

Oracle

Oracle Field Service Cloud / IoTCS Integration using OIC

Release **August 2018**

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs.

No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications. Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle. This documentation is in preproduction status and is intended for demonstration and preliminary use only. It may not be specific to the hardware on which you are using the software. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to this documentation and will not be responsible for any loss, costs, or damages incurred due to the use of this documentation.

The information contained in this document is for informational sharing purposes only and should be considered in your capacity as a customer advisory board member or pursuant to your beta trial agreement only. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described in this document remains at the sole discretion of Oracle.

This document in any form, software or printed matter, contains proprietary information that is the exclusive property of Oracle. Your access to and use of this confidential material is subject to the terms and conditions of your Oracle Master Agreement, Oracle License and Services Agreement, Oracle Partner Network Agreement, Oracle distribution agreement, or other license agreement which has been executed by you and Oracle and with which you agree to comply. This document and information contained herein may not be disclosed, copied, reproduced, or distributed to anyone outside Oracle without prior written consent of Oracle. This document is not part of your license agreement nor can it be incorporated into any contractual agreement with Oracle or its subsidiaries or affiliates.

Contents

1 Integration Requirements	6
Software.....	6
Integration Files	6
2 Integration Setup	7
Configuring IoT-CS	7
Device Model Creation in IoT Platform	7
IoT Data Simulator	8
Asset Configuration.....	9
Rules Configuration.....	12
Application Settings in IoT Platform.....	14
Integration configuration in IoT platform.....	14
Enable widgets in IoT to show asset details in OFSC	15
Configuring Oracle Integration Cloud (OIC)	15
Details of OIC integration	16
Mapped fields in the integration	17
Configuring Oracle Field Service Cloud	17
Create New Activity Type	17
Create Properties for the Activity Type	18
Mobility Configuration for Activity	20
Define Urgent Activity Conditions	22
3 Integration Demo Usage	25
<i>Demo Scenario</i>	25
Overview	25
Use Cases	25
Display of Device status/information from IoTCS in OFSC	25
<i>Demo Scenario Examples</i>	26

Preface

This document describes the integration between Oracle Field Service Cloud (OFSC) and Oracle IoT Cloud Service (IoTCS) using the Oracle Integration Cloud (OIC). It covers the requirements, setup and usage of the integration.

This integration is designed to demonstrate how an integration scenario could be built using the public integration and extension capabilities of Oracle Field Service Cloud (OFSC) and Oracle IoT Cloud Service (IoTCS) using Oracle Integration Cloud (OIC).

This integration is provided to help customers and partners confidently leverage our platform and proven design patterns to meet their own unique needs.

In the pages that follow, we document the detailed setup steps required to deploy the integration.

This guide accompanies the files that contain the necessary components to setup and demonstrate the MVP (Minimum Viable Product) integration presented here.

It is a starting point that shows how Oracle IoT Cloud Service and Oracle Field Service Cloud can connect to create a value-added business process and user experience. An implementer must enter the documented configurations and install the documented patches to create the MVP integration.

However, it is not meant to be a turnkey solution. Each customer's implementation is unique, and customers have different needs that have led them to implement customizations that support their unique business requirements. While the steps in this document describe how to connect a non-customized Oracle IoT Cloud Service instance to a non-customized Oracle Field Service Cloud instance, they could combine with other customizations that have already been applied to a customer's instances.

Disclaimer: The sample code and content of this document is not certified or supported by Oracle; it is intended for educational or testing purposes only.

Oracle Applications Guides

To find guides for Oracle Applications, go to the Oracle Help Center at <http://docs.oracle.com/>.

Documentation Accessibility

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

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

1 Integration Requirements

In order to configure the OFSC / IoTCS integration using OIC, the following are required:

Software

1. Oracle Field Service Cloud instance, version 18A or greater.
2. Oracle Integration Cloud instance, version 18.3.2 or greater.
3. Oracle Internet of Things Cloud Service.

Integration Files

Download the following file:

OFSC-OIOT_CS.par

2 Integration Setup

This section will discuss how to configure the integration.

Configuring IoT-CS

Device Model Creation in IoT Platform

Steps

1. Define the device model. Configure the device model in the IoT platform (URL: <your_host>/ui/).
2. Go to *Devices* → *Model* and create a new Model called *Cell tower* with the following details:

Name: Cell tower

Description: Cell tower model

URN: urn.com.oracle:iot.cellTower

3. The custom attributes for the cell tower model are:

SignalLevel: The level of the GSM signal produced by the cell tower.

Type: Number

Range: 120.0, -30.0

Access: No

Voltage: The voltage in the power network to which the tower is connected.

Type: Number

Range: 0.0, 160.0

Access: No

4. Create an alert under the *Alerts and Custom Data Messages* menu item with the following attributes:

Name: serviceNeeded

Description: Routine service is needed

Type: Alert

URN: urn:com:oracle:iot:cellTower:serviceNeeded

Fields

Name: service_needed

Type: Boolean

5. Go to *Applications -> Oracle IoT Asset Monitoring Cloud Service -> Device Models*. Select the following device models by clicking the *Hand Button*:



- a. Cell Tower: To use it with assets
 - b. Device Model for System Alerts: To integrate between IoT and OFSC using the Alert object
6. Go to *Applications -> Oracle IoT Asset Monitoring Cloud Service -> Device Selection*, and select *Include All*.

IoT Data Simulator

Steps

1. In the IOT data simulator, there should be a simulation model called *Cell tower*. It is based on the device model called *Cell tower*, created in section [Device Model Creation in IoT Platform](#). It uses the following attributes:

SignalLevel: The level of the GSM signal produced by the cell tower. The initial value is -70 dB. The function to automatically change signalLevel is: randomInRange (-80.0,-60.0)

Voltage: The voltage in the power network to which the tower is connected. The initial value is 110 V. The function to automatically change Voltage is: sinInRange (108.0,112.0)

2. The configuration of the alert urn:com:oracle:iot:cellTower:serviceNeeded supported by a simulation model should be the following:

Name: SEND serviceNeeded

Time: 0ms

Field *service_needed* = true

3. Add one event to the configuration of the simulation model. When the event triggers, it changes the behavior of the attributes of the virtual device.

Event name: Event:powerOutage

Description: Power Outage

Voltage = 0.0

SignalLevel = -120.00

4. Create three instances of the virtual device based on the simulation model. See the below sample:

The screenshot shows the ORACLE IoT Digital Twin Simulator interface. At the top, there is a header with the ORACLE logo and the text 'IoT Digital Twin Simulator'. Below the header, there is a section for 'Cell tower' with a plus sign, an upload icon, and a trash icon. Two sliders are visible: 'Running' with a value of 1 and 'Power Outage' with a value of 0. Below the sliders is a table with the following data:

Name ▲	ID	Running	Power Outage		
Cell tower in Beachwood	244606FA-D29F-4AAA-8615-273146984411	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Cell tower in Shaker Heights	752376C1-580E-4E3D-B246-21214A71B316	<input type="checkbox"/>	<input type="checkbox"/>		
Cell tower on Cedar Rd	C979A3D1-388E-4654-9069-63B678D845C6	<input type="checkbox"/>	<input type="checkbox"/>		

5. After creating the devices, switch them on.
6. Go to the IoT platform. Go to the Devices page -> Management and set Name, Description and GPS coordinates for the three created devices.

Asset Configuration

Steps

1. Go to *IoT Asset Monitoring CS* service (URL: <your_host>/am/). Configure Asset type and create several assets.
2. Go to the *Assets* screen and select the *Asset types* tab by selecting:



3. Create a new asset type with the name: `Cell_tower_type`
4. Define the following attributes:

The list contains attributes in the following format <name> : <type>. The attributes do not need to be set as required. Set the default value or specify the allowed values.

City (text)

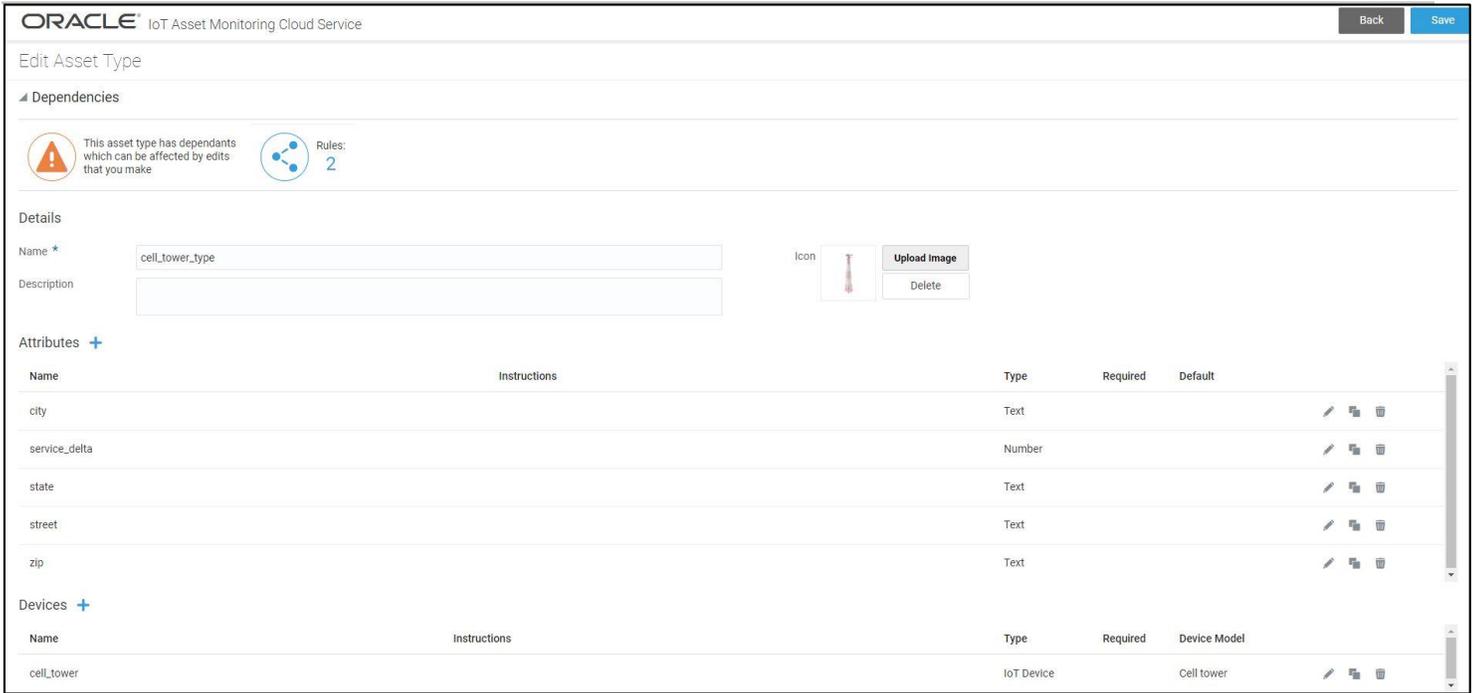
State (text)

Street (text)

Zip (text)

Service_delta (number)

Address related fields populate into the OFSC Activity when the maintenance is required, or the outage has occurred. Service_delta is used to calculate the Service Level Agreement (SLA) for the OFSC Activity. SLA will be set to <timeOfBooking of the activity created > + service_delta. Service_delta is defined in days.



5. Specify that there should be one device attached to the asset of this type. The name of the device is *cell_tower*. The device model is *Cell Tower* (As defined in section [Device Model Creation in IoT Platform](#))

6. Create three assets based on *cell_tower_type*, one for each virtual device previously created.

Specify a *Name* and *Description*. The *Name* cannot contain spaces. Best practice for naming is to use a serial number, e.g. CT389283009823.

Select one device from the pop-up window. This device will be linked with the asset.

Specify the street, city, state and zip. The address should be located in the same GPS coordinates as the device linked to the asset.

The coordinates of each asset are taken from the coordinates of the corresponding device and not from the asset address.

ORACLE IoT Asset Monitoring Cloud Service Back Save

Edit Asset

Details

Name * Tags

Description Assigned Place

Type Storage Places

Asset Groups

Static

Custom Attributes

city service_delta

state street

zip

Devices

Name	Required	Details						
cell_tower		<table border="1"> <thead> <tr> <th>Device ID</th> <th>Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>57734ADC-771C-4FF5-BA78-FB0DE1355BE9</td> <td>Cell tower in Beachwood</td> <td>The cell tower is located not far from Oracle Office in Beachwood</td> </tr> </tbody> </table>	Device ID	Name	Description	57734ADC-771C-4FF5-BA78-FB0DE1355BE9	Cell tower in Beachwood	The cell tower is located not far from Oracle Office in Beachwood
Device ID	Name	Description						
57734ADC-771C-4FF5-BA78-FB0DE1355BE9	Cell tower in Beachwood	The cell tower is located not far from Oracle Office in Beachwood						

Replace Device

7. Go to the *Map* screen. Confirm that you can see the assets on the map.

Rules Configuration

Steps

1. Go to the *IoT Asset Monitoring CS* service. Then go to the *Assets* screen.
2. Create two rules. Rules are set conditions on asset sensor or KPI values. When a rule condition is met, the associated alert, warning, or incident is triggered. Alerts are used because only alerts can be sent to the integrated system.

The first rule will trigger a low severity alert when an asset notifies the system that it needs service. Configure the rule as follows:

Name: Service needed

Apply to: Asset type is *cell_tower_type*

Condition: Alert = *service Needed - urn:com:oracle:iot:cellTower:serviceNeeded*

Fulfill when: *All conditions apply*

Generate: *Alert*

Alert Details:

Summary: Service is needed for the tower

Suppression (minutes): 1

Severity: Low

Inclusions:

Source attributes: unchecked

Context information: unchecked

Message payload: unchecked

When the device that is linked with the asset generates Alert messages with `urn:com:oracle:iot:cellTower:serviceNeeded`, then a system alert will be sent to the integrated system.

The second rule will trigger a critical severity alert when an outage is identified. In this example, the outage is identified when the *Voltage* reported by the cell tower is less than 90 volts. This rule could be more complex, if required. Configure the rule as follows:

Name: Outage

Apply to: Asset type is *cell_tower_type*

Condition: *sensor/cell_tower/Voltage* Less Than 90

Fulfill when: *All conditions apply*

Generate: *Alert*

Alert Details:

Summary: Power outage on cell tower

Suppression (minutes): 1

Severity: Critical

Inclusions:

Source attributes: unchecked

Context information: unchecked

Message payload: unchecked

Application Settings in IoT Platform

Steps

1. Go into IoT platform
2. Open *Settings*. Set *Trusted CN* to the domain of your OIC. This is required to connect from IoT to OIC.

Integration configuration in IoT platform

Steps

1. Go into IoT platform.
2. Create a new *Integration Cloud Service* integration.

Overview tab

Name: OFSC

Connection tab

URL: <OIC host>/integration/flowapi/rest

Authentication: BASIC

Username: Your user name from OIC

Password: Your password from OIC

Streams tab

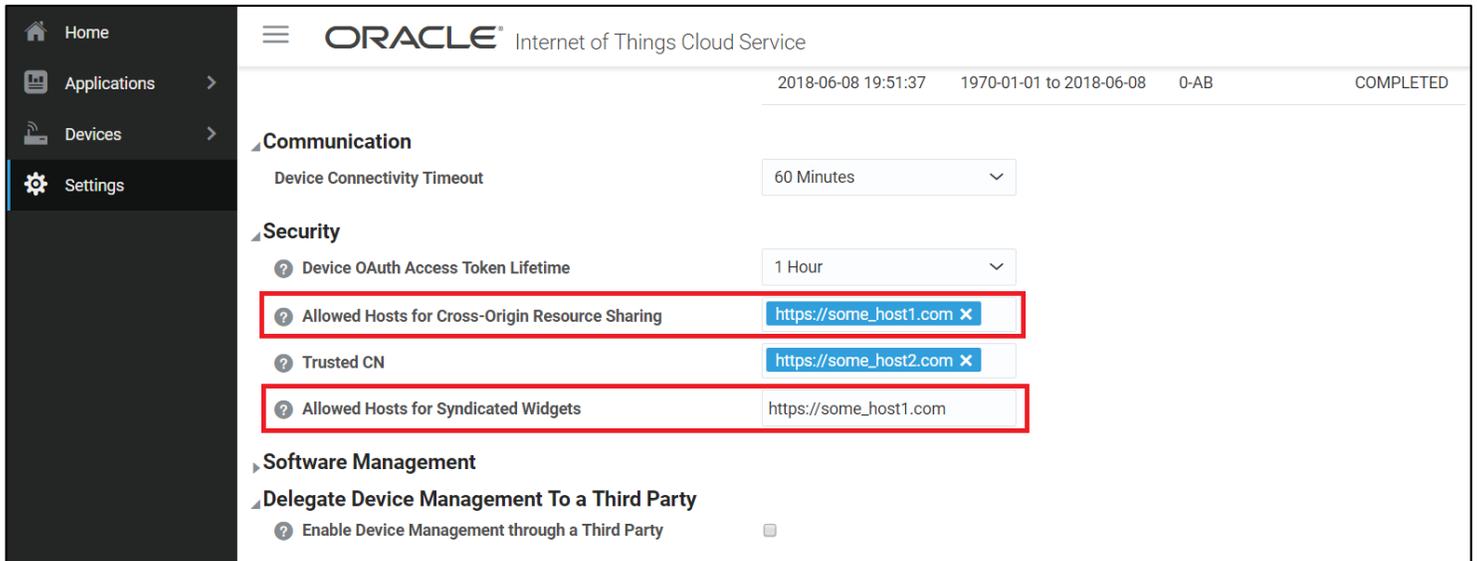
Message Format: RESystemAlert

Integration resource URL: /IOT_TO_OFSC_ORCHESTR/v01/createActivity

Enable widgets in IoT to show asset details in OFSC

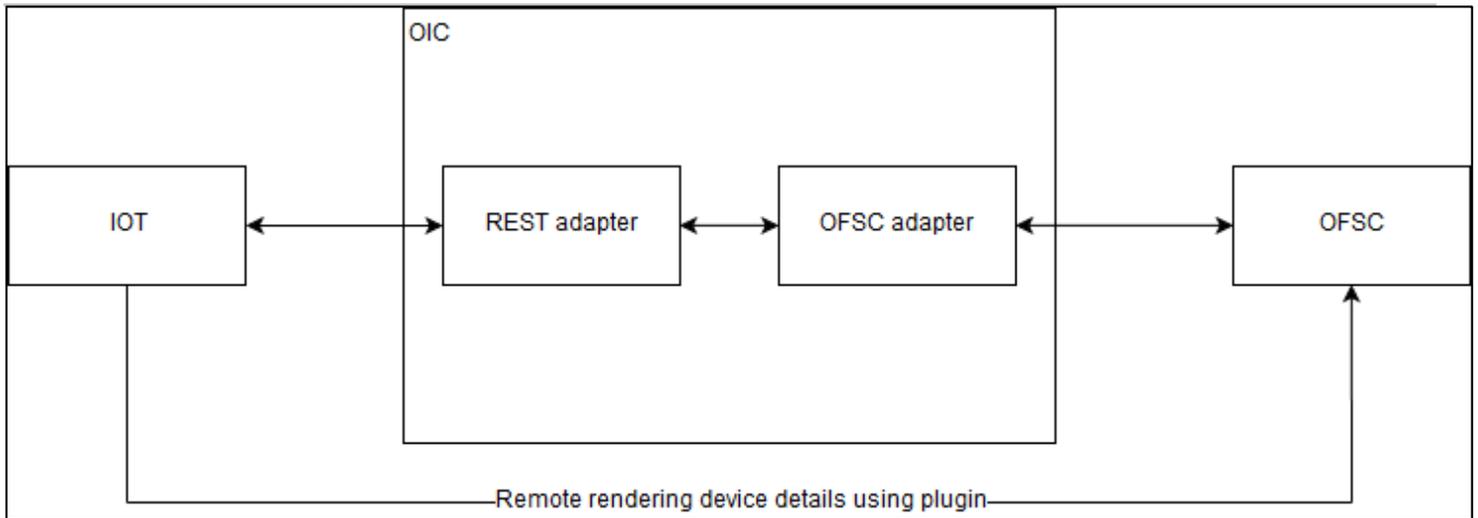
Steps

1. Go into IoT platform. Then go to *Settings*.
2. Find the input *Allowed Hosts for Syndicated Widgets* and enter the name of your OFSC host using the format: *https://some_host.com* (Use the manage URL of your OFSC instance)
3. Enter the same OFSC host into the field *Allowed Hosts for Cross-Origin Resource Sharing*.



Configuring Oracle Integration Cloud (OIC)

The integration between OIC and OFSC flows as follows:



Details of OIC integration

The OIC configuration uses the following components:

REST connection name: IoT connection for OFSC

OFSC connection name: OFSC connection for IoT

Name of the integration: IoT to OFSC Orchestration

URL of the REST adapter connection point: <OIC host>/assetMonitoring/clientapi/v2

Note: Load the certificate from asset monitoring service to OIC, if you are getting a certificate error.

The integration consists of three steps:

IoT invokes OIC and sends the alert message with the array of alerts

For each alert, the information about the asset is retrieved from IoT

Using alert and asset information OIC creates or updates activity in OFSC

Import the integration package for OIC from the *OFSC-O/IOT_CS.par* file downloaded in the [Integration Files](#) section.

Mapped fields in the integration

bulkUpdate.updateParameters.identifyActivityBy = *apptNumberPlusCustomerNumber*

bulkUpdate.updateParameters.ifInFinalStatusThen = *createNew*

bulkUpdate.updateParameters.ifExistsThenDoNotUpdateFields = *resourceId*

bulkUpdate.activities.resourceId = *routing* **Note:** Configure this value according to the unassigned bucket label in OFSC

bulkUpdate.activities.apptNumber = *ruleId*

bulkUpdate.activities.activityType = *asset*

bulkUpdate.activities.customerNumber = *affectedObjectId*

bulkUpdate.activities.streetAddress = *street*

bulkUpdate.activities.city = *city*

bulkUpdate.activities.postalCode = *zip*

bulkUpdate.activities.stateProvince = *state*

bulkUpdate.activities.slaWindowEnd = *newly created activity's timeOfBooking + amount of days stored in asset's service_delta*

bulkUpdate.activities.severity = *severity*

bulkUpdate.activities.summary = *description*

bulkUpdate.activities.asset_name = *name*

bulkUpdate.activities.asset_description = *description*

Configuring Oracle Field Service Cloud

Create New Activity Type

Steps

1. Go to *Configuration* -> *Activity Types* and select *Add Group* to create a new group with the following parameters:

Name: Asset

Label: asset_gr

2. Create a new activity type within the group with the following parameters:

Name: Asset Maintenance

Label: asset

Default duration: 48 (Could be any value)

Color Scheme: Copy from other activity

Active: Checked

Features:

Teamwork: unchecked

Multi-day activity: unchecked

Allow move between resources: checked

Allow creation in buckets: checked

Allow reschedule: checked

Support of not-ordered activities: checked

Allow non-scheduled: checked

Allow mass activities: unchecked

Allow repeating activities: unchecked

Create Properties for the Activity Type

Steps

1. Go to *Configuration* → *Properties*, and add the following properties:

Properties with asset information:

Asset Name

Property type: String

Property name: Asset Name

Property label: asset_name

Lines count: 1

GUI: Text

Asset Description

Property type: String

Property name: Asset Description

Property label: asset_description

Lines count: 1

GUI: Text

a. Properties with alert information:

Summary

Property type: String

Property name: Summary

Property label: summary

Lines count: 1

GUI: Text

Severity

Property type: Enumeration

Property name: Severity

Property label: severity

GUI: Combobox

Enumeration values:-

Critical , CRITICAL

Low , LOW

Normal , NORMAL

Significant , SIGNIFICANT

Mobility Configuration for Activity

Steps

1. Go to *Configuration -> Action Management*, and create an action link.

Plugin URL:

`https://<your_iot_host>/commonui/indexWidget.html?app=AM&root=assetDetail&assetDetail={asset_name}`

Add action link [X]

General Plugin details

* Action name (English)

Action name (Spanish)

Action name (Russian)

Action name (French (European))

Action name (Portuguese (Brazil))

Action name (German)

Action name (Japanese)

Action name (Dutch)

* Action label

Entity

Interface

Base action

Is plugin

Close OK

Add action link [X]

General **Plugin details**

Type: HTML5 application ▼

Use Plugin API:

URL: https://example.oracle.com/abcd

POST data: [Empty text area]

Disable action link in offline:

Main menu items:

Tab or Iframe layout:

Show scrollbars:

Width in pixels: 900

Height in pixels: 600

Close [OK]

2. Configure the Screen Configuration of User Types:

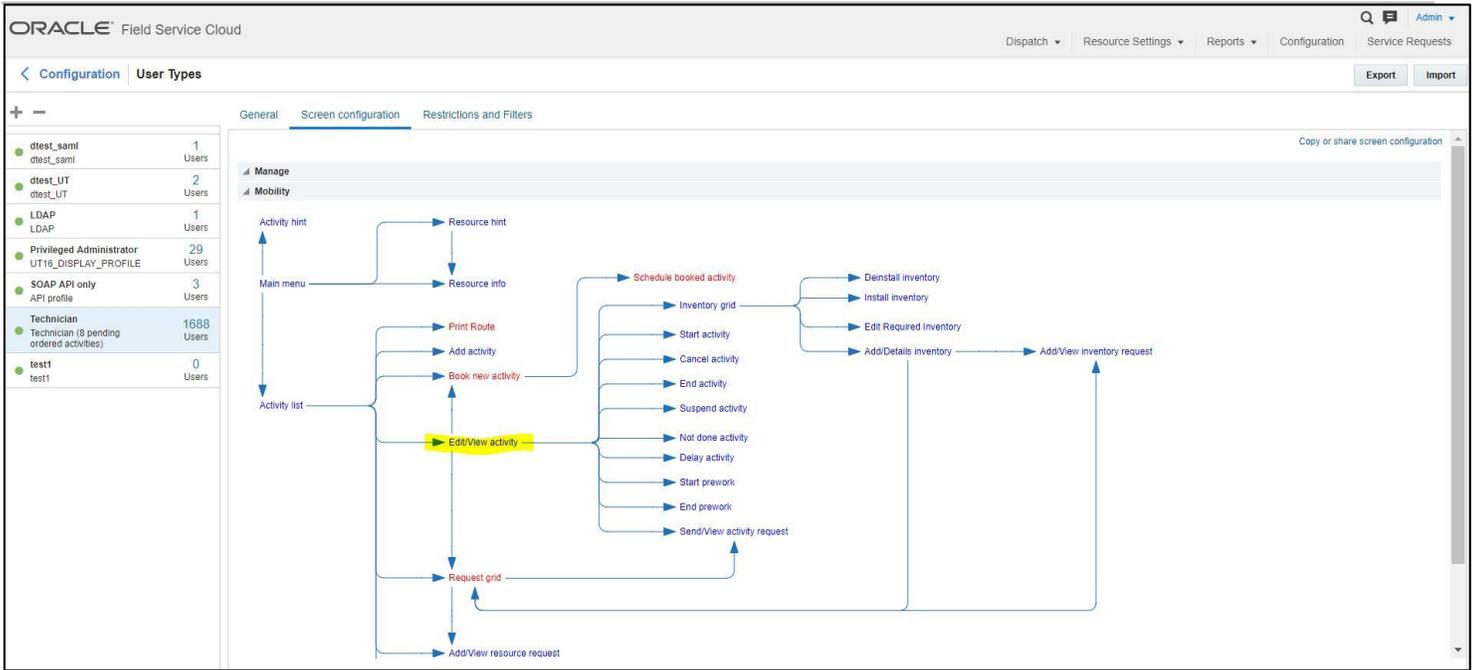
Add the above created action link *Asset Details* to the context *Edit/View Activity* in the *Mobility* section.

Drag and drop Actions named *Asset details* to the palette and give the visibility condition as *Activity type[aworktype] equal to Asset Maintenance*.

Drag and drop the field *Asset Name* to the palette. This is a mandatory field for the plugin to function.

Other fields, like *Asset ID*, *Asset Description*, *Summary*, and *Severity* can also be added to this context with the visibility flag as *Activity type[aworktype] equal to Asset Maintenance*.

OFSC-OSvC Integration Using OIC



Define Urgent Activity Conditions

Steps

1. Activity priority handling steps:

Go to *Configuration* ->| *Business Rules* for Urgent activities, and define the *activity priority* field:

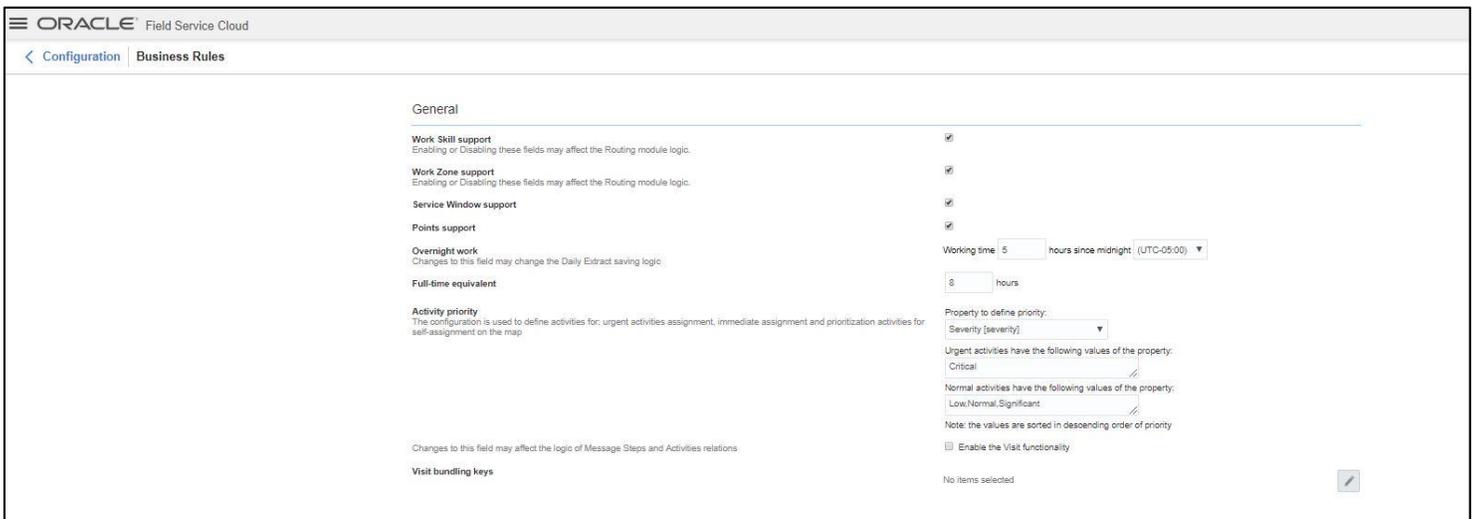
Property to define priority: Severity[severity]

Urgent activities have the following values for the property: Critical

Normal activities have the following values for the property: Low,Normal,Significant

Create a routing plan with a *Run Schedule Immediately, for Urgent activities* (Select the *Planning* node):

Activate the created Routing plan.



≡ **ORACLE** Field Service Cloud

< Routing | Immediate

Routing plan

* Routing plan name

Routing profile

Active

Run schedule

Run routing

Apply for Urgent Activities
 Apply for activities that correspond to filter

Activity matching the Activity priority settings of Business Rules will be assigned with minimal ETA possible, immediately after it is detected on the bucket.

Assignment and Fallback

Assignment automatic
 via Collaboration

Activity will be assigned automatically immediately after the activity moved to or created in a bucket.

* Bundling within day interval starting today

Indicates the time interval within which activities to be bundled with an urgent activity are searched. Bundling means grouping activities into visits according to the Visit bundling keys specified on the Business Rules.

Assign only to resources with appropriate work zone enabled

Activity can be assigned only to a field resource that has appropriate Work Zone enabled.

Fallback

In case assignment times out or fails, the above message scenario should be run

Filters

Activities in the routing bucket that should be scheduled and assigned.

Activities	Resources	Action
*(Other)	*(Other) Normal	Resources

Use resources outside the routing bucket

3 Integration Demo Usage

Demo Scenario

Overview

This demo demonstrates the automation of the process of dispatching a technician to a site, where an IoT enabled device needs attention. If a technician is required, alerts are triggered and captured. An OFSC activity is automatically created, with the appropriate details. This allows the scheduling of an appointment with little or no user interaction.

Use Cases

The Following use cases are included as a part of this integration:

Preventive maintenance

- The Asset triggers an alert that it requires servicing (for example, regular annual maintenance). The asset also stores information about the SLA for the service.
- The alert is sent to OFSC via OIC. An activity is created with information about the asset from IoTCS.
- The Activity is assigned to a predefined bucket in OFSC. It is routed to a suitable Technician when required.

Outage

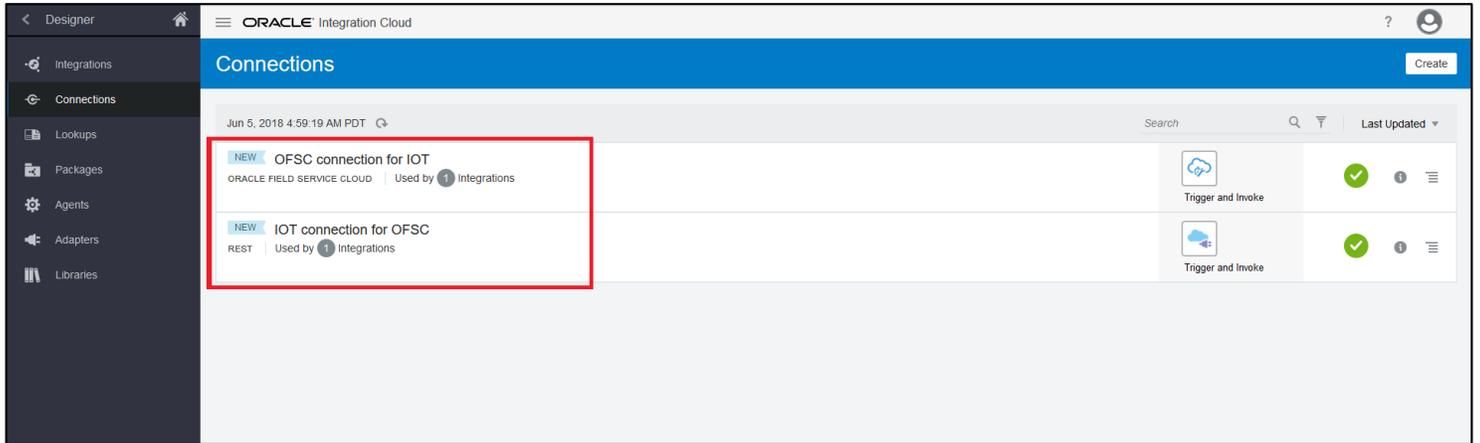
- A critical event occurs. E.g. a power outage.
- The critical alert is sent to OFSC via OIC.
- A new activity is created with details from IoTCS regarding the asset, and is immediately routed to the most appropriate technician. The technician receives notification that there is a critical activity.

Display of Device status/information from IoTCS in OFSC

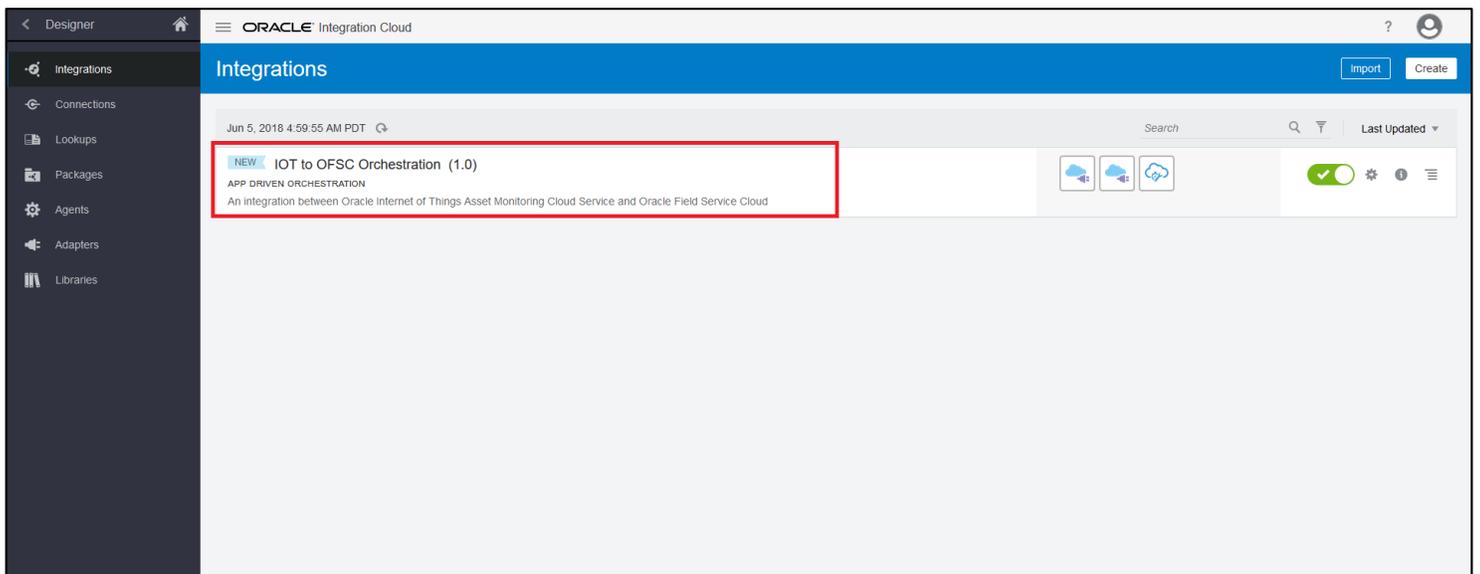
- Whenever an activity, based on alert received from IoTCS, is assigned to a technician, the technician will have the option to view the device information, and key indicators in real time from Mobility.
- A separate screen displays the device details from IoTCS.
- This information will also be available in the dispatcher's view of the activity details.
- This part of the integration will be point-to-point and will not involve OIC.

Demo Scenario Examples

Connections created to both OFSC and IoTCS in the OIC Adapter.



Orchestration integration will create an OFSC activity based on a Trigger from IoTCS.



Monitored devices can be viewed in the IoTCS device simulator interface.

OFSC-OSvC Integration Using OIC

Oracle IoT Digital Twin Simulator

Cell tower + ↕ 🗑️

Running: 2 | Power Outage: 0

Name ▲	ID	Running	Power Outage	
Cell tower in Beachwood	31D06803-EC16-4C6C-85EC-763682802FA4	✓	☐	👁️ 🗑️
Cell tower in Shaker Heights	F4A492AA-8283-4ADC-877C-EAAE8F355647	✓	☐	👁️ 🗑️

Messages and Alerts

Last 10 Minutes

40
30
20
10
0

-10 Minutes -5 Minutes Current Time

Messages
Alerts
Errors

Device details of the monitored asset.

Oracle IoT Digital Twin Simulator

CONTROLS

EVENTS

POWER OUTAGE

ALERTS

SEND:serviceNeeded

DEVICE STATUS | DATA CHART

DETAILED DEVICE MONITORING

5:24:51 PM

STATUS: ON

Cell tower Cell tower in Beachwood

31D06803-EC16-4C6C-85EC-763682802FA4

SIGNALLEVEL: -73.1

VOLTAGE: 108.4

When maintenance is required, the device sends an alert.

The screenshot shows the Oracle IoT Digital Twin Simulator interface. On the left, there are sections for 'CONTROLS', 'EVENTS', and 'ALERTS'. The 'ALERTS' section contains a button labeled 'MESSAGE SENT!' which is highlighted with a red box. In the center, there is a 3D model of a cell tower. On the right, the 'DEVICE MONITORING' panel shows the device status as 'ON' and provides details for a 'Cell tower Cell tower in Beachwood', including its ID (31D06803-EC16-4C6C-85EC-763682802FA4), signal level (-77.4), and voltage (108.7). At the bottom, a blue banner displays the alert: 'Alert: Routing service is needed'.

The alert triggered by IoTCS, triggers an incident in OIC

The screenshot displays the Oracle Integration Cloud 'Track Instances' page. The left sidebar shows navigation options: Monitoring, Dashboards, Integrations, Agents, Tracking, Runs, and Errors. The main content area shows a table of instance runs for 'IOT to OFSC Orchestration | 1.0'. The first instance is highlighted with a red box. The table includes columns for Instance ID, Status, Started, Completed, and Duration.

Instance ID	Status	Started	Completed	Duration
6869d79e-2e6f-4e4e-812c-3b75f51a498b	COMPLETED	just now	just now	04 sec
64cad7d9-45a1-4133-b23a-1c20de0f458c	COMPLETED	8 minutes ago	8 minutes ago	02 sec
2b923964-81d2-4432-b286-06e81aff99ac	COMPLETED	9 minutes ago	9 minutes ago	04 sec
cfc4fb63-ab29-4a12-9ec7-1e130d07324b	COMPLETED	21 minutes ago	21 minutes ago	04 sec
6bd0e4a3-cbd7-44dc-a994-d533a65fac28	COMPLETED	23 minutes ago	23 minutes ago	06 sec
fd35a8c1-8d59-4e83-a420-582234641a26	COMPLETED	34 minutes ago	34 minutes ago	06 sec
7d54fd11-1553-4bce-b4f7-7e7b3263e246	COMPLETED	49 minutes ago	49 minutes ago	07 sec

The incident in OIC creates an activity in OFSC for the maintenance of the asset.

The required fields are mapped from IoTCS to OFSC, and the created activity will have the following fields populated from IoTCS:

- Asset Name
- Asset Description: Populated based on the description of the Asset received from IoTCS
- Summary: Populated based on the description of the Alert from IoTCS
- Severity: Set as *Low* for a maintenance activity. Set as *Critical* for an Outage.
- Address
- City
- Zip/Postal Code
- State
- SLA End: Calculated based on the current date and the value of the service delta parameter received from IoTCS.
- Activity Type: Set as *Asset Maintenance* for this integration. Can be modified per customer preference.
- Resource ID: Points to the bucket where the activity will be created. Set to the Bucket *Routing* for this integration. Can be modified per customer preference.
- Appt Number: Used by the integration to hold the external Id of the activity.
- Customer Number

Since the Severity is *Low*, the activity is assigned to a predefined bucket, where it can be routed as required.

The screenshot displays the Oracle Field Service Cloud Planning interface. The top section shows a resource grid for Tuesday, June 5th, 2018, with a red vertical line indicating a time slot starting at 08:03 AM. The bottom section shows a list of activities with the following data:

Activity	Time Slot	Information	Activity ID	Capacity	Activity status	Duration	Service Wk	Traveling Time	Work Zone	City
<input type="checkbox"/>		3333 Richmond Rd	4225850		pending	00:48		00:00		Beachwood
<input type="checkbox"/>			4225596		pending	20:00		00:30		

Activity details contains information sent from the IoT enabled asset.

ORACLE Field Service Cloud

Dispatch Resource Settings Reports Service Requests Configuration

Activity details (Planning) Cancel Directions Move Send Request **Asset details**

Activity ID: 4225850
Asset Name: CT90380927098
Summary: Service is needed for the tower
Severity: Low
Activity type: Asset Maintenance
Activity status: pending
Position in Route: Ordered
Duration: 0 hours 48 minutes
SLA Start: - : -
SLA End: 08 AM : 04
06/19/18
Start - End: 12:00 AM - 12:48 AM
Access Schedule: ((UTC-05:00) New York - Eastern Time (ET))

Customer info Messages History

Address: 3333 Richmond Rd
City: Beachwood
ZIP/Postal Code: 44122
State: OH
Account Number: E543BD99-0AEB-41D9-9923-A58C75C00BF5

Close OK

Clicking on *Asset Details* opens up the information from IoTCS in the OFSC application. This part of the integration does not involve OIC, and is point-to-point between IoTCS and OFSC.

OFSC-OSvC Integration Using OIC

Activity details (Planning) Cancel Directions Move Send Request Asset details

Activity ID: 4225850
Asset Name: CT90380927098
Summary: Service is needed for the tower
Severity: Low
Activity type: Asset Maintenance
Activity status: pending
Position in Route: Ordered
Duration: 0 hours 48 minutes
SLA Start: 08 AM 06/19/18
SLA End: 06/19/18
Start - End: 12:00 AM - 12:48 AM
Access Schedule: (UTC-05:00) New York - Eastern Time (ET)

Customer info Messages History

Address: 3333 Richmond Rd
City: Beachwood
ZIP/Postal Code: 44122
State: OH
Account Number: ES43BD09-0AEB-41D9-9623-A58C75C00BF5

CT90380927098

Currently Connected 100%
Currently Utilized 100%
Currently Available 100%

INFO INCIDENTS WARNINGS ANOMALIES PREDICTIONS SENSORS IMAGES LOCATION HISTORY

Standard Attributes
RESERVED
TYPE: cell_tower_type
DESCRIPTION
TAGS
GROUPS

Custom Attributes
ZIP: 44122
SERVICE_DELTA: 14
CITY: Beachwood
STREET: 3333 Richmond Rd
STATE: OH

Activity details (Planning) Cancel Directions Move Send Request Asset details

Activity ID: 4225850
Asset Name: CT90380927098
Summary: Service is needed for the tower
Severity: Low
Activity type: Asset Maintenance
Activity status: pending
Position in Route: Ordered
Duration: 0 hours 48 minutes
SLA Start: 08 AM 06/19/18
SLA End: 06/19/18
Start - End: 12:00 AM - 12:48 AM
Access Schedule: (UTC-05:00) New York - Eastern Time (ET)

Customer info Messages History

Address: 3333 Richmond Rd
City: Beachwood
ZIP/Postal Code: 44122
State: OH
Account Number: ES43BD09-0AEB-41D9-9623-A58C75C00BF5

CT90380927098

Currently Connected 100%
Currently Utilized 100%
Currently Available 100%

INFO INCIDENTS WARNINGS ANOMALIES PREDICTIONS SENSORS IMAGES LOCATION HISTORY

SENSOR: cell_tower ATTRIBUTES: Voltage

120
80
40
0

12:45 PM 6 Jun 2018 1:00 PM 1:15 PM 1:30 PM

A critical incident, like a power outage, will trigger a critical event from the asset

OFSC-OSvC Integration Using OIC

ORACLE IoT Digital Twin Simulator

CONTROLS

EVENTS

POWER OUTAGE!

ALERTS

SENDserviceNeeded

DEVICE STATUS DATA CHART

DEVICE MONITORING 5:40:47 PM

STATUS ON

Cell tower Cell tower in Shaker Heights

F4A492AA-8283-4ADC-877C-EAAE8F355647

SIGNALLEVEL -120.0

VOLTAGE 0.0

Event: Power Outage

An OIC incident triggers based on the event from IoTCS

Monitoring

ORACLE Integration Cloud

Track Instances

Jun 5, 2018 5:12:41 AM PDT Last 1 Hour

Instance ID	Started	Completed	Duration
id: e648eb69-309a-40bd-aa8b-d49abbd19db5 Instance ID: 11	just now	just now	01 sec
id: 2dd76564-3fc1-4a46-bac3-26fa9459d8f4 Instance ID: 10	1 minute ago	1 minute ago	04 sec
id: 6869d79e-2e6f-4e4e-812c-3b75f51a498b Instance ID: 9	8 minutes ago	7 minutes ago	04 sec
id: 64cad7d9-45a1-4133-b23a-1c20de0f458c Instance ID: 8	16 minutes ago	16 minutes ago	02 sec
id: 2b923964-81d2-4432-b286-06e81aff99ac Instance ID: 7	17 minutes ago	17 minutes ago	04 sec
id: cfc4fb63-ab29-4a12-9ec7-1e130d07324b Instance ID: 6	29 minutes ago	29 minutes ago	04 sec
id: 6bd0e4a3-cbd7-44dc-a994-d533a65fac28 Instance ID: 5	31 minutes ago	31 minutes ago	06 sec
id: fd35a8c1-8d59-4e83-a420-582234641a26 Instance ID: 4	42 minutes ago	42 minutes ago	06 sec
id: 7d54fd11-1553-4bce-b4f7-7e7b3263e246 Instance ID: 3	57 minutes ago		

An urgent activity is created in OFSC. The severity of this activity is set as *Critical*.

A rule in OFSC will immediately route any activities with a *Critical* severity to a suitable technician.

The screenshot shows the Oracle Field Service Cloud Planning interface. At the top, there are navigation tabs: Dispatch, Resource Settings, Reports, Service Requests, and Configuration. The main header includes 'ORACLE Field Service Cloud' and a search bar. The left sidebar lists various regions and resources, with 'Planning (0)' selected. The main content area displays several key metrics: Routing Plans (1 + 7), Execution Summary (2), Autorouting (100%), Resource Utilization (N/A), and Savings (-\$44,540). Below these metrics is a table with columns: Time, Bucket, Routing Plan, Launched, Assigned Activities, Resources, and Status.

Time	Bucket	Routing Plan	Launched	Assigned Activities	Resources	Status
08:11 AM	Planning	Immediate	⚡	1 of 1	1 of 97	✓
08:10 AM	Planning	Immediate	⚡	1 of 1	1 of 97	✓

This screenshot shows the same Oracle Field Service Cloud interface with an 'Automatic Routing' dialog box open. The dialog title is 'Automatic Routing: Immediate - ID 27311'. It has three tabs: Summary, Report, and Comparison. The 'Report' tab is active, displaying a table with columns: Initial Resource, Destination Resource, Activity, and Error / Comment.

Initial Resource	Destination Resource	Activity	Error / Comment
Planning (routing)	(fast TC) Baptist, Roger (11106)	Asset Maintenance	

The technician sees the activity in his/her route with a high priority.

The screenshot shows the Oracle Field Service Cloud interface. At the top, the Oracle logo and 'Field Service Cloud' are visible. The user is identified as 'BR (fast TC) Baptist,' and the date/time is '06/05/18 08:00 - 17:00'. A green 'Activate Route' button is prominent. Below it, a yellow 'A' icon is next to 'Asset Maintenance >' and a 'Navigate' button with a location pin icon. On the right, the 'My Route' section features a circular progress indicator at 9% and a '1 Pending' status with a yellow dot. Four action buttons are arranged in a 2x2 grid: 'Activities' (headset icon), 'Add Activity' (plus icon), 'Inventory' (van icon), and 'Options' (gear icon).

The screenshot displays the 'Activity details' screen. At the top, there are navigation tabs: 'Cancel', 'Navigate', 'Map', 'History', 'Reschedule', and 'Asset details' (which is highlighted with a red box). The screen is divided into several sections. On the left, 'Activity status: pending' and 'Asset Name: CT90790127098' are shown, with an 'Empty identifier' button below. Below this is the address: '3252 Ardmore Rd, Shaker Heights, 44120, OH, 988ADFF6-3603-46BB-A601-DEBA14E9B72E'. On the right, 'Work Order: 97FB2DE8-E78D-4D45-9279-D6EFFF7E0E70' and 'Activity type: Asset Maintenance' are displayed. Below that, 'Duration: 48 minutes', 'Start - End: 08:17 - 09:05', and 'SLA End: 06/12/18 08:10' are listed. An 'Agreement' button is located at the bottom right.

OFSC-OSvC Integration Using OIC

The technician selects *Asset Details* to view the asset information. This is a point to point integration between IoTCS and OFSC.

Asset details

CT90790127098

Currently **Connected** 100%
Currently **Utilized** 100%
Currently **Available** 100%

INFO INCIDENTS WARNINGS ANOMALIES PREDICTIONS SENSORS IMAGES LOCATION HISTORY

Standard Attributes

RESERVED	<input type="checkbox"/>
TYPE	cell_tower_type
DESCRIPTION	
TAGS	
GROUPS	
REGISTRATION TIME	Jun 05 2018 02:44 PM
REGISTERED BY	iot
LAST MODIFIED TIME	Jun 05 2018 02:44 PM
LAST MODIFIED BY	iot
LAST REPORTED TIME	Jun 05 2018 05:49 PM
GEO-LOCATION	41.473942, -81.537064
ASSIGNED PLACE	

Custom Attributes

ZIP	44120
SERVICE_DELTA	7
CITY	Shaker Heights
STREET	3252 Ardmore Rd
STATE	OH