asset Query

Type of Error	Action	Notification Type	Retry
Business Fault Example: Missing data, such as: • Location/Organization is missing. • Invalid location for asset installation. • Asset does not exist.	Process Stop	Email	Perform asset query again with valid values, from OFS.
Remote Fault Example: WACS IWS invocation error	Process Stop	Email	Perform asset query once WACS IWS is accessible or up.

Integration Process: Oracle Utilities OFSC WACS Work Order

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS or OFS REST API invocation error	Process stop	Email	Resubmit the error instance from OIC.

Integration Process: Oracle Utilities OFSC WACS Work Request

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS or OFS REST API invocation error	Process stop	Email	Resubmit the error instance from OIC.

Integration Process: Oracle Utilities WACS OFSC Storeroom Admin Sync

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS or OFS REST API invocation error	Process stop	Email	Resubmit the error instance from OIC. Or, run the scheduler flow manually.

Integration Process: Oracle Utilities OFSC WACS Storeroom Sync

Type of Error	Action	Notification Type	Retry
Business Fault Example: If the truck sent from OFS does not exist in WACS	Process stop	Email	Ensure both WACS and OFS data is in sync. Then, run the Schedule Storeroom Sync OIC flow.
Remote Fault Example: WACS IWS invocation error	Process stop	Email	Once WACS service is accessible, run the Schedule Storeroom Sync OIC flow.

Integration Process: Oracle Utilities WACS OFSC Schedule Storeroom Sync

Type of Error	Action	Notification Type	Retry
Remote Fault Example: If child OIC flow is not accessible	Process stop	Email	Resubmit the error instance from OIC. Or, run the scheduler flow manually.

Integration Process: Oracle Utilities OFSC WACS Route Activation

Type of Error	Action	Notification Type	Retry
Remote Fault Example: If store room sync child OIC flow is not accessible	Process stop	Email	User has to retry the activation from OFS.

Integration Process: Oracle Utilities OFSC WACS Activity Pull Update

Type of Error	Action	Notification Type	Retry
Remote Fault Example: WACS IWS invocation error or OFS API invocation error	Process stop	Email	If it is a WACS initiated update, resend the activity update request from WAM through the Process Activity flow. If it is an OFS initiated update request, perform Refresh Activity from OFS.

Note: Please note the following:

- Make sure all Oracle Integration Cloud lookups are configured with valid data.
- In case of the Oracle Field Service initiated flows that are event based, if Oracle Field Service to Oracle Integration Cloud communications fails, Oracle Field Service will retry the error events until the Oracle Integration Cloud communication is successful.
- The time limit is 36 hours. After that, all event subscriptions will be deleted in Oracle Field Service.

Resubmitting the Error Instances in Oracle Integration Cloud

In this integration, the flows initiated by Oracle Field Service are asynchronous flows, and the resubmit option is available only for asynchronous flows.

To resubmit the error instances in Oracle Field Service:

1. Login to Oracle Field Service.
2. Navigate **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. Login to Oracle Integration Cloud.

2. Navigate to **Projects** > **OU WACS OFSC** > **Lookups**.
3. Edit the **WAMOFSC_ConfigProps** lookup.

   Change the **email.flag** property value to 'true'.
4. Edit the **WAMOFSC_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 WAMOFSC_Email_ID lookup, do not edit the values provided under the **Recipient** column.

Chapter 7

Extension Libraries in Oracle Integration Cloud

The extension libraries provide a means to register and organize JavaScript for use in integrations. Library functions are automatically available for you to drag from the **Actions** palette to your orchestration integrations.

This integration includes the following extension libraries:

Extension Library	Function	Description	Used in Integration Process
WAMOFSC_AddOffsetTo DateTime	WAMOFSC_addOffsetTo DateTime	Adds the offset needed for conversion.	Oracle Utilities OFSC WACS Activity Complete
WAMOFSC_ConcatAddress	WAMOFSC_ConcatAddress	Concatenates the address information.	Oracle Utilities WACS OFSC Activity Process
WAMOFSC_ReplaceSpecialC haracters	WAMOFSC_replaceSpecialC haracters	Replace special characters with respective codes.	Oracle Utilities WACS OFSC Activity Process

The same extension libraries can be accessed from the **Libraries** page in Oracle Integration Cloud. For more information about extension libraries, refer to the Oracle Integration Cloud documentation at: https://docs.oracle.com/en/cloud/paas/integration-cloud-service/index.html

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:

- Prerequisites
- Activating Integration Flows
- Testing the Integration Flows

Prerequisites

Make sure the catalog in Oracle Utilities Work and Asset Cloud Service is configured completely to activate an integration process.

Activating Integration Flows

To activate the integration flows:

1. Login to Oracle Integration Cloud.
2. From **Home** page, navigate to the integration to activate.
3. Drag the slider for that integration. When prompted to enable tracing, click **Yes** to view the instances.
4. 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 WACS OFSC Activity Process	https://OIC_Host:OIC_Port/ic/ws/integration/v2/flows/oracleutilities/project/OUTL-BA-WACS_OFSC/OUTL-BA-WACS_OFSC_ACTIVITY_PROC/1.0/	WAM/WACS
Oracle Utilities OFSC WACS Activity Complete	https://OIC_Host:OIC_Port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_ACTIVITY_COMP /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.
Oracle Utilities WACS OFSC Admin Data Sync	https://OIC_Host:OIC_Port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-WACS_OFSC_ADMIN_SYNC%7C01.00.0000 / schedule/jobs	An OIC initiated flow that can be triggered by clicking **Run** (play icon) and selecting **Submit Now**.
Oracle Utilities OFSC WACS Resource Usage Details	https://OIC_Host:OIC_Port/ic/api/integration/v2/flows/rest/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_RES_USAGE_SEND / 1.0/resourceUsage	OFSC

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities OFSC WACS Asset Query	• https://OIC_HostOIC_Port/ic/api/integration/ v2/flows/rest/project/OUTL-BA-WACS_OFSC/ OUTL-BA-OFSC_WACS_ASSET_QUERY /1.0/ assetQuery • https://OIC_Host:OIC_Port/ic/api/ integration/ v2/flows/rest/project/OUTL-BA-WACS_OFSC/ OUTL-BA-OFSC_WACS_ASSET_QUERY/1.0/ assetQueryDetailsPickup • https://OIC_Host:OIC_Port/ic/api/ integration/ v2/flows/rest/project/OUTL-BA-WACS_OFSC/ OUTL-BA-OFSC_WACS_ASSET_QUERY/1.0/ assetQueryDetails • https://OIC_Host:OIC_Port/ic/api/ integration/ v2/flows/rest/project/OUTL-BA-WACS_OFSC/ OUTL-BA-OFSC_WACS_ASSET_QUERY/1.0/ assetQueryDetailsHistory	OFSC
Oracle Utilities OFSC WACS Activity Interim Status	https://OIC_HostOIC_Port/ic/api/integration/ v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_ACTIVITY_STAT /1.0/ notify	OFSC
Oracle Utilities OFSC WACS Work Request	https://OIC_Host:OIC_Port/ic/api/integration/ v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_WORK_REQ/1.0/notify	OFSC
Oracle Utilities OFSC WACS Work Order	https://OIC_Host:OIC_Port/ic/api/integration/ v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_WORK_ORDER/1.0/notify	OFSC
Oracle Utilities OFSC WACS Activity Pull Update	https://OIC_Host:OIC_Port/ic/api/integration/ v2/flows/rest/project/OUTL-BA-WACS_OFSC/ OUTL-BA-OFSC_WACS_ACTV_UPDT_PULL/ 1.0/retrieveUpdates	OFSC
Oracle Utilities OFSC WACS Route Activation	https://OIC_Host:OIC_Port/ic/api/integration/ v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_RTE_ACTIVATION/1.0/notify	OFSC
Oracle Utilities WACS OFSC Schedule Storeroom Sync	https://OIC_Host:OIC_Port/ic/api/integration/ v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-WACS_OFSC_SCH_STRM_SYNC%7C01.00.0000 /schedule/jobs	OFSC

Integration Name	End Point URL to be Configured	Application to be Configured
Oracle Utilities WACS OFSC Storeroom Admin Sync	https://OIC_Host:OIC_Port/ic/api/integration/v2/flows/ofsccloudadapter/project/OUTL-BA-WACS_OFSC/OUTL-BA-WACS_OFSC_STRM_ADMN_SYNC%7C01.00.0000/schedule/jobs	WACS
Oracle Utilities OFSC WACS Storeroom Sync	https://OIC_Host:OIC_Port/ic/api/integration/v2/flows/rest/project/OUTL-BA-WACS_OFSC/OUTL-BA-OFSC_WACS_STOREROOM_SYNC/1.0/syncStoreroom	OFSC

Chapter 9

Monitoring and Troubleshooting

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

- Oracle Utilities Work and Asset Cloud Service
- Oracle Integration Cloud

Oracle Utilities Work and Asset Cloud Service

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

Oracle Utilities Work and Asset Cloud Service Error Logs

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

The following error logs can be monitored for Oracle Utilities Work and Asset Management:

- Errors related to the online integration invocation from Oracle Utilities Work and Asset Management are stored in the WACS_ENVIRONMENT_NAME/logs/ or WAM_ENVIRONMENT_NAME/logs/system folder.

  Example: V24001_WAM_ORA_WLS/logs/system\

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

Oracle Integration Cloud

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

Monitoring Integration Flows

Integration flows are monitored using the following:

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

To monitor the integration flows within a project:

1. Login to Oracle Integration Cloud.
2. Click **Projects** then select the relevant project from the navigation pane.
3. Navigate to the **Observe** menu.
4. You can check:
   a. **Integrations** to view the counts of various status of instances created per integration flow.
   b. **Instances** to see instances of integrations of the project.
   c. **Future runs** to see all the runs scheduled or started for scheduled integrations.
   d. **Audit** to view and download design-time audit logs.

For more information, refer to the Monitor the Message Processing Status of Integrations in Projects section of *Using Integrations in Oracle Integration 3*.

To monitor the integration flows outside the project through Oracle Integration Cloud **Observability** menu:

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

Troubleshooting

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

To troubleshoot the activation error:

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

    TRACE ENABLED is displayed next to ACTIVE.

Some of the sample cases are as follows:

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

Appendix A

Validation Algorithms

This appendix focuses on the algorithms in inbound communication and completion events.

- Completion Events

Completion Events

The completion events in this integration are as follows:

Activity Type	Completion Events	Required	Algorithm	Description
WD-EXT-ACT	W1-CrAnyServiceHistComplEvtTyp	Optional		Create Any Service History The Required value source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ serviceHistories
	W1-CreateOperationalRead	Optional		Create Operational Reading The required source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ measurements
	W1-MobileUpdateWorkedAssets	Optional		Update Worked Assets The required source xpath needs to be configured: rawMessage/activityId
	W1-RemoveNonTrackedAsset	Optional		Remove Non- Tracked Asset The Required value source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ actionTaken
	W1-RemoveTrackedAsset	Optional		Remove Tracked Asset The required source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ actionTaken
	W1-AttachComponent	Optional		Attach Component The required source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/actionTaken Required Value Source XPath Value: W1IN

Activity Type	Completion Events	Required	Algorithm	Description
	W1-InstallNonTrackedAsset	Optional		Install Non Tracked Asset The Required value source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ actionTaken Required Value Source XPath Value: W1IN
	W1-InstallTrackedAsset	Optional		Install Tracked Asset The required source xpath needs to be configured: rawMessage/completion/ assetLocationAssets/ assetLocationAssetList/ actionTaken Required Value Source XPath Value: W1IN