

Oracle

Oracle Field Service Cloud / IoTCS Integration using OIC

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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.

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

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<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's a header with the ORACLE logo and 'IoT Digital Twin Simulator'. Below the header, there's a section for 'Cell tower' with icons for adding, uploading, and deleting. Below this, there are two sliders: 'Running' (set to 1) and 'Power Outage' (set to 0). Below the sliders is a table with three rows of cell tower data.

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

ORACLE IoT Asset Monitoring Cloud Service Back Save

Edit Asset Type


Dependencies

 This asset type has dependants which can be affected by edits that you make  Rules: 2
















Details

Name *




Description

Icon  Upload Image Delete

Attributes +

Name	Instructions	Type	Required	Default	
city		Text			  
service_delta		Number			  
state		Text			  
street		Text			  
zip		Text			  

Devices +

Name	Instructions	Type	Required	Device Model	
cell_tower		IoT Device		Cell tower	  

- 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](#))

- 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	Name	Description	
cell_tower		Device ID 57734ADC-771C-4FF5-BA78-FB0DE1355BE9	Cell tower in Beachwood	The cell tower is located not far from Oracle Office in Beachwood	<input type="button" value="Replace Device"/> <input type="button" value="Delete"/>

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

Rules Configuration

Steps

- Go to the *IoT Asset Monitoring CS* service. Then go to the *Assets* screen.
- 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

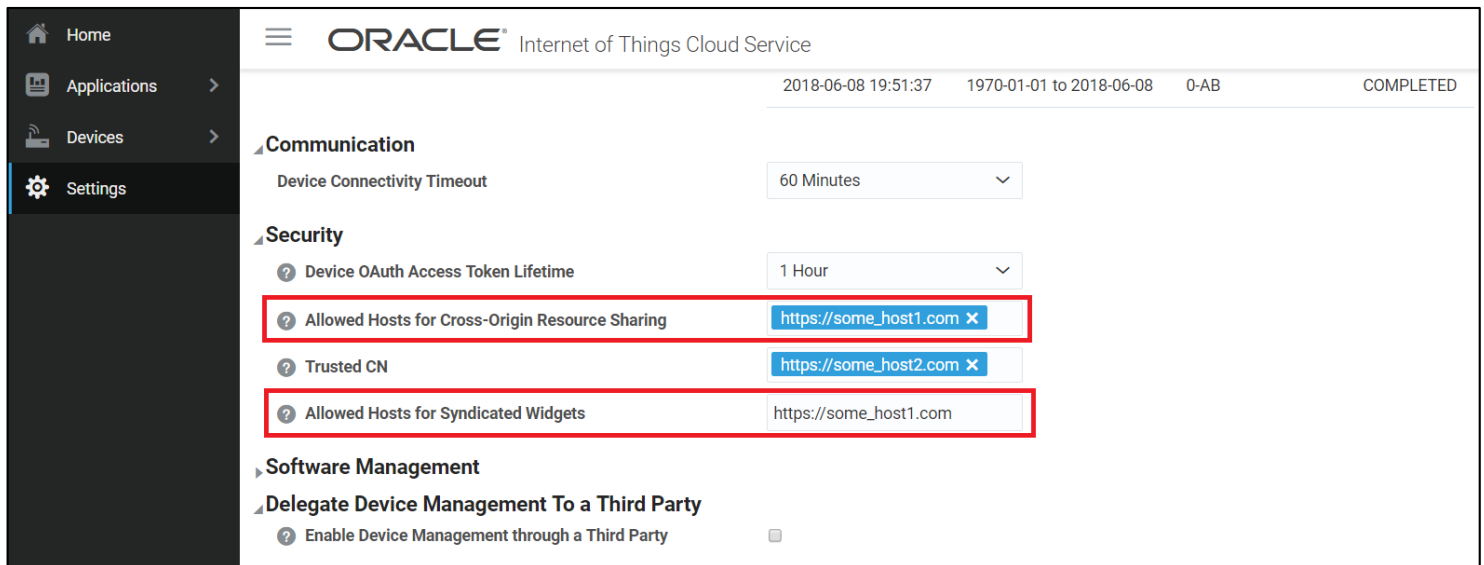
Message Format: RESystemAlert

Integration resource URL: /IOT_TO_OFSC_ORCHESTR/v01/createActivity

Enable widgets in IoT to show asset details in OFSC

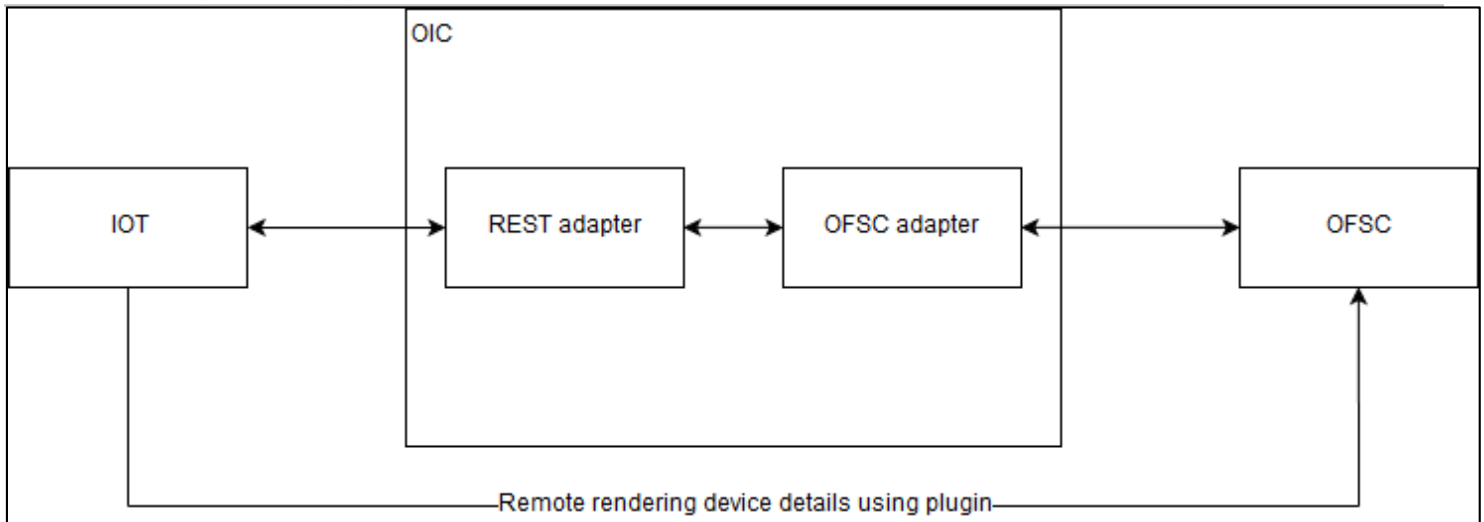
Steps

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}`

The screenshot shows a web-based dialog box titled "Add action link" with a close button (X) in the top right corner. The dialog has two tabs: "General" (selected) and "Plugin details". Under the "General" tab, there are several input fields and dropdown menus. The "Action name" fields are for English, Spanish, Russian, French (European), Portuguese (Brazil), German, Japanese, and Dutch, with "Asset details" entered in the English field. The "Action label" field contains "asset_details". The "Entity" dropdown is set to "Activity", the "Interface" dropdown is set to "*", and the "Base action" dropdown is empty. The "Is plugin" checkbox is checked. At the bottom, there are "Close" and "OK" buttons.

Field	Value
* Action name (English)	Asset details
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	asset_details
Entity	Activity
Interface	*
Base action	
Is plugin	<input checked="" type="checkbox"/>

Add action link [X]

General **Plugin details**

Type: HTML5 application ▼

Use Plugin API: ☐

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

POST data:

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:

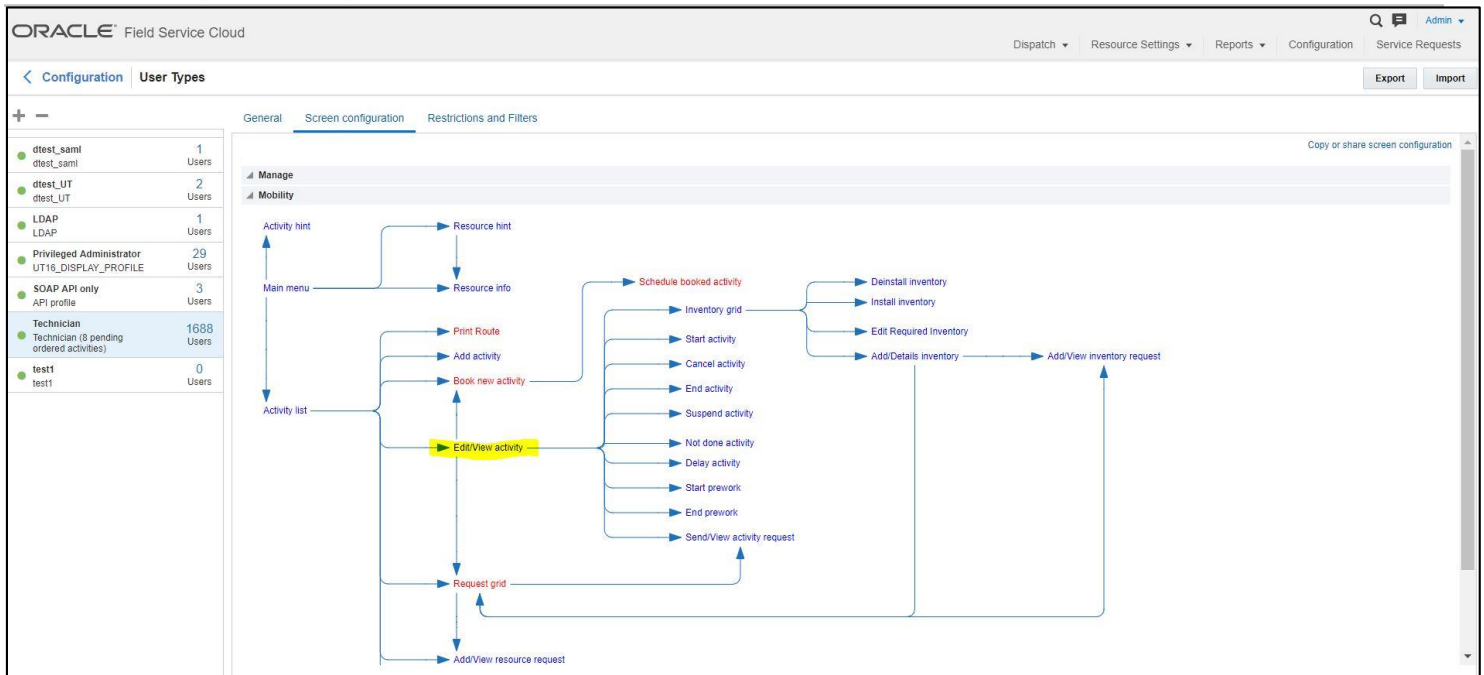
Add the above created action link *Asset Details* to the context *Edit/View Activity* in the *Mobility* section.

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



The screenshot shows the Oracle Field Service Cloud Visual Form Editor for the 'Technician' user type, specifically the 'Edit/View activity' form. The form is divided into several sections, each with a title bar and a content area. The sections include:

- Activity status:** Contains fields for 'Activity status', 'Asset Name', 'Add to Deinstalled', 'Add to Installed', 'Started_deinstalled', and 'Started_installed'.
- Inv tab:** Contains fields for 'Add to Deinstalled', 'Add to Installed', 'started_deinstalled', and 'started_installed'.
- Work Order:** Contains fields for 'Work Order', 'Job Number', and 'Activity type'.
- Service Window:** Contains fields for 'Service Window', 'Time Slot', 'Delivery Window', 'Duration', 'Start - End', 'SLA Start', and 'SLA End'.
- Additional Info:** Contains fields for 'Last Tech', 'Problem Code', and 'W/O Type'.

The form also includes a 'Fields' list on the left side, which contains various fields like 'Activity status', '# Ports', 'Access Hours', 'Access Schedule', 'Account Number', 'Activity ID', 'Activity Notes', 'Activity Time of Assignment', 'Activity Time of Booking', 'Activity Type', 'Activity Type', 'Activity type', 'Address', 'Agreement for Work', 'Alternative route found and ...', and 'Actions'.

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.

The screenshot shows the Oracle Field Service Cloud interface for configuring Business Rules. The breadcrumb navigation indicates the path: Configuration > Business Rules. The 'General' tab is selected, showing various support options (Work Skill, Work Zone, Service Window, Points, Overnight work, Full-time equivalent) all of which are enabled with checkboxes. The 'Activity priority' section is expanded, showing the configuration for defining activity priority. A dropdown menu is set to 'Severity [severity]'. Below this, the configuration specifies that urgent activities have the value 'Critical' and normal activities have the values 'Low, Normal, Significant'. A note states that values are sorted in descending order of priority. There is also an option to 'Enable the Visit functionality' which is currently unchecked. At the bottom, it says 'No items selected' next to a search icon.

ORACLE Field Service Cloud

< Configuration Business Rules

General

Work Skill support ☒
Enabling or Disabling these fields may affect the Routing module logic.

Work Zone support ☒
Enabling or Disabling these fields may affect the Routing module logic.

Service Window support ☒

Points support ☒

Overnight work ☐
Changes to this field may change the Daily Extract saving logic.

Full-time equivalent hours

Activity priority
The configuration is used to define activities for: urgent activities assignment, immediate assignment and prioritization activities for self-assignment on the map.

Property to define priority:
Severity [severity]

Urgent activities have the following values of the property:
Critical

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

Note: the values are sorted in descending order of priority

☐ Enable the Visit functionality

Changes to this field may affect the logic of Message Steps and Activities relations

Visit bundling keys

No items selected

ORACLE

Field Service Cloud

Routing

Immediate

Routing plan

* Routing plan name

Immediate

Routing profile

Immediate

Active

☒

Run schedule

Run routing

Immediately

☒ Apply for Urgent Activities

☐ Apply for activities that correspond to

All

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

1

 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 ☐

Update

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

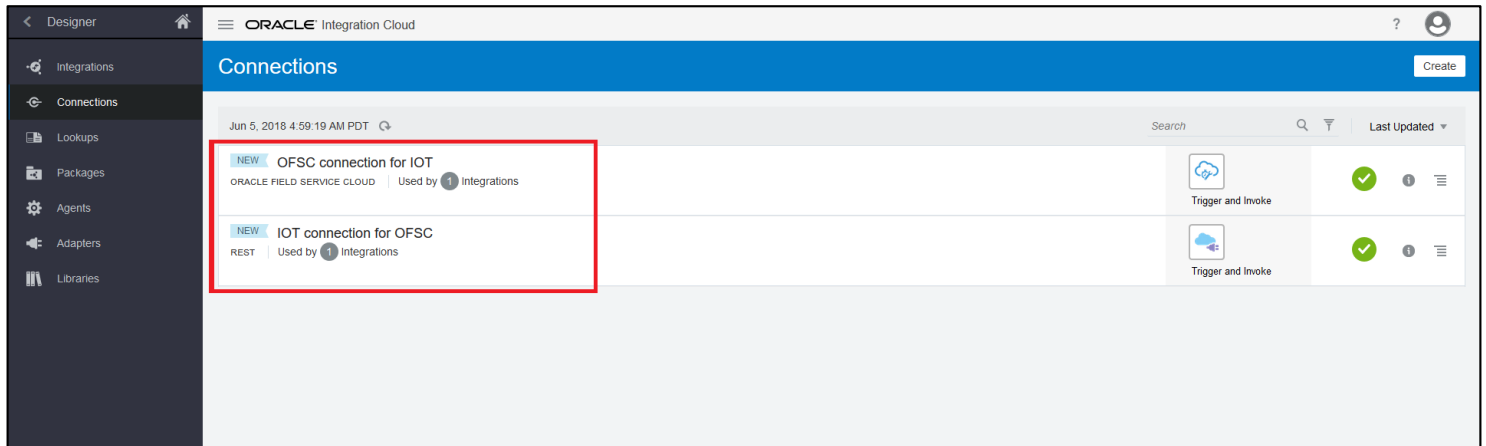
- A critical event occurs. E.g. a power outage.
- The critical alert is sent to OFSC via OIC.
- A new activity is created with details from IoTCS regarding the asset, and is immediately routed to the most appropriate technician. The technician receives notification that there is a critical activity.

Display of Device status/information from IoTCS in OFSC

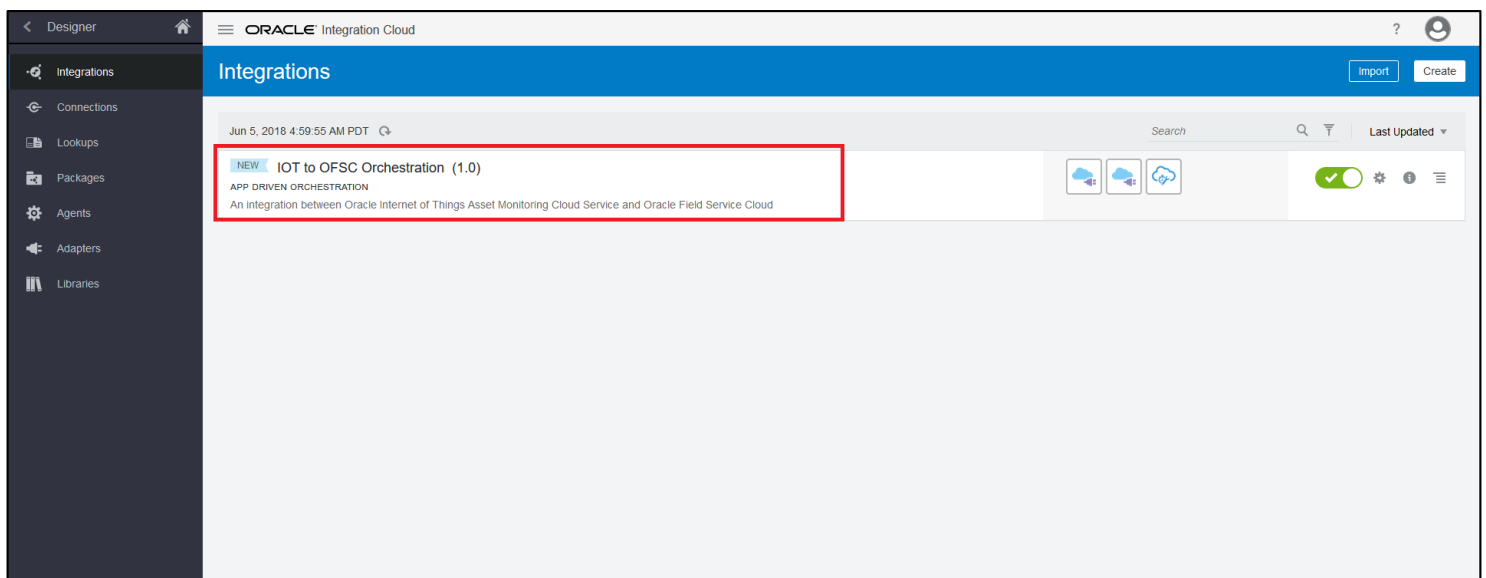
- Whenever an activity, based on alert received from IoTCS, is assigned to a technician, the technician will have the option to view the device information, and key indicators in real time from Mobility.
- A separate screen displays the device details from IoTCS.
- This information will also be available 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.

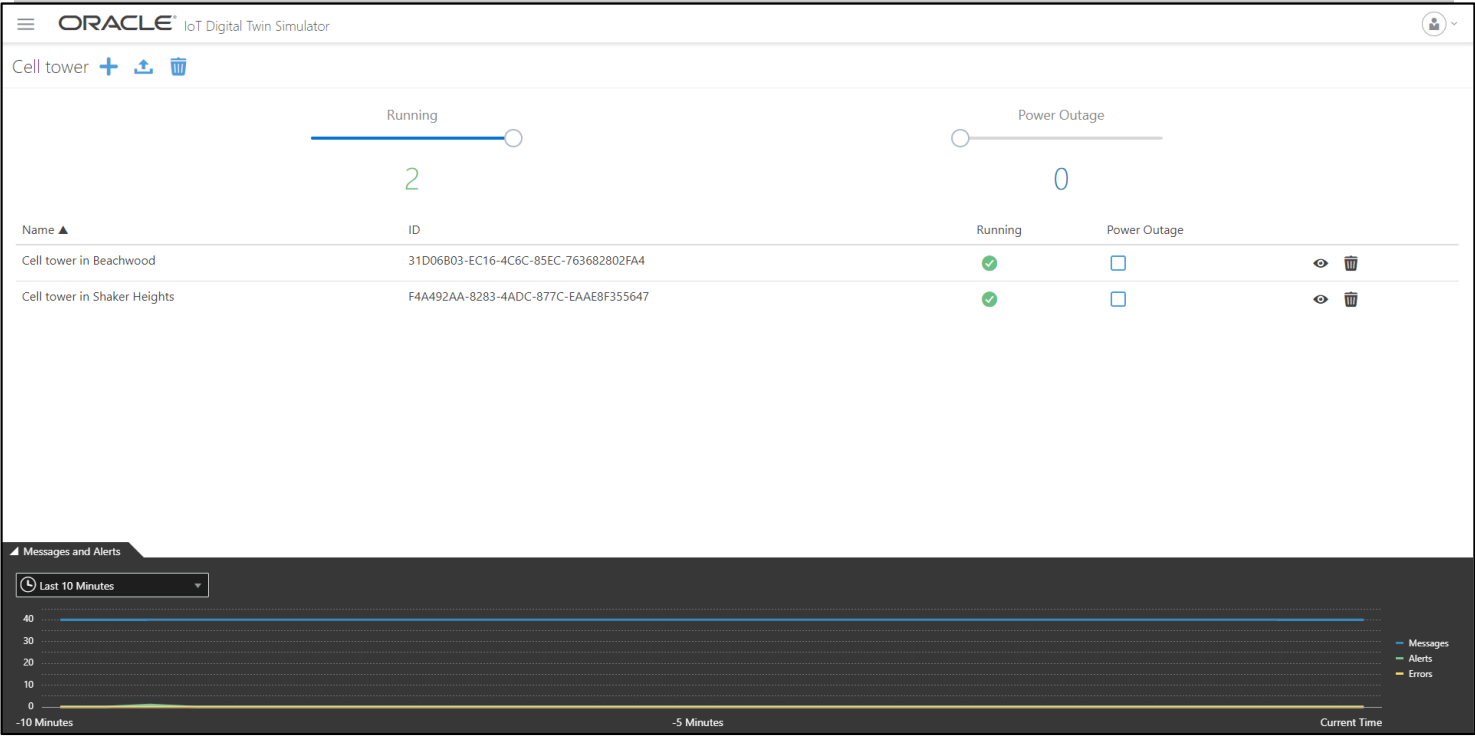


Orchestration integration will create an OFSC activity based on a Trigger from IoTCS.

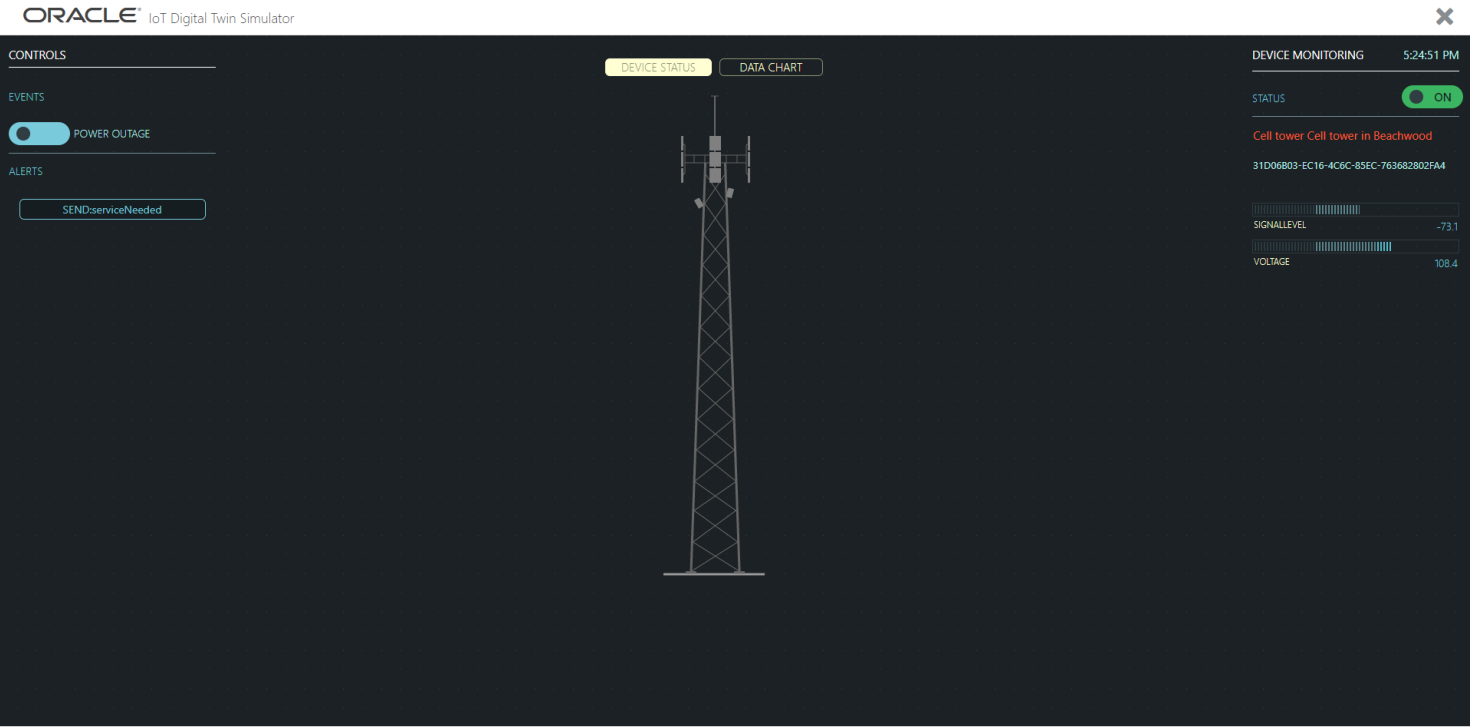


Monitored devices can be viewed in the IoTCS device simulator interface.

OFSC-OSvC Integration Using OIC



Device details of the monitored asset.



When maintenance is required, the device sends an alert.

ORACLE[®] IoT Digital Twin Simulator

CONTROLS

EVENTS

ALERTS

POWER OUTAGE

MESSAGE SENT!

DEVICE STATUS

DATA CHART

DEVICE MONITORING

5:26:30 PM

STATUS

ON

Cell tower Cell tower in Beachwood

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

SIGNAL LEVEL

-77.4

VOLTAGE

108.7

Alert: Routing service is needed

1/1

The alert triggered by IoTCS, triggers an incident in OIC

Monitoring

Dashboards

Integrations

Agents

Tracking

Runs

Errors

ORACLE[®] Integration Cloud

Track Instances

Jun 5, 2018 5:04:46 AM PDT Last 1 Hour

Search

	Id: 6869d79e-2e6f-4e4e-812c-3b75f51a498b IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 9	Started just now Completed just now Duration 04 sec
	Id: 64cad7d9-45a1-4133-b23a-1c20de0f458c IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 8	Started 8 minutes ago Completed 8 minutes ago Duration 02 sec
	Id: 2b923964-81d2-4432-b286-06e81aff99ac IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 7	Started 9 minutes ago Completed 9 minutes ago Duration 04 sec
	Id: cfc4fb63-ab29-4a12-9ec7-1e130d07324b IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 6	Started 21 minutes ago Completed 21 minutes ago Duration 04 sec
	Id: 6bd0e4a3-cbd7-44dc-a994-d533a65fac28 IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 5	Started 23 minutes ago Completed 23 minutes ago Duration 06 sec
	Id: fd35a8c1-8d59-4e83-a420-582234641a26 IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 4	Started 34 minutes ago Completed 34 minutes ago Duration 06 sec
	Id: 7d54fd11-1553-4bce-b4f7-7e7b3263e246 IOT to OFSC Orchestration 1.0 COMPLETED	Instance ID: 3	Started 49 minutes ago Completed 49 minutes ago Duration 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 navigation bar includes 'Dispatch', 'Resource Settings', 'Reports', 'Service Requests', and 'Configuration'. The left sidebar shows a hierarchy of resources under 'Sunrise Enterprise', including 'Planning (0)' and 'Planning (2)'. The main area shows a resource calendar for 'Tuesday, June 5th, 2018'. A red vertical line indicates the current time at 08:03 AM. Below the calendar, a table lists activities:

Activity	Time Slot	Information	Activity ID	Capacity	Activity status	Duration	Service Wt	Traveling Time	Work Zone	City
		3333 Richmond Rd	4225850		pending	00:48		00:00		Beachwood
			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

Admin

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 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

E543BD89-0AEB-41D9-9623-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

ORACLE[®] Field Service Cloud

DispatchResource SettingsReportsService RequestsConfiguration

Activity details (Planning)

CancelDirectionsMoveSend RequestAsset details

Activity ID4225850

Asset NameCT90380927098

SummaryService is needed for the tower

SeverityLow

Activity typeAsset Maintenance

Activity statuspending

Position in RouteOrdered

Duration0 hours 48 minutes

SLA Start08 AM 06/19/18

SLA End06/19/18

Start - End12:00 AM - 12:48 AM

Access Schedule(UTC-05:00) New York - Eastern Time (ET)

Customer infoMessagesHistory

Address3333 Richmond Rd

CityBeachwood

ZIP/Postal Code44122

StateOH

Account NumberES43BD089-0AEB-41D9-9623-A58C75C00BF5

CT90380927098

Currently Connected

Currently Utilized

Currently Available

100%

100%

100%

INFOINCIDENTSWARNINGSANOMALIESPREDICTIONSSENSORSIMAGESLOCATION HISTORY

Standard Attributes

RESERVED

TYPEcell_tower_type

DESCRIPTION

TAGS

GROUPS

Custom Attributes

ZIP44122

SERVICE_DELTA14

CITYBeachwood

STREET3333 Richmond Rd

STATEOH

Close

OK

ORACLE[®] Field Service Cloud

DispatchResource SettingsReportsService RequestsConfiguration

Activity details (Planning)

CancelDirectionsMoveSend RequestAsset details

Activity ID4225850

Asset NameCT90380927098

SummaryService is needed for the tower

SeverityLow

Activity typeAsset Maintenance

Activity statuspending

Position in RouteOrdered

Duration0 hours 48 minutes

SLA Start08 AM 06/19/18

SLA End06/19/18

Start - End12:00 AM - 12:48 AM

Access Schedule(UTC-05:00) New York - Eastern Time (ET)

Customer infoMessagesHistory

Address3333 Richmond Rd

CityBeachwood

ZIP/Postal Code44122

StateOH

Account NumberES43BD089-0AEB-41D9-9623-A58C75C00BF5

CT90380927098

Currently Connected

Currently Utilized

Currently Available

100%

100%

100%

INFOINCIDENTSWARNINGSANOMALIESPREDICTIONSSENSORSIMAGESLOCATION HISTORY

SENSORcell_tower

ATTRIBUTESVoltage

Last 1 hour

120

80

40

0

12:45 PM 6 Jun 2018

1:00 PM

1:15 PM

1:30 PM

Close

OK

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

The screenshot displays the Oracle IoT Digital Twin Simulator interface. On the left, the 'CONTROLS' panel includes 'EVENTS' with a 'POWER OUTAGE!' toggle and 'ALERTS' with a 'SEND:serviceNeeded' button. The central area shows a 'DEVICE STATUS' tab with a 'DATA CHART' button and a 3D model of a cell tower. On the right, the 'DEVICE MONITORING' panel shows the status as 'ON', the device name 'Cell tower Cell tower in Shaker Heights', the ID 'FAA492AA-8283-4ADC-877C-EAAE8F355647', and metrics for 'SIGNALLEVEL' (-120.0) and 'VOLTAGE' (0.0). A blue banner at the bottom indicates an event: 'Event: Power Outage'.

An OIC incident triggers based on the event from IoTCS

The screenshot shows the Oracle Integration Cloud 'Track Instances' page. The left sidebar contains navigation links: Monitoring, Dashboards, Integrations, Agents, Tracking (selected), Runs, and Errors. The main content area displays a table of instances, with the first instance highlighted by a red box. The table includes columns for instance ID, name, status, and timing.

Jun 5, 2018 5:12:41 AM PDT		Last 1 Hour	Search
	Id: e648eb69-309a-40bd-aa8b-d49abbd19db5 IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 11	Started just now Completed just now Duration 01 sec
	Id: 2dd76564-3fc1-4a46-bac3-26fa9459d8f4 IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 10	Started 1 minute ago Completed 1 minute ago Duration 04 sec
	Id: 6869d79e-2e6f-4e4e-812c-3b75f51a498b IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 9	Started 8 minutes ago Completed 7 minutes ago Duration 04 sec
	Id: 64cad7d9-45a1-4133-b23a-1c20de0f458c IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 8	Started 16 minutes ago Completed 16 minutes ago Duration 02 sec
	Id: 2b923964-81d2-4432-b286-06e81aff99ac IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 7	Started 17 minutes ago Completed 17 minutes ago Duration 04 sec
	Id: cfc4fb63-ab29-4a12-9ec7-1e130d07324b IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 6	Started 29 minutes ago Completed 29 minutes ago Duration 04 sec
	Id: 6bd0e4a3-cbd7-44dc-a994-d533a65fac28 IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 5	Started 31 minutes ago Completed 31 minutes ago Duration 06 sec
	Id: fd35a8c1-8d59-4e83-a420-582234641a26 IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 4	Started 42 minutes ago Completed 42 minutes ago Duration 06 sec
	Id: 7d54fd11-1553-4bce-b4f7-7e7b3263e246 IOT to OF SC Orchestration 1.0 COMPLETED	Instance ID: 3	Started 57 minutes ago Completed 57 minutes ago Duration 06 sec

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.

ORACLE Field Service Cloud

DispatchResource SettingsReportsService RequestsConfiguration

Q Name or ID

PlanningTuesday, June 5th, 2018Baseline Settings

Sunrise Enterprise

Asia (0)

dd (68)

dtest_bucket (0)

Europe (0)

FL USA

Newfoundland

ns_315 (0)

Planning (0)

São José dos Campos (0)

Texas inventories (0)

Routing Plans

17

Execution Summary

2

Autorouting

100%

Resource Utilization

N/A

Savings

-\$44,540

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	

ORACLE Field Service Cloud

DispatchResource SettingsReportsService RequestsConfiguration

Q Name or ID

PlanningTuesday, June 5th, 2018Baseline Settings

Sunrise Enterprise

Asia (0)

dd (68)

dtest_bucket (0)

Europe (0)

FL USA

Newfoundland

ns_315 (0)

Planning (0)

São José dos Campos (0)

Texas inventories (0)

Routing Plans

17

Execution Summary

2

Autorouting

100%

Resource Utilization

N/A

Savings

-\$44,540

Time	Bucket	Routing Plan	Launched	Assigned Activities	Resources	Status
08:13 AM						
08:12 AM						
08:11 AM						
08:10 AM						

Automatic Routing: Immediate - ID 27311

SummaryReportComparison

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

ORACLE

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

ORACLE[®] Field Service Cloud

BR

(fast TC)
Baptist,

06/05/18
08:00 - 17:00

Activate Route

A

Asset Maintenance >

Navigate

My Route

9%

1 Pending

Activities

Add Activity

Inventory

Options

< Home

Activity details

Cancel

Navigate

Map

History

Reschedule

Asset details

Activity status: pending

Asset Name: CT90790127098

Empty identifier

Address: 3252 Ardmore Rd

City: Shaker Heights

ZIP/Postal Code: 44120

State: OH

Account Number: 988ADFF6-3603-46BB-A601-DEBA14E9B72E

Work Order: 97FB2DE8-E78D-4D45-9279-D6EFFF7E0E70

Activity type: Asset Maintenance

Duration: 48 minutes

Start - End: 08:17 - 09:05

SLA End: 06/12/18 08:10

Agreement

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

< Details

Asset details

Q

CT90790127098

Currently Connected

Last 1 hour

100%

Currently Utilized

Last 1 hour

100%

Currently Available

Last 1 hour

100%

INFOINCIDENTSWARNINGSANOMALIESPREDICTIONSSENSORSIMAGESLOCATION HISTORY

Standard Attributes

RESERVED

TYPE

DESCRIPTION

TAGS

GROUPS

cell_tower_type

REGISTRATION TIME

REGISTERED BY

LAST MODIFIED TIME

LAST MODIFIED BY

LAST REPORTED TIME

GEO-LOCATION

ASSIGNED PLACE

Jun 05 2018 02:44 PM

iot

Jun 05 2018 02:44 PM

iot

Jun 05 2018 05:49 PM

41.473942, -81.537064

Custom Attributes

ZIP

SERVICE_DELTA

CITY

STREET

STATE

44120

7

Shaker Heights

3252 Ardmore Rd

OH