

Oracle® Cloud

Using Oracle Internet of Things Fleet Monitoring Cloud Service



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Preface

Using Oracle IoT Fleet Monitoring Cloud Service provides information and procedures for using Oracle IoT Fleet Monitoring Cloud Service. Oracle IoT Fleet Monitoring Cloud Service lets you monitor and manage your fleet.

Topics:

- Audience
- Documentation Accessibility
- Diversity and Inclusion
- Related Documents
- Conventions

Audience

Using Oracle IoT Fleet Monitoring Cloud Service is intended for Fleet Managers who are responsible for managing their fleet.

Documentation Accessibility

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Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Related Documents

For more information, see these Oracle resources:

- Oracle Cloud at <http://cloud.oracle.com>
- *Getting Started with Oracle Cloud*

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.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Get to Know Oracle IoT Fleet Monitoring Cloud Service

Welcome to Oracle IoT Fleet Monitoring Cloud Service. Oracle IoT Fleet Monitoring Cloud Service is a cloud-based service that provides you real-time end-to-end transportation visibility and insights into business entities, such as vehicle location, condition of containers, status of in-transit inventory, cargo condition, operational costs, vehicle use, and driving behavior.

Oracle IoT Fleet Monitoring Cloud Service Overview

Oracle Internet of Things (IoT) Fleet Monitoring Cloud Service helps you track the location and activity of fleet assets. Sensors connected to the on-board diagnostic (OBD) port in each fleet asset use cellular, satellite, or Bluetooth connections to transmit real-time vehicle location and performance data to Oracle IoT Fleet Monitoring Cloud Service. You can use real-time and historic vehicle location and performance data to determine where changes can be implemented to improve customer satisfaction, reduce operating costs, and increase driver safety.

For complete transportation monitoring of a supply chain network, Oracle Internet of Things (IoT) Fleet Monitoring Cloud Service provides you visibility of private fleet or third party carrier trips for

- Real-time location and condition of vehicles, trailers, and containers moving freight
- In-transit cargo and inventory condition and their insights
- Predictions for estimated time of arrival (ETA) of trips
- Driver behavior and vehicle usage

Your business requirements determine how you use Oracle IoT Fleet Monitoring Cloud Service. You might want to focus on the reduction of fuel costs, plan more efficient delivery routes, or keep in touch with drivers more frequently. Oracle IoT Fleet Monitoring Cloud Service provides a user interface that is designed to let you focus on the data that is important to you. Let's take a look at some of these features.

The map view identifies the location of every fleet asset in real-time. Knowing the location of a vehicle in real-time lets you more accurately predict the estimated time of arrival (ETA), improve route planning efficiency, and reduce idle time and fuel consumption.

The prebuilt business dashboards and predefined key performance indicators (KPIs) help you monitor fleet performance — availability, active trips, fuel costs, utilization, speed violations, and more. Knowing the condition of each fleet asset helps you schedule regular repair and servicing and avoid downtime.

Rules can help you track fuel consumption, battery life, tire pressure, engine oil level, engine temperature, and more. Rules can also help you influence good driver behavior by monitoring speed violations, harsh braking, and route deviations.

Use the Oracle IoT Fleet Monitoring Cloud Service to:

- **Gain Real-Time Fleet Visibility**
 - Track and locate vehicles in transit, and get current vehicle on-board sensor data.
 - View map-based, interactive visualizations of vehicles, equipment, ship-orders, ship-units, and ship-items associated with trips.
 - Leverage built-in KPIs for fleet status, utilization, availability, fuel costs, exceptions, and policy violations.
 - Use certified partner devices plugged directly into your vehicle, and securely collect and transmit vehicle on-board sensor data.
- **Improve ETA Predictions and Reduce Vehicle Downtime**
 - Continuously monitor vehicle on-board sensor data to detect faults and diagnose alerts.
 - Improve customer experiences with better ETA predictions and potential vehicle failure predictions.
 - Manage timely resolution of issues via effective incident management.
 - Gain contextualized visibility and notifications on the mobile app.
 - Apply feature-based machine learning on data from Oracle Transportation Management Cloud to determine insights and transit time predictions for planned shipments.
- **Monitor Vehicle Usage**
 - Create geofence boundaries to specify vehicle usage areas.
 - Get instantly notified when vehicle movement violates geofence boundaries.
 - Monitor vehicle idle time to reduce fuel costs and complete trips faster.
- **Plug in to the Supply Chain**
 - Integrate with Oracle Transportation Management Cloud and Oracle Warehouse Management Cloud to pull in trip or shipment information, send information about vehicles in transit, and import facilities.
 - Automatically generate incidents and alerts in supply chain management applications to handle issues such as shipment delays and vehicle breakdowns.
 - Digitally transform your fleet management processes with complete real-time visibility across all aspects of your fleet.

Roles and Responsibilities

How you interact with Oracle IoT Fleet Monitoring Cloud Service is dependent on your assigned role and access privileges.

Role	Responsibilities
Administrator (IoT Administrator)	<p>This role is common across all the apps of Oracle IoT Intelligent Applications.</p> <ul style="list-style-type: none"> • Create and manage organizations • Create users in the application, manage their roles • Manage users of an organization • Manages vehicles and active trips. • Responds to and resolves incidents and alerts. • Creates rules to monitor vehicle and driver performance. • Creates geofences to prevent misuse of fleet assets and theft. • Creates and modifies trip templates and trips. • Sets and modifies application settings including monetary and measurement units. • Uploads vehicle, trip, device model, and user mapping data. • Uses key performance indicators (KPIs) to determine the efficiency of fleet operations including fuel costs and vehicle utilization.
Viewer (IoTViewer)	<p>This role is common across all the apps of Oracle IoT Intelligent Applications.</p> <ul style="list-style-type: none"> • View operations center entities of an organization such as <ul style="list-style-type: none"> — dashboards — digital twins — notifications <p>A non-admin user should have a Viewer role in order to access the Oracle IoT management console (/ui)</p>
Technician (IoTTechnician)	<p>This role is common across all the apps of Oracle IoT Intelligent Applications.</p> <ul style="list-style-type: none"> • Create and manage entity instances in an organization • Configure connectivity by creating connectors, download the schema and creating the interpreter. • Troubleshooting issues, resolve incidents, view associated rules. • Access digital twin entities, execute actions and what ifs. • Access assets inventory and edit their custom attributes.
Integrator (IoTIntegrator)	<p>This role is common across all the apps of Oracle IoT Intelligent Applications.</p> <ul style="list-style-type: none"> • Integrates Oracle IoT Fleet Monitoring Cloud Service with other applications and cloud services such as Oracle Transportation Management, Warehouse Management, and so on. • Configure the external application to allow it to access Oracle IoT Fleet Monitoring Cloud Service
Logistics Operator (IoTLogisticsOperator)	<p>This role is applicable only for Oracle IoT Fleet Monitoring Cloud Service.</p> <p>View operations center entities</p> <ul style="list-style-type: none"> • Views, creates, and manages trips. • view incidents, exceptions, alerts and their associated rules. • Has read access to all operation center views, such as dashboards, vehicles, drivers, facilities, shipments, and shipment transaction logs. • View digital twins of all entities and their sub-entities.
Driver (IoTDriver)	<p>This role is applicable only for Oracle IoT Fleet Monitoring Cloud Service.</p> <ul style="list-style-type: none"> • Creates new trips. • Manages vehicle assignments. • Starts shipments. • Stop or complete trips or shipments and add comments

Role	Responsibilities
Shipper (IoTShipper)	<p>This role is applicable only for Oracle IoT Fleet Monitoring Cloud Service.</p> <ul style="list-style-type: none"> Tracks and monitors shipments, trips, and facilities.

Oracle IoT Fleet Monitoring Cloud Service Business Objects

A business object is an object within a computer application that represents a part of the business or an item within it. These business objects let you collect, view, manage, and analyze business data. A vehicle is a business object within the Oracle IoT Fleet Monitoring Cloud Service. Using business objects simplifies data management by encapsulating the data associated with the business entity it represents.

The structure, relationships, and attributes of business objects are stored in the schema of your database. Your development team manually defines the attributes of the predefined Oracle IoT Fleet Monitoring Cloud Service business objects. For example, the vehicle identification number (VIN), make, model, and year for each of the vehicles in your fleet. When you view a vehicle business object in Oracle IoT Fleet Monitoring Cloud Service, the defined attributes are displayed. To allow administrator to update, create, and delete business objects, your development team has created a set of actions that let them add create, edit, and update business object data. When the administrator modifies business objects, the schema and tables in the database are automatically updated.

You can track, monitor, and perform analytics on business objects. Some business objects such as vehicles and drivers are predefined in the application and others such as shipments and facilities must be imported from external systems. Optionally, you can create custom business entities such as key performance indicators (KPIs) to analyze your data and develop predictive analytics.

This table lists the Oracle IoT Fleet Monitoring Cloud Service business objects.

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

Business Object	Creation Supported in the Application?	Imported from an External System?	Optional Business Object?
Alert	✓		
Driver	✓	✓	
Geofence	✓		
Facility			✓
Incident	✓		

Business Object	Creation Supported in the Application?	Imported from an External System?	Optional Business Object?
Metrics or Key Performance Indicators (KPIs)	✓		
Metric/KPI Contextual Data			✓
Organization	✓		
Rule	✓		
Trip	✓		✓
Shipment		✓	✓
Vehicle	✓		
Equipment		✓	
Ship-Order		✓	
Ship-Unit		✓	
Ship-Item		✓	

Monitored Business Entities

Use the Oracle IoT Fleet Monitoring Cloud Service to monitor trips, shipments, vehicles, equipment in vehicles, ship-orders, ship-units or packages, ship-items, and the drivers assigned to a trip.

Trips

A trip is the primary entity of Oracle IoT Fleet Monitoring Cloud Service that has multiple sub entities such as stop locations, vehicle, drivers, equipment, ship-orders, ship-units, and ship-items. In real-time, as an administrator, you can perform location monitoring and inventory condition monitoring of the trip including all its sub entities. A trip can be created within the application or imported from an external application such as Oracle Transportation Management Cloud Service.

Vehicles

Connect a data logger to the OBD-II of a fleet vehicle to send vehicle data to the Oracle IoT Fleet Monitoring Cloud Service. By tracking vehicle performance in real time, you can schedule repair and service and avoid costly breakdowns. As an administrator you know where every vehicle is located and if it is operating efficiently.

Equipment

Equipment is a sub-entity of a trip such as, a trailer or a container. It is part of an imported trip and the equipment can be associated with a well-known equipment asset created and maintained in or it can be associated with a tracking sensor in Oracle IoT Fleet Monitoring Cloud Service. This tracking sensor of an equipment allow you to monitor its life-cycle and condition within the life-cycle of the trip.

Ship Orders

A ship order is a sub-entity of a trip and contains information including source location, destination location, pickup dates, status, special instructions, and measurements, such as, weight or volume. An imported trip can contain one or more ship orders.

Ship Units

A ship-unit is a sub-entity of a trip and contains information such as, commodity, hazardous or not, measurements, count, type, and so on. There can be one or more ship units in a ship order. A trip can contain multiple ship-units, each belonging to multiple ship-orders of that trip. A ship-unit can either be associated with a well-known package asset created and maintained in or it can be associated with a sensor in Oracle IoT Fleet Monitoring Cloud Service.

Ship Items

A ship-item is inventory that contains information such as quantity, commodity, measurements, hazardous or not, and so on. One or more ship-items can belong to a ship-unit and each ship-item is associated with a ship-order. A ship-item can either be associated with a well-known item asset created and maintained in or it can be associated with a sensor in Oracle IoT Fleet Monitoring Cloud Service. Its sensor devices help you monitor its condition and location.

Drivers

Good driver behavior can reduce repair and service maintenance costs. As an administrator, you can implement rules and geo-fences to enforce good driver behavior. For example, you can implement rules that relay information about drivers exceeding speed limits, hard braking, or driving for too many hours. Geofence rules make sure drivers do not deviate from the assigned route.

Oracle IoT Fleet Monitoring Cloud Service Business Process Work-Flow

A work-flow, or a business process, is a collection of tasks that you complete to configure the cloud service to meet the unique requirements of your business. The typical tasks you complete are represented visually in the diagram and links to each task or collection of tasks are provided in the table below the diagram.

Oracle IoT Fleet Monitoring Cloud Service monitors, collects, transmits, and analyzes vehicle data. To perform predictive analytics that identify issues before they disrupt service to your customers, you can use the included key performance indicators (KPIs) or you can create your own custom KPIs to meet the unique requirements of your business. You can also create custom rules that notify you of abnormal vehicle conditions in real time. Knowing when a vehicle requires maintenance helps with the

development of maintenance schedules and this reduces or eliminates service disruptions due to unscheduled maintenance or breakdowns.

The real-time data collected by Oracle IoT Fleet Monitoring Cloud Service helps you optimize vehicle performance, improve driver safety, and increases customer satisfaction. You'll know the location of every vehicle in your fleet and you'll know if your drivers are complying with your policies.

Integration with Oracle Transportation Management makes it easier to access and share Oracle Transportation Management shipment data. Application integration increases efficiency and provides a better customer experience because you always know the location of a shipment. Integrations also let you realize the full benefit of your software investment and let you use all of the data you collect as fully as possible.

This image represents the work-flow for using Oracle IoT Fleet Monitoring Cloud Service:

 **Note:**

Familiarize yourself with the Oracle IoT Fleet Monitoring Cloud Service Operation Center, Design Center, and App Settings before performing these tasks. See [Access Oracle IoT Fleet Monitoring Cloud Service](#) for more information.

Task	Description	More Information
Set Up Your Devices to Send Data	Set up your devices to send data to Oracle IoT Fleet Monitoring Cloud Service.	Connect Vehicles to Oracle IoT Fleet Monitoring Cloud Service
Add Vehicles	Create the vehicle types and vehicles that you wish to monitor.	Add and Manage Vehicles
Create Trips	Create trip templates, trips and add stop locations to a trip.	Create Trips Using the App UI
Import Trips and Associate its Equipment, Ship Orders, Ship Units, and Ship Items	For an imported trip, associate its sub-entities either with sensors or with well-known transport assets existing in Oracle IoT Asset Monitoring Cloud. This association enables their real-time location and cargo condition monitoring.	Manage Trips to Enable Condition Monitoring
Create Drivers	Create drivers and associate a driver to a trip.	Manage Drivers
Create Rules	Create location, threshold, and alert rules to generate alerts or incidents that identify vehicle and trip issues.	Create Rules to Monitor Issues

Simulate Before You Implement

Access to the Oracle Fusion Cloud IoT Intelligent Applications simulator is included with your Oracle IoT Fleet Monitoring Cloud Service subscription. The simulator lets you create simulated vehicles to test data transmission and simulate alerts, incidents, and trips. The simulator eliminates the need to purchase, install, and configure expensive test hardware and software.

The Oracle Fusion Cloud IoT Intelligent Applications simulator simulates the typical operational characteristics of a fleet vehicle. This includes vehicle speed, engine

temperature, and distance travelled. You can assign a simulated vehicle to a trip and then you can follow its progress in the map view. You can receive notifications when the simulated vehicle starts or completes a trip, or when specific rule conditions such as maximum vehicle speed are met or exceeded.

The primary objective of the Oracle Fusion Cloud IoT Intelligent Applications simulator is to let you evaluate Oracle IoT Fleet Monitoring Cloud Service functionality and assess the needs of your business. With the simulator, you can determine what data you want to monitor and how Oracle IoT Fleet Monitoring Cloud Service can help you reduce costs and improve customer service.

Want to learn more about Oracle Fusion Cloud IoT Intelligent Applications simulator? See [Use the Truck Simulator](#).

How to Get Support

Use these resources to resolve problems:

- Visit the Oracle Help Center at <http://docs.oracle.com/en/>.
- If you're an Oracle Premier Support Customer, visit [My Oracle Support](#).
- Contact Oracle Technical Support. See Contacting Oracle Support in *Getting Started with Oracle Cloud*.

Access Oracle IoT Fleet Monitoring Cloud Service

Here's what you need to know to access Oracle IoT Fleet Monitoring Cloud Service, including the prerequisites, accessing the instance and its various interfaces, and assigning roles. Review this chapter carefully to make sure that you have configured the service for your requirements.

Before You Begin with Oracle IoT Fleet Monitoring Cloud Service

Before you use the cloud service:

- Make sure that you have the link to access the service instance. This link is provided by Oracle in an email and the format is typically `https://hostname/<cloud service acronym>`. For example, `https://hostname/fm` for Oracle IoT Fleet Monitoring Cloud Service. If you haven't received this email, contact your Oracle representative.
- If you are a driver, make sure you have the Oracle IoT Fleet Monitoring Mobile Application installed and provisioned on your Apple or Android mobile device. If you require assistance with setting up the application, contact your Fleet Manager.
- Make sure that you have a user name and password to access Oracle IoT Fleet Monitoring Cloud Service or the Oracle IoT Fleet Monitoring Mobile Application. If you have not been assigned a user name or password, contact your development team.

How You Access Oracle IoT Fleet Monitoring Cloud Service

How you access and interact with Oracle IoT Fleet Monitoring Cloud Service is dependent on your role. For example, a Fleet Manager, uses the Oracle IoT Fleet Monitoring Cloud Service browser-based application interface to manage fleet activities. A driver uses the Oracle IoT Fleet Monitoring Mobile Application to review trip information and communicate with the Fleet Manager.

The Application Interface

Fleet Managers use the browser-based application interface to manage the day-to-day activities of their fleet and monitor fleet performance. For example, a Fleet Manager can use the map view to quickly determine the location of fleet vehicles, vehicle availability, vehicle utilization, and reported incidents. The Fleet Manager can use the application interface to create rules to track fuel consumption, battery life, tire pressure, engine oil level, engine temperature, and more.

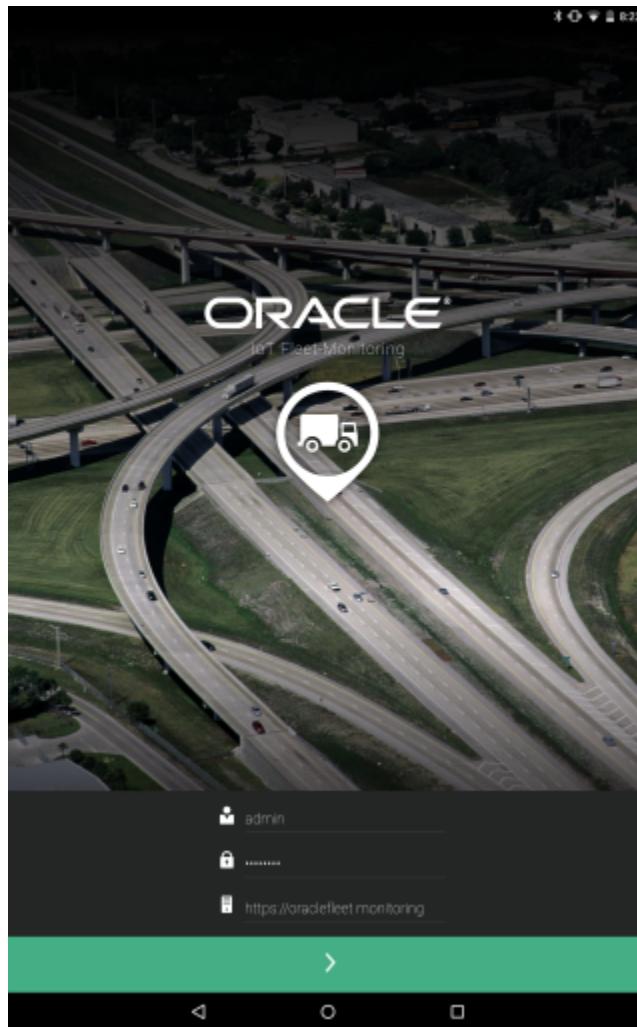
The Oracle IoT Fleet Monitoring Cloud Service application has these broad sections:

- [The Operation Center](#)
- [The Design Center](#)

- [Settings](#)

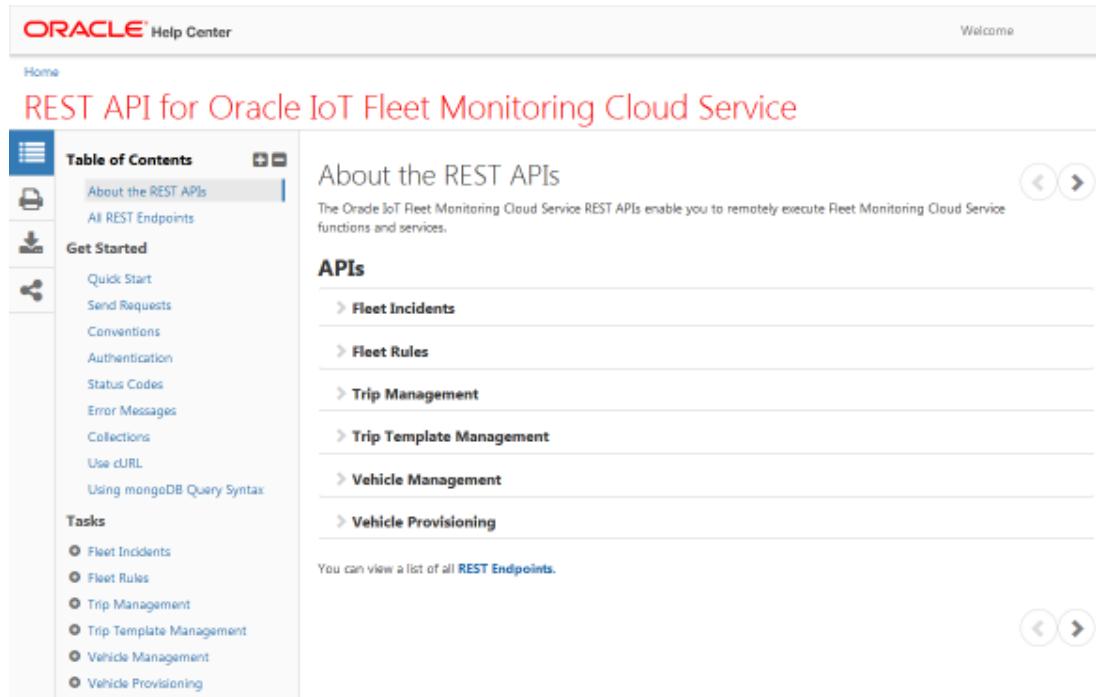
Oracle IoT Fleet Monitoring Mobile Application

The Oracle IoT Fleet Monitoring Mobile Application is a cloud based application for mobile Apple or Android devices. Drivers use the application to review trip information and receive route updates in real time. Drivers can set their starting location, add waypoints, and manage messages from the fleet manager. See [Use the Oracle IoT Fleet Monitoring Mobile App](#).



REST API for Oracle IoT Fleet Monitoring Cloud Service

The REST API for Oracle IoT Fleet Monitoring Cloud Service lets developers remotely execute Oracle IoT Fleet Monitoring Cloud Service functions and services. The REST API for Oracle IoT Fleet Monitoring Cloud Service is a resource-based API that uses Hypertext Application Language (HAL). HAL provides a standard way for expressing the resources and relationships of an API as hyperlinks. Using HAL, developers use HTTP methods (GET, PUT, POST, DELETE) to submit requests and receive information about the API in the response. See [REST API for Oracle IoT Fleet Monitoring Cloud Service](#).



The screenshot shows the Oracle Help Center interface for the REST API documentation. The left sidebar contains a 'Table of Contents' with sections like 'About the REST APIs', 'All REST Endpoints', 'Get Started' (with sub-sections like 'Quick Start', 'Send Requests', 'Conventions', 'Authentication', 'Status Codes', 'Error Messages', 'Collections', 'Use cURL', and 'Using mongoDB Query Syntax'), 'Tasks' (with sub-sections for 'Fleet Incidents', 'Fleet Rules', 'Trip Management', 'Trip Template Management', 'Vehicle Management', and 'Vehicle Provisioning'), and 'APIs' (with sub-sections for 'Fleet Incidents', 'Fleet Rules', 'Trip Management', 'Trip Template Management', 'Vehicle Management', and 'Vehicle Provisioning'). The main content area is titled 'About the REST APIs' and describes the REST APIs for executing Fleet Monitoring Cloud Service functions and services. It lists several API categories: Fleet Incidents, Fleet Rules, Trip Management, Trip Template Management, Vehicle Management, and Vehicle Provisioning. At the bottom of the main content, there is a note: 'You can view a list of all REST Endpoints.' Navigation arrows are visible at the top and bottom right of the main content area.

How to Access Oracle IoT Fleet Monitoring Cloud Service

Log in to manage and monitor your Oracle IoT Fleet Monitoring Cloud Service instance. Before you log in to Oracle IoT Fleet Monitoring Cloud Service, you must have a user account. Oracle provides user account information when you subscribe to Oracle IoT Fleet Monitoring Cloud Service.

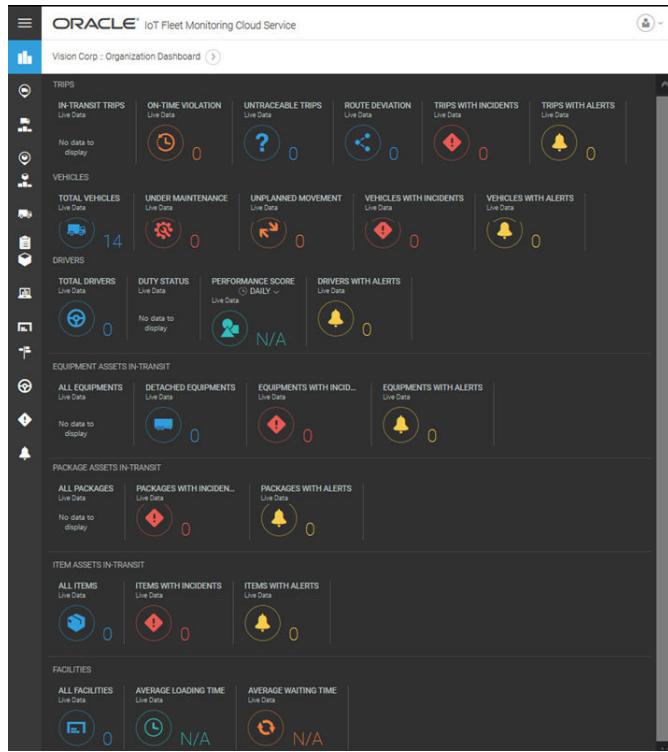
1. Open on Internet browser and browse to the URL for the Oracle IoT Fleet Monitoring Cloud Service instance provided by Oracle. Typically, the URL for cloud service instances is: `https://hostname/<cloud service acronym>`. For example, `https://hostname/fm` for Oracle IoT Fleet Monitoring Cloud Service.
2. Enter your user name and password and click **Sign In**.

The Operation Center

The Operation center is the default view for your organization. When you first log in to Oracle IoT Fleet Monitoring Cloud Service, you are placed in the Operation center for your organization.

You can return to the Operation center from any page by clicking **Menu** and selecting **Operation Center**.

Monitor your fleet, vehicles, drivers, trips, shipments, and facilities from the Operation center. The Organization Dashboard is the default Operation Center page. The **Organization Dashboard** provides a snapshot view of the current status including threshold deviations or exceptions raised for trips, vehicles, drivers, facilities, equipment, ship-units or packages, and ship-items currently in-transit, for the active organization.



The toolbar on the left lets you access the following pages:

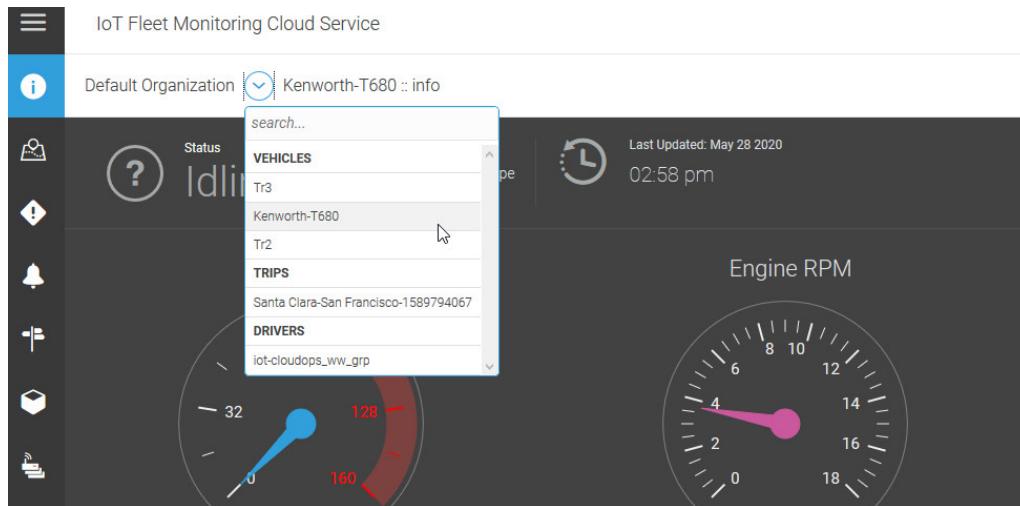
 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

Item	Description
 Organization Dashboard	This page provides you a snapshot view of the live status of the trips, vehicles, drivers, facilities, equipment assets, package assets, and item assets that are in-transit in the currently active organization. This page is the default view of the Operation Center. You can monitor live data of in-transit trips, untraceable trips, vehicles under maintenance, off-duty or on-duty drivers, equipment assets, package assets, and unit assets in-transit. These and several other vital parameters help you determine the overall performance of your organization in a single view. Note that the equipment assets, package assets and item assets are the well-known assets created and managed in Oracle IoT Asset Monitoring Cloud but have been leveraged in trips that are tracked and monitored in Oracle IoT Fleet Monitoring Cloud.
 Fleet Map	This page displays your fleet vehicles on the map. The Fleet Metrics and Trip Metrics display vehicle and trip metrics for the vehicles appearing on the map.

Item	Description
 Shipments Map	Shows shipments on the map. Use the shipments map view and info view to get real-time insights into your shipments in transit. Shipment metrics are displayed in a ribbon at the bottom of the shipment map view. Use the metrics ribbon to quickly locate shipments and view shipment metrics including active shipments, incidents, untraceable shipments, delayed shipments, and transportation costs. <i>Shipper</i> or <i>Administrator</i> permissions are required to view the shipment map view.
 Vehicles	Lists your vehicles along with their details, such as registration number and status. Click Information  against a vehicle to view the vehicle dashboard.
 Transaction Logs	Transaction logs can assist with troubleshooting Oracle Transportation Management Cloud Service communication issues. The transaction logs display all trip or shipment data that was sent to (outbound) or received from (inbound) Oracle Transportation Management Cloud Service or Oracle Intelligent Track and Trace. See View Transaction Logs .
 Shipments	Lists the shipments along with their details, such as driver, vehicle, stops, and delivery status details. <i>Shipper</i> or <i>Administrator</i> permissions are required to view shipment details.
 Shipments: Dashboard	View the shipments dashboard to quickly determine shipment performance for the current day or the previous seven days. The key performance indicators (KPIs) displayed on the dashboard include details, such as average delay, average freight weight, total freight cost, and delivery status.
 Facilities	Lists your facilities along with their average loading and waiting times.
 Trips	Shows your trips with details, such as status and trip alerts.
 Drivers	Lists the designated drivers along with their duty statuses and currently assigned vehicles.
 Incidents	Lists the incidents generated by rules. Details such as incident status, summary, priority, and creation time are also included.
	Click Information  against an incident to view or update the incident.
 Alerts	Lists the alerts generated by rules. Details such as description, alert type, rule type, and creation time are also included.
	Click Information  against a rule type to view or edit the alert rule.

The breadcrumbs at the top let you filter your context. For example, use the breadcrumbs to navigate to a particular vehicle, trip, or driver in the organization.



Use the Organization Dashboard

Use the Organization Dashboard to obtain the current status of all the entities of the active organization in a single view. Various widgets display the exceptions raised and deviations occurred for the entities and their sub-entities. It is also referred as an exceptions monitoring dashboard.

The out-of-box Organization Dashboard is the first view displayed when you sign in to the application. The status of all the entities in the current organization are displayed through widgets and icons where each panel of the dashboard represents an entity. Complete the steps to monitor, navigate, and examine the real-time status of each entity of the current organization. After signing in, you are on the Operation Center of the application and the Organization Dashboard is displayed.

1. View the panels and their widgets. Notice that each panel is associated with an entity of the organization including Trips, Vehicles, Drivers, Facilities, Equipment Assets, Package Assets, Item Assets. Note that the equipment assets, package assets and item assets are the well-known assets created and managed in Oracle IoT Asset Monitoring Cloud but have been leveraged in trips that are tracked and monitored in Oracle IoT Fleet Monitoring Cloud.
2. Notice that the first widget of each panel displays the total count of the entity in the organization. The remaining widgets display the count of entities with aberration, exceptions, or deviations, such as incidents, alerts, detached, untraceable, under maintenance and so on. Review the panel and widget content from his table:

Panel - Entity Name	Widgets – Status Indicators
Trips	In-Transit Trips, On-Time Violation, Route Deviation, Untraceable Trips, Trips with Incidents, Trips with Alerts
Vehicles	Total Vehicles, Unplanned Movement, Under Maintenance, Vehicle with Incidents, Vehicles with Alert
Drivers	Total Drivers, Duty Status, Performance Score (Daily/Weekly), Drivers with Alerts
Facilities	All Facilities, Average Loading Time, Average Waiting Time

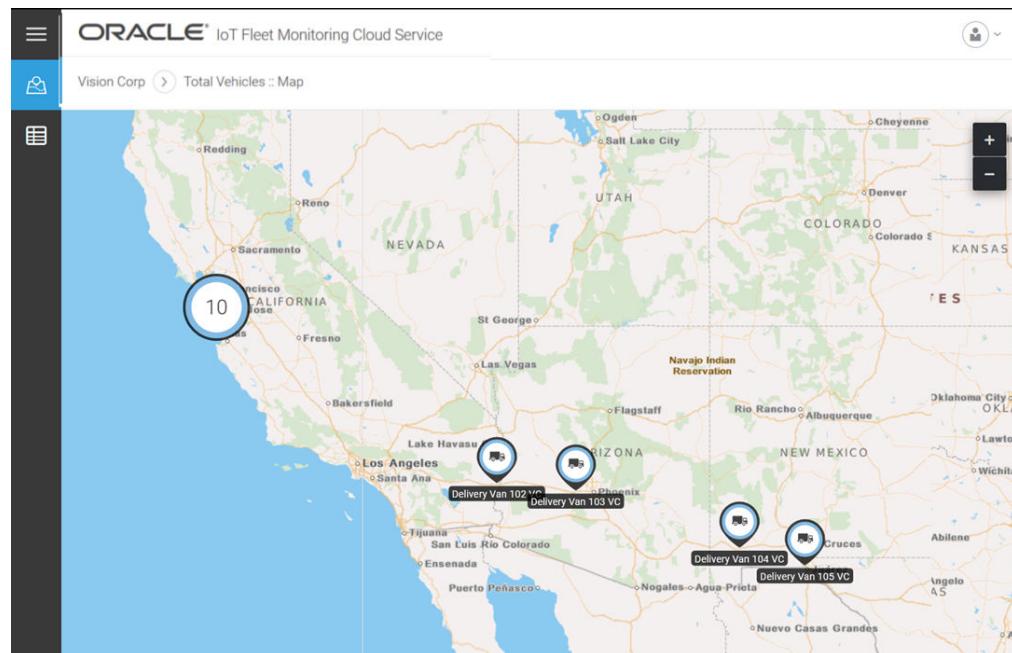
Panel - Entity Name	Widgets – Status Indicators
Equipment Assets In-Transit	All Equipment, Detached Equipment, Equipment with Incidents, Equipment with Alerts.
Package Assets In-Transit	All Packages, Packages with Incidents, Packages with Alerts
Item Asset In-Transit	All Items, Items with Incidents, Items with Alerts.

3. Explore and review the widgets of the **Vehicles** panel to monitor the real-time status of in-transit vehicles in the current organization.

a. To examine the live data on the map, click a widget of the panel

The map view appears and the entity's count for the status indicator is displayed on the map based on their geo-location.

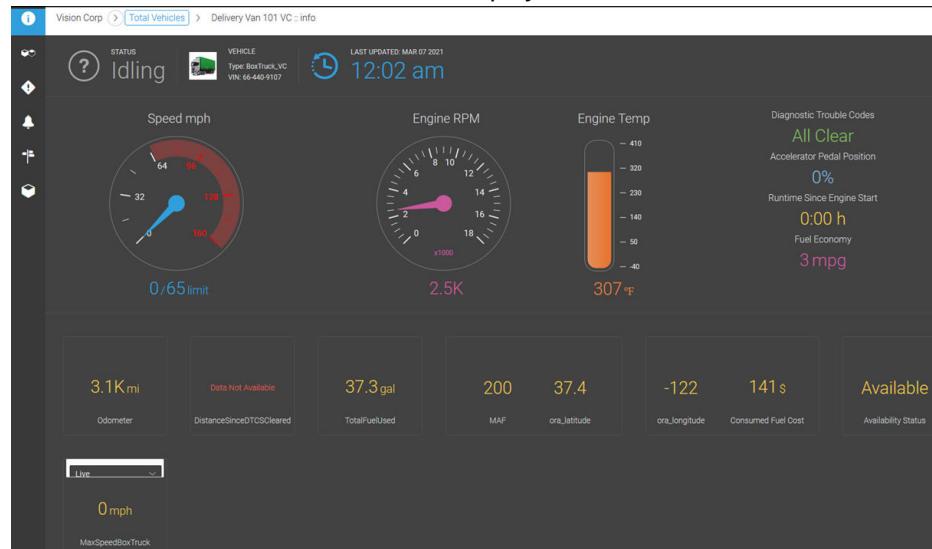
b. To view each entity instance individually on the map, click the count values until each entity instance appears on the map. You can zoom-in by double clicking an entity on the map.



c. To view a summary list of the entities, on the left navigation bar, click **List View** .

d. To examine a vehicle in detail, scroll towards the end of the record, hover over it, and click **Information** .

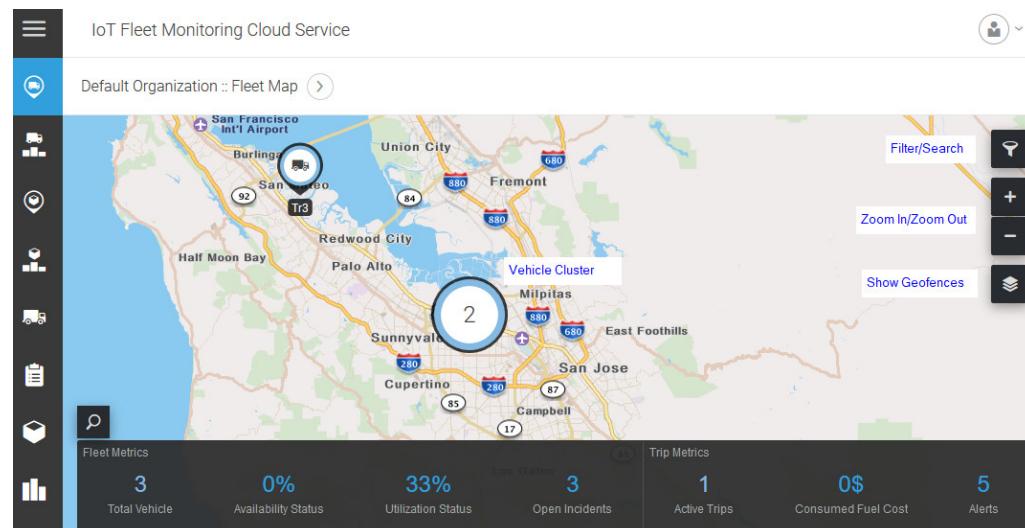
The information view of the vehicle is displayed.



- e. Use the breadcrumb navigation links to go back to the list view or the organization dashboard.
4. Repeat Step 3 for the remaining panels on the dashboard to obtain the status of all other entities including trips, drivers, facilities, equipment, packages, and items, of the organization.

Locate Your Vehicles in the Fleet Map

Use the map view to quickly locate the physical locations of your fleet vehicles. Your vehicles can appear independently, or clustered together, depending on your zoom level in the map.



1. In the Operation Center, click **Fleet Map** in the menu bar.

 **Note:**

If you are already on a vehicle, driver, or trip page, you can return to the map view by clicking the organization name in the breadcrumb navigation.

2. Use the zoom buttons (+ and -) to zoom in or out in the map view.
3. Click a vehicle cluster to separate out the individual vehicles. Alternatively, zoom in further to separate the clustered vehicles.
4. Click an individual vehicle to view the vehicle details.
5. (Optional) Click the Filter icon to search for individual vehicles based on vehicle attributes such as vehicle name, status, type, location, and driver name.
6. Click the GeoFences icon to show existing geofences on the map.

The Design Center

Use the design center to create and manage your fleet monitoring entities. You can monitor these entities in the operations center.

Use the design center to manage your organizations, vehicle types, vehicles, trips, drivers, shipments, facilities, geofences, and all the associated entities.

When you first log in to Oracle IoT Fleet Monitoring Cloud Service, you are placed into the operations center for your organization. Click **Menu** , and then click **Design Center** to access the design center options.

The design center contains the following pages:

- **Organization:** Use the Organization page to create and edit organizations. You can change the list of users associated with an organization, add dashboards for the organization, and add notification subscribers for the organization. You can also create rules, metrics, and integrations for the organization. You can edit organization-wide settings such as measurement units, currency, and the fleet KPI (metrics) bar for the map view.
Use the Organization page to switch your current organization. The organization selected in the design center is the one that appears under the operations center.
- **Vehicle Types:** Use the Vehicle Types page to create and manage your vehicle types. Use the Vehicle Types page to create entities associated with the vehicle type, such as metrics and rules.
- **Vehicles:** Use the Vehicles page to create, view, manage, and delete your vehicles. The vehicle view lets you see the vehicle information along with all sensors, incidents, alerts, trips, and shipments associated with the vehicle.
- **Trips:** Use the Trips page to create and manage trip rules and metrics. You can also use the Trips page to create trip templates that can be applied to frequently repeated trips.
- **Drivers:** Use the Drivers page to create and manage rules and metrics for your drivers.
- **Shipments:** Use the Shipments page to create and manage rules and metrics for your shipments.

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

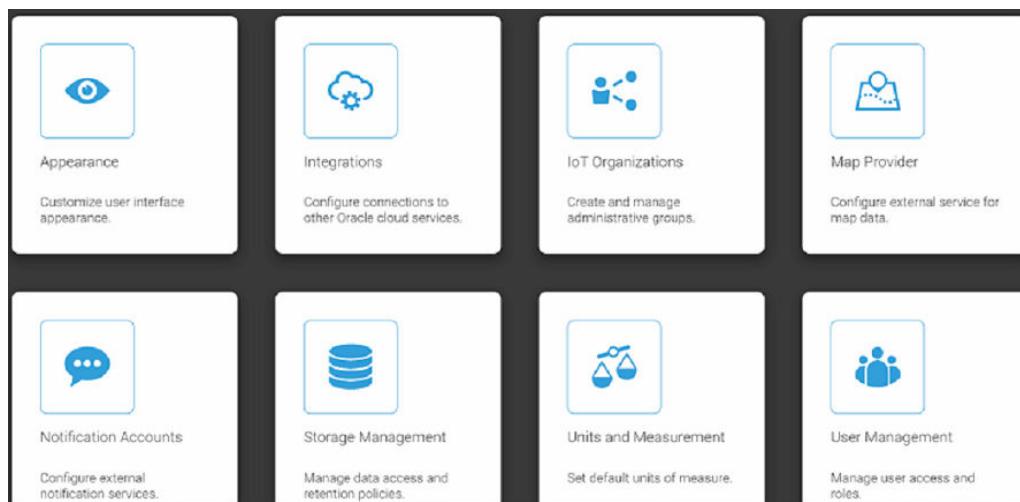
- **Equipments:** Use the Equipments page to create and manage rules and metrics for your equipments.
- **Ship Units:** Use the Ship Units page to create and manage rules and metrics for your ship units.
- **Ship Items:** Use the Ship Items page to create and manage rules and metrics for your ship items.
- **Facilities:** If you have imported facilities from Oracle Warehouse Management Cloud Service, you can view and manage them here. You can view the details for a facility, such as the facility code, address, and map preview. You can also create and manage facility rules, geofences, and floor plan.
- **Geofences:** Use the Geofences page to create, view, and edit your geofences. Both polygonal and circular geofences are supported.

Settings

Use settings to configure global settings such as creating users, managing data storage, adding map providers, adding integrations, managing organizations, configuring notification accounts, modifying appearances, or adding units of measurements. These global configurations are applicable to all the organizations of all the IoT intelligent applications.

To open the settings view from the **Operation Center**, click **Menu**, and select **Settings**. To open it from the **Design Center**, click **Previous**, and then select **Settings**.

As an administrator, the **Settings** view lets you configure global settings for your applications in IoT Intelligent Applications. Settings at each organization level can override these global configurations.



Item	Description
 Appearance	This option lets you customize the appearance of the title bar of your application. It provides options to display or remove the application name and the logo on the title bar.
 Integrations	This option allows you to add and configure integrations with other Oracle applications such as Oracle Demand Management System, Oracle Object Storage Service, Oracle Transportation Management System, and so on. The configured integrations are global across all the applications. To configure integrations for the active organization in the Fleet Monitoring application, from the Design Center , select Organization , and then Integrations .
 IoT Organizations	This option displays all the organizations of IoT Intelligent Applications and lets you: <ul style="list-style-type: none"> Manage organizations, such as create, delete, switch, export, or import Configure settings for each organization of IoT Intelligent Applications individually, which override the global settings. You can customize Appearance, Connectors, Context Specific, Organization Details, Map Provider, Subscribers, Units and Measurement, and User Access Control. See Manage Organizations
 Map Provider	This option lets you globally set the Map provider for all the applications. See Change the Map Provider To override this setting for an organization, set the map provider for an organization from the IoT Organizations tile.
 Notification Accounts	This option allows you to add notification accounts for an SMS provider, SMTP email providers, or Webhook (HTTP) provider. When an incident occurs in an organization, the application notifies to the subscribers added to these notification accounts. See Send Notifications for Incidents or Alerts .
 Storage Management	This option lets you monitor and manage the data storage for your application. The configuration is shared across the applications. See Monitor Data Storage and Manage Capacity Usage
 Units and Measurement	This option lets you set the units of measuring the speed, volume, distance, and temperature by selecting the unit system as US Imperial or Metric. See Set the Unit of Measurement
	To override this global setting for an organization, configure the unit system for your organization from the IoT Organizations tile.
 User Management	This option allows you to create and manage users for all the applications and allocate appropriate roles to the users. See Add and Manage Users
	After creating a user, you need to assign the user to an organization from the IoT Organizations option. See Assign Users to an Organization .

Connect Vehicles to Oracle IoT Fleet Monitoring Cloud Service

A device connected to the vehicle sends real time data to Oracle Fusion Cloud IoT Intelligent Applications. A data logger connected to the OBD-II port of a fleet vehicle is a common device used to transmit location and operational data to Oracle Fusion Cloud IoT Intelligent Applications. A device model defines what data is collected and forwarded to Oracle IoT Fleet Monitoring Cloud Service. Oracle provides a default device model to collect typical OBD-II data.

Vehicles cannot transmit location and operational data independently. A data logger must be installed to allow vehicle data to be transmitted to the cloud service. A data logger is a physical device that is connected to the OBD-II port of a vehicle. The data logger reads the OBD-II data and then transmits the data to the cloud service.

Device Models Overview

A device model is an interface that lets any device communicate with Oracle Fusion Cloud IoT Intelligent Applications regardless of its manufacturer or operating system. A device model can represent a device, gateway, device adapter, or a device application.

A device model provides Oracle Fusion Cloud IoT Intelligent Applications access to:

- metadata associated with the device type
- message formats generated by the device
- exposed web resources that can be used for sending commands
- device capabilities, such as device software management

A device model is uniquely defined by a Uniform Resource Name (URN). For example:

```
{
  "urn": "urn:com:mycompany:mydevices:driverdevice1",
  "name": "Driver Device 1",
  "description": "A device assigned to driver 1",
  "system": false,
  "attributes": [ ],
  "actions": [ ],
  "formats": [ ],
  "links": [ ]
}
```

A device model uses the `URN` as its unique identifier (ID). It also has a descriptive name and an optional description. When the `system` attribute has a value of `true`, it indicates that the device model was provided with Oracle Fusion Cloud IoT Intelligent Applications instance. Each device model can be enhanced with three additional lists: attributes, actions, and message formats.

A device model's attributes represent the variables that the device supports. Here is an example:

```
"attributes": [
    { "name": "oxygenSaturation", "type": "NUMBER" },
    { "name": "heartRate", "type": "NUMBER" }
]
```

Each attribute has a message format and web resources associated with it. Some device models are defined only by their attributes, but most are defined by some combination of attributes and accompanying alert message formats. Attributes may be read-only or readable and writable.

The actions identify the methods that can be remotely invoked on the device. They are similar to attributes, but are in invocable state, instead of readable state. Here is an example:

```
"actions": [
    { "name": "initialize", "description": "Returns the temp in C",
      "argType": "NUMBER" },
    { "name": "reset", "description": "Min measured value since ON" }
]
```

Formats specify the types of messages that the device can send to Oracle Fusion Cloud IoT Intelligent Applications. The URN defined is the ID used and must be unique. Here are two examples:

```
"formats": [
    {
        "urn": urn:oracle:iot:device:pulseoximeter",
        "name": "Pulse Oximeter Data",
        "description": "Pulse Oximeter format",
        "type": "DATA",
        "value": {
            "fields": [
                { "name": "oxygenSaturation", "type": "NUMBER",
                  "optional": false },
                { "name": "heartRate", "type": "NUMBER", "optional": false }
            ]
        },
        "links": [ "..."]
    },
    {
        "urn": urn:oracle:iot:device:pulseoximeter:fatal",
        "name": "Pulse Oximeter Alert",
        "description": "Fatal alert for pulse oximeter",
        "type": "ALERT",
        "value": {
            "fields": [
                { "name": "oxygenSaturation", "type": "NUMBER",
                  "optional": false },
                { "name": "heartRate", "type": "NUMBER", "optional": false }
            ]
        }
    }
]
```

```
        ],
    },
    "links": [ "..."]
}
]
```

A device can implement multiple device models. For example, device models may exist for battery management and for temperature sensing. A single device might implement one or both of these device models.

When a registered device has device models that aren't defined yet in Oracle Fusion Cloud IoT Intelligent Applications, the device can declare these models during activation. These draft device models aren't usable until they are saved and become normal device models. When draft models are saved, the device that declared them during activation is also updated.

Device models that are included with Oracle Fusion Cloud IoT Intelligent Applications are known as system models. These models can't be changed or deleted.

You can add a device model either from Oracle IoT Fleet Monitoring Cloud Service or from the Oracle Fusion Cloud IoT Intelligent Applications platform UI.

Device Overview

A device is a data logger that is connected to the OBD-II port of a fleet vehicle or a sensor that reads and transmits real time vehicle data. Vehicle data can include vehicle speed, engine revolutions per minute (rpm), vehicle diagnostic trouble codes (DTCs), coolant temperature, latitude, and longitude.

The data logger transmits location and operational data to Oracle Fusion Cloud IoT Intelligent Applications. The device model determines what data is sent from Oracle Fusion Cloud IoT Intelligent Applications to Oracle IoT Fleet Monitoring Cloud Service.

To associate sensors with your vehicles, make sure that the devices are registered and activated in Oracle Internet of Things Cloud Service. Oracle IoT Fleet Monitoring Cloud Service relies on Oracle Fusion Cloud IoT Intelligent Applications for its devices. If you do not already have your sensor devices set up in Oracle Fusion Cloud IoT Intelligent Applications, you need to register and activate these devices.

Register a Single Device

To communicate with Oracle Fusion Cloud IoT Intelligent Applications, every device that is connected to Oracle Fusion Cloud IoT Intelligent Applications must be registered and then activated. All devices are registered as a Directly Connected Device (DCD). During activation, the device indicates support for indirect enrollment. A device indicating indirect enrollment capability is automatically changed from DCD to Gateway.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console. The URL format to access the IoT management console is: <iot instance name>.<domain name>/ui. For example: <https://myiotcs.mydomain.oraclecloud.com/ui>.
2. Click the **Menu** (≡) icon adjacent to the Oracle Internet of Things Cloud Service title on the Management Console.
3. Click **Devices**.

4. Click **Registration**.
5. Click **Register Single Device**.
6. Complete the optional and mandatory fields.

 **Note:**

If you leave the **Activation Secret** field blank, a value is auto-generated and displayed when the device registration is confirmed. You can enter your own Activation Secret value. Any additional information, such as Name, Description, and Metadata are optional, but can be useful as search criteria when managing your registered devices.

7. Click **Register**.
8. (Optional) Click **Select Devices to Provision** and select one or more indirectly connected devices to provision the gateway with the shared secret credentials of the selected devices.

Indirectly connected devices that use controlled roaming can connect through a gateway only if the gateway has the shared secret credentials to activate the device.
9. Enter a password in the **File Protection Password** field to encrypt the provisioning file that contains the configuration and credentials to activate your device.
10. Enter the password again in the **Confirm Password** field.
11. Click **Download Provisioning File** to download the provisioning file to your computer.

The provisioning file is required to run your client.

12. Click **Finish**.
13. Click **Management**.

The registered device is listed in the Management pane with a State value of Registered and Type value of Unknown.

See [Cloud Service Device Life Cycle](#), and [Locate a Device](#) for more information about device states, types, and managing your devices.

Register a Batch of Devices

You can register a batch of devices that you want to connect to Oracle Fusion Cloud IoT Intelligent Applications using a comma-separated values (CSV) file.

For information about CSV file properties, see [About CSV Batch Registration File Properties](#).

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console. The URL format to access the IoT management console is: <iot instance name>.<domain name>/ui. For example: <https://myiotcs.mydomain.oraclecloud.com/ui>.
2. Click the **Menu** (≡) icon adjacent to the Oracle Internet of Things Cloud Service title on the Management Console.

3. Click **Devices**.
4. Click **Registration**.
5. Select one of these options:
 - Click **Download CSV template** to download a CSV template that you can complete.

 **Note:**

The CSV file contains the mandatory and optional property values for each device. If a value is not provided for the optional properties, insert a comma to indicate that a value is not provided. In the last line of the sample CSV file, a comma indicates that property values are not provided for **ActivationId** and **Activation Secret**

- Click **Batch Registration** to upload an existing CSV file.
6. Click **Browse** and browse to the CSV file that contains the registration information for the devices you are registering.
7. Click **Next** when the CSV registration file is successfully uploaded.

If the Review page contains a warning (⚠) icon, select one of these options:

- **Update** - Choose this option if you want to update the information for an existing registered device. The registered device has the same manufacturer, model and serial number as one of the devices listed in the CSV registration file.
- **Ignore** - Choose this option if you do not want to include the device in the current registration process.

8. Click one of these options:
 - **Next** - Click to proceed to register the items in the CSV registration file that have been identified as being viable candidates for registration.
 - **Cancel** - Click to discontinue the current batch registration process.
9. Enter a password to encrypt the provisioning file that contains the configuration and credentials to activate your device.
10. Enter the same password in the **Confirm Password** field.

If both passwords match the **Download Provisioning File** button becomes enabled.

11. Click **Download Provisioning File** to download the provisioning file to your computer.
12. Click **Finish**.
13. Click **Management** on the left menu.

The registered devices are listed in the Management page and have the state of Registered.

14. Activate the registered devices to begin a secure communication between the devices and Oracle Fusion Cloud IoT Intelligent Applications. See [Activating a Batch of Registered Devices](#).

About CSV Batch Registration File Properties

The following table provides descriptions of the properties that appear in the Comma Separated Values (CSV) file used to register a batch of devices with Oracle Fusion Cloud IoT Intelligent Applications. Mandatory and optional values are described in the table and are listed in the order they are expected to appear in the CSV file.

To register a batch of devices with Oracle Fusion Cloud IoT Intelligent Applications, see [Register a Batch of Devices](#).

Property	Required / Optional	Description
Name	<i>Optional</i>	The <code>String</code> data type assigned to the registered device. This value can be modified after device registration.
Manufacturer	Required	The manufacturer of the device.
Model Number	Required	The model number of the device
Serial Number	Required	The serial number of the device.
Activation ID	<i>Optional</i>	A Device Unique Identifier (UID) that is required for device activation. If a value is not specified, an auto-generated value is assigned to the device after a successful registration. The value cannot be changed after the device is successfully registered.
Activation Secret	<i>Optional</i>	The Activation Secret (also known as Shared Secret) value required to activate your device. If a value is not specified, an auto-generated string value is assigned to the device after a successful registration. This value is available after a successful registration. This value can be modified before you modify your device.
Latitude	<i>Optional</i>	The decimal notation of the latitude of the device's position. For example: -43.5723 [World Geodetic System 1984]. If you specify the latitude, then you must also specify the longitude.
Longitude	<i>Optional</i>	The decimal notation of the longitude of the device's position. For example: , e.g. -43.5723 [World Geodetic System 1984]. If you specify the longitude, then you must also specify the latitude.
Altitude	<i>Optional</i>	The decimal notation of the altitude of the device's position, in meters above sea level.
Accuracy	<i>Optional</i>	The accuracy of the device's position in meters. This must be a positive number or zero. An accuracy value can only be specified if the latitude and longitude are provided.

Property	Required / Optional	Description
Metadata	Optional	Key/value pairs that are listed in successive columns. There must be an even number of columns containing keys and values. If there is an odd number of columns, an error message is returned.

Activate a Device

A device can be activated after it is registered and an application has been created and run on the device. During activation, the device indicates support for indirect enrollment. A device indicating indirect enrollment capability is automatically changed from DCD to Gateway.

1. Register your directly connected device. See Registering a Single Device.
2. Create an application for the device using the Oracle Fusion Cloud IoT Intelligent Applications Client Software Library APIs. See Developing Device Software Using the Client Software Libraries.

When using the Java Client Library, for example, use the following steps to initialize and activate the device:

- a. Add this statement to the device application code to initialize the device:

```
DirectlyConnectedDevice dcd = new
DirectlyConnectedDevice(configFilePath, configFilePath);
```

- b. Add this statement to the device application code to activate the device:

```
if (!dcd.isActivated())
{ dcd.activate(deviceModelUrn); }
```

3. Verify the device has been activated:

- a. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.
- b. Click the **Menu** (≡) icon adjacent to the Oracle Internet of Things Cloud Service title on the Management Console.
- c. Click **Devices**.
- d. Click **Management**.
- e. Locate the device in the device table or use the **Property** and **Value** fields at the top of the table to search for a specific device.
- f. Verify **Activated** and not **Registered** is displayed in the **State** column.

Activating a Batch of Registered Devices

After you've registered a batch of devices, you need to activate the devices before they can securely communicate with Oracle Fusion Cloud IoT Intelligent Applications.

1. Register the devices and download the provisioning file. See Registering a Batch of Devices.

2. Activate each of the registered devices. See [Activate a Device](#).
3. Verify that each of the registered devices has been activated.
 - a. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.
 - b. Click the **Menu** (≡) icon adjacent to the Oracle Internet of Things Cloud Service title on the Management Console.
 - c. Click **Devices**.
 - d. Click **Management**.
 - e. Locate the device in the device table or use the **Property** and **Value** fields at the top of the table to search for a specific device.
 - f. Verify `Activated` and not `Registered` is displayed in the **State** column.

Install the Sample Application for Testing

To view and monitor simulated vehicle data, you install a sample application on a mobile device. The sample application displays simulated vehicle data such as coolant temperature and throttle position. The sample application can help you determine what vehicle data to include in your own application.

1. Make sure the hardware prerequisites are met before you install the Java SE client software library on your directly connected device. See [Oracle IoT Cloud Service Client Software Certified System Configurations](#).
2. Make sure that the time in your system is current. If it isn't, update it using the `date` command. The following shows an example of setting the time on a Linux platform:

```
date -s "15 FEB 2016 14:00:00"
```

3. Prepare your directly connected device to use the Java SE client software library:
 - a. Open a web browser and browse to [Oracle Java SE Embedded Downloads](#).
 - b. Download Oracle Java SE Embedded JDK Version 8 to your device. These are the available versions:

Platform	Hardware	File
Linux/x86 desktop	x86 Linux Small Footprint – Headless	<code>ejdk-8u101-linux-i586.tar.gz</code>
Raspberry Pi or i.MX6 boards	ARMv6/ARMv7 Linux - VFP, HardFP ABI, Little Endian1 version.	<code>ejdk-8u101-linux-armv6-vfp-hflt.tar.gz</code>

- c. Run this command to extract the contents of the Oracle Java SE Embedded JDK file:

```
cd <eJDK-download-folder-location>/  
tar xzvf ejdk-8u73-linux-armv6-vfp-hflt.tar.gz
```

- d. Verify that the `ejdk1.8.0_73` folder was created.

- e. Run this command to create the Java SE Embedded Compact 2 profile:

```
cd ejdk1.8.0_73/bin
./jrecreate.sh -d /home/janeuser/ejre1.8.0_73_compact2_minimal_vm -p
compact2 --vm minimal
```

The output should appear similar to this example:

```
Building JRE using Options {
ejdk-home: /home/janeuser/ejdk1.8.0_73
    dest: /home/janeuser/ejre1.8.0_73_compact2_minimal_vm
    target: linux_arm_vfp_hflt
    vm: minimalruntime: compact2 profile
    debug: false
    keep-debug-info: false
    no-compression: false
    dry-run: false
    verbose: false
    extension: []}
```

- f. Install the JDK Compact 2 profile on your device. See [Create Your JRE with jrecreate](#) in the *Oracle Java SE Embedded Developer's Guide*.
4. Register your directly connected device and download the provisioning file. See [Registering a Single Device](#).
5. Open a web browser and browse to the Oracle Fusion Cloud IoT Intelligent Applications [client software libraries download site](#).
6. Scroll to **Java SE Client Software Library** and download the **Binaries** and **Samples** zip files from the **Java SE Client Software Library** table. This table describes the contents of each zip file:

Filename	Description
iotcs-csl-javase-bin-<version>.zip	Contains the Java SE client software library binary files.
iotcs-csl-javase-samples-<version>.zip	Contains the Java SE sample applications.

7. Extract the contents of the zip files. The files are saved to these directories:

Filename	Directory
iotcs-csl-javase-bin-<version>.zip	iotcs/csl/ios/bin
iotcs-csl-javase-samples-<version>.zip	iotcs/csl/ios/samples

8. Associate the `FleetMonitoringOBD2Device` device model with the **Obd2DeviceSample** application. See [Associate a Device Model to an IoT Application](#).
9. Set the `CL_HOME`, `GRADLE_HOME`, and, `JAVA_HOME` environment variables to the values listed in this table:

System Variable Name	Example
CL_HOME	/home/user/iotcs/csl/javase/
GRADLE_HOME	/opt/gradle-<version>
JAVA_HOME	/usr/java/jdk<version>

10. Modify the `PATH` variable to include the path to the Java and Gradle executables.

For example, in the Linux environment, you can add the following to the existing `PATH` variable.

```
export PATH=$JAVA_HOME/bin:$GRADLE_HOME/bin:$PATH
```

11. If your computer is on a Virtual Private Network, or behind a firewall:

- a.** Open the `gradle.properties` file, located in the Gradle user home directory and add these lines:

```
systemProp.http.proxyHost=<your_proxy_server.com>
systemProp.http.proxyPort=<your_proxy_port>
systemProp.https.proxyHost=<your_proxy_server.com>
systemProp.https.proxyPort=<your_proxy_port>
```

- b.** Save your changes and close the `gradle.properties` file.

12. Open a command prompt and browse to the location of the sample OBD-II application.

13. Run this command to create the OBD-II simulator device model:

```
curl --user <IOT POD LOGIN>:<IOT POD PASSWORD> https://<IOT POD SERVER>:<IOT POD PORT>/iot/api/v2/deviceModels -k -X POST -d @tmp/Obd2Simulator.json -H "Content-Type:application/json"
```

Replace `IOT POD LOGIN`, `IOT POD PASSWORD`, `IOT POD SERVER`, and `IOT POD PORT` with the values for your environment.

14. Run this command to start the `OBD2DeviceSample` application:

```
java -cp "./samples/build/libs/iotcs-csl-samples.jar:lib/device-library.jar:library/shared/lib/json-20160212.jar"
com.oracle.iot.sample.obd2.Obd2DeviceSample<provisioner file>
<password>
```

Replace `provisioner file` and `password` with the values you recorded when you registered your device.

Output similar to the following appears:

```
DEDF23F9-4D8A-4FDC-A8F3-9C06C6BD5D11
!!! ALERT: Vehicle started Event: speed: 10
17:30:57: Speed: 0 Throttle: 0.00% RPM: 0.00 CoolantTemp:-40
FuelRate: 0.00 FuelEconomy: 0.00 FuelTank: 99.99% Runtime: 1
Distance: 0.00 Location : 12.897532, 77.658337 800.000000
17:30:58: Speed: 2 Throttle: 0.78% RPM: 128.50 CoolantTemp:-38
FuelRate: 25.70 FuelEconomy: 0.04 FuelTank: 99.98% Runtime: 2
```

```
Distance: 0.00 Location : 12.897534, 77.658337 800.000000
17:30:59: Speed: 3 Throttle: 1.18% RPM: 192.75 CoolantTemp:-37 FuelRate:
38.55 FuelEconomy: 0.05 FuelTank: 99.97% Runtime: 3 Distance: 0.00
Location : 12.897535, 77.658337 800.000000
```

Set Up a Freematics One Vehicle Data Logger for Testing

To view and monitor vehicle data sent by a Freematics One vehicle data logger, you install a sample application on an Android device. The sample application displays vehicle data such as coolant temperature and throttle position. Vehicle data is sent from the Freematics One vehicle data logger to the Android device, and then to Oracle IoT Fleet Monitoring Cloud Service. The sample application can help you determine what vehicle data to include in your own application.

1. Register your directly connected Android device and download the provisioning file. See [Registering a Single Device](#).
2. Install the provisioning file on the Android device.
3. Set up your development environment to use the Android client software libraries. See [Setting Up Your Development Environment to Use the Android Client Software Libraries](#).
4. Prepare your device to use the Android client software libraries. See [Preparing Your Device to Use the Android Client Software Libraries](#).
5. Install the sample Android APK application on the Android device. See [Running the Sample Android Directly Connected Device Application](#).

The sample Android APK application is included with the Android client software libraries you downloaded and extracted in step 3.

6. Update the Freematics One vehicle data logger firmware to match the Oracle IoT Fleet Monitoring Cloud Service device model Parameter IDs (PIDs):
 - a. On a computer, open a web browser and browse to the [Arduino website](#).
 - b. Download install the latest Arduino IDE.
 - c. Open Git CMD and run this command: `git clone https://github.com/stanleyhuangyc/Freematics.git`.
 - d. Run these commands: `cd Freematics` and then `git checkout 98eccfba5ae3101e1a96b8d3d446c0a6a0b17b1e`.
 - e. Browse to the location of the Freematics `datalogger.ino` file. For example: `C:\Users\<username>\Downloads\FreematicsNew\Freematics\firmware_v4\datalogger`.
 - f. Open the `datalogger.ino` file in a text editor.
 - g. On line 326 remove the `pids[2]` array and all references to it.
 - h. Enter these values for the `byte pids[]` array: `PID_SPEED`, `PID_RPM`, `PID_THROTTLE`, `PID_MAF_FLOW`, `PID_FUEL_LEVEL`, `PID_RUNTIME`, `PID_DISTANCE`, and `PID_COOLANT_TEMP` and then save and close the `datalogger.ino` file.
 - i. Copy the `libraries` folder from the Freematics file into the Arduino `libraries` folder. Typically, the Arduino `libraries` folder is located at this path: `C:\Users\<username>\Documents\Arduino\libraries`.

- j. Connect one end of a data cable into the Freematics One vehicle data logger and the other end of the data cable into the computer.
- k. Open a web browser and browse to the [Silicon Labs website](#).
- l. Download and install the USB to UART Bridge Virtual COM Port (VCP) drivers.
- m. Open Windows Device Manager, expand **Ports (COM & UPI)**, and then record the port number for **Silicon Labs CP210x USB to UART Bridge (COM30)**.
- n. Open the Arduino IDE.
- o. Click **File** and then **Open** and then browse to the location of the `datalogger.ino` file that you modified in steps h to k.
- p. Click **Tools** and then **Port** and confirm the port number you recorded in step h is displayed. If you cannot access the **Port** menu, close and reopen Arduino or restart the computer.
- q. Click **Tools** and then **Serial Monitor** and confirm that data is scrolling in the window.
- r. Click **Sketch** and then **Verify/Compile**.
- s. Click **Sketch** and then **Upload**.

7. Insert the Freematics One vehicle data logger into a vehicle OBD-II port.
8. Activate Bluetooth functionality on the Android device.
9. Start the vehicle in which the Freematics One vehicle data logger is installed.
10. Move the Android device to the interior of the vehicle and connect to the Freematics One vehicle data logger.
11. Open the sample Android APK application on the Android device.

To learn more, complete the [Set Up a Freematics ONE Vehicle Data Logger](#) tutorial.

Create Device Models in Oracle Fusion Cloud IoT Intelligent Applications

The device model options are fetched from your Oracle Fusion Cloud IoT Intelligent Applications instance.

The Oracle IoT Fleet Monitoring Cloud Service application relies on your platform side Oracle Fusion Cloud IoT Intelligent Applications for its device models. If you do not already have your device models set up in Oracle Fusion Cloud IoT Intelligent Applications, then you need to add the device models for your sensor devices.

Create a New Device Model

A device model is an interface that lets any device communicate with Oracle Fusion Cloud IoT Intelligent Applications regardless of its manufacturer or operating system.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

<https://hostname/ui>

Here, *hostname* is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. Click the **Add** (+) icon to create a new device model.
5. On the New Device Model page:
 - a. **Name**: Enter a name for the device model.
 - b. **Description**: Enter an optional description for the device model.
 - c. **URN**: Enter a unique identifier for the device model. Use this format:
`urn:com:<mycompany>:<mydevice>:<what the device model does>`.
6. Select system attributes for the device model.
7. (Optional) Add custom attributes for the device model:
 - a. Expand the **Custom Attributes** option list.
 - b. Click the **Add** (+) icon.
 - c. Enter a name for the custom attribute in the **Name** field.
 - d. Enter an optional description for the custom attribute in the **Description** field.
 - e. Select a data type in the **Type** list.
 - f. Select **Writable** if you want to make the custom attribute writable.
 - g. In the **Default Value** field, enter an optional default value based on the value of the **Type** drop-down list.
 - h. Click **OK**.
8. (Optional) Define the actions that can be invoked on the device:
 - a. Expand the **Actions** option list.
 - b. Click the **Add** (+) icon.
 - c. Enter a name for the action in the **Name** field.
 - d. Enter an optional description for the action in the **Description** field.
 - e. Select the data type for the action in the **Arguments** list.
 - f. Click **OK**.
9. (Optional) Create alerts and custom message formats for the device model:
 - a. Expand the **Alerts and Custom Messages** option list.
 - b. Click the **Add** (+) icon.
 - c. Enter a name for the alert or custom message in the **Name** field.
 - d. Enter an optional description for the alert or custom message in the **Description** field.
 - e. Enter a unique identifier for the alert or custom message in **URN** field. Use this format:
`urn:<mycompany>:<department>:<mydevice>:<device model>:<message>`.
 - f. Select a data type in the **Type** list.

- g. Click **OK**.
- h. Select the alert message format and then click the **Add** (+) icon in the **Fields** column.
- i. Enter a name for the message type in the **Name** field.
- j. Select a data type in the **Type** list.
- k. Select **Optional** to indicate the field value can be missing in the device model message format.
- l. Click **OK**.

10. Click **Save**.

Import a Device Model

If you have previously exported a device model, you can import the `.json` file into Oracle Fusion Cloud IoT Intelligent Applications.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

`https://hostname/ui`

Here, `hostname` is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. In the **Device Models** tab, click the **Import** (⬇) icon.
5. Click **Choose File** and select the `.json` file to import.
6. Click **Import** to import the device model.

Duplicate a Device Model

Duplicate a device model to quickly copy the settings of an existing device model to a new device model.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

`https://hostname/ui`

Here, `hostname` is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. Click the **Duplicate** (복사) icon.

5. Complete these fields:
 - a. **Name:** Enter a new name for the device model.
 - b. **Description:** Enter an optional description for the device model.
 - c. **URN:** Enter a new unique identifier for the device model. Use this format: .
6. Select system attributes for the device model.
7. (Optional) Add or edit the custom attributes for the device model.
8. (Optional) Add or edit the actions that can be invoked on the device
9. (Optional) Add or edit the alerts and custom message formats for the device model:
10. Click **Save**.

Edit a Device Model

Edit a device model to edit, add, duplicate, or remove device model settings including the device model name, description, and attributes.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

`https://hostname/ui`

Here, `hostname` is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. Click the **Edit** (✎) icon.
5. Edit the device model settings.
6. Click **Save**.

View the Devices Associated with a Device Model

View the devices associated with the device model to determine how many devices are using the device model.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

`https://hostname/ui`

Here, `hostname` is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. On the Device Model page, select a device model from the table, and then click the **Device** (💻) icon.

The Devices page is displayed.

Print Device Model Settings

Print the device model settings to view a hard copy of the device model settings.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

<https://hostname/ui>

Here, *hostname* is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. On the Device Model page, select a device model from the table, and then click the **Print** (🖨) icon.
5. Select a printer.
6. Click **OK**.

Export Device Model Settings

Export the device model settings to use the device model settings in another application or to save a copy of the device model settings as a backup in case of a system failure.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

<https://hostname/ui>

Here, *hostname* is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. On the Device Model page, select a device model from the table, and then click the **Export** (📤) icon.
5. In the save dialog box, browse to a location to save the file, and then click **Save**.

Delete a Device Model

Delete a device model when it is no longer required.

1. Open the Oracle Fusion Cloud IoT Intelligent Applications Management Console.

You can access the Oracle Fusion Cloud IoT Intelligent Applications Management Console from the following URL:

<https://hostname/ui>

Here, *hostname* is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.

2. Click the **Menu** (≡) icon.
3. Select **Devices** and then select **Model**.
4. On the Device Model page, select a device model from the table, and then click the **Delete** (trash) icon.

A warning appears if the device model is in use. If you delete the device model, the related message flows, explorations, integrations, and device message links are affected as well.

5. Click **Continue**.

Manage Drivers

A driver is a person who drives a fleet vehicle and is a registered user with a driver role. The driver when added to an organization, is responsible for the safe operation of the assigned vehicles and route planning of trips and shipments of that organization.

Drivers use the Oracle IoT Fleet Monitoring Mobile Application to create and manage trips or to start and stop shipments. As an administrator, you can [Configure Mobile Application Settings](#) to allow or restrict drivers of an organization to select and update assigned vehicles or to create a trip.

View Driver Details

Use the driver details dashboard to quickly determine the duty status of a driver, the vehicle currently assigned to the driver, the time the driver has been idle, the distance the driver has driven, and alerts associated with the driver.

You should be in the **Operation Center** page.

1. From the **Operation Center** menu options click **Drivers** ().
2. For the current organization, view the **Drivers Summary** information and the name of drivers, their duty status, alerts raised, and assigned vehicles.
3. To examine the details of a specific driver, select a driver in the **Drivers** list and click the **View** () icon.

Use the **Filter** () icon to search for a specific driver or drivers that match criterion such as name, current vehicle, fence violations, idle violations, speeding violations, or alerts.

4. Click **Back** to return to the drivers list.

Enable Driver Scoring

Enable driver scoring to monitor driver performance and ensure drivers are driving in a manner that promotes good fuel consumption, reduces wear and tear on vehicles, and respects safety and regulatory rules.

These five key performance indicators (KPIs) are used to calculate a driver score: harsh braking, harsh acceleration, harsh cornering, speeding, and idling. Each of the five KPIs contributes 20% to the final driver score value.

1. Click **Menu**  and then click **Settings**.
2. Click **IoT Organizations** and then from the listed organization click your organization name.
3. Click **Context Specific** and then the **Driver Scoring** tile.
4. Click **Enabled** to enable the status.

The **Criteria Weighting** section displays the percentage assignment of the parameters, such as **Harsh Acceleration**, **Harsh Braking** and so on, to calculate the score.

5. (Optional) Review and modify the percentages for each of the parameters. For **Idling** and **Speeding**, click **Setting**  to customize the computing of the parameter. Click and drag the **Alert Count Type** bar to include its value in the computation of the parameter.
6. (Optional) Expand **Test this Configuration** to simulate and view a score. Enter values for each of the parameters and review the value in **Overall Score**. Click **OK**.
7. Click **Save** and then click **Close** .
8. Confirm driver scoring has been enabled:
 - a. Go to the **Operation Center** and then click **Drivers**.
 - b. Confirm the **Driving Score** column appears on the Drivers dashboard. If it does not, repeat the procedure.

The **Driving Score** column displays NA until there is enough data available to calculate the score.

Deactivate Driver Scoring

Deactivate driver scoring when you no longer want to monitor driver performance.

1. Click **Menu**  and then click **Configuration**.
2. Click **Menu**  and then click **Design Center**.
3. Click **Organization** and then from the organization's dashboard click **Settings** .
4. Clear the **Enable Driving Score Computation** checkbox.

Customize the Driver Scoring Key Performance Indicator

Change the percentage of the data used to calculate a driver score to display a driver score that is specific to your business.

1. Click **Menu**  and then click **Design Center**.
2. Click **Organization** and then from the organization's dashboard click **Settings** .
3. In the **Driver Score** section, click **Edit** .

Alternatively, you can edit the **Driver Score** metric from the **Metrics** icon on the organization dashboard.

4. (Optional) On the Metrics Driver Score page, move the **Fitting Factor** slider to adjust the significance of alerts to the overall driver score.
5. Click **Up**  or **Down**  to adjust the percentage harsh acceleration, harsh braking, harsh cornering, and idling contribute to the driver score calculation. The speeding percentage is adjusted automatically and cannot be manually adjusted.

6. (Optional) To change the factors that are used to calculate the idling percentage value, click **Settings** , move the slider, and click **OK**.
7. (Optional) To change the factors that are used to calculate the speeding percentage value, click **Settings** , move the slider, and click **OK**.
8. Click **Save** and **Back** to return to the organization's dashboard.

5

Add and Manage Users

Access to Oracle IoT Fleet Monitoring Cloud Service functionality is determined by roles. To let users access specific functionality, assign the user to a role that allows access to this functionality. For example, a user cannot create device models unless they are assigned an Administrator role.

There are certain common roles applicable for all the apps of Oracle IoT Intelligent applications and a few roles specific for access to Oracle IoT Fleet Monitoring Cloud Service functionality. The Administrator role is automatically assigned to the user who creates the Oracle IoT Fleet Monitoring Cloud Service instance. The Driver role is assigned to drivers after the Oracle IoT Fleet Monitoring Cloud Service instance is created and provides the user with driver privileges. The Shipper role is assigned to users after the Oracle IoT Fleet Monitoring Cloud Service instance is created and provides the user limited access to application functionality. The Integrator role is assigned to users after the Oracle IoT Fleet Monitoring Cloud Service instance is created and lets the user integrate Oracle IoT Fleet Monitoring Cloud Service with other applications. The Logistics Operator role when assigned, lets the user perform all tasks available in the operation center that includes viewing the details of the entities associated with the views.

This table lists the tasks that the roles under the **Common** category can perform and the roles are applicable across all the apps.

Role Name	Description
Administrator	A 'super-user' role that can access and manage all the apps of Oracle IoT Intelligent Applications that includes creating organizations, creating users, and managing user roles and groups. view, edit, and delete operations.
Technician	Users in this role can create and manage entities of an organization, that includes creating and deleting entity instances, configuring connections to devices, troubleshooting issues, resolving incidents, accessing the digital twins and entity inventory.
Viewer	This role allows users to view all the entities of an organization giving users a read-only access to them. Users in this role can access the Operation Center options to view the dashboards, digital twins, and the notifications. A non-admin user should have a Viewer role in order to access the Oracle IoT management console (/ui)
Integrator	Users in this role are responsible for managing the integration of an IoT application with another application such as Oracle Transportation Management or an external application. Users use the Basic authentication mechanism to grant access to these systems. The user credentials are configured in these integrated applications.

This table lists the tasks that the roles under the **Fleet Monitoring** category can perform and the roles are applicable only for the functionality of the IoT Fleet Monitoring Application.

Role Name	Description
Logistics Operator	This role allows users to monitor the logistics of ongoing business operations and track any exception situations that may occur. Users are typically restricted to access Operation Center views.
Driver	Users in this role have access to the Oracle IoT Fleet Monitoring Mobile application to start and stop trips or shipments, change vehicles assigned to them or create trips. The driver role allows the user to provide in-transit visibility such as delivery related comments, incidents, or delivery completion note.
Shipper	Users in this role are responsible for setting up an end-to-end shipment management operations on the Design Center and for monitoring the shipments in the Operations Center.

Create a New User

Create a new user to let a user access Oracle IoT Fleet Monitoring Cloud Service functionality and complete assigned tasks.

Before you assign a role to a new user, review the [Roles and Responsibilities](#) topic.

1. Click **Menu**  and then click **Settings**.
2. Click the **User Management**  tile.
3. On the User Management page, click **Create User** .
4. Select one or more of these roles in the **ROLES** area under the **Common** category and the **Fleet Monitoring** category. Before you assign a role to a new user, review the [Roles and Responsibilities](#) topic.
 - **Administrator:** Select this role to assign the user administrator privileges across all the apps of Oracle IoT Intelligent applications.
 - **Technician:** Select this role to assign the user the privileges of managing entities of an organization, resolving incidents, and managing digital twins of entities.
 - **Viewer:** Select this role to assign the user viewing privileges of the Operation Center options.
 - **Integrator:** Select this role to assign the user integrator privileges.
 - **Driver:** Select this role to assign the user driver privileges.
 - **Shipper:** Select this role to assign the user shipper privileges.
 - **Logistics Operator:** Select this role to assign the user operation manager privileges.
5. Complete these fields in the **NAME** area:
 - **First Name:** Enter the first name of the user.
 - **Last Name:** Enter the last name of the user.
 - **Username:** Enter a user name for the user account.

6. Complete these fields in the **EMAIL** area:

Primary Email: Select one option that'll contain your primary email address. This email address is used to help the user regain access to their account if they forget their password or are locked out. Any password reset notification emails are sent to the primary email address.

The default value for the **Primary Email** field is **Work**. Depending on the option you choose, the corresponding field is made mandatory. For example, if you select **Home** as the primary email, then the **Home** field is mandatory and the **Work** and **Other** fields are optional.

- **Work:** Enter the work email address for the user.
- **Home:** Enter the home email address for the user.
- **Other:** Enter an additional email address for the user.

 **Note:**

If you do not have access to the previously specified primary email, then you can change the primary email to **OTHER**, and update it with the email ID that you have access to for resetting the password.

7. (Optional) Complete these fields in the **TELEPHONE** area:

- **Work:** Enter the work phone number for the user.
- **Home:** Enter the home phone number for the user.
- **Recovery:** Enter the recovery phone number for the user. This phone number is used to help the user regain access to their account if they forget their password or are locked out.
- **Other:** Enter an additional phone number for the user.
- **Mobile:** Enter the mobile phone number for the user.

8. Click **Save**.

9. Click **Exit** to return to the **Users** list.

Note that after creating a user you need to add the user to one or more organizations. See [Assign Users to an Organization](#).

Edit a User Account

Edit a user account to change a user's role, name, email, or telephone information.

1. Click **Menu**  and then click **Settings**

2. Click the **User Management**  tab.

3. Select a user in the **Users** list and then click **Edit** .

4. (Optional) Select one or more of these roles in the **ROLES** area:

- **Administrator:** Select this role to assign the user administrator privileges across all the apps of Oracle IoT Intelligent applications.

- **Technician:** Select this role to assign the user the privileges of managing entities of an organization, resolving incidents, and managing digital twins of entities.
- **Viewer:** Select this role to assign the user viewing privileges of the Operation Center options.
- **Integrator:** Select this role to assign the user integrator privileges.
- **Driver:** Select this role to assign the user driver privileges.
- **Shipper:** Select this role to assign the user shipper privileges.
- **Logistics Operator:** Select this role to assign the user operation manager privileges.

5. (Optional) Edit these fields in the **NAME** area:

- **First Name:** Enter the first name of the user.
- **Last Name:** Enter the last name of the user.
- **Username:** Enter a user name for the user account.

6. (Optional) Edit these fields in the **EMAIL** area:

Primary Email: Select one option that'll contain your primary email address. This email address is used to help the user regain access to their account if they forget their password or are locked out. Any password reset notification emails are sent to the primary email address.

The default value for the **Primary Email** field is **Work**. Depending on the option you choose, the corresponding field is made mandatory. For example, if you select **Home** as the primary email, then the **Home** field is mandatory and the **Work** and **Other** fields are optional.

- **Work:** Enter the work email address for the user.
- **Home:** Enter the home email address for the user.
- **Other:** Enter an additional email address for the user.

7. (Optional) Edit these fields in the **TELEPHONE** area:

- **Work:** Enter the work phone number for the user.
- **Home:** Enter the home phone number for the user.
- **Recovery:** Enter the recovery phone number for the user. This phone number is used to help the user regain access to their account if they forget their password or are locked out.
- **Other:** Enter an additional phone number for the user.
- **Mobile:** Enter the mobile phone number for the user.

8. Click **Save**.

9. Click **Exit** to return to the **Users** list.

Reset a User Password

Reset a user password when a user forgets their password or you think their account has been compromised.

1. Click **Menu**  and **Settings**.

2. Click the **User Management**  tile.
3. Select a user in the **Users** list and click **Reset Password** .
4. In the Reset Password dialog, click **Continue** to confirm that you want to reset password for the selected user.

A success message is displayed. In addition, an email containing the link to reset the password is sent to the **primary email** address associated with the user account.

Search for a User Account

Use the search function to locate a specific user account or user accounts matching specific search criteria.

1. Click **Menu**  and click **Settings**.
2. Click the **User Management**  tile.
3. Click **Filter List** .
4. From the **Filters** drop down, select **Show Users** and from the **Values** drop down select **Assigned to IoT Apps** or **All Users**.
5. (Optional) Click **Add**  to add additional search criteria.
6. Select one of these options in the **Filter** list:
 - **First Name**: Select this option to search for a user account by the user's first name.
 - **Last Name**: Select this option to search for a user account by the user's last name.
 - **Username**: Select this option to search for a user account by user name.
 - **Email**: Select this option to search for a user account by email address.
 - **Roles**: Select this option to search for a user account by role(s).
7. Select one of these options in the following list:
 - **contains**: Select this option to search for user records containing the search term exactly or partially anywhere in the words in the field and in the same sequence. For example, consider a user table with usernames Johndoe101, Johndoe1010, and Johndoe102. Using the search terms "john", "doe", or "10" returns all the 3 records Johndoe101, Johndoe1010, and Johndoe102.
 - **matches**: Select this option to search for user records containing the exact search terms in the same sequence. For the sample usernames listed earlier, using the search term "johndoe101" returns the record for Johndoe101.
 - **does not contain**: Select this option to search for user records containing the search term exactly or partially anywhere in the words in the field and in the same sequence but filtered out from the result set. For the sample usernames listed earlier, using the search term "jane" returns all the 3 records for Johndoe101, Johndoe1010, and Johndoe102. However, using the search term "doe" returns no records.
8. Enter your search criteria in the **Values** field and then press **Enter**.
9. (Optional) Click **Add**  to add additional search criteria.
10. (Optional) Click **Remove**  to remove additional search criteria.

11. (Optional) Click **Clear All** to clear your search criteria.
12. To obtain the search results matching your search criteria, click **Apply**.
The list of users matching your search criterion are listed.

Delete a User Account

Delete a user account when it is no longer needed.

1. Click **Menu**  and **Settings**.
2. Click the **User Management**  tile.
3. Select a user in the **Users** list and click **Delete** .
4. On the **Confirm Delete** dialog box, click **Delete**.

Add and Manage Vehicles

In Oracle IoT Fleet Monitoring Cloud Service , a vehicle is any conveyance such as a car or truck that is used to transport goods to customers. Fleet vehicles are groups of cars or trucks that are owned or leased by a business, government agency, or other organization. To monitor the location or operational parameters of a vehicle with Oracle IoT Fleet Monitoring Cloud Service, a data logger must be connected to the OBD-II port of the vehicle and configured to communicate with Oracle IoT Fleet Monitoring Cloud Service.

Vehicles are a critical component of your business operations. Using Oracle IoT Fleet Monitoring Cloud Service to manage these expensive assets effectively can help your business realize these benefits:

- Vehicle security. You know where every vehicle is located at all times.
- Cost efficiency. Assign vehicles to a route that avoids unnecessary stops and idling.
- Driver safety. You know where your drivers are and how long they have been working.
- Vehicle utilization. You can make sure every vehicle is operating and not sitting idle in a parking lot.

 **Note:**

If you are using multiple organizations, the vehicles and vehicle types created within an organization are not available to other organizations.

Create a Vehicle Type

Create vehicle types to group vehicles with similar attributes. Grouping vehicles with similar attributes can simplify performance management.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Vehicle Types** from the **Design Center** sub-menu.
3. Click **Create Vehicle Type** (+).
4. Enter a name for the vehicle type.
5. (Optional) Complete these fields:
 - **Description** : Enter a description for the vehicle type.
 - **Make**: Enter the make of the vehicle.
 - **Model**: Enter model information for the vehicle.
 - **Year**: Enter the year of manufacture for the vehicles. Multiple selections are allowed
 - **Category**: Select either **Truck** or **Car** as the vehicle category. If you do not specify a value for the Category field, then Truck is used as the default transport mode to fetch

the route from map provider. If no route is found for Truck category, then the map provider tries to fetch a route for Car category.

Note that Oracle Maps supports vehicle categories Truck and Auto. So any category value other than Truck is considered as Auto.

6. (Optional) To add an image to the vehicle type, click **Upload Image**, browse to the location of the image, and then double-click it.
7. (Optional) To add custom attributes to the vehicle type, click  next to **Attributes** and then complete these fields:
 - **Name:** Enter a name for the attribute.
 - **Required:** (Optional) Select this option to make an attribute required for the vehicle type.
 - **Type:** (Optional) Select one of these attribute types: **Text**, **Number**, **Date**, **True/False**, **Image**, and **URI**.
 - **Allowed Values:** (Optional) Select or enter the allowed values for the attribute.
 - **Default:** (Optional) Enter the default value for the attribute.
 - **Instructions:** (Optional) Enter instructions for the attribute.
8. Click **Create** to create the custom attribute.
9. Select sensor attributes for the vehicle type:
 - a. Select predefined sensor attributes from the list that are supported by your device, click **Select Device Model**, select a device model, and then click **Select**.

The selected sensor attributes are mapped to their corresponding device model attributes. If required, edit a mapping by clicking  and click **Update**.
 - b. To add other sensor attributes supported by your device, click  provide a name for the attribute, select the device model, and then click **Create**.

You can select if the sensor attribute is a **Required** attribute for all vehicles of the vehicle type.
10. Click **Save**.

If there are unconfigured sensor attributes, a dialog appears confirming if you want to remove the unselected sensor attributes from the sensor attributes list. Click **OK** to remove the unselected sensor attributes.

Edit a Vehicle Type

Edit a vehicle type to edit, add, duplicate, or remove vehicle type settings including the vehicle type name, description, image, attributes, device model reference, and sensor attributes.

1. Click **Menu** , and then click **Design Center**.
2. Select **Vehicle Types** from the **Design Center** sub-menu.
3. In the left pane, select a vehicle type on the **Vehicle Types** dashboard.
4. Click  against Description.

5. If the Edit Vehicle Type Warning dialog appears, click **Yes**.
6. (Optional) To view dependency information, click a dependency in the **Dependencies** area.
7. (Optional) Edit the **Name**, **Description**, **Make**, **Model**, **Year**, or **Category** fields.
8. (Optional) Click **Upload Image** to add a new image for the vehicle type, or click **Delete** to delete the existing image.
9. (Optional) Select one of these options in the **Attributes** area:
 - Click **Add** (+) to add a new attribute.
 - Click **Edit** (✎) to edit an existing attribute.
 - Click **Duplicate** (복사) to quickly copy the settings of an existing attribute to a new attribute.
 - Click **Delete** (삭제) to delete an attribute.
10. (Optional) Select one of these options in the **Sensor Attributes** area:
 - Click **Add** (+) to add a new sensor attribute.
 - Click **Edit** (✎) to edit an existing sensor attribute.
 - Click **Delete** (삭제) to delete a sensor attribute.
 - Select the sensor attribute and then click **Select Device Model** to change the device model associated with the sensor attribute.
11. Click **Save**.
12. (Optional) Click **Back** to return to the **Vehicle Types** dashboard.

View Vehicle Type Dependencies

View vehicle type dependencies to view the trips, vehicles, rules, and shipments currently associated with the vehicle type. These dependencies can help you determine if the vehicle type is used frequently. If it is not in use or used frequently, consider deleting it.

1. Click **Menu** (☰), and then click **Design Center**.
2. Select **Vehicle Types** from the **Design Center** sub-menu.
3. In the left pane, select a vehicle type on the **Vehicle Types** dashboard.
4. Click **Edit** (✎).
5. If the **Edit Vehicle Type Warning** dialog appears, click **Yes**.
6. To view dependency information, click a dependency icon in the **Dependencies** area.
7. Click **Back** to return to the **Vehicle Types** dashboard.

Duplicate a Vehicle Type

Duplicate a vehicle type to quickly copy the settings of an existing vehicle type to a new vehicle type.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Vehicle Types** from the **Design Center** sub-menu.
3. In the left pane, select a vehicle type on the **Vehicle Types** dashboard.
4. Click **Duplicate** ().
5. Enter a name for the vehicle type in the **Name** field and then modify the other vehicle type settings including the image, attributes, device model, and sensor attributes.
6. Click **Save**.
7. (Optional) Click **Back** to return to the **Vehicle Types** dashboard.

Delete a Vehicle Type

Delete a vehicle type when it is no longer required. Delete all associated KPIs, and dependencies before deleting a vehicle type.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Vehicle Types** from the **Design Center** sub-menu.
3. In the left pane, select a vehicle type on the **Vehicle Types** dashboard.
4. Click **Delete** ().
5. If the vehicle type does not have dependencies, click **Delete**.
6. If the vehicle type has dependencies, the Existing Dependencies dialog appears. These dependencies must be removed before the vehicle type can be deleted.
Click a dependency icon to view details of the dependency. Click **Close** to close the dialog.

Create a Vehicle

Create a vehicle when a new vehicle is added to your fleet.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Vehicles**  from the **Design Center** sub-menu.
3. Click **Create New Vehicle** ().
4. Complete these fields in the **Details** area:
 - **Name**: Enter a name for the vehicle.
 - **Description** : (Optional) Enter a description for the vehicle.
 - **VIN**: Enter the vehicle identification number (VIN) for the vehicle.
 - **Registration Number**: Enter the vehicle registration number.
 - **Type**: Select the vehicle type. To create a vehicle type, see [Create a Vehicle Type](#).
 - **Make**: Non-selectable field auto-populated when the vehicle type is selected.

- **Model:** Non-selectable field auto-populated when a vehicle type is selected.
- **Vehicle Year:** Select the year of manufacture for the vehicle.

5. Select or enter the custom attributes for the vehicle in the **Custom Attributes** area.

6. (Optional) Select the sensor attributes for the vehicle in the **Sensor Attributes** area and then select one of these options:

- Click **Link Device** next to **Sensor Attributes** to use the same sensor device for all of the selected sensor attributes.
- Click **Link Device** for each sensor attribute to use a specific sensor device for each sensor attribute.

A sensor attribute is the data that is returned by the data logger that is connected to the OBD-II port of the vehicle.

7. Click **Save**.

8. (Optional) Click **Back** to return to the **Vehicles** dashboard.

Edit Vehicle Details and Device Sensor Attributes

Edit vehicle details and device attributes when vehicle information changes or you want to request new vehicle sensor data or replace a device assigned to a vehicle.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Vehicles**  from the **Design Center** sub-menu.
3. Select a vehicle and then click **Edit** () .
4. Edit these fields in the **Details** area:
 - **Name:** Enter a name for the vehicle.
 - **Description:** (Optional) Enter a description for the vehicle.
 - **VIN:** Enter the vehicle identification number (VIN) for the vehicle.
 - **Type:** The vehicle type associated with the vehicle.
 - **Registration Number:** Enter the vehicle registration number.
 - **Vehicle Year:** Select the year of manufacture for the vehicle.
5. (Optional) Select or edit custom attribute values in the **Custom Attributes** area.
6. (Optional) Select new or existing sensor attributes in the **Sensor Attributes** area.

If you have selected new sensor attributes, click **Link Device** against each new attribute to associate the sensor attribute with a device and device attribute.

If you wish to replace existing sensor attribute associations, click **Replace Device** against each sensor attribute that you wish to associate with a replacement device.

7. Click **Save**.
8. (Optional) Click **Back** to return to the **Vehicles** dashboard.

View Vehicle Dependencies

View vehicle dependencies, such as vehicle trips and other dependencies, currently associated with the vehicle.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Vehicles**  from the **Design Center** sub-menu.
3. Select a vehicle and then click **Edit** ().
4. To view dependency information, click a dependency in the **Dependencies** area.
5. Click **Back** to return to the **Vehicles** dashboard.

Delete a Vehicle

Delete a vehicle when it is no longer required. Remove all dependencies before deleting a vehicle.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Vehicles**  from the **Design Center** sub-menu.
3. Select a vehicle in the **Vehicles** list.
4. Click **Delete** ().
5. If the vehicle type does not have dependencies, click **Delete** in the confirmation dialog.
6. If the vehicle has dependencies, the Existing Dependencies dialog appears. These dependencies must be removed before the vehicle can be deleted. Select one of these options:
 - Click a dependency icon to view details of the dependency.
 - Click **Close** to close the dialog.

View Your Vehicles in the Operations Center

The operations center vehicle information dashboard displays information about vehicles in motion, unassigned vehicles, idle vehicles, and stopped vehicles. The dashboard includes vehicle availability and utilization information. You can also see any open incidents against the vehicles.

1. Click **Menu**  and then click **Operation Center**.

2. Click **Vehicles**  in the operation center toolbar.

The list of vehicles appears along with the following vehicle details:

- Vehicle Name.
- Vehicle Model.
- Registration Number.
- Vehicle Type.
- Assigned Driver.
- Vehicle Status, such as *In Motion* or *Idling*.
- Vehicle Availability Status shows if the vehicle is currently available.
- Vehicle Utilization Status shows if the vehicle is currently utilized.

- Open Incidents shows the count of open incidents for the vehicle and links to the incidents page.

You can sort the vehicle list by clicking on the column headings. You can also filter the list to see the vehicles that fit your criteria.



View Vehicle Information and its Operational Status

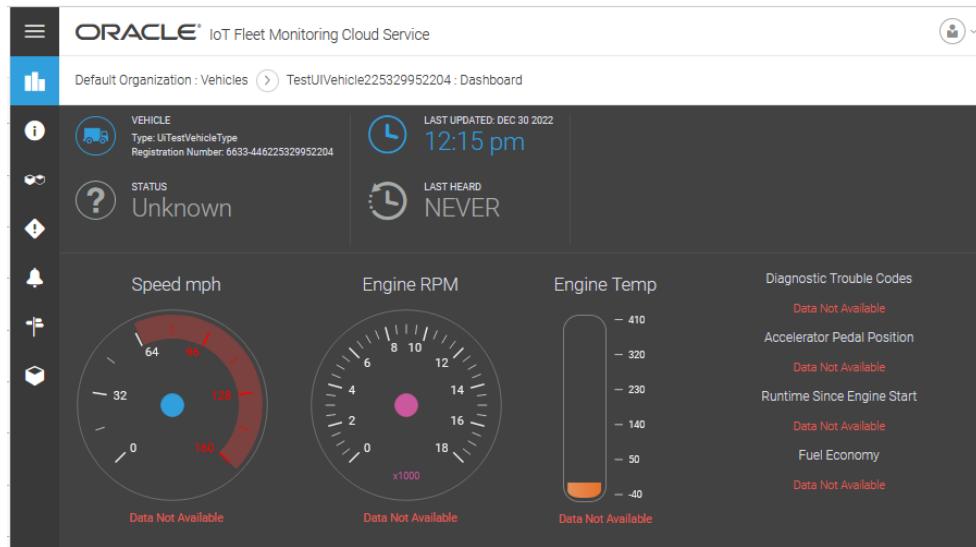
Use the vehicle information page to view static vehicle details such as its make, model, year, vehicle category, VIN, and so on. You can also view the registration and related details associated with the vehicle. On the other hand, use the Dashboard page to quickly determine the operational status of a vehicle, including its current location, its speed, engine temperature, and fuel level.

Note:

The Vehicle Dashboard page will be deprecated in a future release. As an alternative, use the following pages:

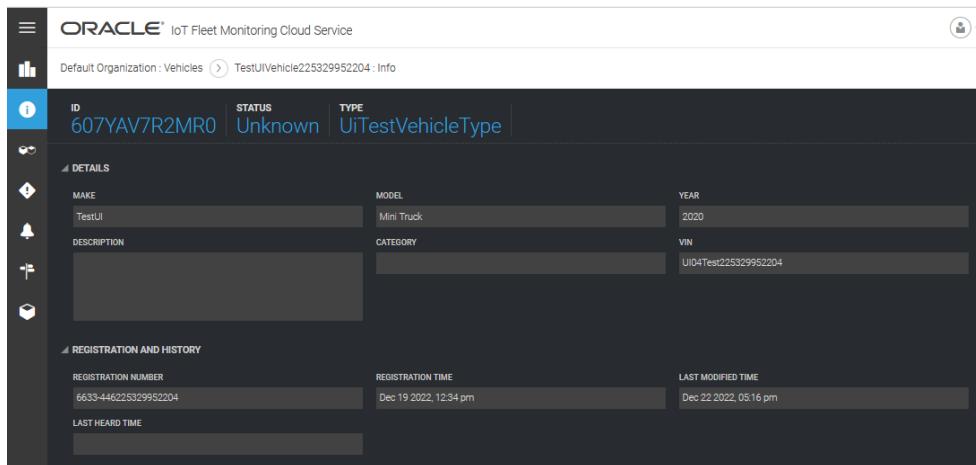
- **Vehicle Information page:** Use this page to view static vehicle details such as its make, model, year, and so on. See the procedure described later in this topic for more information.
- **Digital Twin page:** Use this page to obtain a detailed view of the sensor data being sent from the vehicle to Fleet Monitoring. See [View Vehicle Digital Twin Data](#) for more information.
- **Custom dashboard:** Create a custom dashboard to track key metrics data for your vehicle. [Manage and Monitor Custom Dashboards for Vehicle Types, Drivers, and Trips](#) for more information.

1. Click **Menu** and then click **Operation Center**.
2. Click **Vehicles** in the operation center toolbar.
3. From the list of vehicles, identify the name of the vehicle that you want to view. Scroll to the last column of the records, hover your mouse, and then click the **Information** icon.



The vehicle dashboard page that displays the operational status of the vehicle is displayed.

4. To view the vehicle information page, from the left navigation bar, click Info (Info icon), which is the second icon on the navigation bar.



You can use the toolbar to access various other vehicle details, such as the vehicle location on the map, vehicle incidents and alerts, trips associated with the vehicle, shipments associated with the vehicle, and sensors associated with the vehicle.

5. Use the breadcrumb navigation at the top to navigate to another vehicle or page in the operation center.

View Vehicle Incidents

Use the vehicle incidents dashboard to view incidents reported for a specific vehicle.

1. Click **Menu**  and then click **Operation Center**.

2. Click **Vehicles**  in the operation center toolbar.
3. Select a vehicle in the **Vehicles** list.
4. Click the **View** () icon.
5. Click **Incidents**  in the toolbar to the left of the vehicle details.
6. To filter the incidents list, click a pie chart segment or use a search filter:
 - a. Click **Search** ()
 - b. Select **Status**, **Priority**, **Type**, **Creation Date**, **Description**, or **Creation Date**.
 - c. Select additional search parameters.
 - d. (Optional) Click **Add** (+) or **Remove** (-) to add or remove search filters.

View Vehicle Alerts

Use the vehicle alerts dashboard to view alerts reported for a specific vehicle. Alerts are issued when the requirements set for an alert condition are met or exceeded. For example, an alert is issued when the vehicle engine temperature exceeds a specific limit.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Vehicles**  in the operation center toolbar.
3. Select a vehicle in the **Vehicles** list.
4. Click the **View** () icon.
5. Click **Alerts**  in the toolbar to the left of the vehicle details.
6. To filter the alerts list, click a pie chart segment or use a search filter:
 - a. Click **Search** ()
 - b. Select **Alert Type**, **Rule Type**, **Severity**, **Creation Time**, **Description**, or **Driver Name**.
 - c. Select additional search parameters.
 - d. (Optional) Click **Add** (+) or **Remove** (-) to add or remove search filters.

View Vehicle Trip Information

Use the vehicle trips dashboard to view the trips completed or in progress for a specific vehicle.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Vehicles**  in the operation center toolbar.
3. Select a vehicle in the **Vehicles** list.
4. Click the **View** () icon.

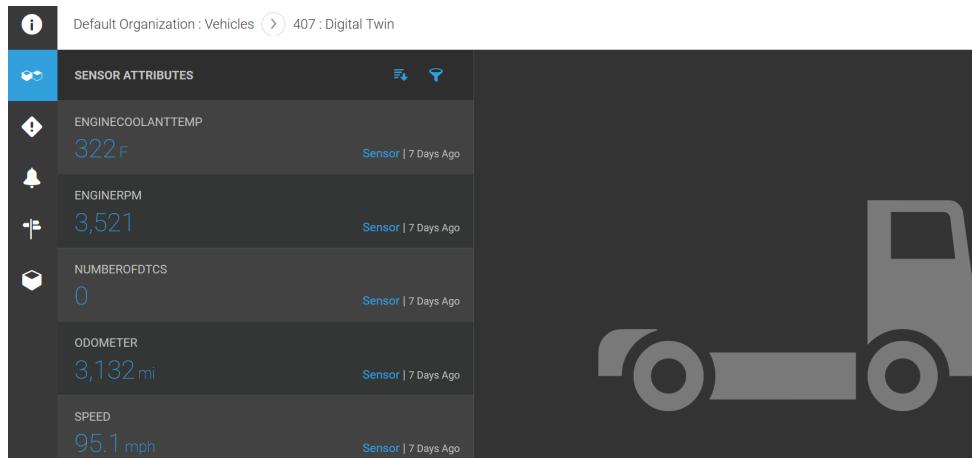
5. Click **Trips**  in the toolbar to the left of the vehicle details.
6. To filter the trips list, click a pie chart segment or use a search filter:
 - a. Click **Search** .
 - b. Select **Status**, **Start Time**, **ETA**, **Source**, **Destination**, **Stops** or **Trip Length**.
 - c. Select additional search parameters.
 - d. (Optional) Click **Add**  or **Remove**  to add or remove search filters.

View Vehicle Digital Twin Data

View the vehicle's digital twin data to obtain a detailed view of the sensor data being sent from the vehicle to Oracle IoT Fleet Monitoring Cloud Service.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Vehicles**  in the operation center toolbar.
3. Select a vehicle in the **Vehicles** list.
4. Click the **Information**  icon.
5. Click **Digital Twin**  in the toolbar to the left of the vehicle details.

The digital twin view of the vehicle displays the list of sensor attributes and their values.



6. (Optional) To view the attributes in an order, click the **Sort**  icon and select one of the following options:
 - **Sort by Attribute Name (A-Z)**
 - **Sort by Attribute Name (Z-A)**
 - **Sort by Last Updated**
7. (Optional) To search and display specific attributes, click the **Filter**  icon to open the Filters dialog box.

- a. From the **Filter** drop down, select either **Attribute Name** or **Attribute Value** and then select a suitable operator such as **contains**, **matches**, **does not contain**, **is**, or **is not**.

- b. Enter a value in the **Value** text box and press enter.
- c. (Optional)Click **Add** to create additional filter conditions.
- d. Click **Apply**.

The filtered results are displayed.

8. For a graphical view of an attribute over a time period, click the attribute value. On the graphical view select one of the following options from the **Date Time Window** drop down.

- **Live**
- **1 hour ago**
- **24 hours ago**
- **7 days ago**
- **14 days ago**

To disable or enable live refresh of attribute data from the sensor devices, on the top right corner of the window, click the **Digital Twin Menu ...** icon and select **Disable Live Refresh** or **Enable Live Refresh**.

Review the data and click **Close** .

Add and Manage Trips and Trip Data

A Trip, typically is a collection of goods that is being transported, has been, or needs to be transported from one geographic location to another. It also encompasses the route defined for the movement of the goods.

As an administrator or an operations manager, you can create a trip from the Trips page of the operation center and associate a vehicle to the trip. You can assign a driver to a trip created on the Trips page, or a driver can start or select a trip in the Oracle IoT Fleet Monitoring Mobile Application. When a driver starts a trip, it becomes active and it can be monitored using Oracle IoT Fleet Monitoring Cloud Service.

Integrate with Oracle Transportation Management Cloud Service to import trip data that includes cargo or inventory information. Oracle IoT Fleet Monitoring Cloud Service performs location and inventory monitoring of the imported trips.

To enable effective monitoring of trips and/or all its sub-entities, as an administrator, you can associate the trip's sub-entities such as vehicle, equipment, ship-units, and ship items with sensor devices or well-known assets. This association helps in location monitoring, tracking ETA, and for vehicle and inventory condition monitoring.

A trip in Oracle IoT Fleet Monitoring Cloud Service supports private fleets and third party carriers. Trips are capable of receiving GPS data, temperature, humidity, pressure, and other sensor data from the trip's inventory items, such as equipment, ship-units or ship-items. This feature enables users to monitor cargo conditions when they use private fleets or third-party carriers to transport their goods. Additionally, a third party carrier's trip can receive GPS updates from a driver's mobile app.

What is a Trip?

A trip is the primary entity of Oracle IoT Fleet Monitoring Cloud Service that represents a route to transport goods from a source location to a destination location. Create a trip using the application UI or import from an external application, such as Oracle Transportation Management Cloud Service. Track trips in real-time for monitoring inventory condition and in-transit location.

A trip in Oracle IoT Fleet Monitoring Cloud Service is a primary entity with several sub-entities. When you create a trip using the application UI, a start location, a destination location, stop locations, a driver, and a vehicle are its sub-entities. Trips imported from Oracle Transportation Management Cloud Service, or created using REST APIs can have additional sub-entities, such as equipment, ship-orders, ship-units, and ship-items. The sub-entities allow the trips to be monitored for inventory condition and in-transit location.

Types of Trips

A trip is a route that a vehicle travels in and it includes start location, a destination, and optional stops. There are two types of trips as follows:

- **Planned:** A planned trip is one that has designated source and destination locations along with optional stops. It also has a vehicle and driver assigned to the trip, which you can specify either at the time of creating the trip or starting a trip.

Planned trips are created by a fleet manager or an operations manager and can be created for both private fleet and third-party carriers. Private fleet trips are the ones where you own the fleet of vehicles and its other related entities. In third-party carrier trips, you do not own the fleet, but you use the one you decide to hire from a third party.

- **Automatic:** When a vehicle that is currently not assigned to any planned trip moves 1600 feet (equivalent to 500 meters) beyond its current location, then a trip is automatically created and is referred to as an unplanned movement or an Automatic Trip. Such automatic trips are created only if automatic trip creation is enabled in the context specific settings of your organization.

Automatic trips are displayed in the Trips summary view along with the rest of the trips in your organization. You can identify an automatic trip by viewing the value of the Name column that contains entries with the "AT-" prefix. For example, AT-1679035360. You can monitor automatic trips by using the Trips dashboard

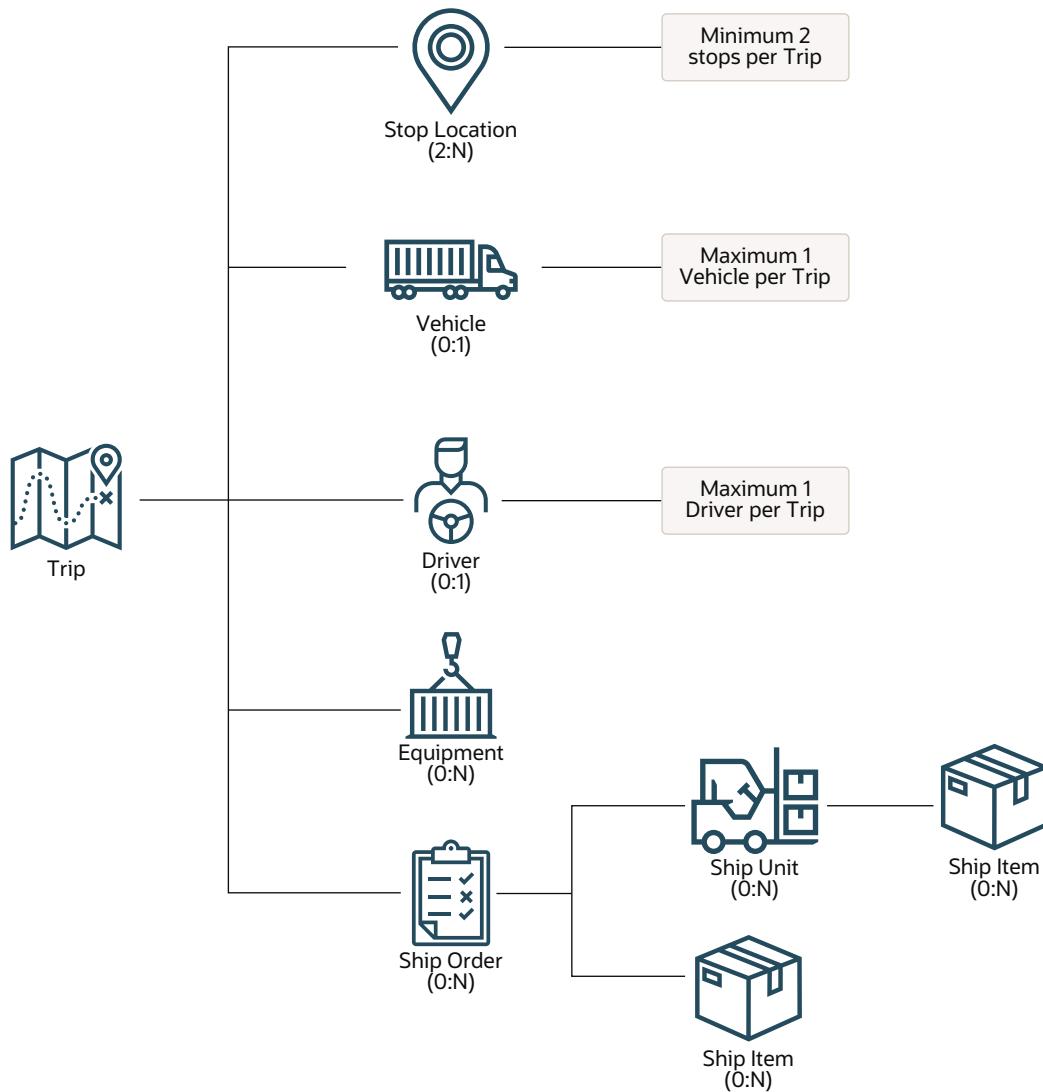
that you can access from **Menu > Operation Center > Trips**  > click the **Actions** icon against the automatic trip entry and select **Show Details** > from the left navigation bar, click **Trip Dashboard** . In addition, you can view and compute metrics just as you do for any regular planned trips.

Stops are added when a vehicle on an automatic trip stops at a location for more than 10 minutes. If the vehicle stops at a location for 90 minutes or longer, then it is considered as a destination stop and the automatic trip is completed. Once an automatic trip is created, it is in *En Route* state. An automatic trip is completed when either of these conditions are met:

- The vehicle is assigned to a planned trip and the trip is started.
- The vehicle has stopped at a location or has stopped sending location pings for 90 minutes or longer.

Trip Structure

This image depicts the sub-entities of a trip and their relationships.



Sub-Entities of a Trip

Name	Description	More Information
Start Location	The source location or GPS coordinates of a trip, which is indicated by a start flag on the map view.	Create a Trip Without Using a Trip Template
Destination Location	The final destination of a trip which is indicated by a finish flag on the map view.	Create a Trip Without Using a Trip Template
Stop Locations	The intermediate stops between the source and destination. They are either delivery points or pick up points.	Create a Trip Without Using a Trip Template
Driver	A driver can be assigned to a trip. A driver can start or stop a trip using the Oracle IoT Fleet Monitoring Mobile Application.	Assign a Driver or a Vehicle to a Trip Manage Drivers

Name	Description	More Information
Vehicle	A conveyance such as a truck or a car for transporting inventory from a source location to a stop location.	Assign a Driver or a Vehicle to a Trip Add and Manage Vehicles
Equipment	Equipment represents any method of storage or transport used for the movement of goods in a trip from one location to another, such as, a trailer, container, flatbed, or a tank, and so on. It can have sensors/trackers attached for measuring attributes including GPS, temperature, humidity, shock, tilt, pressure, and so on.	View Trip Equipment Details
Ship-Orders	A ship-order is part of the inventory metadata that contains order information required for transportation of goods from one location to another in a trip.	View Ship Orders of a Trip
Ship-Units	A ship-unit is a transportation handling unit that's used to facilitate ease of transportation in a trip. These can be wooden or metallic pallets, boxes, cartons, automotive racks, and so on. A ship-order can contain one or more ship-units.	View Ship-Units of a Trip
Ship-Items	A ship-item is an individual trackable inventory item or items that's being transported and monitored in a trip. It can belong to a ship-unit or can be independent of ship-units too.	View Ship-Units of a Trip

How to Enable Trip Monitoring?

To monitor the sub entities of a trip including equipment, ship-units, and ship-items, you can either associate them with sensor / trackers devices within Oracle IoT Fleet Monitoring Cloud Service or you can associate them with well-known transportation assets, such as equipment, packages, and items that are created and maintained in .

Associate Sub-Entities with Assets in Oracle IoT Asset Monitoring Cloud

Oracle IoT Asset Monitoring Cloud lets you monitor the location, condition, and utilization of assets. You can also detect asset anomalies and use analytics to predict asset failures.

A trip in Oracle IoT Fleet Monitoring Cloud Service can leverage existing well-known transportation assets, such as equipment, packages, or items that have been created and managed in . The sub-entities of a trip including an equipment, a ship-unit, or a ship-item can be linked to these transportation assets, which ensure that the monitoring data is provided by to Oracle IoT Fleet Monitoring Cloud Service.

Associate Sub-Entities with Sensors or Trackers

When the sub-entities of a trip such as an equipment, ship-units, or ship-items are merely represented by the sensors or tracking devices of Oracle IoT Fleet Monitoring Cloud Service that are linked to them, then these sub-entities are valid until the trip is running and active. In this scenario, Oracle IoT Fleet Monitoring Cloud Service tracks and monitors a trip's sub-entities using the data provided by these sensors.

See [Associate Sensors or Well-Known Assets to an Entity of a Trip](#).

How to Add Trips?

In Oracle IoT Fleet Monitoring Cloud Service, there are multiple ways to add trips and assign sub-entities to it. After you've create a trip, associated sensor devices to its sub-entities, and started a trip, it is tracked and monitored for its geographic location and inventory condition.

As a fleet manager or an operations manager, you can create trips in the application. A registered driver can also add and manage trips in the Oracle IoT Fleet Monitoring Mobile Application.

Methods to Add Trips

- **Use the Oracle IoT Fleet Monitoring Cloud Service application UI.**

Use this method to create a trip when you need to monitor only vehicles and drivers of a fleet for their geo-location, utilization, fuel consumption, driving behavior, and more such metrics. The vehicles and trips are primarily in-app registered entities.

On the application UI, as an administrator, you create a trip with source, destination, and stops location. You associate a vehicle and a driver to a trip before you start it. See [Create Trips Using the App UI](#).

- **Import trips from an external application such as Oracle Transportation Management Cloud Service.**

Use this method when you need to manage trips for location tracking and inventory condition monitoring in addition to vehicle and driver monitoring. See [Manage Trips to Enable Condition Monitoring](#). There is support for private fleet trips and third party carrier (3PL) trips. Learn more [About Private Fleet Trips](#) and [About Third-Party Carrier Trips](#).

- **Use the Oracle IoT Fleet Monitoring Mobile Application**

A registered driver can use the Oracle IoT Fleet Monitoring Mobile Application to create and start a trip. See [Use the Oracle IoT Fleet Monitoring Mobile App](#).

- **Invoke Oracle IoT Fleet Monitoring REST API to create, start, and manage trips.**

Use this method for trying and testing the trip monitoring features in Oracle IoT Fleet Monitoring Cloud Service. See [Trip Management REST Endpoints](#).

Create Trips Using the App UI

A planned or unplanned trip is a route that a vehicle travels. A trip includes a start location, a destination, and optional stops. As a fleet manager or an operations manager you can create a trip from the Trips page in the operation center. You can also create trip templates in the design center for frequently used trips.

You can assign a driver to a trip created on the Trips page, or a driver can select a trip in the Oracle IoT Fleet Monitoring Mobile Application. When a driver is assigned to a trip, it becomes active and it can be monitored using Oracle IoT Fleet Monitoring Cloud Service.

 **Note:**

If you are using multiple organizations, the trips and trip templates for an organization are not available in other organizations.

Create a Trip Using a Trip Template

Use a trip template to create a trip that is used frequently. The trip template provides the start location, trip stops, and the destination for the trip.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. Click **Create Trip** .
4. Select **Use Templates** to use a predefined trip template.
5. Select a trip template from **Trip Templates**.
6. Complete these fields:
 - **Trip Name:** Enter a name for the trip. The default name is the name of the trip template.
 - **Earliest Start Time:** (Optional) Enter or select the earliest date and start time for the trip.
 - **Latest Start Time:** (Optional) Enter or select the latest date and start time for the trip.
 - **Vehicle:** Select the vehicle assigned to the trip. If left unassigned, you are prompted to assign the vehicle when starting the trip.
 - **Driver:** Select the driver assigned to the trip. If left unassigned, you are prompted to assign the driver when starting the trip.
 - **Planned Trip Distance:** (Optional) Enter the planned distance for the trip in miles.
 - **Planned Trip Duration:** (Optional) Enter the planned drive duration for the trip in minutes.
 - **Tolls:** (Optional) Select **Include** or **Exclude** to specify whether the map provider must retrieve a route that includes or avoids toll roads, respectively. Note that this drop-down list is displayed in the UI only if your map provider is HERE Technologies. The value that you set for this field overrides the corresponding toll option configured in the organization-level settings that is accessible from the **Menu > Settings > IoT Organizations > Organization Name > Context Specific > Trips & Shipments** tile.
7. Click **Save** to save the trip.
8. (Optional) Click **Back** to return to the Trips dashboard.

Create a Trip Template

Trip templates let you create trips that are repeated frequently. If you have Fleet Administrator (IoTFAAdministrator) permissions, you can create trip templates for the

organization in the Design Center. Drivers can use trip templates to create and start trips.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Trips** from the **Design Center** sub-menu.
3. On the Trips page, click **Trip Templates**.
4. Click **Create Template** .
5. Enter a **Trip Template Name**.
6. In the map, click **Add**  to add a start location for the trip template.
7. Select **Source** and then click the start location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
8. (Optional) Enter a **Distance to Next Stop** value in miles.
9. (Optional) Enter a **Stop Duration** in seconds.
10. Click **Confirm**.

A start flag indicator is added to the map.

11. To add a destination:

- a. In the map, click **Add**  to add the destination for the trip template.
- b. Select **Destination**, and then click the destination location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. Click **Confirm**.

A destination flag indicator is added to the map.

12. (Optional) To add a stop:

- a. Click the **Start Flag**  and then **Add Next Stop** .
- Alternatively, you can also click **Add**  in the map to add a stop.
- b. Make sure that **Stops** is selected, and then click the stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.
- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

13. (Optional) To add a stop between the start and the first stop:

- a. Click the **Start Flag**  and then **Add Next Stop** .
- b. Click the new stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.

- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

14. (Optional) To add a stop after an existing stop:

- a. Click a **Pin**  and then **Add Next Stop** .
- b. Click the new stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.
- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

15. Click **Save** to save the trip.

16. (Optional) Click **Back** to return to the Trips dashboard.

Create a Trip Without Using a Trip Template

If you have Fleet Administrator (IoTAdminAdministrator) permissions, you can create a trip on the Trips dashboard and assign a driver and vehicle to it. A trip is a predefined route that a vehicle travels. A trip includes a start location, a destination, and optional stops. After a trip is created, it can be monitored using Oracle IoT Fleet Monitoring Cloud Service.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. Click **Create Trip** .
4. Make sure that **Use Template** is not selected.
5. Complete these fields:
 - **Trip Name**: Enter a name for the trip.
 - **Earliest Start Time**: (Optional) Enter or select the earliest date and start time for the trip.
 - **Latest Start Time**: (Optional) Enter or select the latest date and start time for the trip.
 - **Vehicle**: Select the vehicle assigned to the trip. If left unassigned, you are prompted to assign the vehicle when starting the trip.
 - **Driver**: Select the driver assigned to the trip. If left unassigned, you are prompted to assign the driver when starting the trip.
 - **Planned Trip Distance**: (Optional) Enter the planned distance for the trip in miles.
 - **Planned Trip Duration**: (Optional) Enter the planned drive duration for the trip in minutes.

- **Tolls:** (Optional) Select **Include** or **Exclude** to specify whether the map provider must retrieve a route that includes or avoids toll roads, respectively. Note that this drop-down list is displayed in the UI only if your map provider is HERE Technologies. The value that you set for this field overrides the corresponding toll option configured in the organization-level settings that is accessible from the **Menu > Settings > IoT Organizations > Organization Name > Context Specific > Trips & Shipments** tile.

6. In the map, click **Add**  to add a start location for the trip.
7. Select **Source** and then click the start location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
8. (Optional) Enter a **Distance to Next Stop** value in miles.
9. Click **Confirm**.

A start flag indicator is added to the map.

10. To add a destination:

- a. In the map, click **Add**  to add the destination for the trip.
- b. Select **Destination**, and then click the destination location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. Click **Confirm**.

A destination flag indicator is added to the map.

11. (Optional) To add a stop:

- a. Click the **Start Flag**  and then **Add Next Stop** .

Alternatively, you can also click **Add**  in the map to add a stop.

- b. Make sure that **Stops** is selected, and then click the stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.
- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

12. (Optional) To add a stop between the start and the first stop:

- a. Click the **Start Flag**  and then **Add Next Stop** .

- b. Click the new stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.
- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

13. (Optional) To add a stop after an existing stop:

- a. Click a **Pin**  and then **Add Next Stop** .
- b. Click the new stop location for the trip in the map view. Use the zoom controls to increase or decrease map magnification or click **Search**  and search for a specific address.
- c. (Optional) Enter a **Distance to Next Stop** value in miles.
- d. (Optional) Enter a **Stop Duration** in seconds.
- e. Click **Confirm**.

A stop indicator, along with the stop number, is added to the map.

14. Click **Save** to save the trip.

15. (Optional) Click **Back** to return to the Trips dashboard.

Start a Trip

If you have Fleet Administrator (IoTAdministrator) permissions, you can start trip on the Trips dashboard. When you start a trip, it is assigned to the selected driver and you can monitor trip progress in the map view.

Note:

When a trip is in *Planned* state, you can update its vehicle or driver assignment, update the address of source, destination, and optional stops, add or remove stops, change stop sequence, and so on. However, when a trip is in *En Route* state, you can only update its state to *Completed*.

1. Click **Menu**  and then click **Operation Center**.

- 2.** Click **Trips**  in the operation center toolbar.
- 3.** Select a trip in the trip list.
- 4.** In the last column, click the Actions button, and then click **Start**.

If you haven't pre-assigned a trip vehicle and trip driver, then you are prompted to assign a vehicle and driver before you can start the trip.

- 5.** Click **Yes** to start the trip.

The state of the trip changes from *Planned* to *En Route*.

Enable Automatic Trips

Automatically create a trip when a vehicle is on the move. You can enable automatic trips in the organization settings. When a vehicle currently not assigned to a trip moves 1600 feet (500 meters) beyond its assigned location, a trip is automatically created.

- 1.** Click **Menu** , and then click **Settings**.
- 2.** Select **IoT Organizations** and then select your organization from the listed organizations.

3. Click **Context Specific** and then **Trip & Shipments**.
4. In the **Automation Settings** section, select **Automatic Trip Creation**.
5. Click **Save** to save the changes. After you receive a success message, click **Close** .

Assign a Driver or a Vehicle to a Trip

Fleet Administrator (IoTMAAdministrator) permissions are required to assign or reassign drivers or vehicles to trips. A trip does not become active until the driver assigned to the trip accepts it on their mobile device.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. Select a trip in the trip list.
4. Click **Edit** .
5. To assign or reassign a vehicle to a trip, select a vehicle in the **Vehicle** list.
6. To assign or reassign a driver to a trip, select a driver in the **Driver** list.
7. Click **Save**.
8. (Optional) Click **Back** to return to the Trips dashboard.

View Trips Summary

Use the trips summary view to obtain information about all the trips of the current organization. From the list, search for specific trip details using filters. Choose and customize the type of information you wish to view in the table, such as status, count of incidents, alerts, exceptions, fuel consumption, vehicle assigned, start time, end time, and so on.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. To search for specific trips from the list, use **Filter**  and enter search criteria for attributes such as trip name, ID, vehicle, driver, type, delivery status, state, end time. Click **Clear Filter** to display the complete trip list.
4. To customize the information displayed on the **Trip Summary** view, on the table head, after the last column, click **Show /Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list. The fields that you selected appear at the end of the last column of the table.
5. (Optional) To view details of a specific trip. select a trip in the trip list. Scroll to the last column of the record, hover your mouse, and click **Information** .
6. (Optional) For each trip record in the list, you can use the **Edit**, **Start**, **Cancel**, and **Delete** icons to perform respective operations on the trip data, if the trip has not yet started or is in planned state.

7. (Optional) Use the breadcrumb navigation at the top to navigate to other pages in the operations center or the organization dashboard.

View the Trip Templates List

The trip templates list displays information about the trip templates currently in use.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Trips** from the **Design Center** sub-menu.
3. On the Trips page, click **Trip Templates** .

View Trip Template Details and Preview Trip Route

Use the trip template details dashboard to view information about the trip including planned stops and the trip start and finish locations.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Trips** from the **Design Center** sub-menu.
3. On the Trips page, click **Trip Templates** .
4. Select a trip template in the **Trip Templates** list.
5. Click the **View (oculars)** icon.
The planned trip duration, total trip distance, source location, stops, and destination details are shown.
6. (Optional) Click **Map (location)** to view the trip route in a map view.
7. Click **Back** to return to the **Trip Templates** list.

Cancel or Complete a Trip

If you have Fleet Administrator (IoTFMAdministrator) permissions, you can complete or cancel a trip when a trip is complete or has been cancelled.

1. Click **Menu (≡)** and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. Select a trip in the trip list.
4. Click **Edit (pencil)**.
5. Select **Completed** or **Cancelled** in the **Trip Status** list.
You can only cancel a trip that is currently in progress.
6. Click **Save**.
7. (Optional) Click **Back** to return to the Trips dashboard.

Delete a Trip

Delete a trip if it is no longer required. IoTAdminAdministrator permissions are required to delete a trip.

 **Note:**

Trips that have been started cannot be deleted.

1. Click **Menu**  and then click **Operation Center**.
2. Click **Trips**  in the operation center toolbar.
3. Select a trip in the trip list.
4. Click **Delete** .
5. Click **Delete** in the confirmation dialog.

Manage Trips to Enable Condition Monitoring

Oracle IoT Fleet Monitoring Cloud Service imports trips from Oracle Transportation Management Cloud Service, lets you configure these trips and its sub-entities including vehicles, drivers, stops, containers or trailers, ship-units, and ship-items with tracking and sensor devices for monitoring, and provides snapshot and detailed view of each sub-entity's condition and location status.

To know about a trip and its sub-entities, see [What is a Trip?](#). After configuring an integration with Oracle Transportation Management Cloud Service that provides trip data, an administrator can update and associate the sub-entities of the imported trips either with sensor devices or with well-known transport assets from Oracle IoT Asset Monitoring Cloud.

Work-flow to Manage Trips for Condition Monitoring

Complete the tasks of this table to import and configure trips for vehicle, trailer, and inventory condition and location monitoring.

Task	Description	More Information
Integrate with Oracle Transportation Management Cloud Service (OTM)	<p>As an integrator you need to configure the integration in an organization and map the drivers of both the application. After the integration, Oracle Transportation Management Cloud Service sends the trip data to Oracle IoT Fleet Monitoring Cloud Service. When you configure Oracle Transportation Management Cloud Service, you need to use this microservice URL:</p> <p><code>https://<your instance URL>/iotapps/serviceapi/v1/transportation?defaultNS=true</code></p>	Integrate with Oracle Transportation Management
(Optional) Create assets in Oracle IoT Asset Monitoring Cloud	<p>You can leverage well-known transportation assets (equipment, packages, and items) already existing in Oracle IoT Asset Monitoring Cloud or create these assets that will help monitor the sub-entities of a trip for location, inventory condition, and status. You need assets for each sub-entity of your trip with these asset types:</p> <ul style="list-style-type: none"> • Transport Equipment for Equipment • Transport Package for Ship-Unit • Transport Item for Ship-Item 	Create and Manage Assets
Examine the imported trips	<p>For the active organization, on the operation center, you can view the trips and all its sub-entities imported from Oracle Transportation Management Cloud Service. The imported trips contains the sub-entities such as Equipment, Ship Order, Ship-Unit, Ship-Item, on the Trip Details view.</p>	View Trips Summary
(Optional) Assign a vehicle and a driver	<p>If a vehicle or a driver is not assigned to the trip, the administrator can assign a vehicle and a driver to the trip.</p>	Assign a Driver or a Vehicle to a Trip
Associate tracker and sensor devices to vehicles	<p>You should have registered devices that are available for association with the vehicle of an imported trip.</p>	Edit Vehicle Details and Device Sensor Attributes

Task	Description	More Information
Associate tracker and sensor devices to equipment or trailers	If you are not leveraging an existing or well-known asset in Oracle IoT Asset Monitoring Cloud as an equipment, then you can link the equipment of the trip with a sensor device in the application. On establishing this link, Oracle IoT Fleet Monitoring Cloud Service can continuously track and monitor the geo-location, condition, and status of the equipment asset for the entire trip duration.	Associate Sensors or Well-Known Assets to an Entity of a Trip
Associate tracker and sensor devices to ship units	The condition, status, and location of the ship-units can be tracked and monitored by sensors or well-known assets that you need to link with each ship unit of a trip.	Associate Sensors or Well-Known Assets to an Entity of a Trip
Associate tracker and sensor devices to ship items	Link each and every ship item of a trip with a sensor device or a well-known asset in Oracle IoT Asset Monitoring Cloud. This enables Oracle IoT Fleet Monitoring Cloud Service to perform condition monitoring and location status of ship items of a trip.	Associate Sensors or Well-Known Assets to an Entity of a Trip
Create rules to send exception events to OTM	Administrator can create rules that transmit exception events such as route deviations, cargo condition alerts, and so on to Oracle Transport Management System (OTM) or any external system via an HTTP webhook.	Transmit Exception Events to External Systems See in Create a Rule
Create rules to detect non-communication or connectivity loss of devices	As an administrator, you can configure a rule for a trip's entities and use the <code>inactiveDuration</code> metric to determine non-communication of messages or connectivity loss for more than a configurable time period. The rule when triggered notifies the administrator about the entity and the type of loss.	Detect Non-Communication or Connectivity Loss of Devices
Start a trip	Either an administrator can start a trip or typically a driver uses the Oracle IoT Fleet Monitoring Mobile Application to start an assigned trip.	Learn About Private Fleet Trips and About Third-Party Carrier Trips Start a Trip or Use the Oracle IoT Fleet Monitoring Mobile App

Task	Description	More Information
(optional) View Digital Twins of trip sub-entities	You can view the digital twin versions of the sub entities of a trip such as a vehicle, equipment, ship-units, and ship-items. For each entity, the associated sensors or assets with their values are displayed in read-only mode.	View Digital Twin Details

Oracle IoT Fleet Monitoring Cloud Service provides end-to-end transportation visibility, real-time inventory condition, and predictive insights of trips. To monitor trips and its sub entities see [Monitor Trips and Its Entities](#)

Associate Sensors or Well-Known Assets to an Entity of a Trip

A trip's sub-entities can be associated with existing or well-known transportation assets in Oracle IoT Asset Monitoring Cloud Service or with sensor / tracker devices in Oracle IoT Fleet Monitoring Cloud Service. This association with sub-entities including vehicles, equipment, ship-units, and ship-items provide real-time data such as temperature, humidity, geo-location, tilt angle during a trip. Oracle IoT Fleet Monitoring Cloud Service uses this data to provide you real-time inventory condition, location, and status of your trip.

Trip data imported from Oracle Transportation Management Cloud Service contains entities such as equipment, ship-units, an ship-items. These entities of a trip can either be associated with well-known transportation assets created and maintained in Oracle IoT Asset Monitoring Cloud or can be linked to sensors or trackers in Oracle IoT Fleet Monitoring Cloud Service.

To associate a well-known transportation asset to a trip's sub-entity, you should have created or viewed the required asset that uses a specific asset type (Transport Equipment, Transport Package, or Transport Item) in Oracle IoT Asset Monitoring Cloud, and noted the asset name. See how to [Create and Manage Assets](#).

Alternatively, to associate a sensor to a trip's sub-entity you should have registered the sensor device in the IoT Cloud Service Platform and noted the sensor device name. See how to [Register and Activate Devices](#).

To enable monitoring of each individual sub-entity of a trip, you should link it to a unique sensor device of Oracle IoT Fleet Monitoring Cloud Service or a well-known asset in Oracle IoT Asset Monitoring Cloud.

1. Click **Menu**  and then click **Operation Center**.
2. On the operation center navigation bar, click **Trips** .

The trips summary view of all the trips in the organization is displayed.

3. Identify the trip record to which you need to link devices or well-known assets with its sub-entities and hover over it towards its last field. Click .

Note:

Select a trip that is in the planned state. You cannot associate devices in a trip that is completed.

The trip is displayed on the map view.

4. From the trip navigation bar, to select the entity to which you need to associate devices or well-known assets, click one of the following icons:
 - **Equipment** 
 - **Ship Units** 
 - **Ship Items** 
- The selected entity's page is displayed with the list of equipment, sub-units, or sub-items associated with the trip.
5. From the list, for equipment identify the equipment ID, for ship-units identify the ship-unit ID, or for ship-items identify the ship-item ID, and expand its value. Click .
6. On the **Add Asset/Device Reference** dialog, select one of the following:
 - **Add Asset Reference** : click the radio button and select an asset from the **Asset Reference** drop down list.
 - **Add Device Reference**: click the radio button and select a sensor device from the **Sensor Reference** drop down list.
7. Click **Save**.
8. Repeat Steps 5 through 7 for all the records of the sub-entity that you selected in Step 4.
9. For a trip, select another sub-entity and repeat Steps 5 through 7 for all the items of the sub-entity. Ensure that for a trip, whichever sub-entity needs to be tracked and monitored, is associated with a sensor device from Oracle IoT Fleet Monitoring Cloud Service or a well-known asset from Oracle IoT Asset Monitoring Cloud.

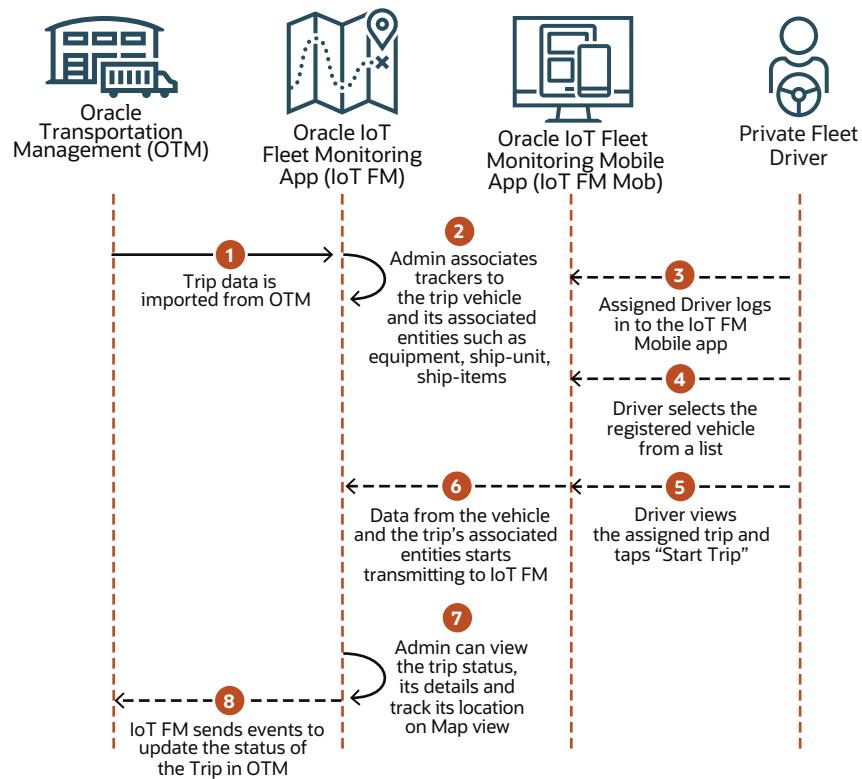
About Private Fleet Trips

Private fleet trips in Oracle Transportation Cloud can be imported to Oracle IoT Fleet Monitoring Cloud, which does condition and location monitoring of the trip's entities after the assigned driver starts the trip using the Oracle IoT Fleet Monitoring Mobile app.

A private fleet trip created in Oracle Transportation Management Cloud, can be imported to Oracle IoT Fleet Monitoring Cloud that can track and monitor the trip's entities for location and condition monitoring.

Work flow of a Private Fleet Trip

This flow diagram displays the sequence of steps followed to start a private fleet trip and enable Oracle IoT Fleet Monitoring Cloud to perform condition and location monitoring of the trip's entities.



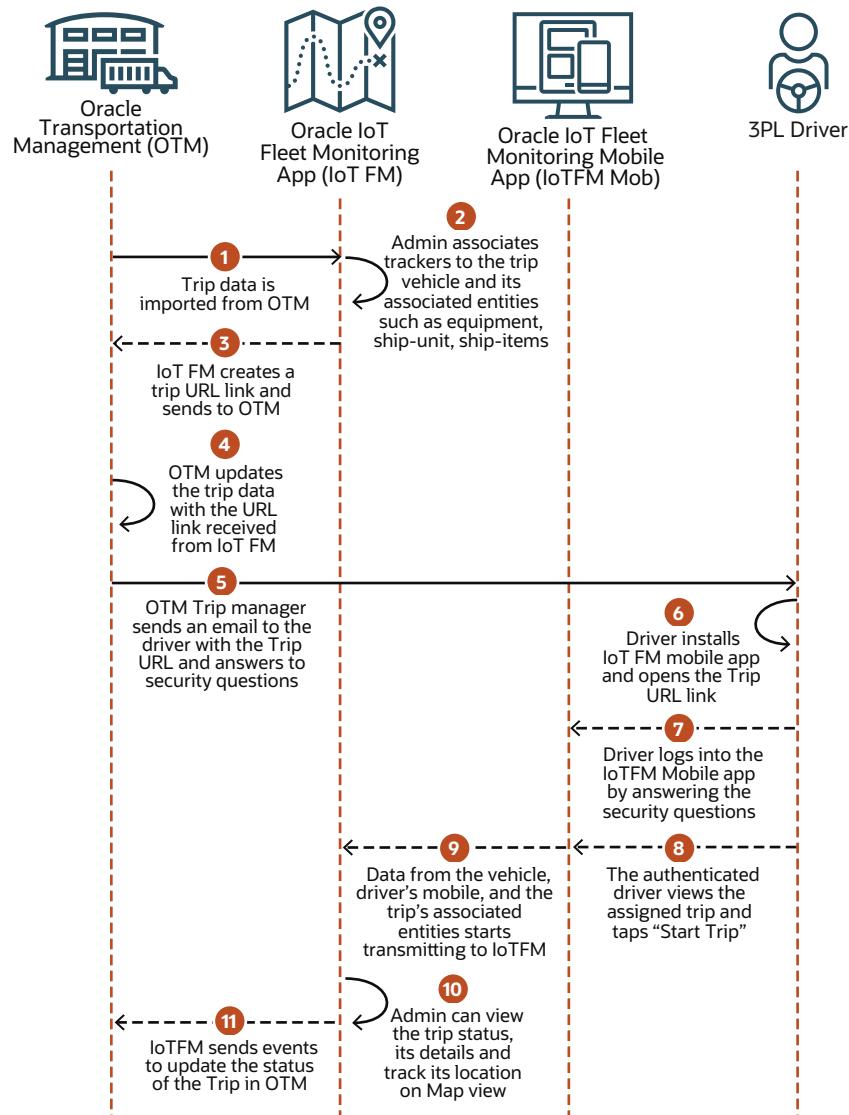
About Third-Party Carrier Trips

Third-party carrier trips in Oracle Transportation Cloud can be tracked and monitored in Oracle IoT Fleet Monitoring Cloud after the assigned driver starts the trip using the Oracle IoT Fleet Monitoring Mobile app.

Third-party carrier trips created in Oracle Transportation Management Cloud, can be tracked and monitored in Oracle IoT Fleet Monitoring Cloud including the trip's entities and the driver's mobile. The third-party carrier's driver signs in to the Oracle IoT Fleet Monitoring mobile app using certain security answers and starts a third-party carrier trip.

Work-flow of a Third-Party Carrier Trip

This flow diagram displays the sequence of steps used to start and monitor a third party carrier trip.



Transmit Exception Events to External Systems

As an administrator, configure rules that can trigger and transmit system or exception events such as route deviations, cargo condition alerts, and so on to Oracle Transport Management System (OTM) or any external system via an HTTP URL.

Oracle IoT Fleet Monitoring Cloud Service can transmit incidents and alerts to an external application as tracking events. Fleet Monitoring can send emails and SMS notifications. Additionally, custom status event codes, sensor data, metrics, location, system and custom attributes which are defined in rule conditions are transmitted as reference inputs to configured URLs .

As an administrator or shipper of an organization, you can configure business rules on vehicles, shipments, drivers, trips or their entities such as equipment, ship-unit, ship-items that generates incidents or alerts that are transmitted as exception events to Oracle Transportation Management (OTM) application, Oracle Intelligent Track and Trace (ITT), or any external system.

You need to configure notification accounts for HTTP providers, email providers or SMS providers and then add subscribers for these notification accounts.

When you configure a rule, you can define custom event codes that are transmitted with the incident or alert information.

When such a rule is triggered, the IoT service publishes a canonical event payload that complies with the [CloudEvents](#) specification. The event payload with relevant data transformation can be consumed by the external application.

Workflow to Transmit Events to External Systems

Step	Description	More Information
Share the event payload structure with the external systems' admin.	<p>Event payload is the information that is transmitted to the external systems via a HTTP URL when an incident or alert is triggered by an event-based rule.</p> <p>The event payload structure complies with the CloudEvents specification.</p> <p>The associated external system should be aware of the event payload structure for it to accurately consume and transform the event data that it receives in the notification from the Fleet Monitoring application.</p> <p>The payload structure is relevant for notifications sent to a HTTP provider. For email or SMS notifications, the payload structure is not applicable.</p> <p>Note that for transmitting the event notification to OTM, the payload structure need not be shared because the Fleet Monitoring application will transform the notification data to XML format and then transmit to OTM.</p>	Review the Event-Notification Payload Structure About Event Transmission to Oracle Transportation Management System

Step	Description	More Information
Configure the integration with the external system.	<p>You should obtain the relevant URL of the external system such as OTM, ITT, and so on, which you need to add in the Fleet Monitoring application. The target system is also configured appropriately by their admin to receive event notifications from Fleet Monitoring.</p> <p>For example, in OTM, refnums and transmission codes are configured for it to receive and interpret the relevant sensor attribute values, metrics, and event codes from the event notification data from Fleet Monitoring.</p>	Integrate with Oracle Transportation Management Integrate with Oracle Intelligent Track and Trace Integrate with Oracle Warehouse Management Cloud Service
Create notification accounts.	<p>Create notification accounts for an SMS provider, an email provider or an HTTP provider. When a rule generates an incident or alert, notifications are sent to the configured subscribers including the HTTP subscriber.</p> <p>Note that for OTM, you don't need to add a HTTP based notification account because Fleet Monitoring seeds it after you've configured the integration with OTM.</p>	Send Notifications for Incidents or Alerts
Add subscribers.	<p>Add subscribers to the SMS, e-mail provider, or the HTTP provider that you've added as notification accounts. The subscribers receive the event notifications.</p> <p>For OTM, when you've configured the integration, the subscriber is added by default.</p>	Add Subscribers for the Notifications

Step	Description	More Information
Create rules.	<p>Before you create an event-based rule, define rule conditions which when met will trigger an incident or an alert.</p> <p>Define custom event codes that'll be sent with the event payload to the external system when a rule is triggered.</p> <p>An incident transmits an event-creation code or an event-resolution code when an incident is created or resolved respectively. An alert has a single event-creation code.</p> <p>Transmission codes should be configured on OTM system for the cloud event "code" field.</p>	Create a Rule

Review the Event-Notification Payload Structure

When a rule triggers an incident or an alert, an event notification can be transmitted to an external system, which transforms and consumes the data.

The structure of each event-notification payload is shared with the external system's admin who in turn provides the external system's URL. In the Fleet Monitoring application, the admin uses the URL to configure an integration with the external system and then configures notification accounts with the external system's URL, a SMS provider, or an email provider. The event -notification payload structure complies with the [CloudEvents](#) specification.

 **Note:**

For sending event-notifications to Oracle Transportation Management (OTM), this payload structure in JSON is not applicable because the Fleet Monitoring application transmits the information to OTM in XML format. See [About Event Transmission to Oracle Transportation Management System](#)

The following steps help you review the payload structure of a event notification triggered by an incident and by an alert.

1. Review this incident-triggered event notification payload structure for a ship-unit entity of a trip:

```
{
  "specversion": "1.0",
  "type": "com.oraclecloud.iot.incidentTriggered",
  "id": "2635236",
  "source": "/incidents/<incidentId>", // All fulfilments (&
rules themselves) are always local ID
  "subject": "/shipunits/<shipunitId>",
  "time": "2021-04-05T17:31:50.52Z",
```

```

"datacontenttype": "application/json",
"data": {
    "summary": "Ship Unit Temperature Pressure Breach",
    "description": "Ship Unit Temperature Pressure Breach",
    "type": "OUTAGE",
    "priority": "HIGH",
    "state": "RESOLVED",
    "contexts": [
        {
            "id": "<tripId>",
            "kind": "TRIP"
        },
        {
            "kind": "SHIPUNIT",
            "id": "<shipunitId>",
            "values": [
                {
                    "id": "<sensorId>",
                    "name": "ora_temperature",
                    "type": "SENSOR",
                    "value": 40
                },
                {
                    "id": "<sensorId>",
                    "name": "ora_humidity",
                    "type": "SENSOR",
                    "value": 72
                },
                {
                    "id": "<metricId>",
                    "name": "sys_geoLocation",
                    "type": "METRIC",
                    "value": "<latitude>, <longitude>, <altitude>"
                }
            ]
        }
    ],
    "parent": "/trips/<tripId>",
    "org": "<orgId>",
    "code": "<eventCode>"
}

```

2. Review this alert-triggered notification payload structure a ship-unit entity of a trip:

```

{
    "specversion": "1.0",
    "id": "2635236",
    "type": "com.oraclecloud.iot.alertTriggered",
    "source": "/alerts/<alertId>",
    "subject": "/shipunits/<shipUnitId>",
    "time": "2021-04-05T17:31:50.52Z",
    "datacontenttype": "application/json",
    "data": {
        "summary": "Ship Unit Temperature Pressure Breach",

```

```

        "severity": "CRITICAL",
        "contexts": [
            {
                "id": "<tripId>",
                "kind": "TRIP"
            },
            {
                "kind": "SHIPUNIT",
                "id": "<shipunitId>",
                "values": [
                    {
                        "id": "<sensorId>",
                        "name": "ora_temperature",
                        "type": "SENSOR",
                        "value": 40
                    },
                    {
                        "id": "<sensorId>",
                        "name": "ora_humidity",
                        "type": "SENSOR",
                        "value": 72
                    },
                    {
                        "id": "<metricId>",
                        "name": "sys_geoLocation",
                        "type": "METRIC",
                        "value": "<latitude>, <longitude>,
<altitude>"
                    }
                ]
            }
        ],
        "parent": "/trips/<tripId>",
        "org": "<orgId>",
        "code": "<eventCode>"
    }
}

```

3. Review the purpose of these fields in the payload structure:

- **type:** The value of this field follows a format similar to `com.oraclecloud.iot.alertTriggered` `com.oraclecloud.iot.incidentTriggered` and denotes if the event was triggered by an incident or an alert.
- **id:** The value represents a unique ID of the event.
- **source:** Its value denotes the ID of the specific alert or incident that generated the event.
- **subject:** The value contains the ID of the entity whose sensor data, metrics, location data, system or custom attributes are defined in the rule condition and caused the event-based rule to fire an incident or alert.
- **time:** Its value denotes the time when the incident or alert was generated in UTC format.

- **parent**: Its value denotes the parent entity of the subject entity. For example, a trip is the parent of a ship-unit.
- **org**: This denotes the organization ID to which the source entity belongs.
- **code**: For a new incident, it contains a creation event code and when the incident is resolved, it contains a resolution event code. In case of an alert, it contains only the creation event code.
- **data**: It contains several sub-fields such as `summary`, `description`, `type`, `priority`, `state` whose values have information about the incident or alert that the admin defined in the rule.
- **context**: This field has several sub-fields that describe those sensor attributes or metrics of the `subject entity` and the `parent entity`, which were used in the rule's condition. The geo-location of the entities would be added in all notifications by default.

4. Note the list of values allowed for the fields of the payload:

- **type**: one of

```
["com.oraclecloud.iot.incidentTriggered",
 "com.oraclecloud.iot.alertTriggered"]
```

- **source**: one of

```
["/alerts/<alertId>", "/incidents/<incidentId>"]
```

- **subject**: one of

```
["/vehicles/<vehicleId>", "/drivers/<driverExternalId or driverId>",
 "/equipments/<trip equipment ref>
```

```
", "/facilities/<facility external Id>", "/shipitems/<ship item
no.>", "/shipunits/<ship unit no.>", "/shipments/<shipment externalId
or shipmentId>", "/trips/<trip ExternalId or tripId>"]
```

- **parent**: one of

```
["/shipments/<shipment externalId or shipmentId>", "/trips/<trip
ExternalId or tripId>"]
```

- **kind**: one of

```
["VEHICLE", "DRIVER", "TRIP", "SHIPMENT", "FACILITY", "EQUIPMENT",
"SHIPITEM", "SHIPUNIT"]
```

- **values:type**: one of

```
["METRIC", "SENSOR", "SYSTEM", "CUSTOM", "LOCATION"]
```

About Event Transmission to Oracle Transportation Management System

The IoT Intelligent Fleet Monitoring application transmits event-notification payloads to Oracle Transportation Management (OTM) in XML format unlike in the other external systems where it transmits the payload in JSON format based on the CloudEvents specification.

As an administrator, you create a rule for an entity and add conditions which when met triggers an incident or alert that transmits an event-notification payload to OTM in XML format.

About Configurations

As an administrator, before you can create a rule to transmit exception events to OTM, complete these configurations in Fleet Monitoring and OTM applications:

- For each of the entities, such as vehicle, trip, ship-unit, shipment, driver and so on, identify the sensor attributes, metrics, location attributes, system attributes or custom attributes which you'll use in the rule conditions. The OTM admin should configure refnum/value pairs that map to these attributes for each of the entities. This configuration is required when the **Send Rule Attributes** flag is enabled in the OTM configuration screen in Fleet Monitoring.
- Define custom event codes for the incidents and alerts in your rule. The OTM admin should configure transmission codes mapping to these event codes. This configuration is mandatory for OTM to successfully process the event notifications from Fleet Monitoring.
- In your organization, configure an integration with OTM. From the **Design Center > Organization > Integrations** option, go to the **OTM Configurations** page. Enable the **Integration Status** and **Send Rule Attributes** options. If the **Send Rule Attributes** is not enabled then the rule condition's attributes are not transmitted with the notification to OTM. See [Connect to an Oracle Transportation Management Cloud Service Instance](#).
- Obtain the OTM URL, domain name, user name, and password details from the OTM admin and use the details to add an OTM integration in your organization. See [Integrate with Oracle Transportation Management](#).
- The OTM admin should have enabled and configured the integration with Oracle IoT Intelligent Fleet Monitoring application in the OTM instance.

About Notification Account and Subscribers

In the IoT Intelligent Fleet Monitoring application, a pre-seeded notification account for OTM is available. After you've configured an integration with OTM, a pre-configured subscriber for the OTM notification account gets added. The Fleet Monitoring application uses these pre-existing configurations to transmit event notifications to OTM.

When you create a rule, select the target entity, add conditions, select the incident or alert option, and select the OTM subscriber that would receive the event notification. To view the various options, see [Create a Rule](#).

To know the workflow to transmit events to other external systems see [Transmit Exception Events to External Systems](#)

Detect Non-Communication or Connectivity Loss of Devices

Oracle IoT Fleet Monitoring Cloud Service can detect if a vehicle, a trip, or any of the trip's entities loses connectivity with the application and then can notify the administrator or the logistics operator.

A system metric `inactiveDuration` is computed for the devices associated with an entity of a trip and is displayed in the info view of the entity.

As an administrator, you can configure a rule for the entities and use the `inactiveDuration` metric to determine non-communication of messages or connectivity loss for more than a configurable time period. The rule when triggered notifies the administrator about the entity, type of loss, and its geo-location. See how to [Create a Rule](#).

As an administrator, you can add the `inactiveDuration` metric for a trip's entity or any vehicle on a dashboard. See [Add or Remove Metrics on Custom Dashboards](#).

Additionally, you can use the `inactiveDuration` metric to create new aggregation metrics such as:

- Duration of average connectivity loss
- Min and max duration of connectivity loss
- If `inactiveDuration` is greater than `n` then metric set to true

Monitor Trips and Its Entities

To monitor trips and its sub-entities including its vehicle, driver, equipment, ship-units, and ship-items, use the menu options in the operation center.

As a fleet manager you can monitor a trip and its entities in real-time by viewing their summarized data as lists, snapshot view in charts, detailed data of individual entities in the information view, analyzed data on dashboards, route, stops, and ETA related data on map views. You can also manage and monitor the incidents, alerts, and exceptions raised during a specific trip.

In this chapter, you see how to monitor those trips and their sub entities including ship-order, equipment, ship-units, and ship-items, that got imported from an external application such as Oracle Transportation Management Cloud.

To monitor or view a vehicle from the operation center, see [View Your Vehicles in the Operations Center](#) and to view a driver from the operation center, see [View Driver Details](#)

Monitor the Trip Dashboard

Trip dashboard gives you a snapshot of a trip through widgets and icons that display the status including live data on expected ETA at final destination, start time, delivery status, stops completed, distance covered, fuel consumed, number of incidents and alerts raised, and the status of all its sub entities.

As an administrator, you can view the trip dashboard to obtain the real-time status summary of a specific trip. You should ideally know the name of the trip in the current organization that you wish to monitor. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** .

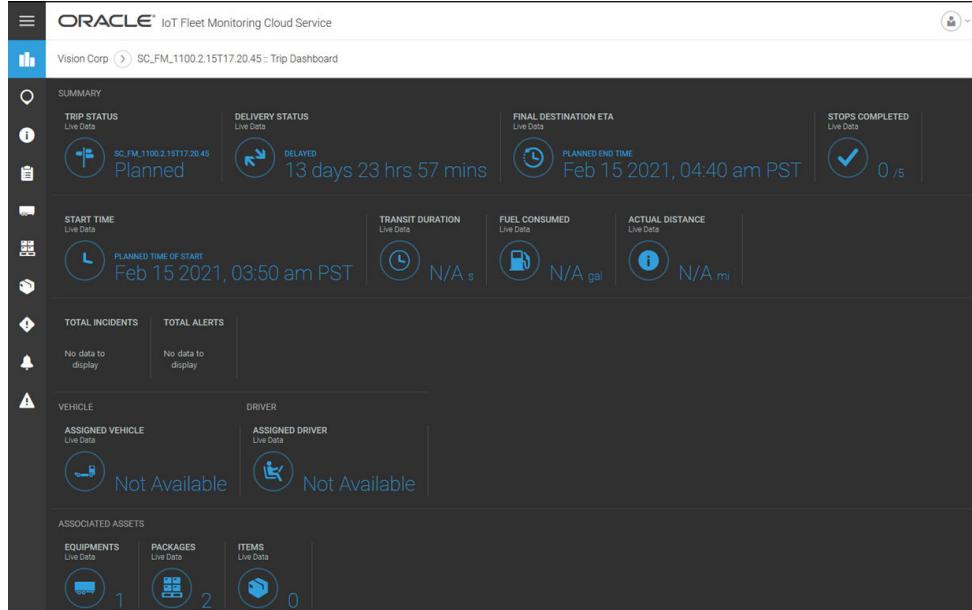
The trips summary view is displayed that lists all the trips of the current organization.

2. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .

The map view of the trip is displayed and a menu bar is displayed on the left.

3. From the left navigation bar, click **Trip Dashboard** 

A dashboard with a snapshot view of the trip's status is displayed.



4. Monitor the widgets and their values that reflect the live data of the trip. Notice that the widgets and their values appear under four sections including **Summary, Vehicle, Driver, and Associated Assets**
 - The **Summary** section displays the values for Trip Status, Delivery Status, Final Destination, Stops Completed, Start Time, Transit Duration, Fuel Consumed, Actual Distance, Total Incidents, and Total Alerts.
 - The **Vehicle** section displays the assigned vehicle's name and its current status.
 - The **Driver** section displays the assigned driver's name and current status.
 - The **Associated Assets** section displays the number of equipment assets in transit, number of package assets in transit, and number of item assets in transit for the trip. These assets are well-known transport assets created and maintained in Oracle IoT Asset Monitoring Cloud. These transport assets are associated with the equipment, ship-unit, or ship-item sub-entities of the current trip.
5. (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

Examine the Map View

The trip map view displays the route of the trip on the map with live data about the trip including the stops, time of arrival and time of departure from the stops, status of the trip, and incidents or alerts raised during the trip.

As an administrator, you can view a planned, en-route, or completed trip on the map and monitor its route, stops, time specifications, alerts, and incidents. You can optionally view the system created stop fences around each stop or route fence around the trip route, and monitor for location pings received within the fences. This helps in accurate detection of arrival and departure events.

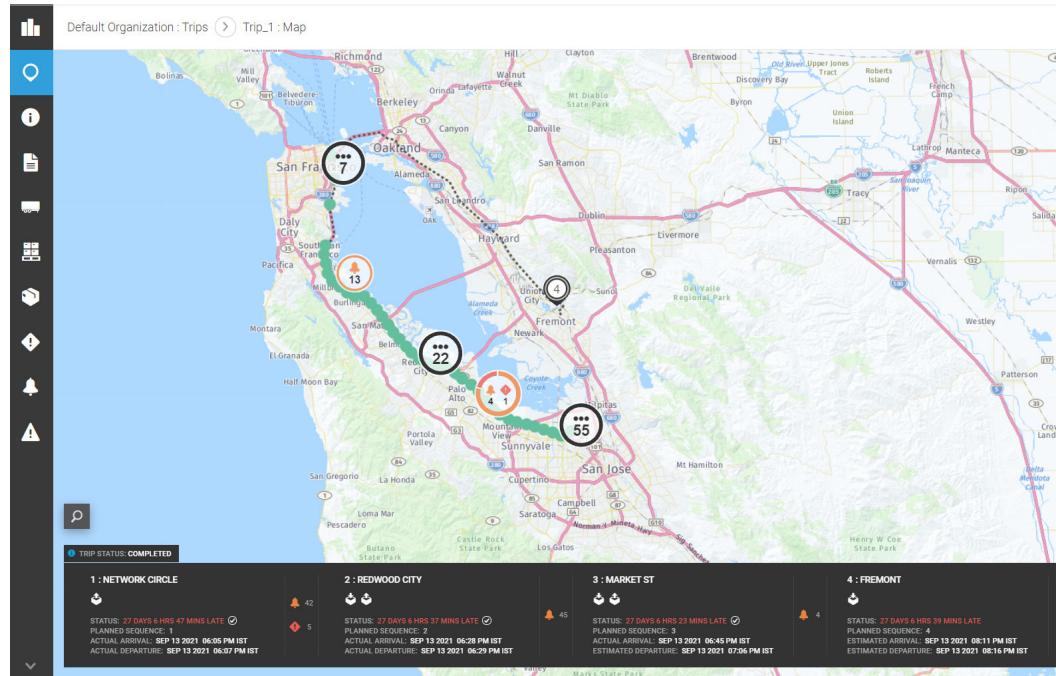
You should ideally know the name of the trip in the current organization that you wish to monitor on the map. You should be on the **Operation Center**.

- From the **Operation Center** menu options, click **Trips** 

The trips summary view is displayed that lists all the trips of the current organization.

- From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** 

The map view of the trip is displayed and a menu bar is displayed on the left.



- Monitor the following on the map view

- Stops:** The stops of the trip are highlighted over the route in the map in a sequential manner. Click each stop icon to view its details. The stops are also displayed at the bottom of the map with details such as name of the stop, status of the trip at that stop, estimated time of arrival and departure.
- Trip Status:** The overall trip status is displayed as planned, en-route, or completed.
- Vehicle:** In an en-route trip, a vehicle icon appears on the trip route based on the live data of its geo-location. To view the vehicle details, its speed, driver, final destination ETA, click the vehicle icon. Double click the icon to view its digital twin.
- Equipment:** The trailer or the container that the vehicle is carrying is displayed on the trip route based on its live geo-location data. Click the icon to view the equipment name, final destination ETA, assigned driver name, and the trip name. Double click the icon to view its digital twin.
- Alerts and Incidents:** The alerts and incidents that may have raised due to rule violations are displayed on the trip route. Click the alert icons or the incident icons to view its details. Double click the incident icon to view the incident page that allows you to edit its information and edit its underlying rule.

On the map, if a trip's stop, an associated entity, incidents, and alerts need to appear on the same physical location or in close proximity, then clustering of map objects prevents concealing of the objects. It helps you to monitor each object and navigate to its details. A cluster of map objects can be of a single type with the same type of objects or entities, a paired type with a valid pair of entities, or a multiple type with multiple entities. Review a

few icons used in a cluster that let you inspect specific map objects and navigate to their details.

The following table illustrates the icons for **single type cluster used for stops** of a trip.

Icon	Description
	A single stop with a stop number, which has not been visited.
	A single stop with a stop number, which has been visited on time.
	A single stop with a stop number, which has been visited with delay.

The following table illustrates the icons for **multiple type cluster used for stops** of a trip.

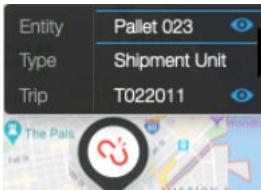
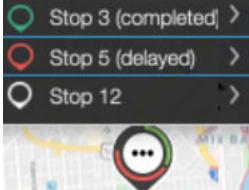
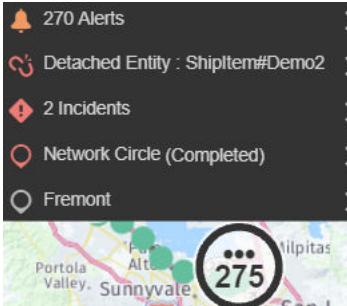
Icon	Description
	Multiple stops, all of which have been visited
	Multiple stops, all of which have been visited with delay
	Multiple stops, all of which are yet to be visited
	Multiple stops with mixed status

The following table illustrates the icons for **cluster types used for alerts and incidents** of a trip.

Icon	Description
	Single type cluster for incidents raised
	Single type cluster for alerts raised

Icon	Description
	Single type cluster for incidents raised in closed proximity but not on the same location
	A paired type cluster for incidents and alerts raised

When you click a map object, its heads up display (HUD) appears, which lets you navigate to the details of each individual object such as stops, incidents, alerts, and trip entities. The following table illustrates the icons for **cluster types with HUD**.

Icon	Description
	A single type detached entity with HUD. When you click a detached entity, details of the entity is displayed in a heads up display, which you can monitor further from the Information icon.
	Multiple type cluster of stops with HUD. To know more about the stop, click the next icon beside each object.
	Multiple type cluster of various map objects and entities. To know more about each object, click the Information icon or the next icon.

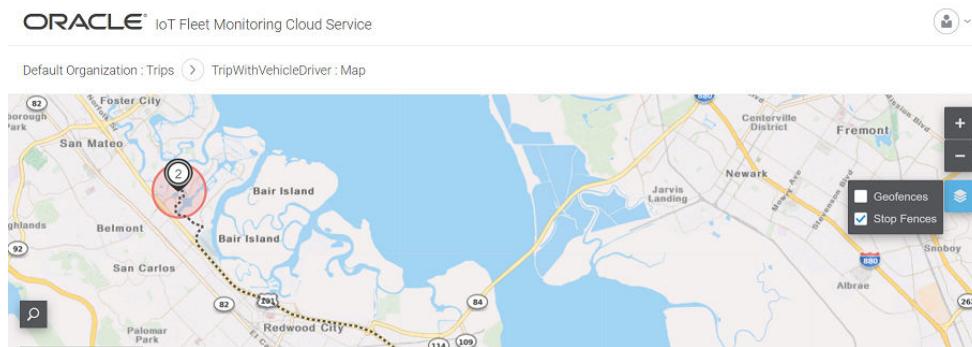
4. (Optional) Use the **Search Geofence**, **Zoom-In**, and **Zoom-Out** icons to locate a specific geofence, and zoom-in or zoom-out to it on the map.
5. (Optional) Click **Map Options** . To view the available geo-fences, select **Geofences**. If you've enabled route geofencing for this organization, then the **Route Fence** check box allows you to display the system-defined route-geofence of this trip.



The image displays the trip map view with a route geofence around the trip route, when you've selected the **Route Fence** map option.

The route geofence check box is displayed in **Map Options** when the organization-level setting of route-geofences is enabled before you created this trip in the organization.

6. (Optional) Click **Map Options** . To view system-defined stop geo-fences, select **Stop Fences**. You can monitor the trip for location pings received within the stop geo-fences, which helps in accurate detection of arrivals and departure events.



The image displays the trip map view with a geofence around a stop, as the **Stop Fences** map option appears selected.

7. (Optional) Use the breadcrumb information to navigate to the organization dashboard or use the left navigation menu bar to view other information about the selected trip.

View Trip Information

Trip info view displays information about a selected trip in categories such as, creation details, location, attributes, measurements, timings, and sensor device references.

As an administrator, you can view the trip info page to obtain complete information about a specific trip. You should ideally know the name of the trip in the current organization that you wish to view. You should be on the **Operation Center**.

- From the **Operation Center** menu options, click **Trips** .

The trips summary view is displayed that lists all the trips of the current organization.

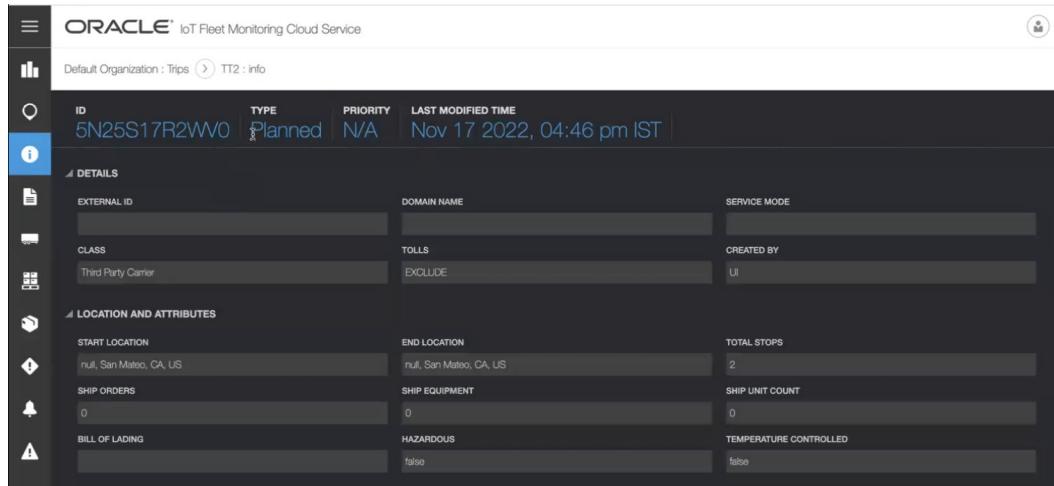
- From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Actions**, and then select **Show Details**.

The map view of the trip is displayed and a menu bar is displayed on the left.

In the map view, a route (displayed as a dotted line) that is assigned by your map provider is displayed between the source and destination stops, including any optional stops inbetween. However, if your map provider is unable to fetch an assigned route for a given source and destination stops (for example due to network issues, or provider server issues, and so on), then a straight line connecting all stops is displayed.

- From the left navigation bar, click **Trip Info**  , which is the third icon on the menu bar.

A page with a snapshot view of the trip's information is displayed.



- View the header panel, categories and their data. The header panel displays the trip ID, type, priority, and last modified time. The categories that appear are **Details**, **Location and Attributes**, **Measures**, **Timings**, **Sensor References**, and **Custom Attributes**.
 - The **Details** section displays the external ID, domain name, service mode, class, tolls, and created by. External ID and domain name are applicable for trips imported from Oracle Transportation Management Cloud Service.
 - The **Location and Attributes** section displays addresses of the start and end stops, count of its sub entities and its associated data. The fields are start location, end location, total stops, ship orders, equipment, ship-units, ship-items, bill of lading, hazardous, and temperature controlled.

- The **Measures** section displays values of all measurements associated with the trip including total planned distance, total loaded distance, total unloaded distance, total weight, total volume, total weight, total volume, cost, total planned transit duration, and capacity utilization.
- The **Timings** section displays the various planned and actual timings of the trip such as, earliest start time, latest start time, actual start time, actual end time, planned start time, and planned end time.
- The **Sensor References** section displays the sensor devices associated in this tip
- The **Custom Attributes** section displays the name and values of additional attributes of the trips that have been imported from an external transportation application.

5. (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

View Ship Orders of a Trip

Ship orders are metadata information that contains inventory data of a trip imported from an external application such as Oracle Transportation Management Cloud Service. The ship orders view displays information about the order, weight and volume of the inventory, and also timings for pick ups scheduled for the trip.

As an administrator, you can view the ship orders page to obtain complete information about the ship orders of a specific trip. You should ideally know the name of the trip in the current organization whose ship orders you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** 
2. The trips summary view is displayed that lists all the trips of the current organization.
3. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .
4. The map view of the trip is displayed and a menu bar is displayed on the left.
5. From the left navigation bar, click **Ship Orders** 

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The details of the sub entities or inventory and special instructions associated with the ship order is displayed.

ORDER RELEASE	ORDER KEY	EARLY PICKUP	LATE PICKUP	VOLUME	WEIGHT
SO1 301 47218	SO1 301 Ref 47218	Jan 12 2021, 12:31 pm	Jan 12 2021, 12:31 pm	5.6 m3	56.7 Kg
SHIP UNITS Live Data		SHIP ITEMS Live Data		SPECIAL INSTRUCTIONS	
1		2		Cold Chain Drugs : Vaccines : Temperature Controlled	
SO1 302 47218	SO1 302 Ref 47218	Jan 12 2021, 12:31 pm	Jan 12 2021, 12:31 pm	5.6 m3	56.7 Kg

- To customize the information displayed on the **Ship Orders** view, on the table head, after the last column, click **Show / Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list. The fields that you selected appear at the end of the last column of the table.
- (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

View Ship-Units of a Trip

Ship-units can contain one or more ship-items which contain the commodities for transport and delivery. A ship-item can contain commodities independent of ship-units. The Ship-Unit view and the Ship-Item view of a specific trip displays the details about these sub-entities of the trip including the linked sensors or assets.

As an administrator, you can view the ship-units page to obtain complete information about the ship-units or packages of a specific trip. Similarly the ship-items page displays information about ship-units that contain the commodity that is being transported for delivery. You should ideally know the name of the trip in the current organization whose ship-orders or ship-units you wish to view. You should be on the **Operation Center**.

- From the **Operation Center** menu options, click **Trips** .
- From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .
- From the left navigation bar, click **Ship Units** .
- View the fields and their data. Notice that the columns that appear are **Ship Unit Number**, **Ship Unit Key**, **Ship Unit Type**, **Order Release**, **Count**, **Commodity**, **Linked Alerts**, and **Open Incidents**.
- To view the sensors or assets associated with a ship-unit, expand a ship-unit record displayed in the list.

The details of the sensors or assets and special instructions associated with the ship unit is displayed.

To view the digital twin of the linked asset or sensor, towards the left of the asset details, click . If the trip is in a planned state or has not completed, **Edit** is enabled to modify the assets or sensors linked to the equipment, if needed. See [Associate Sensors or Well-Known Assets to an Entity of a Trip](#).

6. To customize the information displayed on the **Ship Units** view, on the table head, after the last column, click **Show /Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list.

The fields that you selected appear at the end of the last column of the table.

7. (Optional) Use the breadcrumb information at the top of the page to navigate to other entities of the current organization or to the organization dashboard.

View Trip Equipment Details

Equipment is a trailer or a container that contains ship units or ship items. It is a sub entity of a trip that has been imported from an external application such as Oracle Transportation Management Cloud Service. The equipments view of a trip displays information about the equipment, open incidents and alerts raised due to the equipment, its associated pickup and drop stops, commodity it is carrying and also the sensors or assets linked to it..

As an administrator, you can view the equipment page to obtain complete information about the equipment associated with a specific trip. You should ideally know the name of the trip in the current organization that you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** .

The trips summary view is displayed that lists all the trips of the current organization.

2. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .

The map view of the trip is displayed and a menu bar is displayed on the left.

3. From the left navigation bar, click **Equipments** .

A page with a list of equipment associated with a trip is displayed.

4. View the fields and their data. Notice that the columns that appear are **Equipment ID**, **Equipment Number**, **Type**, **Pickup Stop Sequence**, **Drop Stop Sequence**, **Commodity**, **Linked**, **Detached**, **Alerts**, and **Open Incidents**.
5. To view the hip units or ship items associated with an equipment expand the equipment record displayed in the list.

The details of the assets or sensors and special instructions associated with the equipment is displayed.

To view the digital twin of the linked asset or sensor, towards the left of the asset details, click . If the trip is in a planned state or has not completed, **Edit** is enabled to modify the assets or sensors linked to the equipment, if needed. See [Associate Sensors or Well-Known Assets to an Entity of a Trip](#).

6. To customize the information displayed on the **Equipment** view, on the table head, after the last column, click **Show /Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list.

The fields that you selected appear at the end of the last column of the table.

7. (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

View Ship-Items of a Trip

Ship-units can contain one or more ship-items which contain the commodities for transport and delivery. A ship-item can contain commodities independent of ship-units. The Ship-Unit view and the Ship-Item view of a specific trip displays the details about these sub-entities of the trip including the linked sensors or assets.

As an administrator, you can view the ship-items page to obtain complete information about the ship-items containing commodities being transported for delivery in a specific trip. You should ideally know the name of the trip in the current organization whose ship-items you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** .

The trips summary view is displayed that lists all the trips of the current organization.

2. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .

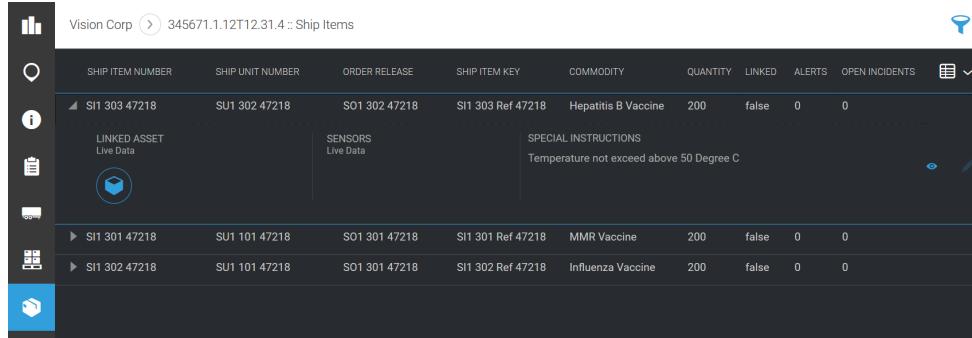
The map view of the trip is displayed and a menu bar is displayed on the left.

3. From the left navigation bar, click **Ship Units** .

A page with a list of the trip's ship-items is displayed.

4. View the fields and their data. Notice that the columns that appear are **Ship Item Number**, **Ship Unit Number**, **Ship Item Key**, **Order Release**, **Quantity**, **Commodity**, **Linked**, **Alerts**, and **Open Incidents**.
5. To view the sensors or assets associated with a ship-item, expand a ship-item record displayed in the list.

The details of the sensors or assets and special instructions associated with the ship-item is displayed.



SHIP ITEM NUMBER	SHIP UNIT NUMBER	ORDER RELEASE	SHIP ITEM KEY	COMMODITY	QUANTITY	LINKED	ALERTS	OPEN INCIDENTS	Actions
SI1 303 47218	SU1 302 47218	S01 302 47218	SI1 303 Ref 47218	Hepatitis B Vaccine	200	false	0	0	
			LINKED ASSET Live Data	SENSORS Live Data	SPECIAL INSTRUCTIONS Temperature not exceed above 50 Degree C				
SI1 301 47218	SU1 101 47218	S01 301 47218	SI1 301 Ref 47218	MMR Vaccine	200	false	0	0	
SI1 302 47218	SU1 101 47218	S01 301 47218	SI1 302 Ref 47218	Influenza Vaccine	200	false	0	0	

To view the digital twin of the linked asset or sensor, towards the left of the asset details, click . If the trip is in a planned state or has not completed, **Edit**  is enabled to modify the assets or sensors linked to the equipment, if needed. See [Associate Sensors or Well-Known Assets to an Entity of a Trip](#).

6. To customize the information displayed on the **Ship Items** view, on the table head, after the last column, click **Show /Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list.

The fields that you selected appear at the end of the last column of the table.

7. (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

Manage Incidents for a Trip

Incidents are raised in a trip when a rule condition for a trip or any of its sub entities are not met. You can view and manage all the incidents of a specific trip from the Incidents view of a trip.

As an administrator, you can view the incidents page to obtain the list of incidents raised in a specific trip. You can update the status of each incident and enter your specific comments for the incident. You should ideally know the name of the trip in the current organization whose incidents you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** .

The trips summary view is displayed that lists all the trips of the current organization.

- From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .

The map view of the trip is displayed and a menu bar is displayed on the left.

- From the left navigation bar, click **Incidents** .

A page with a list of the incidents raised for the trip is displayed.

- View the fields and their data. Notice that the columns that appear are **Rule Type**, **State**, **Priority**, **Created**, **Type**.

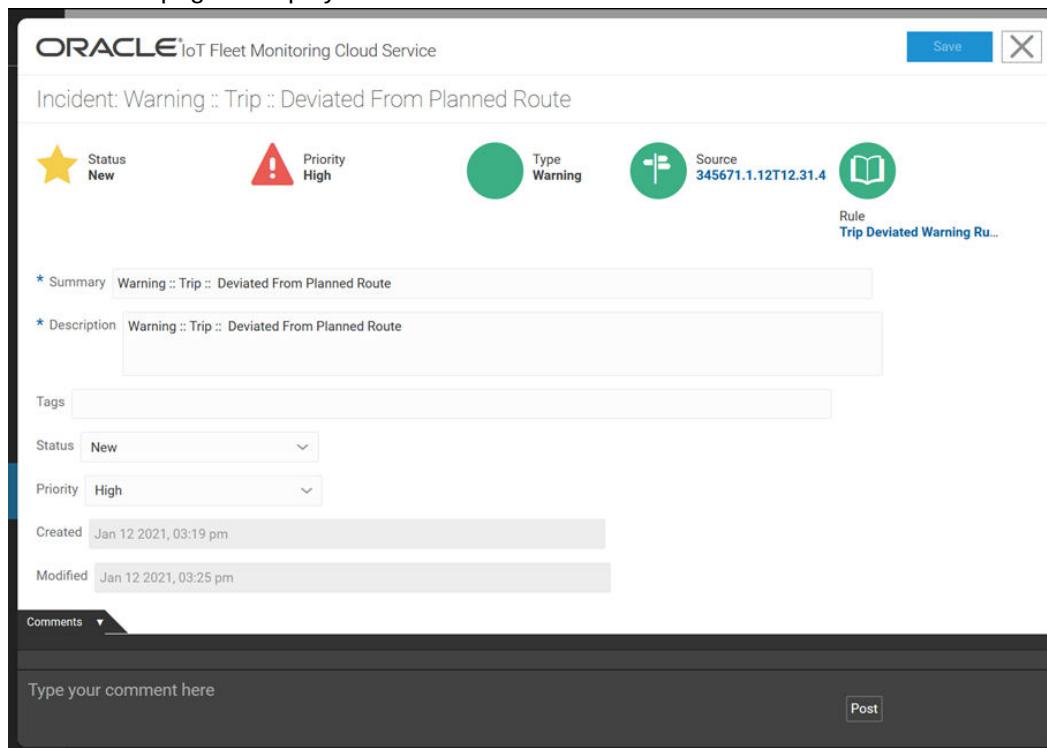
- To customize the information displayed on the **Incidents** view, on the table head, after the last column, click **Show /Hide Columns** . Select the check-box of the fields that you wish to include in the table. To close the list of fields, click outside the list.

The fields that you selected appear at the end of the last column of the table.

- To view the associated trip route on the map and locate the stop at which the incident was raised, beside the name of the incident click **Information** .

- To update the status of the incident or add your comments to it, towards the end of the record, click **Edit** .

The incident page is displayed.



The screenshot shows the Oracle IoT Fleet Monitoring Cloud Service incident page for a trip deviation warning. The page title is "Incident: Warning :: Trip :: Deviated From Planned Route". The top navigation bar includes "Save" and a close button. The incident details are displayed in a grid format:

- Status: New (yellow star icon)
- Priority: High (red exclamation mark icon)
- Type: Warning (green circle icon)
- Source: 345671.1.12T12.31.4 (green circle icon)
- Rule: Trip Deviated Warning Ru... (green circle icon)

Below the grid, there are summary and description fields, both containing the text "Warning :: Trip :: Deviated From Planned Route". There are also dropdowns for Status (New) and Priority (High), and date fields for Created (Jan 12 2021, 03:19 pm) and Modified (Jan 12 2021, 03:25 pm). A "Comments" section at the bottom has a text input field "Type your comment here" and a "Post" button.

- To manage the incident, update the **Status** field, enter comments in the **Comments** section, and click **Post**.

To open the dashboard of the associated trip, click the trip name appearing in **Source** at the top of the page

To modify the underlying rule, click the rule name appearing in **Rule**. Edit the rule conditions or any field if needed and click **Save**.

- On the incident page, click **Save**.

10. (Optional) Use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

(Optional) Enter the result of the procedure here.

Review Alerts for a Trip

Alerts are raised as notifications in a trip when a rule condition for a trip or any of its sub entities are not met. You can view all the alerts of a specific trip from the Alerts view of a trip.

As an administrator, you can view the alerts page to obtain the list of alerts raised in a specific trip. You can review the alert details and identify it in the trip route. You should ideally know the name of the trip in the current organization whose alerts you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** 

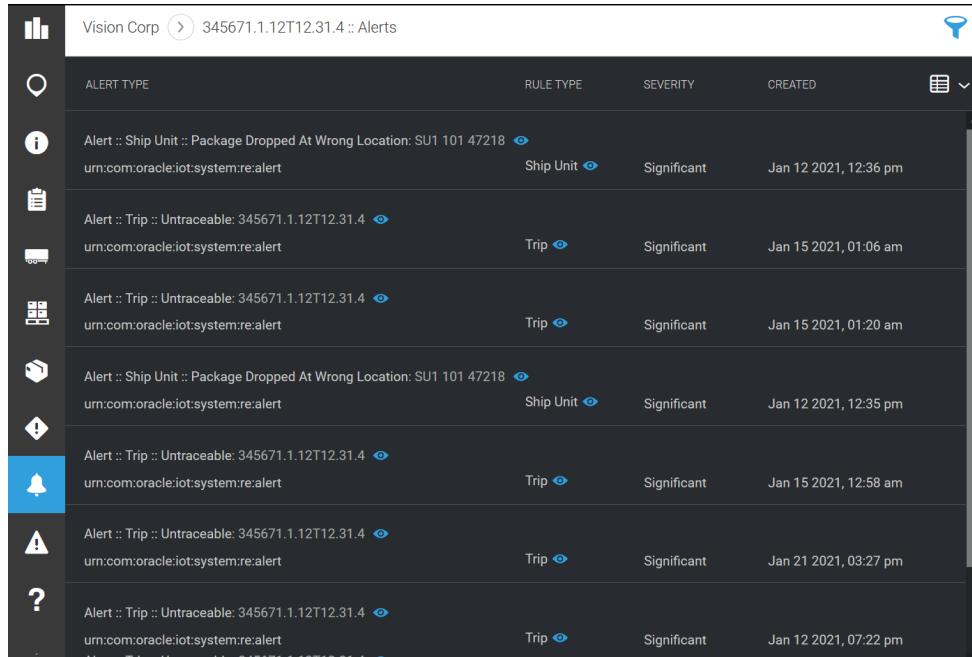
The trips summary view is displayed that lists all the trips of the current organization.

2. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .

The map view of the trip is displayed and a menu bar is displayed on the left.

3. From the left navigation bar, click **Alerts** .

A page with a list of the alerts raised for the trip is displayed.



ALERT TYPE	RULE TYPE	SEVERITY	CREATED
Alert :: Ship Unit :: Package Dropped At Wrong Location: SU1 101 47218	Ship Unit	Significant	Jan 12 2021, 12:36 pm
Alert :: Trip :: Untraceable: 345671.1.12T12.31.4	Trip	Significant	Jan 15 2021, 01:06 am
Alert :: Trip :: Untraceable: 345671.1.12T12.31.4	Trip	Significant	Jan 15 2021, 01:20 am
Alert :: Ship Unit :: Package Dropped At Wrong Location: SU1 101 47218	Ship Unit	Significant	Jan 12 2021, 12:35 pm
Alert :: Trip :: Untraceable: 345671.1.12T12.31.4	Trip	Significant	Jan 15 2021, 12:58 am
Alert :: Trip :: Untraceable: 345671.1.12T12.31.4	Trip	Significant	Jan 21 2021, 03:27 pm
Alert :: Trip :: Untraceable: 345671.1.12T12.31.4	Trip	Significant	Jan 12 2021, 07:22 pm

4. View the fields and their data. Notice that the columns that appear are **Alert Type**, **Rule Type**, **Severity**, and **Created**.
5. To customize the information displayed on the **Alerts** view, on the table head, after the last column, click **Show / Hide Columns** . Select the check-box of the

fields that you wish to include in the table. To close the list of fields, click outside the list.

The fields that you selected appear at the end of the last column of the table.

6. To view the associated trip route on the map and locate the stop at which the alert was raised, beside the name of an alert, click **Information** .
7. To modify the underlying rule, in **Rule Type**, click **Information** . Edit the rule conditions or any field if needed and click **Save**.
8. (Optional) On the alerts page, use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

View Digital Twin Details

Oracle IoT Fleet Monitoring Cloud Service creates a digital twin version of the sub-entities of a trip including the vehicle, equipment, ship-units, and ship-items and lets you monitor the sensors and their values such as, temperature, pressure, shock, humidity, ambient temperature, tamper detection, tilt, light, and so on.

Before you can view the digital twin versions of the sub-entities of a trip imported from Oracle Transportation Management Cloud Service, you should have associated the sub-entities with sensor devices or assets. See [Associate Sensors or Well-Known Assets to an Entity of a Trip](#). For seeing values of the sensor devices in their digital twin views, the trip's state should be en-route or completed.

1. Click **Menu**  and then click **Operation Center**.
2. On the operation center navigation bar, click **Trips** .

The trips summary view of all the trips in the organization is displayed.

3. Identify the trip record for which you need to view the digital twin versions of the devices or assets of its sub-entities and hover over it towards its last field. Click  for that record.

Note:

Select a trip that is in the en-route or completed state. Sensor devices or assets though associated get linked with the sub-entities only after a trip has started.

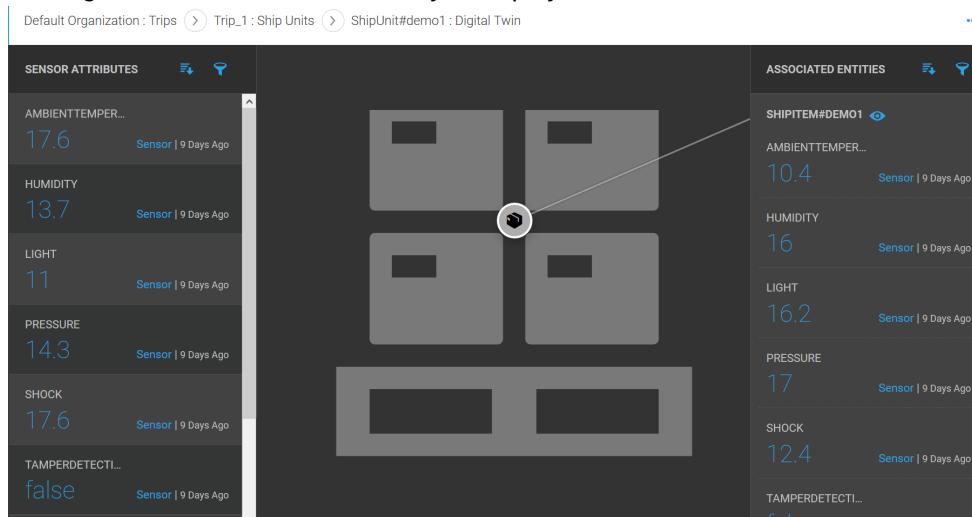
The trip is displayed on the map view.

4. From the Trip navigation bar, select the entity for which you need to see the digital twin and then click one of the following icons:
 - Equipment 
 - Ship Units 
 - Ship Items 

The selected entity's page is displayed with the list of equipment, ship-units, or ship-items associated with the trip.

- From the list, for equipments identify the equipment ID, for ship-units identify the ship-unit ID, or for ship-items identify the ship-item ID and expand its value.
- Towards the other end of the record, click 

The digital twin view of the sub-entity is displayed.



- On the left frame, examine the values of the sensor attributes associated with the entity. Use the **Sort**  icon to sort the attributes in the list. Use the **Filter**  icon to search for specific attributes.
- (Optional) To view the attributes in an order, click the **Sort**  icon and select one of the following options:
 - Sort by Attribute Name (A-Z)**
 - Sort by Attribute Name (Z-A)**
 - Sort by Last Updated**
- (Optional) To search and display specific attributes, click the **Filter**  icon. Enter or select the following in the **Filter** dialog box:
 - From the **Filter** drop down, select **Attribute Name** and choose **contains**, **matches**, or **does not contain**.
 - Enter a value in the **Value** text box and press enter.
 - (Optional) Click **Add** to create additional filter conditions.
 - Click **Apply**.

The filtered results are displayed.
- For a graphical view of an attribute over a time period, click the attribute value. On the graphical view select one of the following options from the **Date Time Window** drop down.
 - Live**
 - 1 hour ago**
 - 24 hours ago**
 - 7 days ago**
 - 14 days ago**

To disable or enable live refresh of attribute data from the sensor devices, on the top right corner of the window, click the **Digital Twin Menu ...** icon and select **Disable Live Refresh** or **Enable Live Refresh**.

Review the data and click **Close** .

10. The central frame displays the digital image of the entity including its associated entity. For example an equipment displays the ship units and a ship unit displays its associated ship items contained in it. Review the attributes of the associated entity displayed on the right.
11. (Optional) On the **Associated Entities** section, use the **Sort**  icon to view the attribute values in a sorted order. Use the **Filter**  icon to search for a specific attribute value.
12. To view the graphical data of an attribute of the associated entity over a specific time period, click the attribute. Choose an option from the **Date Time Window** drop down. Examine the graphs and click **Close** .
13. To view its associated entity and their sensor attribute values, click .
14. To view the digital twin of an associated entity, for an entity, click .
15. Use the links in the breadcrumb to navigate back to the parent entity's digital twin view.

Manage Exceptions Raised for a Trip

Exceptions are notifications raised for a trip or any sub-entity of a trip including a vehicle, equipment, ship-units, and ship-items when the sensor device or asset associated with an entity is already in use for monitoring another entity of an en-route trip. You can fix the asset associations or device links and resolve exceptions.

As an administrator, you can view the exceptions page to obtain the list of exceptions raised in a specific trip. You can review the exception details, edit the device links, and resolve it. You should ideally know the name of the trip in the current organization whose exceptions you wish to view. You should be on the **Operation Center**.

1. From the **Operation Center** menu options, click **Trips** .
2. The trips summary view is displayed that lists all the trips of the current organization.
3. From the list of trips, identify the trip name that you wish to monitor. Scroll to the last column of the record, hover your mouse, and click **Information** .
4. The map view of the trip is displayed and a menu bar is displayed on the left.
5. From the left navigation bar, click **Exceptions** .

A page with a list of the exceptions raised for the trip is displayed.

Source	Source Type	Reference	Reference Type	Message	Action
ShipItem#_a630f0a5db025	Ship Item	24227B4B-208C-4F51-B35D-7DF8A667DA92-Oracle-Imx	Tracker	Device with name 24227B4B-208C-4F51-B35D-7DF8A667DA92-Oracle-Imx is no longer linked.	Please provide a different device or ensure that the associated device is no longer linked.
ShipItem#_a630f0a5db025	Ship Item	478BFB2B-B66D-4DAD-A6A7-34964FDAB8B1-Oracle-Imx	Tracker	Device with name 478BFB2B-B66D-4Dip is no longer linked.	Please provide a different device or ensure that the associated device is no longer linked.

- View the fields and their data. Notice that the columns that appear are **Source**, **Source Type**, **Reference**, **Reference Type**, **Message**, and **Action**.
The **Source Type** field provides the type of sub-entity that is linked to the sensor device, which is referred in the **Reference** field.
- Make a note of the value in **Reference**. To edit the associated device link, towards the end of a record, click **Edit**.

The **Add Asset/Device Reference** dialog box appears. Associate a different device or asset to this entity and click **Save**. See Step 6 in [Associate Sensors or Well-Known Assets to an Entity of a Trip](#) for details.

- On the **Exceptions** view, select the check box for the exception that you edited and fixed, and then click **Resolve**.

The exception is removed from the list.

- (Optional) On the exceptions page, use the breadcrumb information to navigate to other entities of the current organization or to the organization dashboard.

Manage and Monitor Custom Dashboards

Create and use dashboards to track key metrics pertaining to your business processes. You can also use custom dashboards to view historical values for your metrics and gain statistical data for measuring your business efficiency.

In addition to the in-built Organization Dashboard, you can create and manage:

- custom dashboards that display status and information about the trips and shipments of an organization.
- custom dashboards that display key metrics for vehicles and drivers.

Manage and Monitor Custom Dashboards for Organizations

The Organization Dashboard provides you the status of the en-route trips and typically highlights the exceptions and deviations raised in them. To monitor all other trips of an organization, such as completed or planned trips, create one or more custom dashboards, and view them from the Operation Center. Manage the custom dashboards by adding or removing metrics, incidents, alerts, and other attributes of any entity of an organization.

Create and View a Custom Dashboard

Create a custom dashboard from the Organization option of the Design Center and view it in the Operation Center of the Organization.

Sign in as an administrator and ensure that you have switched to the organization for which you need to create a custom dashboard.

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, click **Organization**.
3. From the lower section, click **Dashboards**.

On the **Dashboards** page, the **Organization Dashboard** is listed.

4. Click **Create Dashboard** .
5. On the **Create Dashboard** dialog, based on your required layout, select an appropriate template either from the **Blank** tab or from the **Saved** tab. Select a template from the available templates and click **Create**.

The design page of a new dashboard is displayed, which is based on your selected template.

6. On the blank dashboard, enter or select the following values:
 - **Name**: Enter a name for the custom dashboard.
 - **Role Access**: Add or removes roles which can view this dashboard.
 - **Icon**: Select an icon for the dashboard, which appears in the **Operation Center**.

To add a new metric group or a gadget to the dashboard, see [Add or Remove Metrics on Custom Dashboards](#).

7. Click **Save** and then click **Close** .

The custom dashboard appears on the **Dashboards** list.

8. To view this custom dashboard, click **Menu**  and then **Operation Center**.

At the end of the left navigation bar, you can view the icon of your custom dashboard. Click the icon.

The dashboard is displayed, which is blank. To add a new gadget or metrics to the dashboard, see [Add or Remove Metrics on Custom Dashboards](#).

Add or Remove Metrics on Custom Dashboards

Manage your custom dashboard by adding metric groups and then adding gadgets into the groups. Configure each gadget to display a metric value of an entity.

As an administrator, you should have created a custom dashboard in the current organization. See [Create and View a Custom Dashboard](#).

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, click **Organization**.
3. From the lower section, click **Dashboards**.

On the **Dashboards** page, the custom dashboards are listed below the **Organization Dashboard**.

4. Select the custom dashboard in which you need to add or remove metrics and click **Edit** .

The dashboard design page is displayed.

5. To create a group that would display a collection of metric values, click **Add Metric Group** .
6. On the new tile, in the text field, enter a name of the group.
7. (Optional) To place the box before an existing metric group or in a specific area of the dashboard, on the top right corner of the tile, click the **Drag** icon, and with the mouse pressed, drag and drop the tile in the desired section of the dashboard.
8. To add a specific metric value to an existing metric group, click the **Add New Gadget**  icon that appears inside the metric group tile.
9. On the **Create Dashboard Item** dialog box, enter or select the following values:
 - **Type:** Select **Metrics**.
 - **Metric:** From a specific entity, such as Drivers, Equipment, Facilities, Vehicles, Shipments, Ship Units, or Ship Items, select the required metric to be displayed.
 - **Aggregate:** Select the appropriate aggregate function such as Average, Max, Min, Sum, or Percentile, if applicable for the metric selected in the previous option.

- **Label:** Enter the label text for the metric gadget. The default label uses the name of the metric that you selected. The **Label** can be different from the metric name. For example, if you are aggregating the average delay across shipments, you may use Average Delay to highlight this fact.
- **Unit:** (Optional) Enter the unit value if it is enabled for the specific metric.
- **Icon:** (Optional) Select the icon that'll appear on the metric gadget. The dashboard icon you select is used on the menu bar in the Operations Center.
- **Color:** (Optional) Select the color of the label, value, and the icon that appears on the metric gadget.
- **Histogram:** Select this checkbox to show a preview chart against the metric gadget icon. This setting is available only if the metric is a global-level KPI (created at the organization level) and is of numeric or boolean type with scheduled data. For any metrics created at the entity level (for example vehicle types or drivers), the Histogram setting is not available.

10. Click **Create**.

A new metric with its value is displayed in the metric group.

11. To create another metric gadget, repeat Steps 8 through 10.

12. To create a metric group, complete Steps 5 and 6.

13. To modify a metric gadget, click the **Edit**  icon that appears inside the gadget. Modify the required fields in the **Configure Dashboard Item** dialog box, and click **Update**.

14. To delete a metric gadget, click the **Delete**  icon that appears inside the gadget.

Delete a Custom Dashboard

Delete a custom dashboard from the Design Center of an Organization, which will also remove it from the Operation Center.

Sign in as an administrator and ensure that you have switched to the organization for which you need to delete a custom dashboard.

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, click **Organization**.
3. From the lower section, click **Dashboards**.

On the **Dashboards** page, the custom dashboards are listed including the **Organization Dashboard**.

4. Select the custom dashboard to be deleted and for that dashboard, click **Delete** .
5. To verify the removal of the custom dashboard, click **Menu**  and then **Operation Center**.

At the end of the left navigation bar, verify that the icon of your custom dashboard is not listed.

Manage and Monitor Custom Dashboards for Vehicle Types, Drivers, and Trips

Create custom dashboards for vehicle types, drivers, and trips, to visualize your most relevant business metrics in a single pane and use it to track their respective performances. For example, you can create a dashboard for vehicles and then use it to track metrics such as availability status, consumed fuel cost, idling duration, and so on. Manage the custom dashboards by adding or removing metrics, incidents, alerts, and other attributes of vehicle types or drivers.

Create and View Custom Dashboards for Vehicle Types, Drivers, and Trips

Create a custom dashboard from the Vehicle Types, Drivers, or Trips option of the Design Center and view it in the Operation Center of the Organization.

Sign in as an administrator and ensure that you have switched to the organization for which you need to create a custom dashboard.

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, depending on whether you want to create a custom dashboard for vehicles, drivers, or trips, click **Vehicle Types**, **Drivers**, or **Trips**, respectively.
3. From the lower section, click **Dashboards**.
4. On the Dashboards page, click **Create Dashboard** .
5. On the **Create Dashboard** dialog, based on your required layout, select an appropriate template either from the **Blank** tab or from the **Saved** tab. Select a template from the available templates and click **Create**.

The design page of a new dashboard is displayed, which is based on your selected template.

6. On the blank dashboard, enter or select the following values:
 - **Name:** Enter a name for the custom dashboard.
 - **Role Access:** Add or removes roles which can view this dashboard.
 - **Icon:** Select an icon for the dashboard, which appears in the **Operation Center**.

To add a new metric group or a gadget to the dashboard, see [Add or Remove Metrics on Custom Dashboards for Vehicle Types, Drivers, and Trips](#).

7. Click **Save** and then click **Close** .
8. To view this custom dashboard, click **Menu** . From the **Operation Center** menu options, click **Vehicles** or **Drivers**, and then click the information icon for a given vehicle or driver.

At the end of the left navigation bar, you can view the icon of your custom dashboard. Click the icon.

The dashboard is displayed, which is blank. To add a new gadget or metrics to the dashboard, see [Add or Remove Metrics on Custom Dashboards for Vehicle Types, Drivers, and Trips](#).

Add or Remove Metrics on Custom Dashboards for Vehicle Types, Drivers, and Trips

Manage your custom dashboard by adding vehicles, drivers, or trips-specific metric groups and then adding gadgets into the groups. Configure each gadget to display a metric value for vehicles, drivers, or trips.

As an administrator, you should have created a custom dashboard in the current organization. See [Create and View Custom Dashboards for Vehicle Types, Drivers, and Trips](#).

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, click **Vehicle Types, Drivers, or Trips**.
3. From the lower section, click **Dashboards**.

On the **Dashboards** page, the custom dashboards are listed.

4. Select the custom dashboard in which you need to add or remove metrics and then click .

The dashboard design page is displayed.

5. To create a group that would display a collection of metric values, click **Add Metric Group** .
6. On the new tile, in the text field, enter a name of the group.
7. (Optional) To place the box before an existing metric group or in a specific area of the dashboard, on the top right corner of the tile, click the **Drag** icon, and with the mouse pressed, drag and drop the tile in the desired section of the dashboard.
8. To add a specific metric value to an existing metric group, click the **Add New Gadget**  icon that appears inside the metric group tile.
9. On the **Create Dashboard Item** dialog box, enter or select the following values:
 - **Type:** If you are creating a dashboard for Drivers or Trips, then select **Metrics**. If you are creating a dashboard for Vehicle types, then you can select either **Metric** or **Sensor Attributes**.
 - **Metric:** From a specific entity such as Vehicles or Drivers, select the required metric to be displayed. For example, for Vehicles, you can select metrics such as Alerts, Fuel Consumed, Idling Duration, and so on. Similarly, for Drivers, you can select metrics such as Distance Driven, Driving Speed, Harsh Acceleration, and so on.
 - **Sensor Attribute:** Select the required sensor attribute to be displayed, for example, EngineRPM. The **Sensor Attribute** drop-down list is displayed only while creating a Vehicle Type dashboard with the **Type** field set to **Sensor Attributes**.

- **Label:** Enter the label text that appears for the metric gadget. The default label uses the name of the metric that you selected. The **Label** can be different from the metric name.
- **Unit:** (Optional) Enter the unit value if it is enabled for the specific metric.
- **Icon:** (Optional) Select the icon that'll appear on the metric gadget.
- **Color:** (Optional) Select the color of the label, value, and the icon that appears on the metric gadget.
- **Histogram:** Select this checkbox to show a preview chart against the metric gadget icon. This setting is available only if the metric is created at the entity level (for example vehicle types or drivers) and is of numeric or boolean type with scheduled data. For any global-level KPI (created at the organization level), the Histogram setting is not available.

10. Click **Create**.

A new metric with its value is displayed in the metric group.

11. To create another metric gadget, repeat Steps 8 through 10.

12. To create a metric group, complete Steps 5 and 6.

13. To modify a metric gadget, click the **Edit**  icon that appears inside the gadget. Modify the required fields in the **Configure Dashboard Item** dialog box, and then click **Update**.

14. To delete a metric gadget, click the **Delete**  icon that appears inside the gadget.

Delete Custom Dashboards for Vehicle Types, Drivers, and Trips

Delete a custom dashboard from the Design Center of an Organization, which will also remove it from the corresponding Vehicles, Drivers, or Trips pages in the Operation Center.

Sign in as an administrator and ensure that you have switched to the organization for which you need to delete a custom dashboard.

1. Click **Menu**  and then **Design Center**.
2. From the **Design Center**, click **Vehicle Types, Drivers, or Trips**.
3. From the lower section, click **Dashboards**.

On the **Dashboards** page, the custom dashboards are listed.

4. Select the custom dashboard to be deleted and for that dashboard, click **Delete** .
5. To verify the removal of the custom dashboard, click **Menu** . From the **Operation Center** menu options, click **Vehicles, Drivers, or Trips** and then click the information icon for a given vehicle, driver, or trip.

At the end of the left navigation bar, verify that the icon of your custom dashboard is not listed.

View and Compare Metric Data

You can view the metric data in a chart view and compare the historical data for both in-built and custom metrics by navigating from the dashboard widgets. In addition, you can choose upto four metrics for comparison and generate relative performance insights by enabling multiple y-axis chart.

For example, you can create a custom metric calculation to measure the Vehicle Idle Time on a monthly basis. This will give an overview of the fleet utilization and efficiency. You can view and compare the historical values on a monthly basis to understand if you need to procure additional vehicles for your fleet. You can also add other relevant metrics such as fuel economy or fuel consumed to compare the impact of idling on the fuel consumed or the average fuel economy.

You can also view historical metric data (hourly, weekly, or monthly) in both chart and tabular views. Historical views are displayed in the custom dashboard widgets only for metrics for which you select the **Histogram** checkbox. In the Chart view, you can view historical data for any secondary metrics (selected from the **Select Metric** drop-down list) capable of having historical data, irrespective of whether you selected the **Histogram** checkbox for it.

1. Navigate to and view your custom organization dashboard, vehicle dashboard, or driver dashboard. To do so:
 - a. For custom organization dashboard: Click Menu  and then **Operation Center**. At the end of the left navigation bar, you can view the icon of your custom dashboard. Click the icon.
 - b. For custom dashboards for vehicles or drivers: Click Menu . Then, from the **Operation Center** menu options, click **Vehicles** or **Drivers**, and then click the information icon for a given vehicle or driver. At the end of the left navigation bar, you can view the icon of your custom dashboard. Click the icon.
2. In the dashboard view, click the metric whose data you want to view.
A chart view for the metric is displayed.
3. To view historical data for the metric for a specific time period, select the relevant time duration from the **Data Time Window** drop-down list. Note that if you select **Custom** time duration, then you can specify a time period in the last six months.
4. To compare the historical data of one or more metrics, in the **Metric Comparison** section of the Chart view, choose the metrics from the **Select Metric** drop-down list. In addition, you can select the **Multiple Y Axis** checkbox for an alternative visualization option of the selected metrics. You can compare data for upto four metrics.

Note:

If you select a metric without historical data, then a warning icon next to the metric is displayed.

5. To view metric data in tabular format, click **List** .
6. To switch back to chart view, click **Chart** .

Export Metric Data

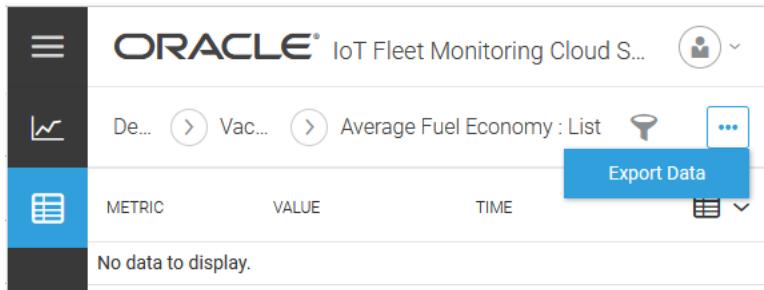
Export your metric data from the tabular view to a comma-separated value (CSV) file.

1. Navigate to and view your custom organization dashboard, vehicle dashboard, or driver dashboard.
2. In the dashboard view, click the metric data that you want to export. A chart view for the metric is displayed.
3. From the **Data Time Window** drop-down list, select the time period for which you want to export data.

 **Note:**

Currently, you can export metric data only for the primary metric that you selected. You cannot export data for any other secondary metrics that you have might selected from the **Select Metric** drop-down list.

4. Click **List**  to switch to viewing data in a tabular format.
5. Select **Export Data** from the **Actions** menu on the upper-right side of the page.



The screenshot shows the Oracle IoT Fleet Monitoring Cloud interface. On the left, there is a vertical navigation bar with three icons: a list (selected), a chart, and a table. The main content area is titled 'Average Fuel Economy : List'. At the top right, there are filter and '...' buttons. Below the title, there is a table with columns: METRIC, VALUE, and TIME. A blue button labeled 'Export Data' is positioned to the right of the table. The message 'No data to display.' is shown at the bottom of the table area.

6. Browse to a location to save the file and then click **Save**.

Manage Global Configuration Settings and Organization Level Settings

Manage the global settings for all your Oracle IoT Intelligent Applications from the Settings page. For example, you can manage the application roles, integrations, storage, security, map provider, notification accounts, and appearance settings across all your IoT applications.

You can also navigate to the organization-specific settings from the Settings page. You can override several global settings, such as the map provider, units and measurements, and appearance settings at the organization level. You can also manage users, connectors, and notification subscribers for the organization under the organization settings.

Monitor Data Storage and Manage Capacity Usage

As an administrator, you can monitor the data storage for your Oracle IoT Intelligent Applications Cloud Service. Use the Storage Management page to review storage data in the system, to set up or adjust the time window for data retention, and to run data deletion jobs.

Note:

If you are using more than one application in Oracle IoT Intelligent Applications Cloud Service, then the data storage settings are shared between these applications. Also, any operations that you perform under data management, such as tweaking data life spans or creating deletion jobs, affects data in all these applications.

So, for example, if you are using the Asset Monitoring and Production Monitoring applications, the data usage includes usage across both these applications. Also, if you were to delete metric data older than, say, 30 days, then metric data that is older than 30 days is deleted in both your applications.

When you log in to your IoT application as an administrator, a notification appears with details on the storage capacity used. Notifications may also appear periodically for every 10% of capacity that is used up. High-priority notifications are sent after you have used up more than half of the storage capacity. You can use the Storage Management page to manage your storage capacity.

The **Storage Management** tile under application **Settings** lets you monitor and manage the data storage for your application. The Storage Management page has the following sections:

- **Summary:** Shows you the total data storage capacity available for your account, and the currently used up capacity. Depending on your current usage, the status is indicated using one of the following colors:
 - **Green:** Indicates that more than 50% of the available capacity remains.
 - **Orange:** Indicates that between 25% and 50% of the available capacity remains. A recommendation on ways to manage your data is also included.

- **Red:** Indicates that less than 25% of the available capacity remains, and you must take steps to manage your storage data.

▲ SUMMARY

RECOMMENDATION	CAPACITY USED	LAST 7 DAYS USAGE	EST. CAPACITY REACHED
 Review Data Usage	 252 / 500 GB	28 GB	62 DAYS

Once capacity is reached, data received from devices or generated via analytics will no longer be stored.

Consider the following to manage your data usage.

-  [Configure the lifespan of your data.](#)
-  [Delete old data to free up space.](#)
-  [Contact your sales representative to increase your storage capacity.](#)

- **Data Management:** Lets you manage data, change settings, and create data deletion jobs. The data capacity usage percentages are shown category-wise:
 - **Raw Device Data:** Raw time-series data from devices that is stored in a normalized JSON format. Comprises application messages, connector messages, integration-related messages, log messages, and other related messages.
Oracle recommends a data life span of 7 Days, or less, for this category to avoid high storage consumption.
 - **Sensor Data:** Time-series data from devices and computed attributes used for machine-learning models and anomaly detection. Comprises incoming sensor data, visualization and training data.
Set the data life span for this category to match your business requirements for data retention.
 - **Custom Metric Data:** Computed values of user-defined metrics. Comprises data specific to custom metrics or KPIs. Custom metrics are metrics that you create in the application for your production environment and scenarios.
Set the data life span for this category to match your business requirements for data retention.
 - **System Metric Data:** Computed values of built-in system metrics that are automatically computed. Comprises data specific to system metrics or KPIs. System metrics are the built-in metrics that are calculated automatically in your application.
Oracle recommends a data life span of 90 Days, or less, for this category to avoid high storage consumption.
 - **Transaction Log Data:** Comprises logs related to all shipment transactions that have occurred between Oracle IoT Fleet Monitoring Cloud and OTM or ITT.
Set the data life span for this category to match your business requirements for data retention.

You can select the data life span for each category. The data life span is the time period for which data is retained. If you set the data life span for a category to **Delete Manually**, then data for that category is never deleted, unless you manually run a data deletion job. Note that this setting may potentially lead to storage capacity issues, as stored data is never deleted.

You can choose to create data deletion jobs to delete selective data. A data deletion job lets you select the data type and time span for which you wish to delete data.

Perform Data Management Tasks

Use the **Data Management** section to manage data storage settings for your application. You can select the data life span for the various data types. You can also create data deletion jobs to delete selective data.

1. Click **Menu (≡)** and then click **Settings** .

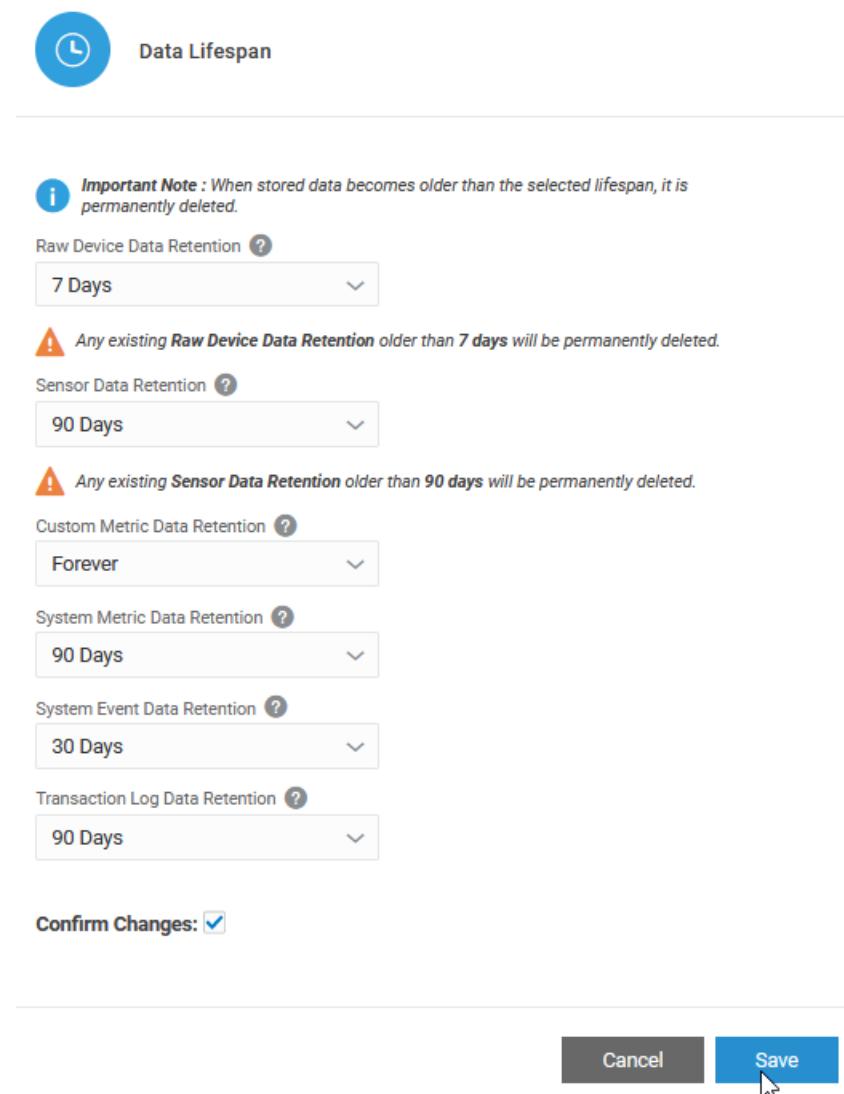
2. Click **Storage Management**.

The Storage Management page appears.

3. To change the data life span, click **Edit**  under **Data Life Span**.

The Data Life Span section appears under the Data Management section.

- a. Select the data life span for **Raw Device Data**, **Sensor Data**, **Custom Metric Data**, **System Metric Data**, and **Transaction Log Data**.



Data Lifespan

Raw Device Data Retention   7 Days 

Important Note : When stored data becomes older than the selected lifespan, it is permanently deleted.

Sensor Data Retention   90 Days 

Custom Metric Data Retention   Forever 

System Metric Data Retention   90 Days 

System Event Data Retention   30 Days 

Transaction Log Data Retention   90 Days 

Confirm Changes:

Cancel **Save** 

If you select **Forever** for a category, then the data for that category is never deleted automatically. You would need to run a data deletion job, described in the subsequent steps, to select and delete any data for the category.

- b. Select **Confirm Changes** and click **Save** to save your settings.
4. (Optional) To run a data deletion job, click the **Create Data Deletion Job** button.
- a. In the Create Data Deletion Job dialog box, select one or more data types for which you wish to delete data.

The available choices are:

- **Device**
- **System Metrics and Custom Metrics**
- **Sensor**

- b. Under **Delete Data**, choose the time period for which you wish to delete the data.

For example, you may want to delete sensor data that is **Older than 30 days**. You can also choose a custom **Time Range** for which to delete data. For example, you may wish to delete data for a particular day or hour.

- c. Click **Delete** to create the delete job.

You can monitor the job progress, and the number of records that were deleted, under the Data Deletion Jobs section. When the data delete job completes, its status changes from **In Progress** to **Completed**.

You can also choose to delete a data deletion job. If the job is still running when you delete it, then the job is terminated and deleted. If the job has already failed or completed, then deleting the job simply removes it from the list of failed or completed jobs.

DATA DELETION JOBS				
 In progress	 Completed	 Failed		
INITIATED	TIME WINDOW	TYPE	DELETED	SCANNED
10/12/20 12:01:55	01/01/70 to 10/05/20	Device	0	1

 Create Data Deletion Job

Change the Map Provider

Oracle Intelligent Applications let you integrate with third-party map providers. Oracle Maps is the default map provider. Change the map provider to replace Oracle maps with the map data provided by a third-party map provider. Currently, only maps provided by HERE Technologies are supported.

This global setting applies to the organizations of all the applications of Oracle IoT Intelligent Applications.

1. Click **Menu (≡)** and then click **Settings** .
2. Click **Map Provider**.

3. Select one of these options in the **Map Provider** list:
 - **Oracle Maps**: (Default) Select this option to use the maps provided by Oracle.
 - **HERE Maps**: Select this option to use the maps provided by HERE Technologies.
4. Select one of the time options in the **Refresh Time** list. This determines the time interval at which the map data is refreshed in the application.
If you select **Custom**, enter the number of seconds in **Value**.
5. If you selected HERE Maps, complete these fields:

 **Note:**

- From 22.4.1 release onward, Oracle recommends that you configure HERE maps using OAuth mechanism. In other words, instead of using HERE maps login credentials, generate an access token for authenticating to HERE maps. And to generate the access token, you must first generate OAuth credentials (access key ID and access key secret) as described in the HERE Developer portal at <https://developer.here.com>.
- The **Application ID** and **Application Code** fields are displayed only if you have previously configured HERE maps.

- **Application ID**: Enter your HERE Technologies application ID.
- **Application Code**: Enter your HERE Technologies application code.
- **Access Key ID**: This is the access key credential used for authenticating to HERE maps using OAuth mechanism. Generate and enter the access key from the <https://developer.here.com> website.
- **Access Key Secret**: This is the secret credential used for authenticating to HERE maps using OAuth mechanism. Generate and enter the access key secret from the <https://developer.here.com> website.
- **Access Token URL**: Accept the default value or enter the access token URL. The access token URL defines the API used to generate access tokens for authenticating to HERE maps using OAuth mechanism.
- **Base URL**: Accept the default value or enter the base URL. The base URL defines the API used to render the map tiles.
- **Route URL**: Accept the default value or enter the route URL. A route URL defines the API used to determine the route to be covered by a trip or shipment in map view.
- **Geocode URL**: Accept the default value or enter the geocode URL. The geocode URL defines the API used to convert a human-readable address into geographic coordinates.
- **Reverse Geocode URL**: Accept the default value or enter the reverse geocode URL. A reverse geocode URL defines the API used to convert geographic coordinates into a human-readable address.
- **Batch Reverse Geocode URL**: Accept the default value or enter the batch reverse geocode URL. A batch reverse geocode URL defines the API used to convert multiple geographic coordinates into human-readable addresses.

- **Aerial URL:** To display satellite imagery in the map view, accept the default value or enter the aerial URL. An aerial URL defines the API used to display satellite imagery.
- **Traffic URL:** To display real-time traffic data in the map view, accept the default value or enter the traffic URL. A traffic URL defines the API used to display traffic data.
- **Map Tiles Language:** Select the language in which you want the map tiles to be displayed in map view. Note that map tiles for a selected language are displayed only if the corresponding language data is available in HERE maps. If HERE maps doesn't have the corresponding language map tile, then it defaults to displaying the map tiles in English.

6. Click **Validate Credentials**. After you receive a success message, click **Close** 

 **Note:**

To change the map provider for a specific organization only, select the **IoT Organizations**, and select the organization name. Before you can select **HERE Maps** for any individual organization, you should configure its settings from the **Settings > Map Provider** page.

Set the Map Refresh Interval

A refresh keeps your maps in sync with the latest data.

This global setting applies to all the organizations of Oracle IoT Intelligent Applications.

1. Click **Menu (≡)** and then click **Settings** .
2. Click **Map Provider**.
3. Select an option for the **Refresh Time** list.

If you need to specify a custom refresh time, select **Custom** and specify the **Value** in seconds.

Set the Unit of Measurement

Set the unit of measurement to match the measurement unit in your location. You can select US imperial or metric measurement units.

Measurement units are configured globally or at the organization level.

1. Click **Menu (≡)**, and then click **Settings**.
2. For a global setting, select **Units and Measurement**. For an individual organization, select **IoT Organizations**, select the organization name, and then select **Units and Measurement**.
3. Click **Edit**  in the **Units and Measurements** area.

4.  **Note:**

If you are configuring units for an organization for the first time, select a unit of measurement for the organization appropriately. If the organization was already configured, and a unit of measurement was previously selected, avoid updating the unit of measurement. Updating the unit of measurement may lead to incorrect reporting of historical data in the system.

Select one of these options in the Unit System list.:

- **US Imperial:** Displays distance, speed, temperature, and volume values in US imperial units, such as Miles, Miles Per Hour, Fahrenheit, and Gallon respectively.
- **Metric:** Displays distance, speed, temperature, and volume values in metric units, such as Kilometer, Kilometer Per Hour, Celsius, and Litre respectively.

5. Click **Save**. After you receive a success message, click **Close** .

Set the Currency Unit

Set the currency unit to match the currency used in your location.

The monetary unit is configured at the organization level. If you are configuring an organization for the first time, select a unit of measurement for the organization appropriately. If the organization was already configured, and a unit of measurement was previously selected, avoid updating the unit.

1. Click **Menu** (≡), and then click **Settings**.
2. Select **IoT Organizations** and then select your organization from the listed organizations.
3. Click **Context Specific** and then **Trip & Shipments**.
4. In the **Monetary** area, select a currency from the **Currency** list.
5. Click **Save**. After you receive a success message, click **Close** .

Set the Fuel Cost

Set the fuel cost to match the value used in your location.

1. Click **Menu** (≡), and then click **Settings**.
2. Select **IoT Organizations** and then select your organization from the listed organizations.
3. Click **Context Specific** and then **Trip & Shipments**.
4. In the **Monetary** area, enter the fuel cost in the **Fuel Cost** field.
5. Click **Save** to save the changes. After you receive a success message, click **Close** .

Configure the ETA Computation Settings

The estimated time of arrival (ETA) indicates when a vehicle is expected to arrive at a destination. ETA computation settings include settings for computation interval, stop radius, and delay tolerance.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organizations** and then select your organization from the listed organizations.
3. Click **Context Specific** and then **Trip & Shipments**.
4. In the **ETA Computation** section, optionally change the values for the following fields:
 - **Calculate Trip ETA**: This is selected by default and enables ETA calculation for trips.
 - **Calculate Shipment ETA**: Select to enable ETA calculation of shipments that includes shipments imported from an external transportation management system.
 - **Refresh Time (min)**: Enter the refresh time in minutes. A lower value means more frequent ETA computations. The default value is 5 minutes.
 - **Stop Radius**: Increasing the stop radius identifies the stop location for a vehicle sooner, but the geographical accuracy is reduced. The default value is 0.6214 miles or 1 km.
 - **Delay Tolerance (min)**: Specifies the threshold time duration after which a trip or shipment is marked delayed. The default value is 60 minutes, which means that a trip or shipment is marked delayed once it is delayed beyond 60 minutes. You can choose to increase or decrease this threshold.
5. Click **Save** to save the changes. After you receive a success message, click **Close** .

Configure Route Preferences

Configure organization-level preferences for routing and geofencing. You can specify whether the map provider must use the fastest or shortest route and include or exclude tolls for route creation. You can also configure route geofences that may be used to report vehicle route deviations. Route geofencing consumes significant computational resources.

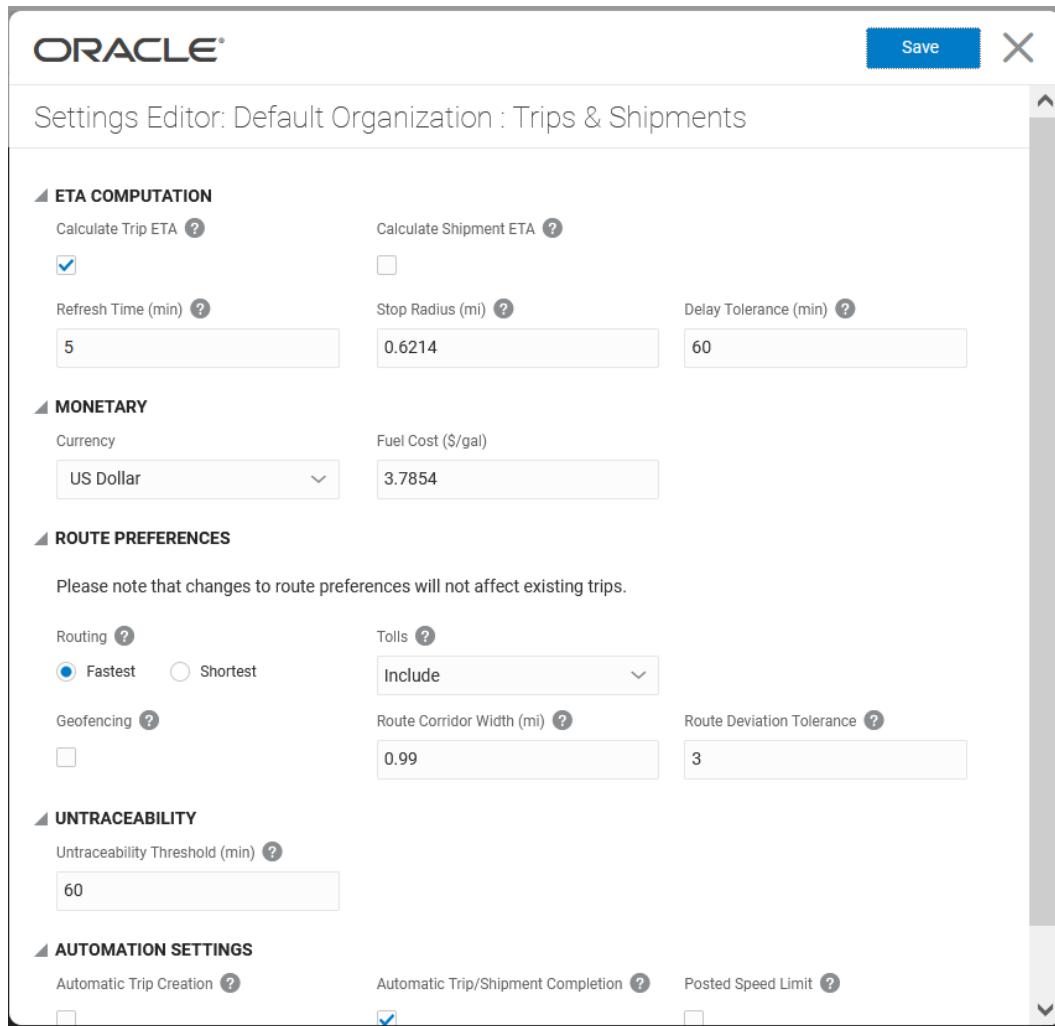
As an administrator, you can configure route preferences for an individual organization.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organization** and then select your organization from the listed organizations.
3. Click **Context Specific**, and then **Trip & Shipments**.
4. In the **Route Preferences** section, set the routing parameters as follows :
 - a. Select either the **Fastest** or **Shortest** option that the map provider must use for route calculation. If you select **Fastest**, then the map provider calculates the route with the fastest travel time. If you select the **Shortest** option, then the map provider calculates the route with the shortest travel distance.
 - b. From the **Tolls** drop-down list, select **Include** or **Exclude** to specify whether the map provider must retrieve a route that includes or avoids toll roads, respectively. Note that this drop-down list is displayed in the UI only if your map provider is HERE Technologies.

 **Note:**

Any changes made to routing preferences will not affect existing trips.

The following screenshot displays the settings page for Trips & Shipments that includes the Route Preferences section for HERE Maps:



The screenshot shows the Oracle Settings Editor interface for the 'Default Organization : Trips & Shipments' settings. The 'ROUTE PREFERENCES' section is highlighted, containing the following configuration:

- Routing:** Fastest (selected radio button)
- Tolls:** Include (dropdown menu)
- Geofencing:** (checkbox)
- Route Corridor Width (mi):** 0.99
- Route Deviation Tolerance (mi):** 3

Below the 'ROUTE PREFERENCES' section, a note states: "Please note that changes to route preferences will not affect existing trips."

Other sections visible in the interface include **ETA COMPUTATION**, **MONETARY**, **UNTRACEABILITY**, and **AUTOMATION SETTINGS**.

The following screenshot displays the settings page for Trips & Shipments that includes the Route Preferences section for Oracle Maps:

Settings Editor: Default Organization : Trips & Shipments

ETA COMPUTATION

Calculate Trip ETA Calculate Shipment ETA

Refresh Time (min) Stop Radius (mi) Delay Tolerance (min)

MONETARY

Currency Fuel Cost (\$/gal)

ROUTE PREFERENCES

Please note that changes to route preferences will not affect existing trips.

Routing

Geofencing Route Corridor Width (mi) Route Deviation Tolerance

UNTRACEABILITY

Untraceability Threshold (min)

AUTOMATION SETTINGS

Automatic Trip Creation Automatic Trip/Shipment Completion Posted Speed Limit

If you are using maps provided by HERE Technologies, then note the following limitations of the map provider:

- Sometimes, the map provider returns a route with toll road even though a request for a route with **Tolls** set to **Exclude** is made. In such a case, an error is displayed in the trip error or exceptions page.
- Sometimes, when you request for a route with **Tolls** set to **Include**, the map provider does not return a route with toll road even though it exists.
- HERE Routing API v7 does not support the Truck+Shortest option for a routing request. Therefore, Fleet Monitoring overrides it to Truck+Fastest before requesting for a route.

If you are using Oracle Maps and you request for the shortest route, then sometimes the route returned may not be the shortest.

5. To enable route geofences, select the **Geofencing** checkbox in the Route Preferences section.

When enabled, you can optionally view the route-geofence of a shipment or a trip on their shipment or trip map views respectively. To view the route geofences on the map view, enable this feature before you've created/imported trips or shipments in the organization.

You will get notifications when vehicles deviate from route geofences. As route geofences use significant computational resources, use this feature judiciously.

6. Optionally change the following fields:

- **Route Corridor Width (mi):** Specifies the width of the route corridor in which the vehicle travels. A geofence violation occurs when the vehicle moves outside the route corridor.
- **Route Deviation Tolerance:** Specifies the number of times a vehicle can deviate from the planned route corridor before a geofence violation is recorded.

7. Click **Save** to save the changes. After you receive a success message, click **Close** .

Configure Other Trip and Shipment Settings

Configure organization-level trip and shipment settings, such as automatic trip enabling, automatic shipment completion, posted speed limit configurations, and traceability settings.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organizations** and then select your organization from the listed organizations.
3. Click **Context Specific** and then **Trip & Shipments**.
4. In the Automation Settings section, optionally select or deselect the following settings:
 - a. (Optional) Select **Automatic Trip Creation** to enable a trip to be created automatically.
If a vehicle currently not assigned to a trip moves 1600 feet (500 meters) beyond its assigned location, a trip is automatically created.
 - b. (Optional) From the **Trip/Shipment Completion** drop-down box, select one of the following options:
 - **Auto Complete On Departure From Last Planned Stop:** This is the default option. Select this option if you want trips and shipments to complete automatically when the vehicle departs from the destination (last planned) stop.
 - **Auto Complete On Arrival At Last Planned Stop:** Select this option if you want trips and shipments to complete automatically when the vehicle arrives at the destination (last planned) stop.
 - **Do not Auto Complete:** Select this option if you do not want trips and shipments to be completed automatically.

Note:

If you have a multistop trip or shipment and drivers don't adhere to the planned stop sequence (for example, the driver visits the destination stop first before going to intermediate stops), then it is recommended that you disable the option to complete trips or shipments automatically by selecting the **Do not Auto Complete** option. If you do not select this option, then depending on whether you select **Auto Complete On Departure From Last Planned Stop** or **Auto Complete On Arrival At Last Planned Stop**, the trip or shipment completes automatically when the vehicle departs from or arrives at the destination stop by assuming that all intermediary stops have been completed.

- c. (Optional) Select **Posted Speed Limit** to enable support for posted speed limit configurations.

Posted Speed limit is the maximum lawful speed for a particular location or a given road segment, which is displayed on a regulatory sign.

When you enable this, the application:

- Automatically detects violation of posted speed limits in a trip or a shipment and displays them on the map view along the route. See how to view a shipment's or trip's route on the map from [View Shipment Route Details](#) and [Examine the Map View](#) respectively.
- Lets you use a set of system-defined KPIs such as count of posted speed limit violations or indication of a trip or a shipment's vehicle being driven beyond the posted speed limit. See how to view the system-defined metrics from [View the KPI List](#).
- Lets you create rules to generate alerts or incidents for posted speed limit violations in trips, in shipments, or by drivers. See how to create rules for trips and shipments from [Create a Shipment Rule](#) and [Create a Rule](#).

5. In the **Untraceability** section, enter an integer value for the **Untraceability Threshold (min)** field. This value specifies the number of minutes after which shipments and trips will be marked untraceable when there are no geo-location updates.
6. Click **Save** to save the changes. After you receive a success message, click **Close** .

Configure Mobile Application Settings

You can configure mobile application settings for the organization. These settings determine whether drivers can select or update the trip vehicle, and whether drivers can create trips using the mobile application.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organizations** and then select your organization from the listed organizations.
3. Click **Context Specific** and then **Mobile Applications**.
4. In the **Mobile Applications** section, optionally deselect or select the following settings:
 - **Create Trip:** Determines if drivers can create trips using the mobile application. If enabled, drivers can use the following options in the mobile application to create trips:
 - **Repeat a Recent Trip**
 - **Create a Trip from a Template**
 - **Create a Custom Trip**
 - **Select/Update Assigned Vehicle:** Determines whether drivers can select or update the trip vehicle using the mobile application.
5. In the **Enable Location Tracking** section, select or deselect the **Third Party Carrier Drivers** option.

Selecting this option enables a third-party carrier driver's mobile application to transmit the location information of an ongoing trip. Deselecting this option

disables transmission of location information. This option is applicable only for Trips.

6. Click **Save** to save the changes. After you receive a success message, click **Close** .

Customize Appearance

Customize the name and logo of your application globally or at an organization level from the **Settings** option.

You can customize the appearance globally for all the applications from the **Menu > Settings > Appearance** tile.

You can customize the appearance at the organization level from the **Menu > Settings > IoT Organizations > Organization Name > Appearance** tile.

Show or Hide the Application Name

Show or hide the application name when business requirements change.

1. In the Operations Center, click **Menu** (≡), and then click **Settings**.

If you are in the Design Center, you need to click **Previous** (⬅) before you see the **Settings** option in the menu.

 **Note:**

If you wish to change the appearance for an individual organization only, navigate to **Menu > Settings > IoT Organizations > Organization Name**.

2. Click **Appearance** on the Settings page.
3. Select one of these options:
 - a. Select **Show Application Name** to display the application name on all application pages.
 - b. Clear **Show Application Name** to remove the application name from all application pages.
4. Click **Save**.

Add or Update an Application Logo

Add or update corporate logos when business requirements change or a new corporate logo is issued.

1. In the Operations Center, click **Menu** (≡), and then click **Settings**.

If you are in the Design Center, you need to click **Previous** (⬅) before you see the **Settings** option in the menu.

 **Note:**

If you wish to change the appearance for an individual organization only, navigate to **Menu > Settings > IoT Organizations > Organization Name**.

2. Click **Appearance** on the Settings page.
3. Under **Title Bar Logo**, select **Custom**.

Under Image, click the **Drag and Drop** area to select an image file to upload. Alternatively, you can also drag and drop the image file to the **Drag and Drop** area in your browser window.

4. Click **Save**.

Remove an Application Logo

Remove a logo when an application logo is no longer required.

1. In the Operations Center, click **Menu (≡)**, and then click **Settings**.

If you are in the Design Center, you need to click **Previous (⟨)** before you see the **Settings** option in the menu.

 **Note:**

If you wish to change the appearance for an individual organization only, navigate to **Menu > Settings > IoT Organizations > Organization Name**.

2. Click **Appearance** on the Settings page.
3. Under **Title Bar Logo**, select **None**.
4. Click **Save**.

Enable Or Disable Number Formatting

Specify whether to display numeric values as formatted or unformatted numbers. You can specify this globally or at an organization level from the **Settings** option.

By default, all numeric values for attributes such as speed, temperature, distance travelled, and so on are formatted (rounded off to the nearest decimal). For example, a value of 51.45456 is rounded off to 51.5. You can choose to disable or enable formatting of number values at the global or organization-specific level by deselecting the **Enable Number Formatting** checkbox in the **Number Formatting** section of the **Appearance** tile.

1. In the Operations Center, click **Menu (≡)**, and then click **Settings**.

If you are in the Design Center, you need to click **Previous (⟨)** before you see the **Settings** option in the menu.

 **Note:**

If you wish to change number formatting for an individual organization only, then navigate to **Menu > Settings > IoT Organizations > Organization Name**.

2. Click **Appearance** on the Settings page.
3. In the Number Formatting section, select one of these options:
 - a. Deselect the **Enable Number Formatting** option to display the exact numeric value, without rounding it off to the nearest decimal.
 - b. Select the **Enable Number Formatting** option to display numeric values after rounding them off to the nearest decimal.
4. Click **Save**.

Manage Organizations

Organizations are digital placeholders for the various heterogeneous entities that you have in your business, the locations where these entities operate from, and the associated users of these entities.

From the **Settings > IoT Organizations** tile, use **Manage Organizations** option to create, delete, import and export organizations.

Change Your Current Organization

If you are part of more than one organization, then you can change your current organization in Oracle IoT Fleet Monitoring Cloud Service.

1. Sign in to Oracle IoT Fleet Monitoring Cloud Service
2. Click **Authentication Menu**  displayed on the top right corner and click **Switch Organization**
3. Select the organization name that you wish to switch to, and click **Switch**.
The organization is switched, and you are put in the operations center view for the organization.
4. Alternatively, you can click **Menu** (≡), and then click **Settings**.
5. Select **IoT Organizations** from the listed tiles
6. Click **Manage Organizations** and then click **Switch Organizations..**
7. Select the organization name that you wish to switch to, and click **Switch**.
The organization is switched, and you are put in the operations center view for the organization.

Create a New Organization

Organizations are digital placeholders for the various heterogeneous entities that you have in your business, the locations where these entities operate from, and the associated users of these entities.

This operation is meant for application administrators only. Log in using the administrator account to create organizations in Oracle IoT Fleet Monitoring Cloud Service.

1. Click **Menu (≡)**, and then click **Settings**.

2. Select **IoT Organizations** from the listed tiles.

3. Click **Manage Organizations** and then click **Create Organization**.

The Create Organization dialog appears.

4. Specify a **Name** for your organization.

For example, *North America Operations*.

5. Specify an optional **Description**.

6. Click **Create**.

A confirmation message appears, and the new organization is added to the list of existing organizations.

Assign Users to an Organization

Edit the organization to add or update the list of authorized users for the organization.

Ensure that you have created users and assigned them appropriate roles before you assign them to one or more organizations. See [Create a New User](#).

1. Click **Menu (≡)**, and then click **Settings**.

2. Select the **IoT Organizations** tile from the **Settings** page.

3. The Default Organization and other organizations, if they exist are displayed as tiles. Note that the active organization is labeled with the **Active** label and the in-built Default organization is active by default.

4. Click the organization to which you need to assign users. Various tiles are displayed that allows you to configure organization specific settings.

5. Select the **User Access Control** tile.

6. In the **Users** section, from the table of the left, select the users that you wish to include in the organization, and click the **right-arrow** icon to move it to the table on the right. You can use the Select Filter drop-down list to search for a given user or a set of users.

7. Click **Save** to save the changes to the organization and wait till you receive the **Success** message.

8. Click **Close**.

Export and Import Organizations

You can export an organization, together with its entities, such as vehicles and vehicle types, settings, and integrations from an Oracle IoT Fleet Monitoring Cloud Service instance. You can then import the organization into another Oracle IoT Fleet Monitoring Cloud Service instance.

When you export an organization, all vehicles and their associated vehicle types are exported. The artifacts connected with the entities, such as metrics, rules, anomalies, predictions, and trends are also exported. Importing the organization into another instance creates the organization, together with its entities, configuration, and settings, in the importing instance.

 **Note:**

Import of organizations exported from previous releases is not supported. If you try to import a previously exported organization from an earlier release into the current release of Oracle IoT Fleet Monitoring Cloud Service, the import may fail.

Any groups and places that exist in the exported organization are also brought into the importing instance. Note that any devices connected to vehicles in the original instance are not included in the export. If you have vehicle types with mandatory sensor attributes, you would need to create new device links for the vehicles in the imported organization.

Export an Organization

Export an organization to create an `.iot` export file containing the organization along with its assets, asset types, groups and places.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organizations** from the listed tiles.
3. Click **Manage Organizations** and then click **Export Organization**.
4. Select the organization name that you wish to export, and click **Export**.
A `.iot` archive of the organization is generated.
5. Save the generated `.iot` archive file to your hard disk or a storage location.

You will use this file when importing the organization into another instance of Oracle IoT Fleet Monitoring Cloud Service.

Import an Organization

Import an organization into an Oracle IoT Fleet Monitoring Cloud Service instance to create the organizational artifacts previously exported from another instance.

1. Click **Menu (≡)**, and then click **Settings**.
2. Select **IoT Organizations** from the listed tiles.
3. Click **Manage Organizations** and then click **Import Organization**.
4. Click **Import**.

The Import Organization dialog appears.

5. Under **Upload File**, click the **Drag and Drop** area to select and upload the previously exported **.iot** archive file. Alternatively, you can also drag and drop the **.iot** archive file to the **Drag and Drop** area in your browser window.
6. Click **Done**.

The organization is imported along with its containing artifacts. The organization appears in the list of existing organizations.

Change the Map Type

Change the map type in the map view to change the appearance of the map. Currently, map types are only available with maps provided by HERE Technologies.

1. Change the map provider to HERE Technologies. See [Change the Map Provider](#).
2. In the Operations Center, click **Fleet Map** in the menu bar.
3. Click **Map Layers** () and then select one of these options:
 - **Classic**: Select this option to display the standard map view without satellite imagery, terrain, or traffic.
 - **Satellite**: Select this option to display a satellite image of the current map view.
 - **Terrain**: Select this option to display a map that includes physical terrain information.
 - **Traffic**: Select this option to display real-time traffic conditions in the current map view.

Use the Oracle IoT Fleet Monitoring Mobile App

Drivers are integral to the success of your fleet operations. Drivers use the Oracle IoT Fleet Monitoring Mobile Application to update and review trip and vehicle information, and to start and complete trips or shipments.

With the Oracle IoT Fleet Monitoring Mobile Application, drivers can:

- View trip information including planned stops and estimated trip duration.
- Start trips, complete trips, and cancel trips.
- Start shipments and track shipments.

There are two flavors of the Oracle IoT Fleet Monitoring Mobile app, one for the private fleet drivers and another for the third party carrier drivers. Drivers need to install the Oracle IoT Fleet Monitoring app from Google Play or Apple App Store. A private fleet driver can launch and log-in into the installed app whereas a third party carrier's driver receives a URL link in an email, using which the driver can launch and log-in into the installed app on the mobile device.

Use the Mobile App as a Private Fleet Driver

As a private fleet driver, you can use the Oracle IoT Fleet Monitoring mobile app to manage and monitor vehicles and trips or shipments on a mobile device.

Before you log in to the Oracle IoT Fleet Monitoring mobile app, you must have an user account and know the URL of the Oracle IoT Fleet Monitoring Cloud Service server.

Note:

If you have previously installed the Oracle IoT Fleet Monitoring mobile app, complete steps 3 to 6 of the procedure to open the application.

1. Install the Oracle IoT Fleet Monitoring mobile app:
 - a. Open an internet browser on your Apple or Android device.
 - b. Browse to the Apple App Store or Google Play.
 - c. Search for **Oracle IoT Fleet Monitoring**.
 - d. Install the Oracle IoT Fleet Monitoring application on your mobile device.
2. Open the Oracle IoT Fleet Monitoring mobile app and then read and agree to the legal terms. You'll see the End User License Agreement screen at the first launch of the app.
3. Enter the user name for the Oracle IoT Fleet Monitoring Cloud Service server in the **Username** field.

4. Enter the password for the Oracle IoT Fleet Monitoring Cloud Service server in the **Password** field.
5. Enter the Oracle IoT Fleet Monitoring Cloud Service URL in the **Server** field.

The URL is of the form `https://iot-host-name` or `https://iot-host-name/fm`

6. Tap the **Forward** () button.
7. If you have more than one organizations, select the organization to log in to, and tap **Continue**.

To configure your device as a third party carrier's driver, see [Use the Mobile App as a Third Party Carrier's Driver](#).

Create a New Trip With an Existing Trip Template

Use an existing trip template to assign a vehicle to an existing trip route.

1. Tap **Create a Trip from a Template**.
2. Tap an existing trip template.
3. Tap the **Forward** () icon.
4. Select or search for a vehicle to assign to the trip.
5. Tap **Start Trip**.
6. To complete or cancel the ongoing trip, select one of these options:
 - Tap **Complete** to indicate that the trip is complete.
 - Tap **Cancel** to cancel the trip.

Repeat a Recent Trip

Repeat a recent trip when the same trip is taken again.

1. Tap **Repeat Recent Trip**.
2. Tap a recent trip.
3. Tap the **Forward** () icon.
4. Optionally changed the vehicle assigned to the trip.
5. Tap **Start Trip**.
6. To complete or cancel the ongoing trip, select one of these options:
 - Tap **Complete** to indicate that the trip is complete.
 - Tap **Cancel** to cancel the trip.

Create a Custom Trip

Create a custom trip to create a new route for a vehicle.

1. Tap **Create a Custom Trip**.
2. Tap **Set Start Location**. If the location permissions have not been set, then the Android location permissions dialog box is displayed.

3. If you are using the app on a mobile device running Android version prior to 10, then click **Allow** to grant location permission.
4. If you are using the app on a mobile device running Android version 10 or later, then click **While using the app or Only this time**. If you select the **Deny** option, then an error message stating that the location authorization request is declined is displayed.
5. Enter the starting address for the trip.
6. Tap **Confirm Location**
7. (Optional) To add a stop to the trip route, tap **Set Stop Location**, enter the address for the stop, select a duration in the **Choose Duration** list, and then tap **Confirm Location**. Repeat this step to add additional stops to the trip route.
8. Tap **Set Finish Location**. If the location permissions have not been set, then the Android location permissions dialog box is displayed. See Steps 3 and 4 for more information about setting location permissions.
9. Enter the finish address for the trip and then select a duration in the **Choose Duration** list.
10. Tap **Confirm Location**
11. Tap the **Forward** () button.
12. Tap **Create Trip**.
13. Select or search for a vehicle to assign to the trip.
14. On the Trip Confirmation screen, optionally change the assigned vehicle for the trip.
15. Tap **Start Trip**.
16. To complete or cancel the ongoing trip, select one of these options:
 - Tap **Complete** to indicate the trip is complete.
 - Tap **Cancel** to cancel the trip.

Change a Vehicle Assignment

Change your vehicle assignment when an assigned vehicle is unavailable due to maintenance or a breakdown.

1. Tap the **Forward** () icon in the **Assigned Vehicle** area of the Welcome screen.
2. Search for a vehicle or tap **Select** to select a vehicle in the **Assigned Vehicle** list.
3. Tap **Confirm**.
4. Tap the **Back** () icon at the top of the screen to return to the Welcome screen.

Start Trips

A registered driver after logging into the Oracle IoT Fleet Monitoring app can view the assigned trips and start a specific trip.

As a private fleet driver, you can use the Oracle IoT Fleet Monitoring app to assign a vehicle to a trip and start it. Ensure that you have installed and configured the app in your mobile device.

1. Before you access the Oracle IoT Fleet Monitoring mobile app, view the workflow to start a trip as a private fleet driver or a third-party driver from [About Private Fleet Trips](#) and [About Third-Party Carrier Trips](#).
2. Access the Oracle IoT Fleet Monitoring mobile app. To sign in as a private fleet driver, enter your driver credentials and the instance URL in this format: `https://myiotcs.mydomain.oraclecloud.com`. To sign as a third-party driver, use the link and other security information you've received in the email.
3. Tap **Start a Trip**.
4. If a vehicle is not assigned to you, tap the **Edit**  icon at the top of the screen.
5. Tap **Select** to select a vehicle in the **Assigned Vehicle list**. Tap **Confirm**.
6. Tap the **Back**  icon at the top of the screen to return to the Trips list.
7. Tap a trip in the trips list and then tap **Start Trip**.
8. (Optional) Tap the **List**  icon at the top of the screen to view detailed information about the current trip including scheduled stops and the duration between stops.
9. Click the **Map**  icon to return to the map view.
10. (Optional) At the bottom-right corner of the trip map, tap the **Remark** button to enter any comments en-route and then tap the **Save** button. For example, you can enter comments such as "Reached Stop <stop name> on time".
11. After reaching the last stop, you can tap **Complete** to indicate the trip is complete. If required, you can force complete a trip that is en-route anytime by tapping **Complete**.
12. On the Confirmation screen, if the delivery is complete, select **YES**. Otherwise, select **No**. Enter remarks, if any, in the text area and then tap **Proceed**.

On the **Trip Overview** screen, the trip appears as completed.

The trip delivery status and corresponding remarks, if any, from the Fleet Monitoring mobile app are propagated to Oracle Fleet Monitoring and are displayed in the corresponding **DELIVERY COMPLETED** and **DELIVERY REMARKS** columns of the Trips Summary view as well as transmitted over to Oracle Transportation Management system.

Start a Shipment

Start a shipment that you will be transporting in your vehicle so its progress can be monitored by the Fleet Manager.

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

1. Tap **Start a Shipment**.

2. If a vehicle is not assigned to you, tap the **Edit** () icon at the top of the screen.
3. Tap **Select** to select a vehicle in the **Assigned Vehicle** list.
4. Tap **Confirm**.
5. Tap the **Back** () icon at the top of the screen to return to the **Shipments** list.
6. Tap a shipment in the **Shipments** list and then tap **Start First Shipment**.
7. (Optional) Tap the **List** () icon at the top of the screen to view detailed information about the current trip including scheduled stops and the duration between stops. Click the **Map** () icon to return to the map view.
8. (Optional) At the bottom-right corner of the map, tap the **Remark** button to enter any comments en-route and then tap the **Save** button. For example, you can enter comments such as "Reached Stop <stop name> on time".
9. After reaching the last stop, you can tap **Complete** to indicate the shipment is complete. If required, you can force complete a shipment that is en-route anytime by tapping **Complete**.
10. On the Confirmation screen, if the delivery is complete, select **YES**. Otherwise, select **No**. Enter remarks, if any, in the text area and then tap **Proceed**.

On the **Shipment Overview** screen, the shipment appears as completed.

Track a Shipment

Shipment tracking lets third-party carriers identify the location and progress of a shipment in Oracle Transportation Management. To begin shipment tracking, a driver receives an email notification with a link that opens the Oracle IoT Fleet Monitoring Mobile Application. After the driver correctly answers the challenge questions, the driver starts the shipment and then location data is sent to Oracle Transportation Management.

Note:

- The shipment tracking feature is available only on Android devices.
- Install the Oracle IoT Fleet Monitoring Mobile Application on the driver's mobile device before tracking a shipment. If the Oracle IoT Fleet Monitoring Mobile Application is not installed before the driver selects the tracking link, an error message appears on the driver's mobile device.

1. Install the Oracle IoT Fleet Monitoring Mobile Application on the driver's mobile device:
 - a. Open an internet browser on your mobile Android device.
 - b. Browse to Google Play.
 - c. Search for **Oracle IoT Fleet Monitoring**.
 - d. Install the Oracle IoT Fleet Monitoring Mobile Application on the driver's mobile device.
 - e. Read and agree to the Shipment Monitoring application legal terms.

2. Open the email with the shipment tracking link and then select the tracking link. The app opens.
3. If the location permissions have not been set, then you need to provide the location permissions as follows:
 - a. If you are using an app version prior to 21.2.1 on Android version prior to 10, then the Android location permissions dialog box is displayed. Click **Allow** to grant location permission.
 - b. If you are using app version 21.2.1 or later on Android version prior to 10, then you are prompted with an in-app notice to permit the app to use your location data. Select **Accept**. In the resulting Android location permissions dialog box, click **Allow** to grant location permission. If you decline the in-app notice, then the app will not work and an error message stating that the location authorization request is declined is displayed.
 - c. If you are using an app version prior to 21.2.1 on Android version 10 or later, then the Android location permissions dialog box is displayed with the options **While using the app**, **Only this time**, and **Deny**. This older version app does not have the option to request for background location permission. If you select the **While using the app** or **Only this time** option, then you can get the location pings only when the app is running in the foreground. If you select the **Deny** option, then an error message stating that the location authorization request is declined is displayed. It is recommended that you update the app to the latest version to allow background location permission so that location pings are available even when the app is running in the background or closed.
 - d. If you are using app version 21.2.1 or later on Android version 10 or later, then you are prompted with an in-app notice to permit the app to use your location data. Select **Accept**. In the resulting Android location permissions dialog box, click **Allow in settings**. If you decline the in-app notice, the app will not work and an error message stating that the location authorization request is declined is displayed. In the resulting Location permission screen, select **Allow all the time**.

You can alternatively select **Allow only while using the app**. However, it is recommended to select the **Allow all the time** option to access shipment location even when the app is running in the background or when the app is closed.

If you select the **Ask every time** or **Deny** option, then an error message stating that the location authorization request is declined is displayed.

4. After accepting location permissions, a Storage permission screen is displayed. Select **Allow** to permit the app to access your device storage. The app uses the storage to store device data to communicate with Oracle Internet of Things Cloud Service.
5. On the User Verification screen, successfully answer the two challenge questions. You have three attempts to answer the challenge questions correctly. If you fail to answer the challenge questions correctly, you can retry the questions after a five minute time-out.

Challenge questions appear only for the first shipment. Challenge questions do not appear for subsequent shipments.

6. Tap **Proceed**.
7. Review the shipment details and then tap **Start Shipment**.
8. When the shipment is complete, tap **Complete Shipment** and then tap **Yes**.

Apply Best Practices

Review and apply the best practices when you configure your mobile device and install the Oracle IoT Fleet Monitoring mobile app for seamless communication and data flow between the app and Oracle IoT Fleet Monitoring Application.

Best Practices

As a driver, when you use the Oracle IoT Fleet Monitoring Mobile application, apply these best practices on your mobile device for seamless and continuous communication between the app and the Oracle IoT Fleet Monitoring Application.

- When you are on an active trip or shipment, avoid clearing the Oracle IoT Fleet Monitoring mobile app's cache in your device.
- Ensure your mobile device is charged and has sufficient battery power.

Use the Mobile App as a Third Party Carrier's Driver

To enable tracking of third party carriers' trips or shipments, the third party carrier's driver installs the IoT Fleet Monitoring mobile app and then configures the mobile device. This configuration allows the mobile device to send trip's or shipment's location information to the Oracle IoT Fleet Monitoring server application.

In the following topics, you'll learn how to install the app, configure your mobile device settings to send the location info consistently, and start shipments. The settings may slightly vary with the model and make of your mobile device.

To know the workflow of a third party carrier trip or shipment see [About Third-Party Carrier Trips](#).

Install and Launch the Mobile App

As a third party carrier's driver, install the Oracle IoT Fleet Monitoring mobile app and launch it on your mobile device.

Complete these steps on your mobile device if you are a third party carrier's driver. If you are a private fleet driver, see [Use the Mobile App as a Private Fleet Driver](#).

1. Install the Oracle IoT Fleet Monitoring mobile app:
 - a. On your mobile device, open the Apple App Store or Google Play apps for an iOS or Android device respectively.
 - b. Search for **Oracle IoT Fleet Monitoring**.
 - c. Install the Oracle IoT Fleet Monitoring application on your mobile device.
2. Open the Oracle IoT Fleet Monitoring mobile app and then read and agree to the legal terms. You'll see the End User License Agreement screen at the first launch of the app.
3. To set the location permission and storage permission for your app, see one of the following:
 - [Configure an Android Device of a Third-Party Carrier's Driver](#)
 - [Configure an iOS Device of a Third-Party Carrier's Driver](#)

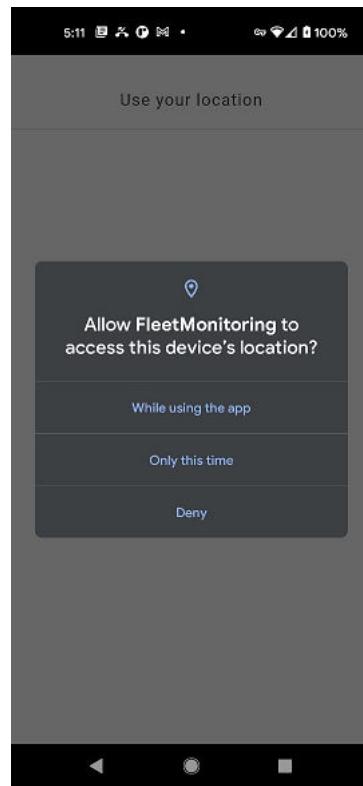
To start a shipment in Oracle IoT Fleet Monitoring mobile app, see [Start and Complete Trips or Shipments](#)

Configure an Android Device of a Third-Party Carrier's Driver

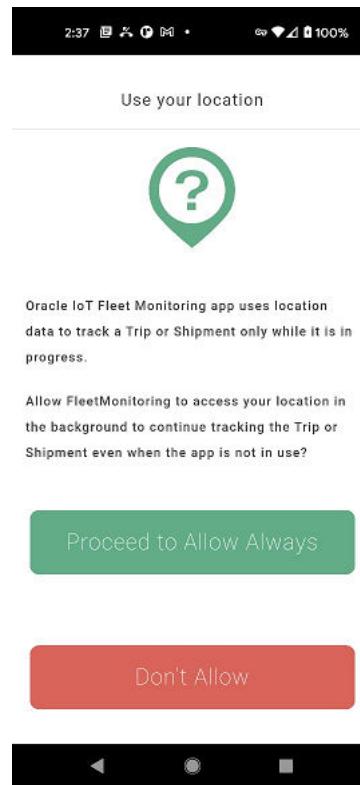
As a third-party carrier's driver, you configure your Android device to send location info of the trip or shipment consistently and seamlessly to the Oracle IoT Fleet Monitoring server application.

As a third-party carrier's driver, you should have installed the Oracle IoT Fleet Monitoring mobile app on your Android device. See [Use the Mobile App as a Private Fleet Driver](#). The following steps to configure your Android device are applicable for Google Pixel 5 and may vary slightly based on the make and model of your Android device.

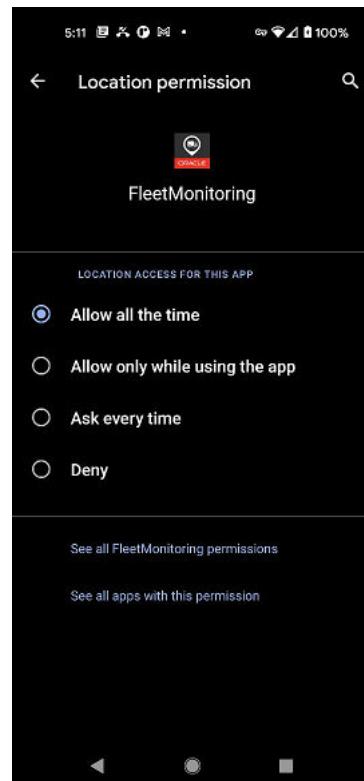
1. Complete these steps to set location and storage permissions on your device:
 - a. Location permission enables the Fleet Monitoring app on your device to send location info to the server when the app is in use and also when the app is running in the background. At the first launch, if the app doesn't request for the location permissions, then go to the device's **Settings** option, search for **FleetMonitoring**, and tap **Permissions**, and then **Location**. Select **While using the app**.



- b. Review the disclosure to understand why the location information is required and how it is used. Select **Proceed to Allow Always** .



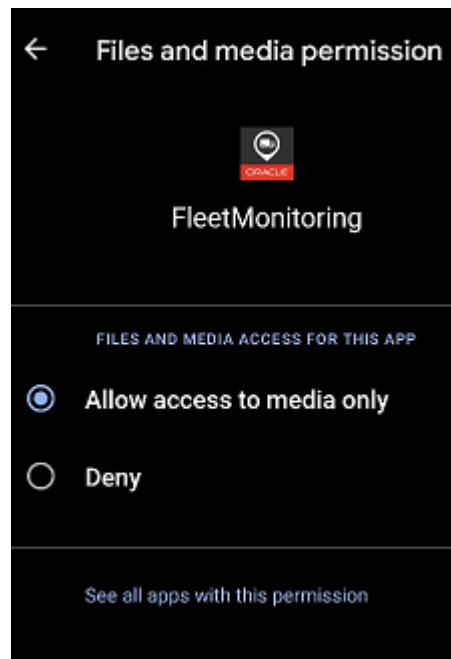
c. On the following **Location Permission** screen, select **Allow all the time**.



Ensure that you don't set the location permission to **Deny** or **Ask every time**. If you select **Allow only while using the app**, no location info will be sent when the app is

running in the background. In addition, you will not be able to start a trip or a shipment.

- d. Provide storage permissions to the Fleet Monitoring app to store provisioning info in the app's storage. At the first launch of the app, if it doesn't request for storage permission, then go to the device's **Settings** option, search for **FleetMonitoring**, and tap **Permissions**, and then **Files and Media**. Select **Allow access to media only**.

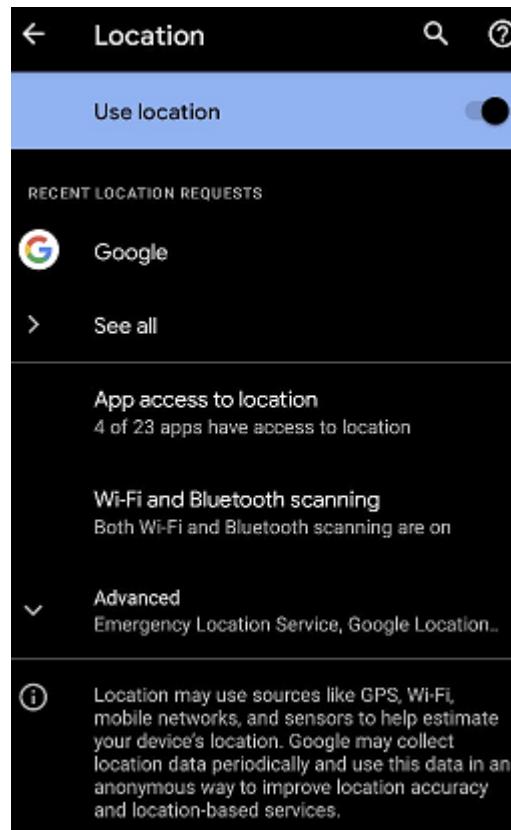


2. Complete these steps to configure various settings, such as location mode, wifi, and battery usage:

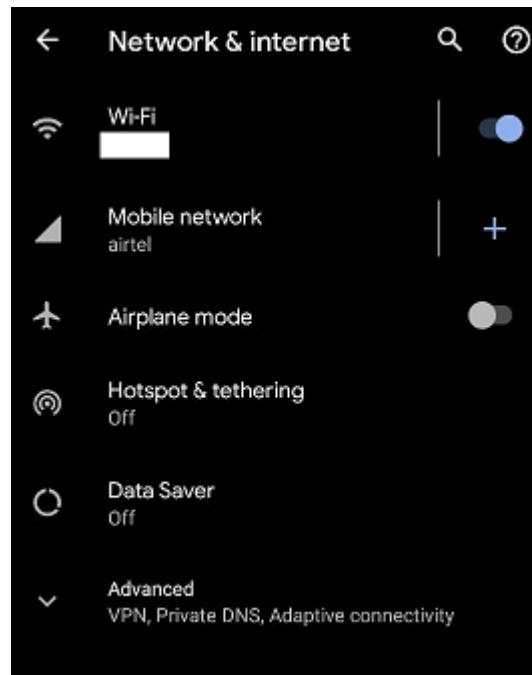
 **Note:**

You will not be able to start a trip or shipment if you do not configure these settings.

- a. Enable the location mode so that the Fleet Monitoring app can send location info from the device to the Oracle IoT Server application. If the location mode isn't enabled by default, then go to the device's **Settings** option. Under **Location** set **Use Location** to **On**.

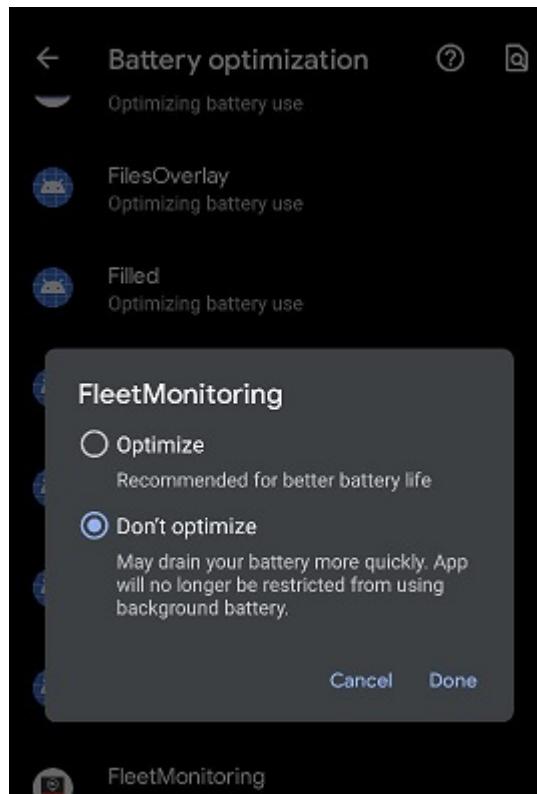


b. Enable access to network either by Wi-Fi or mobile data on your device for the Fleet Monitoring app. If it isn't enabled by default then go to the device's **Settings** option, tap **Network and Internet**, and tap **Wi-Fi**, and then enable **Use Wi-Fi**.

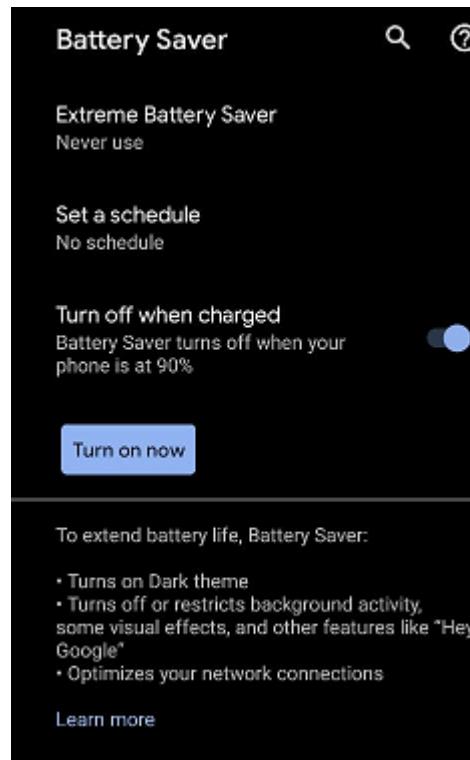


To enable mobile data, in the device's **Settings** option, tap **Network and Internet**, and tap **Mobile network**, and then enable **Mobile data**.

c. Disable the battery optimization option in your device to ensure that the Fleet Monitoring app can continuously send the location info to the server application. The battery optimization feature of your device's operating system may put the Fleet Monitoring app to sleep, which may prevent it to send the location info. To switch off this feature, go to the device's **Settings** option, search for **Battery Optimization**, switch to **All Apps** and locate **FleetMonitoring**. Tap the **Fleet Monitoring** app, select **Don't Optimize**, and then select **Done**.



d. Disable the battery saver mode so that the Fleet Monitoring app doesn't stop sending location info to the server application. Go to the device's **Settings** option, search for **Battery Saver**, and disable this feature.



If the battery saver mode is enabled, whenever the device has low battery power, it can disable location mode, which prevents the Fleet Monitoring app to send location info. This may also happen if the device is locked or if the Fleet Monitoring app is running in the background.

 **Note:**

You can view and set a few or all of these options from their shortcuts on the notification slider of your device.

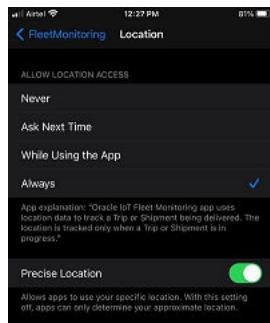
As a third-party carrier's driver, you have ensured that the FleetMonitoring app on your Android device can consistently send the location info of your trip or shipment to the application's server.

Configure an iOS Device of a Third-Party Carrier's Driver

As a third-party carrier's driver, you configure your iOS device to send location info of the trip or shipment, consistently and seamlessly to the Oracle IoT Fleet Monitoring server application.

As a third-party carrier's driver, you should have installed the Oracle IoT Fleet Monitoring mobile app on your iOS device. See [Use the Mobile App as a Private Fleet Driver](#). Complete the following steps to configure your mobile device.

1. Complete this step to set location permissions on your device. Location permission enables the Fleet Monitoring app on your device to send location info to the server even when the app is running in the background. At the first launch, if the app doesn't request for the location permissions, then in the device's **Settings** option, search for **FleetMonitoring**, and tap **Location**. Select **Always**.

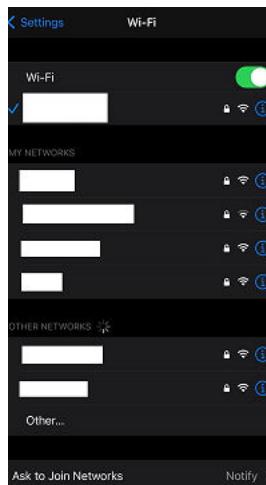


Ensure that you don't set the location permission to **Never** or **AskNext Time**. If you select **While Using the App**, no location info will be sent when the app is running in the background.

2. Complete these steps to configure settings, such as location mode and wifi:
 - a. Enable the location mode so that the Fleet Monitoring app can send location info from the device to the Oracle IoT Server application. If the location mode isn't enabled by default, then go to the device's **Settings** option. Under **Privacy** set **Location Services** to **On**.



- b. Enable access to network either by Wifi or mobile data on your device. If it isn't enabled by default then go to the device's **Settings** option, and for **Wifi**, tap to enable it.



To enable mobile data, in the device's **Settings** option, for **Mobile data** tap to enable it.



 **Note:**

You can view and set a few or all of these options from their shortcuts on the notification slider of your device.

As a third-party carrier's driver, you have ensured that the Fleet Monitoring app on your iOS device can consistently send the location info of your trip or shipment to the application's server.

Start and Complete Trips or Shipments

As a third party carrier's driver, you can start a trip or a shipment and complete it from your mobile device.

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

You've downloaded and installed the Oracle IoT Fleet Monitoring mobile app on your mobile device from the Apple Store or the Play Store. See [Install and Launch the Mobile App](#).

As a third party carrier's driver, if you've been assigned a shipment or trip, then you've received an email containing a link to the trip URL or the shipment URL. Additionally, the email also provides you the answers to the security questions, which help you log-in to the Fleet Monitoring mobile app.

1. To open the Oracle IoT Fleet Monitoring mobile app, select the trip or shipment URL available in the email.
2. If the app launches for the first time on your device, the screen displays the end user license agreement. select **Agree**.

Legal Terms

END USER LICENSE AGREEMENT

PLEASE SCROLL DOWN AND READ ALL OF THE FOLLOWING TERMS AND CONDITIONS OF THIS END USER LICENSE AGREEMENT ("AGREEMENT") CAREFULLY BEFORE CLICKING AN "AGREE" OR SIMILAR BUTTON OR INSTALLING OR USING THE PROGRAM. THIS AGREEMENT IS A LEGALLY BINDING CONTRACT BETWEEN YOU AND ORACLE AMERICA, INC. THAT SETS FORTH THE TERMS AND CONDITIONS THAT GOVERN YOUR USE OF THE PROGRAM. BY CLICKING AN "AGREE" OR SIMILAR BUTTON OR BY INSTALLING AND/OR USING THE PROGRAM, YOU AGREE TO ABIDE BY ALL OF THE TERMS AND CONDITIONS STATED OR REFERENCED HEREIN. IF YOU DO NOT AGREE TO ABIDE BY THESE TERMS AND CONDITIONS, DO NOT CLICK AN "AGREE" OR SIMILAR BUTTON AND DO NOT INSTALL OR USE THE PROGRAM. YOU MUST ACCEPT AND ABIDE BY THESE TERMS AND CONDITIONS AS PRESENTED TO YOU – ANY CHANGES, ADDITIONS OR DELETIONS BY YOU TO THESE TERMS AND CONDITIONS WILL NOT BE ACCEPTED BY ORACLE AND WILL NOT BE PART OF THIS AGREEMENT.

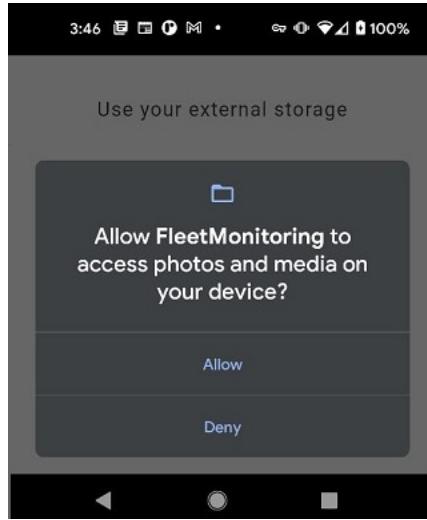
"Oracle" refers to Oracle America, Inc., for and on

Disagree

Agree

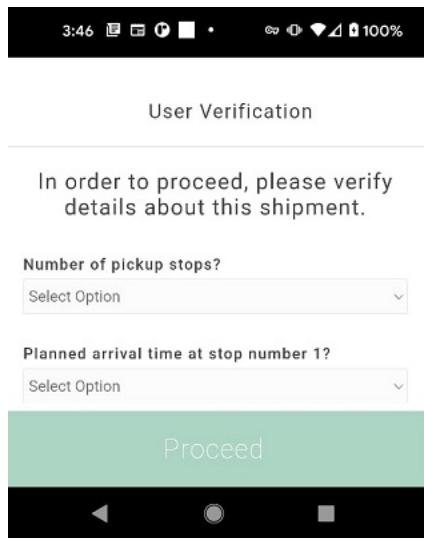
The image displays the End User License Agreement (EULA) screen.

3. For an Android device, the **Storage Permission** screen appears. Select **Allow**. For an iOS device skip to the next step.



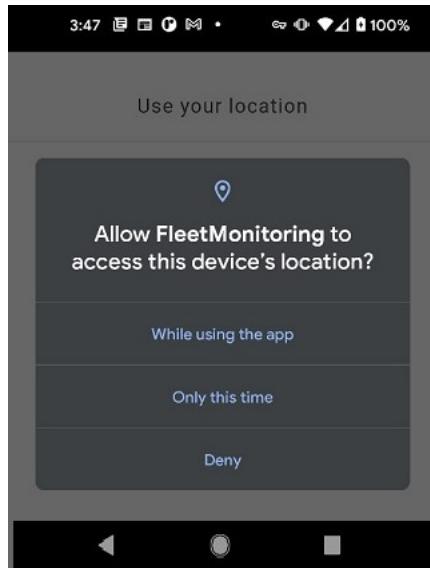
The image displays the permission screen to allow the Fleet Monitoring mobile app to access photos and media on your device.

4. On the **User Verification** screen, select or enter the answers to the questions, which you've received in an email. Select **Proceed**.

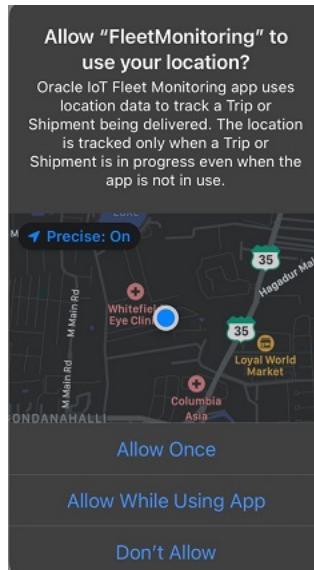


The image displays the user verification screen with two questions about the current shipment, which the driver needs to select from the drop-downs accurately in order to proceed further.

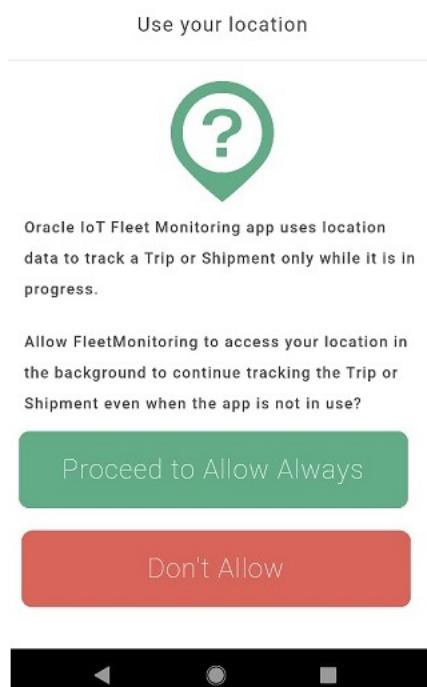
5. Set the location permission by selecting **While using this app** for an Android device and **Allow While Using App** for an iOS device.



The images display the permission screens for Android and iOS devices respectively, to allow the Fleet Monitoring mobile app to access your device's location either while using the app or only this time.

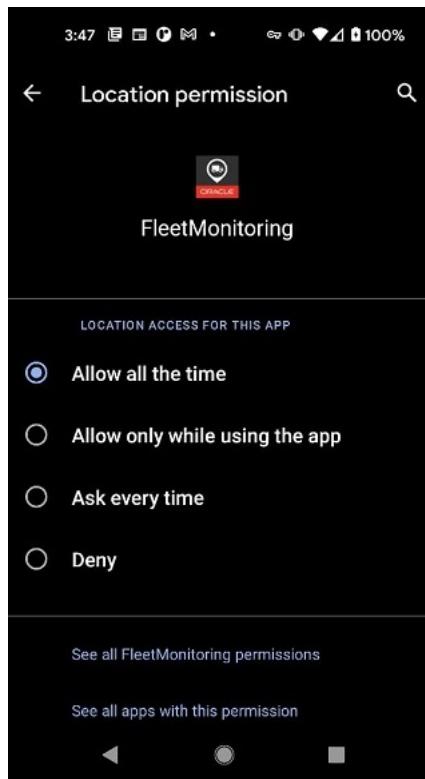


6. On the **App Location Disclosure** screen, review the disclosure content, and tap **Proceed to Allow Always**.



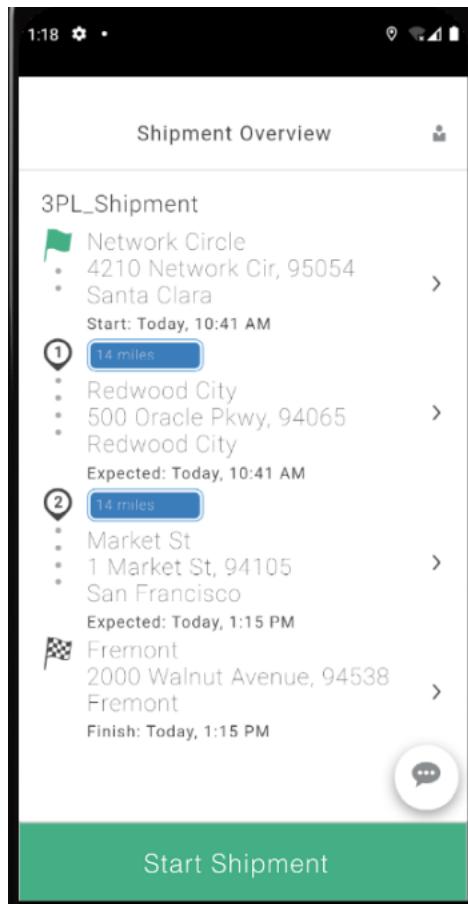
The image displays the permission screen to allow the Fleet Monitoring mobile app to access your device's location always even when the app is not in use.

7. On the **Location Permission** screen, select **Allow all the time**. Note that if you do not select this option, then you will not be able to start the trip or shipment. You will be prompted to allow permission for background location access.



The image displays the permission screen to allow the Fleet Monitoring mobile app to access your device's location all the time.

8. On the **Trip Overview** or **Shipment Overview** screen, view the stops of the trip or shipment and their details. Then select **Start Trip** or **Start Shipment**.

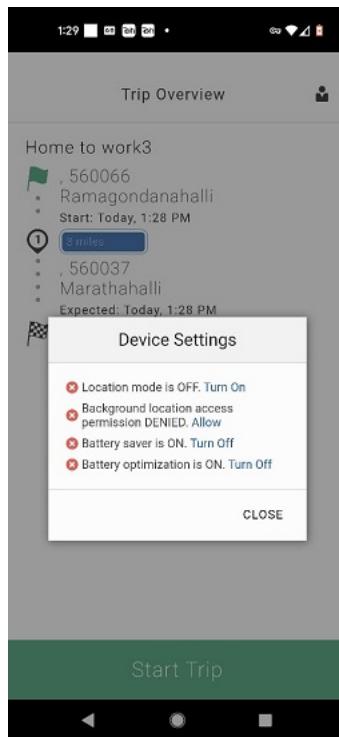


The image displays the shipment overview screen that displays three stops with their names, expected time to start and finish.

 **Note:**

In case of a Trip, if the trip has been started from the Fleet Monitoring web UI, then on the **Trip Overview** screen, the **Assign Trip** button is displayed instead of **Start Trip**. After you tap **Assign Trip**, the button changes to **Complete**. The rest of the process remains the same, as described in this procedure.

9. If you are using an Android device and one or more phone or app settings such as location mode, background location access, battery saver, or battery optimization are not appropriately set, then you will not be able to start the trip or shipment. You will receive the following dialog and will be prompted to fix the settings in order to start your trip or shipment:

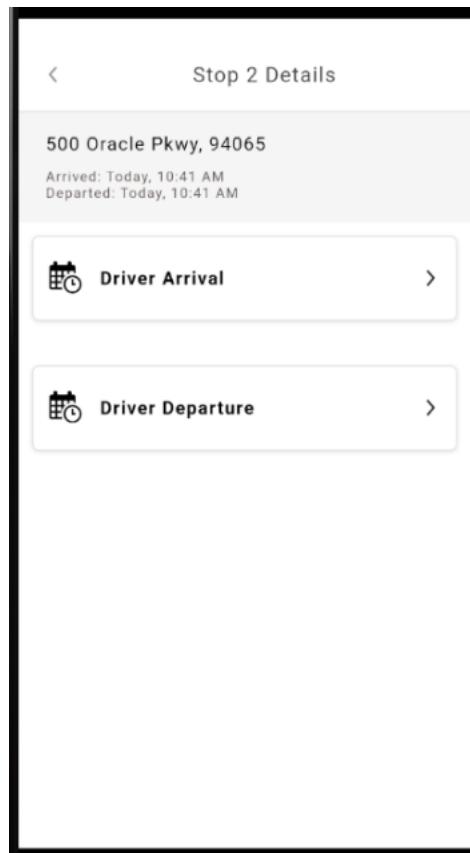


Ensure that your location setting is ON, Battery Saver and Battery Optimization settings are OFF, and the permission for background location access is set to **Allow all the time**. See Steps 1.c and 2 of [Configure an Android Device of a Third-Party Carrier's Driver](#) for details on configuring the required settings.

Note that clicking the links **Turn On**, **Turn Off**, and **Allow** in the Device Settings dialog will take you to the appropriate settings respectively. After fixing the settings, you can use the back arrow button to return to the FleetMonitoring app to start your Trip or Shipment. Until all the settings are fixed, the Device Settings dialog will be displayed each time you try to start a trip or a shipment.

10. (Optional) To manually enter and confirm the exact arrival and departure times for a Shipment Stop:

- a.** Tap the  icon for the required shipment stop to see the stop details.
- b.** On the Stop Details screen, tap the **Driver Arrival** or **Driver Departure** buttons.



- c. On the Arrival Date & Time or Departure Date & Time screens, the current date time is shown by default. Tap **Save** to confirm the default date and time or specify the exact arrival or departure date and time, if required, and then tap **Save**. The Stop Details screen is displayed with the driver specified date and time along with a green check mark.

Arrival Date & Time x

Confirm your stop arrival date & time.

April 18, 2023 calendar icon

02:05 PM clock icon

Save

Stop 2 Details <

500 Oracle Pkwy, 94065

Arrived: Today, 10:41 AM
Departed: Today, 10:41 AM

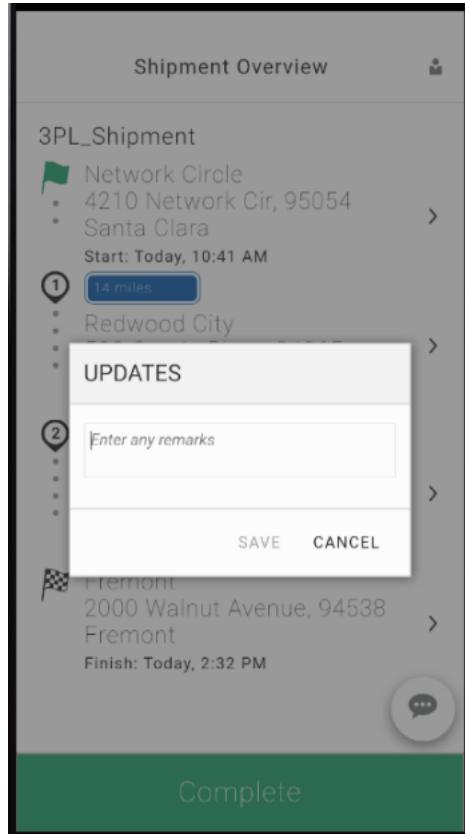
Driver Arrival >
Yesterday, 2:24 PM

Driver Departure >
Today, 2:24 PM

d. Tap the back arrow button to return to the Shipment Overview screen.

11. To enter a comment when you are en-route, select the **Remark** button and enter your comments.

You can enter comments such as "Reached Stop <stop name> on time".

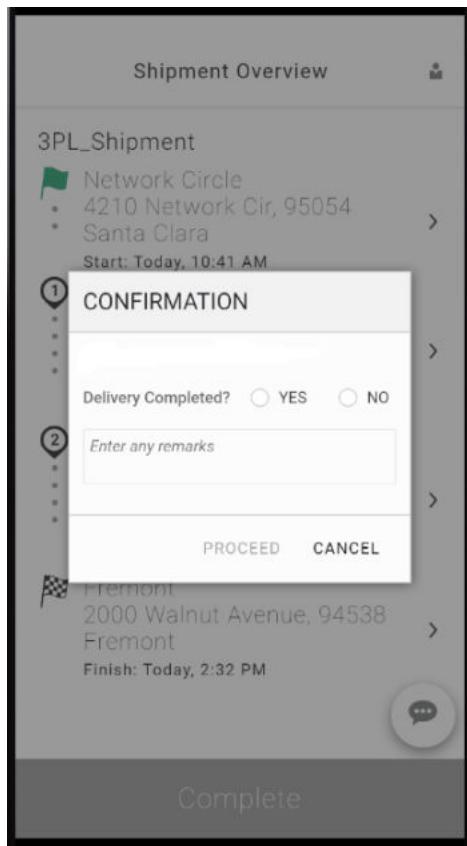


The image displays the shipment overview screen that displays an UPDATES dialog box, where you can enter comments about a given stop or shipment. It has **Save** and **Cancel** buttons.

12. After reaching the last stop, you can tap **Complete** to indicate the trip is complete. If required, you can force complete a trip that is en-route anytime by tapping **Complete**.

13. On the **Confirmation** screen, if the delivery is complete, select **YES**. Otherwise, select **No**. If the trip or shipment was force completed en-route, then in addition to the YES or NO options for delivery completed, an alert stating "Destination not reached" is displayed on the Confirmation screen.

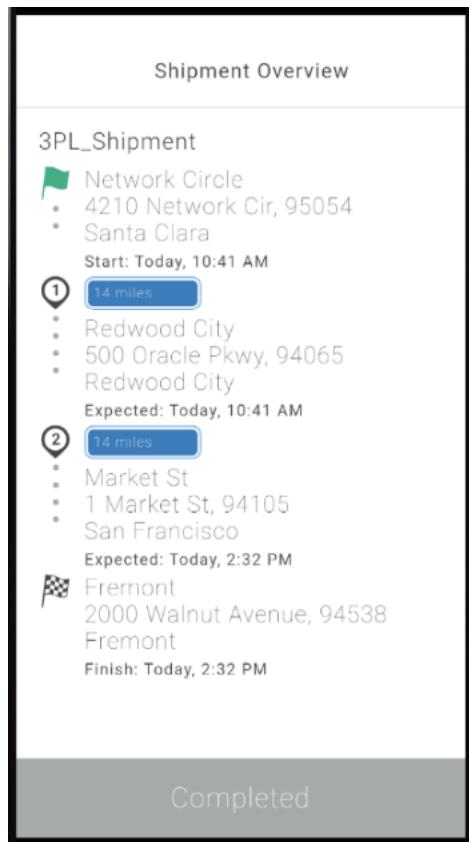
Enter remarks, if any, in the text area and then tap **Proceed**.



The image displays a confirmation dialog with the **YES** and **NO** options and a remarks box. It also has the **PROCEED** and **CANCEL** buttons.

Without reaching the last stop, you can tap **Complete** and on the confirmation screen select **NO** and enter appropriate remarks, and then tap **Proceed**.

On the **Shipment Overview** screen, the shipment appears as completed.



The screen displays the shipment overview screen with the status as completed. The overview screen displays the stop details such as its address, start time, expected time, or finish time.

Use the Truck Simulator

Create and use the truck simulation model of the Oracle IoT Digital Twin Simulator application to create simulated devices and monitor them in Oracle IoT Fleet Monitoring Cloud Service.

The Truck simulator is a part of the Oracle IoT Digital Twin Simulator application that lets you create simulated devices for your environment without the need to connect and set up hardware. You can generate configurable live data, alerts, and events for these simulated devices. Before you create and use the truck simulator, learn how to use the [Oracle IoT Digital Twin Simulator](#).

The Truck simulator lets you to create simulated devices that behave like real devices. You can control and monitor them in real time, turn them off and on, and configure them to generate alerts and events. Without setting up vehicles and connecting sensor devices, you can test the functionality and features of Oracle IoT Fleet Monitoring Cloud Service.

Typical Workflow to Monitor a Simulated Vehicle

Create a Truck simulation model using the IoT Digital Twin Simulator application and then use the Truck simulation model to create simulated device instances. Start the simulator and monitor the simulated vehicles and devices on Oracle IoT Fleet Monitoring Cloud Service.

Simulated devices behave like real devices. You can control and monitor the devices in real time, turn them off and on, and configure the devices to generate alerts and events.

The simulated devices are linked, tracked, and monitored in Oracle IoT Fleet Monitoring Cloud Service, which allow you to test the application's capabilities and features.

You can customize the device attributes, alerts, and actions in your simulation models, which can replicate your real sensor devices. You can also add events, images, and data sources for your simulation models.

Task	Description	More Information
Access the IoT Digital Twin Simulator Dashboard	The IoT Digital Twin Simulator Dashboard provides a set of existing simulation models, and the statuses of the simulated devices associated with these models. Use the dashboard to create a Truck simulator model.	Access the IoT Digital Twin Simulator Dashboard
Create the Truck Simulator Model	On the Oracle IoT Digital Twin Simulator application, you add a predefined Truck simulator model.	Add a Predefined Simulation Model in Oracle IoT Digital Twin Simulator
(Optional) Modify Stop Addresses	If you need to add new stop addresses, then edit the Truck simulator model and modify the <code>yiLocations</code> function.	Modify Stop Addresses

Task	Description	More Information
Add a Device to the Truck Simulator Model	In the Truck simulator model, you add a simulated device. It has attributes, functions, alerts, and events, which you can customize.	Create a Simulated Device in IoT Device Simulator
Add the Required Device Model to Oracle IoT Fleet Monitoring Application	After creating the Truck simulator model, <code>ora_oob2_device_model</code> gets added to the IoT platform. From the Oracle IoT Platform UI, select Oracle IoT Fleet Monitoring Cloud Service and add that device model to the application.	Assign a Device Model
Create the Required Vehicle Type to Oracle IoT Fleet Monitoring Cloud Service	Add a vehicle type using <code>ora_oob2_device_model</code> in Oracle IoT Fleet Monitoring Cloud Service.	Create a Vehicle Type
Create a Vehicle to Oracle IoT Fleet Monitoring Cloud Service	Add a vehicle using the vehicle type in Oracle IoT Fleet Monitoring Cloud Service.	Create a Vehicle
Link the Vehicle's Sensor Attributes to the Simulated Device	Link the vehicle's sensor attributes in Oracle IoT Fleet Monitoring Cloud Service with the attributes of the simulated device of the Truck simulator.	Edit Vehicle Details and Device Sensor Attributes
Start the Simulated Vehicle	Enable the simulated device of the Truck simulator, assign stop addresses, and start it.	Start a Simulated Vehicle
Monitor the Vehicle on the Map View	Monitor the vehicle whose sensors are connected to the simulated device, on the map view of Oracle IoT Fleet Monitoring Cloud Service.	Locate Your Vehicles in the Fleet Map
(Optional) Create and Start a Trip	Create a trip where you associate the vehicle to it and then start the trip.	Create a Trip Without Using a Trip Template Start a Trip
(Optional) Modify Speed of the Simulated Device	Modify the speed of the simulated device that reflects on the vehicle's speed in Oracle IoT Fleet Monitoring Cloud Service.	Modify the Speed of a Simulated Vehicle View Vehicle Information and its Operational Status
(Optional) Monitor the Trip on the Map View	Monitor the trip by viewing its vehicle on the Map view of Oracle IoT Fleet Monitoring Cloud Service	View Trips Summary

Modify Stop Addresses of a Truck Simulator

The Truck simulator can be customized by modifying its attributes, images, events, and functions. The stop addresses represent the start, stop, and destination locations

of a vehicle, which you can modify to meet your test criteria for monitoring the vehicle on the map view of Oracle IoT Fleet Monitoring Cloud Service.

You should have created a Truck simulator using the Oracle IoT Digital Twin Simulator application. See Task 2 in [Typical Workflow to Monitor a Simulated Vehicle](#)

1. Access the Oracle IoT Digital Twin Simulator application by navigating to the URL: <https://myiotcs.mydomain.oraclecloud.com/ds>. Replace myiotcs with your IoT instance name and mydomain.oraclecloud.com by the domain name of your instance.

2. Enter your Oracle Identity Cloud Service credentials and click **Sign In**.

The **Simulations** dashboard of the Oracle IoT Digital Twin Simulator application appears.

3. On the **Simulations** dashboard, click **Edit**  on the **Truck** simulator model.

The resulting page displays the attributes, device models, events, alerts, function, and images used in the simulator model.

 **Note:**

Do not modify the value of **Messaging Interval**.

4. Scroll down to the **Functions** section and identify the **yiLocations** function.
5. On the **Definition** text area of **yiLocations**, use the down-arrow key to move to its end. Before the closing square bracket, insert a comma, and enter your stop address within double quotation marks.

 **Note:**

- You can delete the existing addresses and enter as many stop addresses you want, in any order.
- Ensure that each address appears within double quotes and all the comma separated addresses are enclosed in square brackets. For example, `["address 1","address 2","address 3"]`.
- Separate each field of an address by a comma, such as, `"street,city,state,postal code,country"`. For example, `["4210 Network Cir, Santa Clara,95054,US","Winters Chapel Rd,Doraville,GA,30360, US","9 Murray Rose Avenue, Sydney Olympic Park, NSW, 2127, Australia"]`.

6. Scroll up or down, locate the **Save** button, and click **Save**.

You can view the new stop address values after you've added a device to the **Truck** simulator. To create a device, see Task 4 of [Typical Workflow to Monitor a Simulated Vehicle](#).

In the **Truck** simulator, for a device, click **View** .

On the **Controls** section, click the **Stop 1**, **Stop 2**, or **Stop 3** drop down, and view your new stop address in the list.

Start a Simulated Vehicle

Start the simulated device of the Truck simulator of the Oracle IoT Digital Twin Simulator application..

You should have created the Truck simulator and added a device to the Truck Simulator. See Task 2 and Task 4 in [Typical Workflow to Monitor a Simulated Vehicle](#)

1. Access the Oracle IoT Digital Twin Simulator application by navigating to the URL: <https://myiotcs.mydomain.oraclecloud.com/ds>. Replace myiotcs with your IoT instance name and mydomain.oraclecloud.com by the domain name of your instance.
2. Enter your Oracle Identity Cloud Service credentials and click **Sign In**.
The **Simulations** dashboard of the Oracle IoT Digital Twin Simulator application appears.
3. On the **Simulations** dashboard, click the **Truck** simulator model.
The resulting page displays a device added to the **Truck** simulator.
4. To edit the device details, click the device name.
The **Device Status** page is displayed.
5. In the **Device Monitoring** section, enable **Status** to **ON**.
6. In the **Controls** section, click the **Stop 1** drop-down, and select the starting stop of a trip.
7. Click **Stop 2** and select an intermediate stop. Similarly, select the destination of the trip in **Stop 3**. If there is no intermediate stop, then select the same value for **Stop 2** and **Stop 3**.
8. To start the simulated device, click **Drive to Destination**.
9. Click **Close** .
10. Ensure that the **Running** field of the device displays as **Running**.

Modify the Speed of a Simulated Vehicle

Customize the speed of a simulated device in the Truck simulator of the Oracle IoT Digital Twin Simulator application.

You should have created the Truck simulator, added a device to the Truck Simulator, and started the device. See Task 2 and Task 4 in [Typical Workflow to Monitor a Simulated Vehicle](#).

1. Access the Oracle IoT Digital Twin Simulator application by navigating to the URL: <https://myiotcs.mydomain.oraclecloud.com/ds>. Replace myiotcs with your IoT instance name and mydomain.oraclecloud.com by the domain name of your instance.
2. Enter your Oracle Identity Cloud Service credentials and click **Sign In**.
The **Simulations** dashboard of the Oracle IoT Digital Twin Simulator application appears.
3. On the **Simulations** dashboard, click the **Truck** simulator model.

The resulting page displays a device added to the **Truck** simulator.

4. To edit the device details, click the device name.
The **Device Status** page is displayed.
5. Ensure that the device's status is **ON**.
6. In the **Controls** section, to modify the speed of the simulated vehicle, use the **Speed** slide bar.
7. Click **Close** .

Typical Workflow to Monitor a Simulated Shipment

Create a Truck simulation model using the IoT Digital Twin Simulator application and then use the Truck simulation model to create simulated device instances. Start the simulator and its associated shipment, and then monitor the shipment on Oracle IoT Fleet Monitoring Cloud Service.

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

Simulated devices behave like real devices. You can control and monitor the devices in real time, turn them off and on, and configure the devices to generate alerts and events.

The simulated devices are linked, tracked, and monitored in Oracle IoT Fleet Monitoring Cloud Service, which allow you to test the application's capabilities and features.

Typically shipments data is imported from an external transportation management systems, such as Oracle Transportation Management Cloud Service. Without importing shipment data, you can create a simulated shipment and monitor it in Oracle IoT Fleet Monitoring Cloud Service. Use REST APIs to create and start a simulated shipment.

Task	Description	More Information
Access the IoT Digital Twin Simulator Dashboard	The IoT Digital Twin Simulator Dashboard provides a set of defined existing simulation models, and the statuses of the simulated devices associated with these models. Use the dashboard to create a Truck simulator model.	Access the IoT Digital Twin Simulator Dashboard
Create the Truck Simulator Model	From the Oracle IoT Digital Twin Simulator application, you add a predefined Truck simulator model.	Add a Predefined Simulation Model in Oracle IoT Digital Twin Simulator
Modify Stop Addresses	Start the simulated device of the Truck simulator and modify the vehicle's start and stop addresses.	Modify Stop Addresses

Task	Description	More Information
Add a Device to the Truck Simulator Model	To the Truck simulator model, you add a simulated device. It has attributes, alerts, and events, which you can customize.	Create a Simulated Device in IoT Device Simulator
Add the Required Device Model to Oracle IoT Fleet Monitoring Application	After starting the simulated device of the Truck simulator, the urn:com:oracle:iot:device:obd2 device model gets added to the IoT platform. From the Oracle IoT Platform UI, select Oracle IoT Fleet Monitoring Cloud Service and add that device model to the application.	Assign a Device Model
Create the Required Vehicle Type to Oracle IoT Fleet Monitoring Cloud Service	Add a vehicle type using the urn:com:oracle:iot:device:obd2 device model in Oracle IoT Fleet Monitoring Cloud Service.	Create a Vehicle Type
Create the Vehicle to Oracle IoT Fleet Monitoring Cloud Service	Add a vehicle using the vehicle type in Oracle IoT Fleet Monitoring Cloud Service.	Create a Vehicle
Link the Vehicle's Sensor Attributes to the Simulated Device	Link the vehicle's sensor attributes in Oracle IoT Fleet Monitoring Cloud Service with the attributes of the simulated device of the Truck simulator.	Edit Vehicle Details and Device Sensor Attributes
Start the Simulated Vehicle	Enable the simulated device of the Truck simulator, assign stop addresses, and start it.	Start a Simulated Vehicle
Monitor the Vehicle the Map View	Monitor the vehicle whose sensors are connected to the simulated device, on the map view of Oracle IoT Fleet Monitoring Cloud Service.	Locate Your Vehicles in the Fleet Map
Create a User With a Driver Role	Before you create and start a shipment, you need to create an user with a driver role and add the user to the organization of Oracle IoT Fleet Monitoring Cloud Service.	Create a New User Assign Users to an Organization
Create and Start a Simulated Shipment	To produce shipment data, invoke specific REST APIs to create a simulated shipment and start it.	Create Shipment Start a Shipment
Monitor the Simulated Shipment	Track the simulated shipment on the map view and monitor the shipment details.	View Shipment Route Details View Shipment Details

Monitor Shipments and Facilities

Use the shipments map view and info view to get real-time insights into your shipments in transit. Shipment monitoring can help you lower supply chain costs and reduce customer attrition by identifying risks, problems, and delays early. An user with the shipper role can view shipment information. Use the facilities map view to obtain real-time information about the loads checked in, checked out, docked, and expected.

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

After configuring an integration with Oracle Transportation Management Cloud Service, shipment data gets imported to Oracle IoT Fleet Monitoring Cloud Service, which you can view, track, and monitor from the **Design Center**. Use the KPI ribbon at the bottom of the shipments map view to view shipment metrics including active shipments, incidents, untraceable shipments, delayed shipments, and transportation costs. The shipments KPI dashboard lets you monitor shipment metrics and the shipments dashboard provides you cumulative analytics data of shipments. The shipments info view and map view helps you to keep customers aware of any potential delays and you always know where their packages are and when they will be delivered.

After configuring an integration with Oracle Warehouse Management Cloud Service and importing facilities into Oracle IoT Fleet Monitoring Cloud Service, you can view and monitor facilities, its KPIs, and metrics from the **Design Center**.

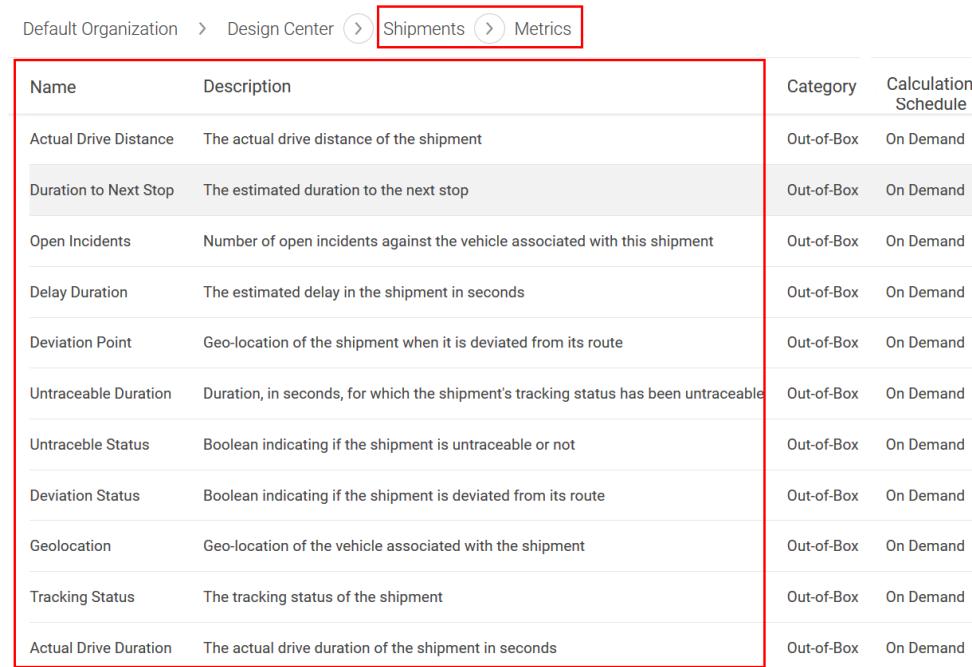
View All Shipment Metrics

You can view all the in-built and user-defined metrics for shipments of an organization from **Design Center**. The **Edit** (Duplicate (Delete (

The in-built metrics and the custom metrics are categorized as out-of-box and user-defined respectively.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. Click **Shipments** and then click **Metrics** (- 3. From the metrics list, review the **Description** field of each metric to understand their purpose and usability.

The shipment metrics are displayed in a table with four fields including **Name**, **Description**, **Category**, and **Calculation Schedule**.



The screenshot shows a ribbon with tabs: Default Organization, Design Center, Shipment Metrics (highlighted with a red box), and Metrics. Below the ribbon is a table with 11 rows, each representing a shipment metric with columns for Name, Description, Category, and Calculation Schedule.

Name	Description	Category	Calculation Schedule
Actual Drive Distance	The actual drive distance of the shipment	Out-of-Box	On Demand
Duration to Next Stop	The estimated duration to the next stop	Out-of-Box	On Demand
Open Incidents	Number of open incidents against the vehicle associated with this shipment	Out-of-Box	On Demand
Delay Duration	The estimated delay in the shipment in seconds	Out-of-Box	On Demand
Deviation Point	Geo-location of the shipment when it is deviated from its route	Out-of-Box	On Demand
Untraceable Duration	Duration, in seconds, for which the shipment's tracking status has been untraceable	Out-of-Box	On Demand
Untraceable Status	Boolean indicating if the shipment is untraceable or not	Out-of-Box	On Demand
Deviation Status	Boolean indicating if the shipment is deviated from its route	Out-of-Box	On Demand
Geolocation	Geo-location of the vehicle associated with the shipment	Out-of-Box	On Demand
Tracking Status	The tracking status of the shipment	Out-of-Box	On Demand
Actual Drive Duration	The actual drive duration of the shipment in seconds	Out-of-Box	On Demand

4. Use the drop downs in the breadcrumbs area to move to a specific design center option or shipments page.
5. (Optional) Click the **Menu** (≡) icon to view the **Design Center** options.

Use the Shipments Metrics Ribbon

Shipment metrics are appears in a ribbon at the bottom of the shipments map view. Use the metrics ribbon to quickly locate shipments of the current organization and view shipment metrics including active shipments, incidents, untraceable shipments, delayed shipments, and transportation costs. Shipper (IoTFMShipper) permissions are required to view the shipment map view.

You should be at the **Operation Center** of the current organization.

1. From the **Operation Center** menu options, click **Shipments Map** ().
2. Select one of these options on the **Shipment Metrics** ribbon:
 - **Total**: Select this option to display the number of active shipments of the current organization in the selected view. The numeric value indicates the number of shipments in the current view. When map magnification is low, shipments in the same geographic location are grouped in clusters with the number of shipments displayed within an icon.
 - **Incidents**: Select this option to display the number of reported shipment incidents of the current organization in the selected view.
 - **Untraceable**: Select this option to display the number of shipments of the current organization that have not received a location update for an hour or longer.

- **Delayed:** Select this option to display the number of delayed shipments of the current organization in the selected view.
- **Transportation Cost:** Select this option to display the transportation costs for all shipments of the current organization in the selected view.

Add a KPI to the Shipment Metrics Ribbon

Add a new shipment key performance indicator (KPI) to the shipment metrics ribbon at the bottom of the shipments map view of the current organization to monitor shipment KPI data that is important to your business. Shipper (IoTFMShipper) permissions are required to view the shipments map view.

You can modify the KPI bar or the metrics ribbon of the shipments map view of the current organization from the **Design Center** of the organization.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, to add a metric on the existing **Shipment Metrics** group, click **Add New Gadget** () .
4. On **Create Dashboard Item**, select **Metrics** or **Sensor Attributes** in the **Type** list.
5. Select a metric or a sensor attribute n the **Metric** list.

Based on your selection of the metric, its unit of measurement is displayed on **Unit** .

6. Select an aggregation value in the **Aggregation** list.

This field is only active for KPIs displaying an aggregate value. An aggregate value is created by an aggregate function that groups multiple values together to form a single value.

7. (Optional) Select a color for the KPI in the **Color** list.
8. Enter a display name in the **Label** text box.
9. Click **Create**.

Your KPI appears on the **Edit KPI Bar** page.

10. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

11. (Optional) Click **Back** to return to the organization page.

Create a Custom Metrics Ribbon in the Shipment Map View

Metrics ribbons in the map view display key performance indicator (KPI) shipment data. Create a custom metrics ribbon to display KPI shipment data that is specific to your business needs.

You can add a metrics group to the metrics ribbon of the shipments map view of the current organization from the **Design Center** of the organization.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** () to edit it.

3. On the **Edit KPI Bar** page, to add a new group beside the **Shipment Metrics** group, click **Add Metric Group** (⊕) that appears beside the **Add New Gadget** icon .
4. Enter a name for the metrics ribbon.
A new group is created where you can add new KPIs or sensor attributes by using its **Add New Gadget** icon.
5. Click **Save**.
6. On the **Edit KPI Bar** page, click **Save**.
You'll receive a **Save Successful** message.
7. (Optional) Click **Back** to return to the organization page.

In the **Operation Center**, **Shipment Map** view, the metrics ribbon or the KPI bar displays the new metric group beside the **Shipment Metrics** group.

Rearrange KPI Data in the Shipment Map View

Rearrange the order and location of sensor and KPI data on the metrics ribbon at the bottom of the map view to meet your specific requirements.

1. Click **Menu** (≡), click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** (⊕) to edit it.
3. On the **Edit KPI Bar** page, select one of these options:
 - a. Click and hold **Drag** (⊖) in the top right of a KPI and then drag the KPI to a new location on the same group.
 - b. Click and hold **Drag** (⊖) in the top right of a KPI and then drag the KPI to a new location on a different group.
 - c. Click and hold **Drag** (⊖) in the top right of a group and then drag the entire group to a new location.
4. On the **Edit KPI Bar** page, click **Save**.
You'll receive a **Save Successful** message.
5. (Optional) Click **Back** to return to the organization page.

Edit an Existing KPI in the Shipment Map View

Edit KPI data currently displayed in the metrics ribbons at the bottom of the shipment map view to change or edit the information that is displayed. For example, you can change the display color of the KPI data.

1. Click **Menu** (≡), click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** (⊕) to edit it.
3. On the **Edit KPI Bar** page, select a KPI and click **Edit** (✎) and then edit the settings for the KPI.
4. Click **Update**.

5. Click **Save**.

You'll receive a **Save Successful** message.

6. (Optional) Click **Back** to return to the organization page..

Remove a KPI from a Shipment Map View Ribbon

Remove a KPI from a metrics ribbon at the bottom of the shipment map view when it is no longer required.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, choose the KPI and click **Delete** ()
4. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

5. (Optional) Click **Back** to return to the organization page.

Remove a KPI Group from the Metrics Ribbon

Remove a metrics group from the shipment map view's metrics ribbon when it is no longer required.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **SHIPMENT KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, click **Delete** () for the metrics group you want to remove from the map view.
4. On the **Confirm Delete** dialog box, click **Delete**.
5. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

6. (Optional) Click **Back** to return to the organization page.

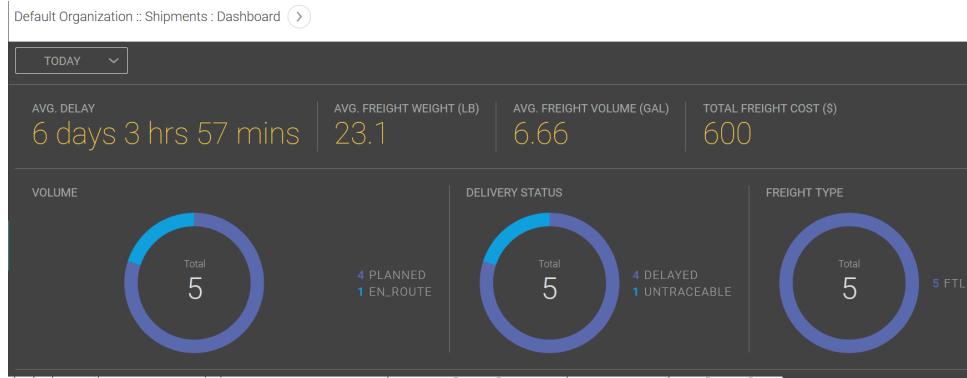
View the Shipments Dashboard

View the shipments dashboard to quickly determine shipment performance for the current day or the previous seven days. The key performance indicators (KPIs) displayed on the dashboard include average delay, average freight weight, average freight volume, total freight cost, total number of completed shipments, freight type, and delivery status of the shipments in the current organization. Additionally, the dashboard displays cumulative graphical data of carriers' plan versus actual by delivery time and by total distance. The carriers' deviation percentage by distance is also displayed.

The administrator or an integrator should have configured an integration with Oracle Transportation Management Cloud Service and the assigned drivers should have started the imported shipments. You should be on the **Operation Center** view of the current organization.

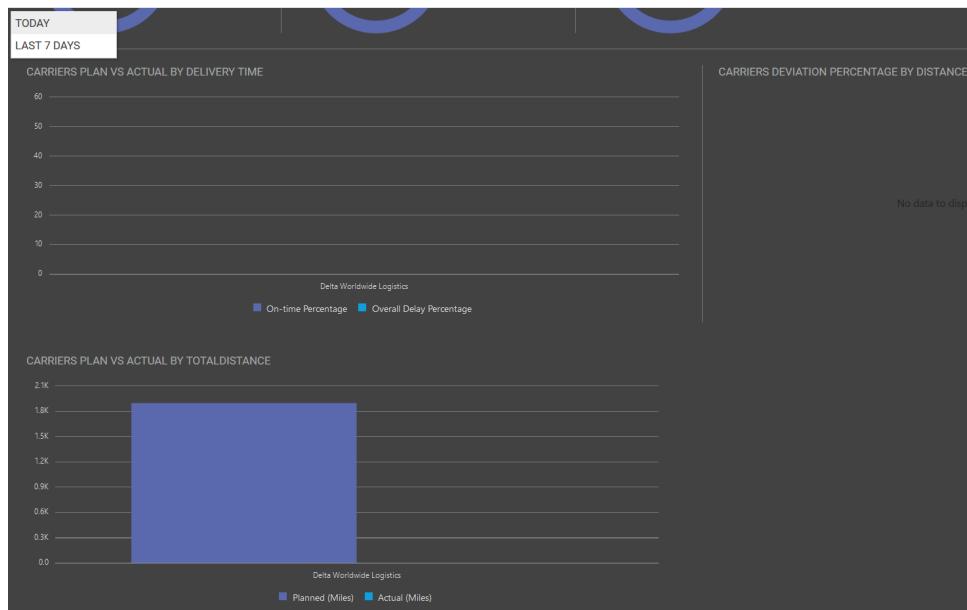
1. From the **Operation Center** menu options, click **Shipments: Dashboard** 

The performance metrics are displayed on the dashboard.



2. (Optional) To display data for the previous seven days, click **Today** and then select **LAST 7 DAYS**. Scroll down to view the remaining performance metrics.

Cumulative data is displayed in a graph.



View Shipment Details for All Shipments

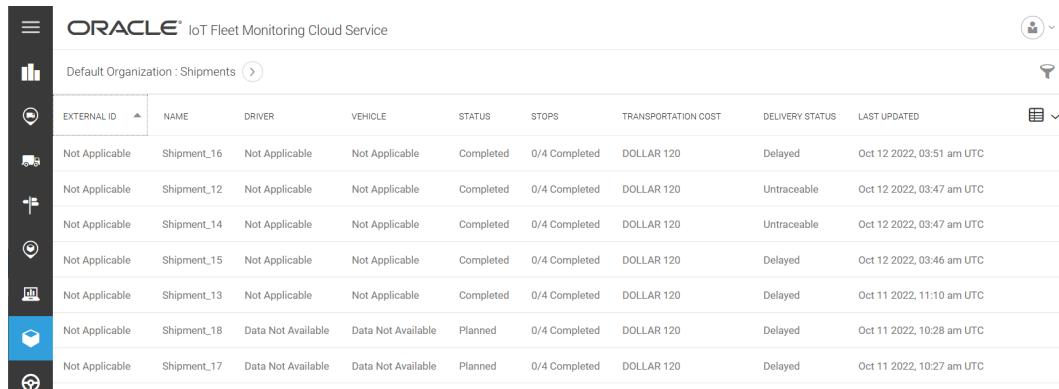
View the Shipments dashboard to quickly determine the status of all shipments, including the distance traveled, delays, transportation cost, and the driver assigned to the shipment. Shipper (IoTFMShipper) permissions are required to view shipment details.

View the details of all the shipments imported from Oracle Transportation Management Cloud Service from the **Operation Center** of the current organization.

1. From the **Operation Center** menu options, click **Shipments** (✉).

The **Shipments** page displays the details such as assigned driver name, vehicle number, number of stops completed, status, transportation cost, delivery status,

and so on.



EXTERNAL ID	NAME	DRIVER	VEHICLE	STATUS	STOPS	TRANSPORTATION COST	DELIVERY STATUS	LAST UPDATED	grid icon
Not Applicable	Shipment_16	Not Applicable	Not Applicable	Completed	0/4 Completed	DOLLAR 120	Delayed	Oct 12 2022, 03:51 am UTC	
Not Applicable	Shipment_12	Not Applicable	Not Applicable	Completed	0/4 Completed	DOLLAR 120	Untraceable	Oct 12 2022, 03:47 am UTC	
Not Applicable	Shipment_14	Not Applicable	Not Applicable	Completed	0/4 Completed	DOLLAR 120	Untraceable	Oct 12 2022, 03:47 am UTC	
Not Applicable	Shipment_15	Not Applicable	Not Applicable	Completed	0/4 Completed	DOLLAR 120	Delayed	Oct 12 2022, 03:46 am UTC	
Not Applicable	Shipment_13	Not Applicable	Not Applicable	Completed	0/4 Completed	DOLLAR 120	Delayed	Oct 11 2022, 11:10 am UTC	
Not Applicable	Shipment_18	Data Not Available	Data Not Available	Planned	0/4 Completed	DOLLAR 120	Delayed	Oct 11 2022, 10:28 am UTC	
Not Applicable	Shipment_17	Data Not Available	Data Not Available	Planned	0/4 Completed	DOLLAR 120	Delayed	Oct 11 2022, 10:27 am UTC	

2. To search for shipments that match a criteria, click **Filter** ().
The **Filter** dialog is displayed.
3. From the Filters dropdown list, select one of the values such as Name, Domain Name, External ID, Driver Name, and so on.
4. From the secondary options, select a suitable operator such as **contains**, **matches**, **does not contain**, **starts with**, **does not match**, **is**, and **is not**.
5. Enter the search term in the adjacent field.
The shipments that match your filter criteria are listed.
6. Review the details of the filtered shipments. Click **Clear Filter** to remove the search criteria.

View Shipment Details

View shipment details of a specific shipment, including the distance traveled, delays, transportation cost, the driver assigned to the shipment, vehicle number, carrier name, address of each stop, the estimated time of arrival and departure at each stop, and number of stops completed. Shipper (IoTFSShipper) permissions are required to view shipment details.

View the detailed information about a specific shipment from the **Shipments** option in the **Operation Center**.

1. From the **Operation Center** menu options, click **Shipments** ().
The **Shipments** page displays the details including assigned driver name, vehicle number, number of stops completed, status, transportation cost, and delivery status.
2. To view details of a specific shipment, select a shipment and then click **View** ().
The info view of the shipment displays the details including delivery status, planned ETA, planned trip distance, transportation cost, stops completed, expected ETA, actual trip distance, last updated time, the carrier name, vehicle number and the driver name. It also

displays the address of the stops, their estimated arrival and departure time.

The screenshot shows the Oracle IoT Fleet Monitoring Cloud Service interface. At the top, it says 'Default Organization 03269 :: info'. Below that, there are several status indicators: a warning icon for 'DELIVERY STATUS: DELAYED' (1 hr 30 mins), a clock icon for 'PLANNED ETA: JUL 23 2008 03:30 pm EST', a person icon for 'PLANNED TRIP DISTANCE 0 Miles', and a dollar sign icon for 'TRANSPORTATION COST (\$) 579.3'. There are also icons for 'STOP COMPLETED 0/2', 'EXPECTED ETA: JUL 23 2008 03:00 pm EST', 'ACTUAL TRIP DISTANCE Data Not Available', and 'LAST UPDATED: JAN 14 2020 02:21 am EST'. Below these, there are two boxes: 'PICKUP' (36 GREENTREE ROAD, PITTSBURGH, USA, 15122, ESTIMATED ARRIVAL: JUL 18 2008 4:49 pm EDT (+1 hr 30 mins), ESTIMATED DEPARTURE: JUL 18 2008 4:49 pm EDT (+1 hr 30 mins)) and 'DROP' (615 5TH AVE, WHITE PLAINS, USA, 10601, ESTIMATED ARRIVAL: JUL 22 2008 3:00 pm EDT (0 mins)). At the bottom, there are tabs for '#ORDERS 1', 'CARRIER NAME NPME', 'VEHICLE', and 'DRIVER NAME'.

3. (Optional) Click **Map** (📍) to view the shipment route in a map view.
4. (Optional) Click **Incidents** (⚠️) to view incidents associated with the shipment.
5. (Optional) Click the organization name on the breadcrumb details to return to the default view of the organization's **Operation Center**.

View Shipment Route Details

Use the shipment map option to view the route for a specific shipment. Shipper (IoTFSShipper) permissions are required to view the shipment map view.

Go to the map view from the detailed information page of a specific shipment from the **Shipments** view in the **Operation Center**.

1. From the **Operation Center** menu options, click **Shipments** (📦) .

The **Shipments** page displays the details including assigned driver name, vehicle number, number of stops completed, status, transportation cost, and delivery status.

2. To view details of a specific shipment, select a shipment and then click **View** (👁️).

The detailed information of the shipment is displayed.

3. On the left menu bar, click **Map** (📍).

The **Map** view of the shipment displays the route, the current location, the pickup, and drop locations of the shipment. Use these icons to search and determine other details on the map:



- The **zoomIn** and **zoomOut** (📍) icons to magnify in or out of an area
- The **Map Options** (📍) icon to enable or disable the display of geofences and system-created route-fences, and stop-fences. You can effectively monitor the

shipment for location pings received within the stop geo-fences, which helps in accurate detection of arrivals and departure events.

- The **Search Geofence** (🔍) icon to enter a specific geofence and determine its location

4. (Optional) Click **Info** (ⓘ) to return to the detailed view of the shipment.
5. (Optional) Click the organization name on the breadcrumb area to return to the **Shipment** page of the **Operation Center**.

View Shipment Incidents

Use the shipment incidents option to view incidents reported for a specific shipment.

Go to the incidents view on the detailed information page of a specific shipment from the **Shipments** view in the **Operation Center**.

1. From the **Operation Center** menu options, click **Shipments** (📦) .
The **Shipments** page displays the details including assigned driver name, vehicle number, number of stops completed, status, transportation cost, and delivery status.
2. To view details of a specific shipment, select a shipment and then click **View** (👁️).
The detailed information of the shipment is displayed.
3. On the left menu bar, click **Incidents** (⚠️).
The list of incidents raised for the shipment is displayed.
4. (Optional) To filter the incidents list, click a pie chart segment or use a search filter:
 - a. Click **Filter** (🔍). In **Select Filter**
 - b. Select **Show All**, **Status**, **Priority**, **Type**, **Description**, or **Creation Time**.
 - c. Select **is** to search for incidents matching the criteria, or select **is not** to search for incidents that do not match the search criteria.
 - d. Select additional search parameters in **Select Search Criteria**.
 - e. (Optional) Click **Add** (➕) or **Remove** (➖) to add or remove search filters.
5. (Optional) Click **Back to Map** to return to the shipment map view.

Search for Shipments in the Map View

Use the filter function in the shipments map view to determine the physical location of a shipment of the current organization.

You should be in the **Operation Center** area of the current organization.

1. From the **Operation Center** menu options, click **Shipments Map** (gMaps) .
2. On the right, above the zoom controls, click the **Filter** (🔍) icon to open the Filters dialog.
3. From the Filters dropdown list, select one of these search options:

- **Shipment Name:** Select this option to search for a shipment by its name.
- **Domain Name:** Select this option to search for a shipment that is imported from a specific domain name in Oracle Transportation Management Cloud .
- **External ID:** Select this option to search for a shipment with a specific external name.
- **Shipment Status:** Select this option to search for a shipment with a specific status.
- **Vehicle Registration No:** Select this option to search for a shipment assigned to a vehicle with a specific vehicle registration number.
- **Driver Name:** Select this option to search for a shipment assigned to a specific driver.
- **Delivery Status:** Select this option to search for a shipment with a specific delivery status.
- **Freight Type:** Select this option to search for a shipment that matches a specific freight type

4. From the secondary options, select a suitable operator such as **contains**, **matches**, **does not contain**, **starts with**, **is**, and **is not**.

5. Enter the search term in the adjacent field.

6. (Optional) To add an additional search condition, click the **Add** (+) icon. For example, search for a shipment in a specific location.

7. (Optional) To remove search conditions, click the **Remove** (-) icon.

The shipment that matches your search criteria appears on the map. You can use



the zoom controls (-) to view the exact location of the shipment and then click **View** (oculars) beside the shipment to determine its details.

Create a Shipment Rule

Create a rule to generate an incident or alert when a shipment meets or exceeds a set threshold.

In a rule, you select an incident when an action is needed post the notification and select an alert when a notification needs to be sent for information purpose only.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. Click **Shipments** and then click **Rules** (book).
3. Click **Create New Rule** (+).
4. Enter a name for the rule in the **Name** field.
5. Select one of these options in the **Apply To** list:
 - **All Shipments:** Select this option to apply the rule to all vehicles.
 - **Specific Shipments:** Select this option and then select the specific shipment to which the rule should apply.

6. Select the rule condition(s) in the **Condition** area:
 - **Alert**: Select this option to generate an alert when the specified conditions are met or exceeded.
 - **Location**: Select this option to generate an incident notification when a shipment enters or leaves a geofence. To create a new geofence, see [Create a New Geofence](#).
 - **Attribute**: Select an attribute to generate an alert or incident notification.
7. (Optional) Select additional conditions.
8. Select these options in the **Fulfillment** area:
 - **All Conditions Apply**: Select this option to generate an incident report when all of the conditions are met or exceeded. or select **Any Conditions Apply** to generate an incident report when any of the conditions are met or exceeded.
 - **Any Conditions Apply**: Select this option to generate an incident report when any of the conditions are met or exceeded.
 - **Incident**: Select this option to generate an incident notification when the specified conditions are met or exceeded.
 - **Alert**: Select this option to generate an alert when the specified conditions are met or exceeded.
9. If you selected **Incident** in the **Fulfillment** area, complete these fields in the **Incident Details** area:
 - **Summary**: Enter a summary that describes the rule.
 - **Type**: Select the rule type.
 - **Priority**: Select an optional priority for the rule.
 - **Tags**: Enter optional tags for the rule.
 - **Description**: Enter an optional description for the rule.
10. (Optional) If you selected **Incident** in the **Fulfillment** area, select subscriber(s) in the **Subscribers** list in the **Notification Subscription** area.

When you add a subscriber, the subscriber receives an SMS incident notification on their mobile device when the rule conditions are met or exceeded.
11. If you selected **Alert** in the **Fulfillment** area, complete these fields in the **Alert Details** area:
 - **Summary**: Enter a summary that describes the rule.
 - **Severity**: Select an optional priority for the rule.
 - **Type**: Select the severity for generating the alert.
 - **Suppression Period**: Select the time in minutes to suppress the alert.
12. (Optional) If you selected **Alert** in the **Fulfillment** area, select the data to include with the alert notification:
 - **Source Attributes**: Select this option to include the source attributes with the alert message.
 - **Context Information**: Select this option to include context information with the alert message.

- **Message Payload:** Select this option to include the message that generated the rule with the alert message.

13. Select a **Rule Schedule**.

14. For the **Custom**, rule schedule, select these options:

- **Repeat Weekly:** The rule will be triggered once every week
- **Repeat Monthly:** The rule will be triggered once every month
- Select cells or drag over the rows to define a data window for the weekly or monthly rule schedule. The rule will use the selected day to trigger and the time range for metric data.

15. Click **Save**.

16. Click **Back** to return to the **Rules** list.

You can view the incidents or alerts generated by a rule from the **Incidents** and **Alerts** options in **Operation Center**.

View All Facilities

View all the facilities from the operation center to quickly determine the average waiting time and average loading time of all facilities.

View the details of all the facilities imported from Oracle Warehouse Management Cloud Service from the **Operation Center** of the current organization.

1. From the **Operation Center** menu options, click **Facilities** (



The **Facilities** page displays the details including average loading time in the last 24 hours and average waiting time in the last 24 hours.

- 2.** To search for facilities that match a criteria, click **Filter** (
- 3.** From the Filter dropdown, select one of the options such as **Name**, **Average Loading Time Last 24 Hours**, and **Average Waiting Time Last 24 Hours**.
- 4.** From the secondary options, select a suitable operator such as **contains**, **matches**, or **does not contain**.
- 5.** Enter the search term in the adjacent field and then click **Apply**.
- 6.** Review the details of the filtered shipments. Click **Clear Filter** to remove the search criteria.

View Facility Details

View details of a specific facility including live metrics on number of loads docked, number of loads in yard, average waiting time, loads expected, checked-in, and checked out in the last twenty four hours. View the geofence of the facility on the map and view a list of the loads and their details.

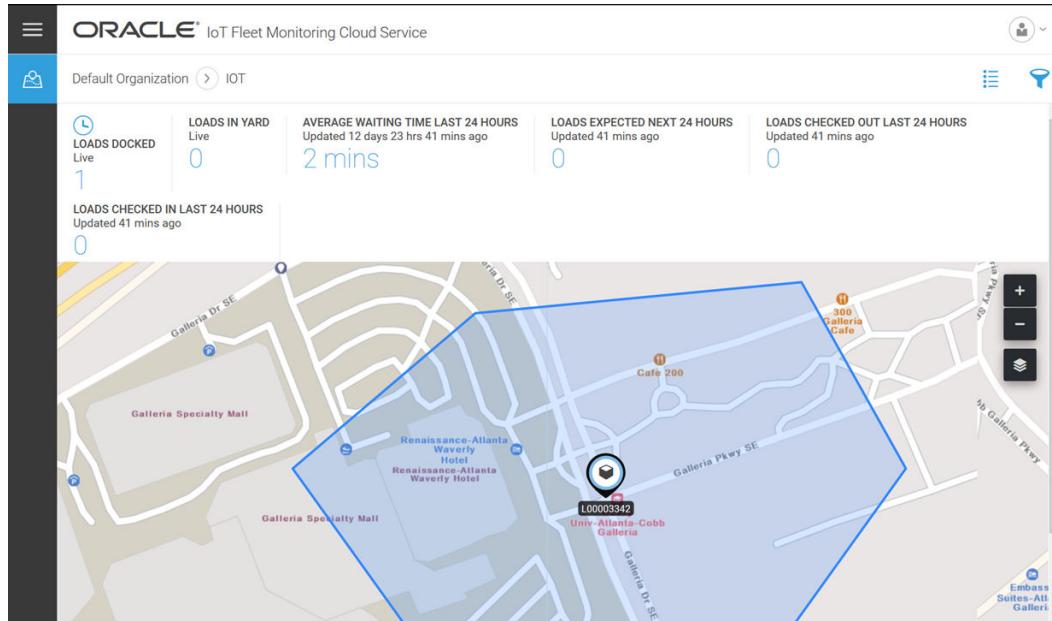
View metrics of a specific facility, its geofence on the map, and its load details in a list from the **Facilities** option in the **Operation Center**.

1. From the **Operation Center** menu options, click **Facilities** (

The **Facilities** page displays all the facilities imported into the organization from Oracle Warehouse Management Cloud Service.

- To view details of a specific facility, select a facility and then click **View** (ocular icon).

The map view displays the facility in its geofence. Live and cumulative facility metrics that are displayed are; loads docked, loads in yard, loads expected next twenty four hours, average waiting time, loads checked-in, and loads checked-out in last twenty four hours.



- (Optional) Click **List View** (grid icon) to view the list of loads and their details. The loads are mapped to the shipments imported from Oracle Transportation Management Cloud Service

The list view page displays the load number, status, shipment ID, appointment time, checked-in time, and checked-out time.

- To search for loads that match a criteria, click **Filter** (magnifying glass icon).
- On the **Filter** dialog box, select a value in **Search Filter**
- From the secondary options, select a suitable operator such as **contains**, **matches**, **does not contain**, and so on.
- (Optional) Click the **Add** (+) icon to add an additional search condition. For example, search for a shipment in a specific location.
- (Optional) Click the **Remove** (minus) icon to remove search conditions.
- On the **Filter** dialog box, click **Apply**. Review the details of the filtered loads.
- Click **Filter** (magnifying glass icon), click **Clear Filter**, and then click **Apply** to remove the search criteria.
- (Optional) Click the organization name on the breadcrumb details to return to the default view of the organization's **Operation Center**.

Monitor Fleet and Trip Metrics in the Fleet Map View

Use the fleet map view and in-built business dashboards to track your fleet — availability, active trips, fuel costs, utilization, speed violations, and more — at a single glance.

The fleet map view lets you quickly know the status and location of fleet vehicles. The trip metrics ribbon at the bottom of the map view displays trip metrics including active trips, fuel costs, and driver violations.

With real-time information about the vehicle route and performance, you can improve service levels and comply with industry regulations. Constantly updated and reliable shipment information significantly improves customer satisfaction.

Use the Fleet and Trip Metrics Ribbon

Fleet and trip metrics are displayed in a ribbon at the bottom of the fleet map view. Use the metrics ribbon to quickly locate vehicles and view trip metrics including active trips, vehicle utilization, fuel costs, and violations.

You should be in the **Operation Center** of your organization..

1. From the **Operation Center** menu options, click **Fleet Map** ().
2. Select one of these options on the **Fleet Metrics** tab:
 - **Total Vehicles:** This displays the number of vehicles in the visible map view. The numeric value indicates the number of vehicles in the current view. When map magnification is low, vehicles in the same geographic location are grouped in clusters with the number of vehicles displayed within an icon.
 - **% Availability Status:** Select this option to display the percentage of vehicles that are currently available in the selected view and are not down with maintenance.
 - **% Utilization Status:** Select this option to display the percentage of vehicles that are currently utilized in active Trips or Shipments in the selected view.
 - **Open Incidents:** Select this option to display the percentage of incidents in the selected view.
3. Select one of these options on the **Active Trips** tab:
 - **Active Trips:** Select this option to display the number of active trips in the selected view.
 - **Consumed Fuel Cost:** Select this option to display the fuel costs for vehicles in the selected view.
 - **Alerts:** Select this option to display vehicle and driver alerts in the selected view.

Add a KPI to the Fleet and Trip Metrics Ribbon

Add a new fleet or trip key performance indicator (KPI) to the fleet and trip metrics ribbon at the bottom of the fleet map view to monitor vehicle, trip, or driver KPI data that is important to your business.

To view the KPI data that you can display on the fleet and trip metrics ribbon, see [View the KPI List](#). To create a custom KPI, see [Create a Formula-Based Custom KPI](#).

You can modify the KPI bar or the metrics ribbon of the fleet map view of the current organization from the **Design Center** of the organization.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **Fleet KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, click **Add New Gadget** (+) on the existing **Fleet Metrics** group or the **Trip Metrics** group .
4. On **Create Dashboard Item**, select **Metrics** in the **Type** list.
5. Select a metric in the **Metric** list.

Click [View the KPI List](#) to determine the name and description of all the metrics or KPIs in the current organization.

Based on your selection of the metric, its unit of measurement is displayed on **Unit**.

6. Select an aggregation value in the **Aggregation** list.

This field is only active for KPIs displaying an aggregate value. An aggregate value is created by an aggregate function that groups multiple values together to form a single value.

7. (Optional) Select a color for the KPI in the **Color** list.
8. Enter a display name in the **Label** text box.
9. Click **Create**.

Your KPI appears on the **Edit KPI Bar** page.

10. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

11. (Optional) Click **Back** to return to the organization page.

Add Sensor Data to the Fleet and Trip Metrics Ribbon

Add sensor data to the fleet and trip metrics ribbon at the bottom of the fleet map view to monitor vehicle, trip, or driver sensor data that is important to your business.

You can modify the KPI bar or the metrics ribbon of the fleet map view of the current organization from the **Design Center** of the organization.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **Fleet KPI BAR** () to edit it.

3. On the **Edit KPI Bar** page, click **Add New Gadget** (+) on the existing **Fleet Metrics** group or the **Trip Metrics** group .

4. On **Create Dashboard Item**, select **Sensor Attributes** in the **Type** list.

5. Select a metric in the **Sensor Attribute** list.

Based on your selection of the attribute, its unit of measurement is displayed on **Unit**.

6. Select an aggregation value in the **Aggregation** list.

This field is only active for the sensor attributes displaying an aggregate value. An aggregate value is created by an aggregate function that groups multiple values together to form a single value.

7. (Optional) Select a color for the attribute in the **Color** list.

8. Enter a display name in the **Label** text box.

9. Click **Create**.

Your sensor attribute appears on the **Edit KPI Bar** page.

10. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

11. (Optional) Click **Back** to return to the organization page.

Create a Custom Metrics Ribbon in the Fleet Map View

Metrics ribbons in the fleet map view display key performance indicator (KPI) and sensor data for your fleet. Create a custom metrics ribbon to display sensor and KPI data that is specific to your business needs.

You can add a metrics group to the metrics ribbon of the shipments map view of the current organization from the **Design Center** of the organization.

1. Click **Menu** (≡), click **Design Center** and then, click **Organization**.

2. On the **Organization** page, click **FLEET KPI BAR** (+) to edit it.

3. On the **Edit KPI Bar** page, to add a new group beside the **Shipment Metrics** group, click **Add Metric Group** (+) that appears beside the **Add New Gadget** icon .

4. Enter a name for the metrics ribbon.

A new group is created where you can add new KPIs or sensor attributes by using its **Add New Gadget** icon.

5. Click **Save**.

6. On the **Edit KPI Bar** page, click **Save**.

You'll receive a **Save Successful** message.

7. (Optional) Click **Back** to return to the organization page.

In the **Operation Center**, **Fleet Map** view, the metrics ribbon or the KPI bar displays the new metric group beside the **Trip Metrics** group.

Rearrange Sensor and KPI Data in the Fleet Map View

Rearrange the order and location of sensor and KPI data and metrics ribbons at the bottom of the fleet map view to meet your specific requirements.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **Fleet KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, select one of these options:
 - a. Click and hold **Drag** () in the top right of a KPI and then drag the KPI to a new location on the same group.
 - b. Click and hold **Drag** () in the top right of a KPI and then drag the KPI to a new location on a different group.
 - c. Click and hold **Drag** () in the top right of a group and then drag the entire group to a new location.
4. On the **Edit KPI Bar** page, click **Save**.
You'll receive a **Save Successful** message.
5. (Optional) Click **Back** to return to the organization page.

Edit Existing Sensor or KPI Data in the Fleet Map View

Edit sensor and KPI data currently displayed in the metrics ribbons at the bottom of the fleet map view to change or edit the information that is displayed. For example, you can change a KPI to a sensor value or change the display color of the sensor or KPI data.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **FLEET KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, select a KPI and click **Edit** () and then edit the settings for the KPI.
4. Click **Update**.
5. Click **Save**.
You'll receive a **Save Successful** message.
6. (Optional) Click **Back** to return to the organization page..

Remove Existing Sensor or KPI Data from a Fleet Map View Ribbon

Remove sensor and KPI data from a metrics ribbon at the bottom of the fleet map view when it is no longer required.

1. Click **Menu (≡)**, click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **FLEET KPI BAR** () to edit it.

3. On the **Edit KPI Bar** page, choose the KPI and click **Delete** ()
4. On the **Edit KPI Bar** page, click **Save**.
You'll receive a **Save Successful** message.
5. (Optional) Click **Back** to return to the organization page.

Remove a Metrics Ribbon from the Fleet Map View

Remove a metrics ribbon from the fleet map view when it is no longer required.

1. Click **Menu** (≡), click **Design Center** and then, click **Organization**.
2. On the **Organization** page, click **FLEET KPI BAR** () to edit it.
3. On the **Edit KPI Bar** page, click **Delete** () for the metrics group you want to remove from the map view.
4. On the **Confirm Delete** dialog box, click **Delete**.
5. On the **Edit KPI Bar** page, click **Save**.
You'll receive a **Save Successful** message.
6. (Optional) Click **Back** to return to the organization page.

Search for Vehicles and Drivers in the Fleet Map View

Use the filter function of the fleet map view to determine the physical location of a vehicle or a driver.

You should be in the **Operation Center** area of the current organization.

1. From the **Operation Center** menu options, click **Fleet Map** ().
2. On the right, above the zoom controls, click the **Filter** () icon.
3. Click **Search Filter** and select one of these search options in the list:
 - **Vehicle Name**: Select this option to search for a vehicle by its name.
 - **Vehicle Status**: Select this option to search for vehicles that have a specific status.
 - **Vehicle Type**: Select this option to search for vehicles that are of a specific vehicle type.
 - **Vehicle Location**: Select this option to search for vehicles in or out of a specific geofence.
 - **Driver Name**: Select this option to search for a vehicle assigned to a specific driver.
 - **Driver Status**: Select this option to search for drivers with a specific status.
4. Select one of these secondary options:
 - **contains**: Select this option to search for vehicles or drivers containing the search term exactly or partially in the beginning of any of the words in the field and in the same sequence.
 - **matches**: Select this option to perform a case-sensitive search for vehicles or drivers containing the exact search terms in the same sequence.

- **does not contain:** Select this option to search for vehicles or drivers containing the search term exactly or partially in the beginning of any of the words in the field and in the same sequence but filtered out from the result set.
- **is:** Select this option to search for a vehicle or driver that includes the search criteria you specify.
- **is not:** Select this option to search for a vehicle or driver that does not include the search criteria you specify

5. Enter the search term in the adjacent field.
6. (Optional) To add an additional search condition, click the **Add** (+) icon. For example, search for a vehicle in a specific location.
7. (Optional) To remove search conditions, click the **Remove** (-) icon.
8. Click **Apply**.

The vehicle that matches your search criteria appears on the map. You can use



the zoom controls (-) to view the exact location of the vehicle and then click **View** (oculars icon) beside the vehicle to determine its details.

View Vehicle or Trip Details in the Fleet Map View

On the fleet map view, vehicles or active trips are represented by a circle with an integer value. Vehicles and active trips are clustered when they are located in close proximity and the map view magnification is low. Clicking the circle automatically increases the map magnification and displays the individual vehicles and active trips that form the cluster.

You should be in the **Operation Center** area of the current organization.

1. From the **Operation Center** menu options, click **Fleet Map** (map icon).
2. Select **Total Vehicles** or **Active Trips** in the ribbon at the bottom of the fleet map view.
3. Click the **Zoom Out** (minus) icon until a circle with an integer value appears.
4. Click the circle.

The map view magnification increases to show the vehicles and active trips contained in the cluster. Additional vehicle and active trip clusters are displayed when the cluster contains vehicles and active trips that are too geographically distant. Click the clusters to display the individual vehicles or active trips.

5. (Optional) To view vehicle or trip details, click an individual vehicle or trip icon.
6. (Optional) To open the vehicle or trip details dashboard, click an individual vehicle or trip icon and then click the **View** (oculars icon).

To learn more about the Vehicle details dashboard, see [Add and Manage Vehicles](#).

Create Rules to Monitor Issues

Create rules to generate incidents or alerts that allow you to monitor and maintain all your assets including vehicles, facilities, shipments, drivers, trips, equipment, ship-units, and ship items. Rules can facilitate and encourage driver accountability, track location deviations of trips and all its sub-entities, monitor condition of shipment items, monitor vehicle utilization and fuel costs.

Rules are typically applied on all entities of a specific type, such as all vehicles, all trips, its sub-entities, all shipments, facilities, or all drivers. You can also selectively apply a rule to specific vehicles or specific shipments.

Rules contain one or more conditions, which if met, generate alerts or incidents, and you are notified.

Rules can be broadly categorized into the following categories:

- **Location-Based Rules:** Use location rules to monitor the geo-location of entities. For example, you can track when a vehicle leaves its assigned stop of a trip, and use the rule to generate an incident.
- **Threshold-Based Rules:** Threshold rules are based on sensor or metric values. Use threshold rules to track sensor values, such as fuel levels and temperature values. For example, you can configure a threshold rule to raise an alert when the fuel levels of a vehicle goes below a threshold value.

You can configure a threshold rule to trigger an incident based on sensor values of temperature or humidity. For example, you may want to monitor the condition of ship-items being transported in a trip.

Threshold rules also let you track KPI values, such as the number of open incidents. For example, you may want to trigger an alert if the number of open outage incidents cross a threshold number.

- **Alert Rules:** Use alert rules to respond to device alert conditions. If your sensor device supports alerts, then you can use alert rules to configure alert responses. For example, an alert rule can trigger a device action based on an alert.
- **Event-Based Rules:** In this rule, you define event codes and target external subscribers to notification accounts. When the rule condition is met, the corresponding event is transmitted to the external system or to a webhook.

Use rules to trigger the following:

- **Incidents:** Use incidents to report issues and notify the maintenance staff or concerned user for resolutions.

The number of open incidents prominently appears on the metrics bar on the map view. Open incidents against an entity are also flagged under the respective entity's information page. You can access all reported incidents from the Incidents page of the Operation Center. The Organization Dashboard can lead you to the specific entities with open incidents.

- **Alerts:** Use alerts to pass device-related alerts to other integrated applications or to generate messages that inform the state or condition of an entity. You can access all

reported alerts from the Alerts page of the Operation Center, information page of each entity, or from the Organization Dashboard.

Create rules for an entity of an organization by one of the following ways:

- On the **Design Center**, from the **Organization** view, use the **Rules** option.
- On the **Design Center**, from the left navigation bar, select the entity for which you need to create a rule, and then use the **Rules** option.

Create a Rule

Create a rule to generate an incident or alert when a specific entity or all entities of a specific type, meets one or more conditions.

1. Click **Menu (≡)**, and then click **Design Center**.
2. Select **Organization** from the **Design Center** sub-menu.

Alternatively, you can also select an entity from the **Design Center** sub-menu to create rules.

3. Click **Rules** on the Organization or on the entity page.
4. Click **Create New Rule** (+).
5. Enter a name for the rule in the **Name** field.
6. Under **Target**, select one of these options from the **Apply To** list:

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

- **Vehicle Type**: Select this option, and then select a vehicle type to apply the rule to a specific vehicle type.
- **Specific Vehicles**: Select this option, and then select one or more vehicles to which the rule applies.
- **Facility**: Select this option, and then select a facility to apply the rule to a specific facility. Note that a list of facilities is displayed only if your instance is integrated with Oracle Warehouse Management Cloud and you've imported facilities into your organization.
- **All Drivers**: Select this option to create and apply the rule to all the drivers of the organization.
- **All Shipments**: Select this option to create and apply the rule to all the shipments imported into the organization from Oracle Transportation Management Cloud.
- **Specific Shipments**: Select this option, and then select a shipment to apply the rule to a specific shipment. Note that a list of shipments is displayed only if you have integrated with Oracle Transportation Management Cloud and shipments got imported into your organization.

- **All Trips:** Select this option to apply the rule to all the trips of your organization.
- **All Equipment:** Select this option to apply the rule to all the equipment of your organization.
- **All Ship Units:** Select this option to apply the rule to all the ship-units of your organization.
- **All Ship Items:** Select this option to apply the rule to all the ship-items of your organization.

7. Select the rule condition(s) in the **Condition** area. Select one of the following values for **Source**:

- **Alert:** Select this option to specify a device alert that triggers the rule and then select a **Message Format** from a list. For example, a speed violation event may generate an alert.
- **Location:** Select this option to generate a notification when a vehicle enters or leaves a geofence. Select **Entered** or **Exited** and then select a geo-fence from the list. To create a new geofence, see [Create a New Geofence](#).
- **Attribute:** Select a sensor attribute in the **Name** field and corresponding values in the **Comparator** and **Value** fields. For example, the engine coolant temperature reaching a critical value may trigger the rule.
- **Metric:** Select a system-defined metric or a user-defined metric in the **Name** field. Enter or select values for the **Comparator** and **Value** fields.

8. (Optional) To provide additional conditions, click **Add** and repeat the previous step for all the conditions.

9. Select these options in the **Fulfillment** area:

- **All Conditions Apply:** Select this option to trigger the rule when all of the conditions are met.
- **Any Conditions Apply:** Select this option to trigger the rule when at least one of the conditions is met.
- **Incident:** Select this option to generate an incident when the rule is triggered.
- **Alert:** Select this option to generate a server alert when the rule is triggered. Server alerts use predefined alert types. For example, you can generate a speed violation alert for an over-speeding vehicle.

10. If you selected **Incident** in the **Fulfillment** area, complete these fields in the **Incident Details** area:

- **Summary:** Enter a summary about the incident.
- **Description:** Enter an optional description for the incident.
- **Type:** Select the incident type: **Maintenance** or **Warning**.
- **Priority:** Select a priority for the incident: **Low**, **Medium**, or **High**.
- **Tags:** Enter optional tags for the incident. You can use tags to search for incidents on the Incidents dashboard.
- **Creation Event Code:** A specific event code that is sent to an external system when an incident is generated. See [Transmit Exception Events to External Systems](#). The event codes are recognized and interpreted by the external systems.
- **Resolution Event Code:** A specific event code that is sent to an external system when the incident is resolved.

11. If you selected **Alert** in the **Fulfillment** area, complete these fields in the **Alert Details** area:
 - **Summary:** Enter a summary about the alert.
 - **Severity:** Select an optional severity for the alert.
 - **Type:** Select a predefined alert type for generating the alert.
 - **Suppression (minutes):** Select the time in minutes to suppress consecutive alerts for the same rule.
12. (Optional) If you selected **Alert** in the **Fulfillment** area, select the data to include with the alert notification:
 - **Source Attributes:** Select this option to include the source attributes with the alert message.
 - **Context Information:** Select this option to include context information with the alert message.
 - **Message Payload:** Select this option to include the message that generated the rule with the alert message.
 - **Creation Event Code:** A specific event code that is sent to an external system when an alert is generated. See [Transmit Exception Events to External Systems](#).
13. (Optional) Select subscriber(s) in the **Subscribers** list in the **Notification Subscription** area.

When you add one or more subscribers, an email, SMS notification or an HTTP notification is sent when an alert or incident is generated.

14. Optionally specify a weekly or monthly schedule during which the rule is in force.

A rule is active at all times, by default. You can change this behavior to choose a custom schedule for the rule.

 - a. Under Rule Schedule, select **Custom**.
 - b. Select **Repeat Weekly** to create a weekly schedule. Alternatively, select **Repeat Monthly** to create a monthly schedule.
 - c. Click or drag inside the rows to select a data window.

You can click an incorrectly selected cell to deselect it. Alternatively, click **Clear** to start afresh.

The following example shows a weekly schedule for a rule that it is active from 8:00 a.m. to 6:00 p.m. on weekdays.

RULE SCHEDULE

Always Active Custom

Repeat Weekly ▼

Click or drag inside a row to define or undefine a data window.

	12am	6am	Noon	6pm	12am
MON			8am	6pm	
TUE			8am	6pm	
WED			8am	6pm	
THU			8am	6pm	
FRI			8am	6pm	
SAT					
SUN					

Clear

15. Click **Save**.
16. Click **Back** to return to the **Rules** list.

Rules Usage Examples

Review a few scenarios for creating rules that generates incidents or alerts.

Typically, you apply rules on all entities of a specific type, such as all vehicles, all trips, its sub-entities, all shipments, facilities, or all drivers. Alternatively, you can selectively apply a rule to specific vehicles or specific shipments. In the following examples, let's assume that the required vehicle types, vehicles, and trips have been configured in the application and you are familiar with the steps to [Create a Rule](#).

Monitor Vehicles

The following examples show you how to use sensor attributes and metrics to keep track of vehicles' performance.

Example 15-1 Detect over-usage of fuel by vehicles

Scenario: As an administrator, you should receive alerts when any vehicle consumes unusual amount of fuel, which can help you monitor fuel efficiency and performance of vehicles.

Solution: Create a rule on the vehicle type, use the `ora_oobd2_total_fuel_used` sensor attribute to check the fuel usage to a value, and raise an alert if the condition is met.

Name
Alert when more fuel used by vehicle

▲ TARGET

Apply To
Vehicle Type *
Vehicle Type: Vehicle_type_storage

▲ CONDITION

sensor/ora_obd2_total_fuel_used
Greater Than
90
Please Choose

▲ FULFILLMENT

Fulfill when
Generate
All Conditions Apply (radio button selected) Any Conditions Apply
Incident (radio button) Alert (radio button selected)

ALERT DETAILS

Summary *
Alert when more fuel used by vehicle
Type *
RESSystemAlert - urn:com:oracle:iot:system:re:alert
Severity
Significant
Suppression (minutes)
1
Inclusions

Example 15-2 Detect vehicles that are inactive

Scenario: As an administrator, you should have a list of vehicles that have been inactive over a period of time.

Solution: Create a rule on the vehicle type, use the `inactive_duration` system-defined metric to check the duration of inactivity with a value, and raise an incident if the condition is met.

▲ DETAILS

Name
Incident for vehicle inactive duration

▲ TARGET

Apply To
Vehicle Type *
Vehicle Type: Vehicle_type_storage

▲ CONDITION

metric/sys_inactiveDuration
Greater Than
50
Please Choose

▲ FULFILLMENT

Fulfill when
Generate
All Conditions Apply (radio button selected) Any Conditions Apply
Incident (radio button selected) Alert

INCIDENT DETAILS

Summary
Incident for vehicle inactive duration
Description
Incident for vehicle inactive duration greater than 50

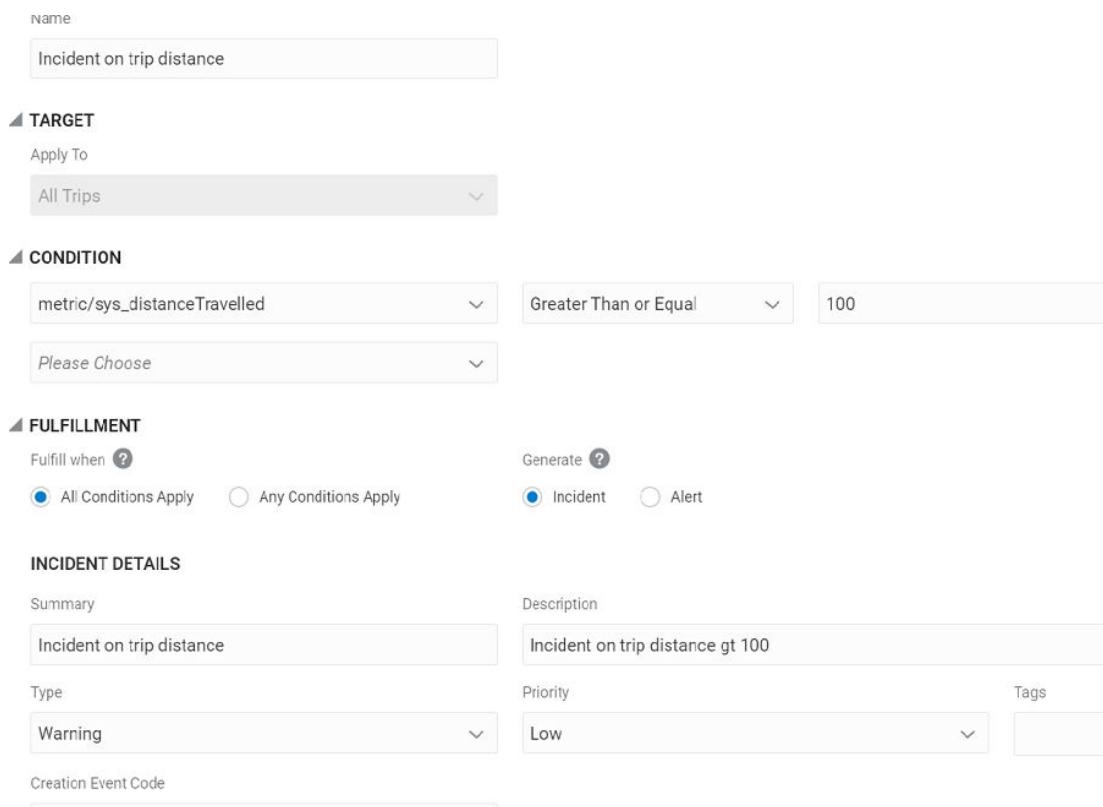
Monitor Trips

The following examples show you how to use system-defined metrics in rules to get notified about trips.

Example 15-3 Monitor distance covered by a trip

Scenario: As an administrator, you should be able to identify those trips that cover unusual distances.

Solution: Create a rule on trips, use the `sys_distanceTravelled` system-defined metric to check the total distance traveled, and raise an incident if the condition is met.



The screenshot shows the 'Create Rule' interface in Oracle Cloud. The rule is titled 'Incident on trip distance'. The 'TARGET' section is set to 'All Trips'. The 'CONDITION' section uses the metric `metric/sys_distanceTravelled` with a threshold of 'Greater Than or Equal' to 100. The 'FULFILLMENT' section is set to 'All Conditions Apply' and 'Incident'. The 'INCIDENT DETAILS' section includes a summary 'Incident on trip distance', a description 'Incident on trip distance gt 100', a type 'Warning', a priority 'Low', and an empty tags field.

Example 15-4 Monitor duration elapsed in a trip

Scenario: As an administrator, you should be aware of those trips whose duration have exceeded a specific time threshold.

Solution: Create a rule on trips, use the `sys_elapsedDurationSeconds` system-defined metric to define a condition, and raise an alert if the condition is met.

The screenshot shows a rule configuration interface with the following fields:

- NAME:** Alert on Trip elapsed duration
- TARGET:** Apply To: All Trips
- CONDITION:** metric/sys_elapsedDurationSeconds Greater Than 100. The 'Please Choose' dropdown is also visible.
- FULFILLMENT:** Fulfill when: All Conditions Apply. Generate: Alert (radio button selected). Options: Incident, Alert, Warning, Action.
- ALERT DETAILS:**
 - Summary: Alert on Trip elapsed duration
 - Type: RESystemAlert - urn:com:oracle:iot:system:re:alert
 - Severity: Normal
 - Suppression (minutes): 1

Use Contextual Parameters in Incident Messages

When creating rules, you can use dynamic contextual parameters in the incident details. You can also use contextual parameters in string message values of your incident messages. The incident messages with contextual information are also sent as email notification to the subscribed users.

Contextual parameters can include variables, such as entity names, sensor values, metric values, and location coordinates of the entity. These variables are dynamically resolved each time the rule is triggered.

The following incident fields can include dynamic contextual parameters:

- **Summary**
- **Description**

Here's an example of the rule configuration screen containing dynamic contextual parameters in the **Summary** and **Description** fields:

The screenshot shows a rule configuration interface with the following fields:

- CONDITION:** sensor/temp Greater Than 200. The 'Please Choose' dropdown is also visible.
- FULFILLMENT:** Fulfill when: All Conditions Apply. Generate: Alert (radio button selected). Options: Incident, Alert, Warning, Action.
- INCIDENT DETAILS:**
 - Summary: Temperature for \${vehicle.name} is high.
 - Description: Temperature for \${vehicle.name} is high. The current temperature is \${event.sensor.temp}.

And here's an actual Incident created by the preceding rule:

Details		Summary	
Status	New	Summary	Temperature for Engine101 is high.
Priority	Low	Description	Temperature for Engine101 is high. The current temperature is 240.997.
Type	Outage		

The following contextual parameters can dynamically retrieve entity, sensor, metric, rule, and location related information:

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

Parameter Type	Parameter Name
Vehicle	<ul style="list-style-type: none"> • \${vehicle.id} • \${vehicle.name} • \${vehicle.registrationNumber} • \${vehicle.vin} • \${vehicle.typeName} • \${vehicle.lastReportedTime} • \${vehicle.trip.name} • \${vehicle.driver.name}
Driver	<ul style="list-style-type: none"> • \${driver.id} • \${driver.name} • \${driver.trip.name} • \${driver.vehicle.name}
Facility	<ul style="list-style-type: none"> • \${facility.id} • \${facility.name} • \${facility.code}
Shipment	<ul style="list-style-type: none"> • \${shipment.id} • \${shipment.name} • \${shipment.externalId} \${shipment.domain} • \${shipment.vehicle.name} • \${shipment.driver.name}
Trip	<ul style="list-style-type: none"> • \${trip.id} • \${trip.name} • \${trip.externalId} • \${trip.domain} • \${trip.vehicle.name} • \${trip.driver.name}
Equipment	<ul style="list-style-type: none"> • \${equipment.id} • \${equipment.tripEquipmentRef} • \${equipment.trip.name}

Parameter Type	Parameter Name
ShipUnit	<ul style="list-style-type: none"> • \${shipunit.id} • \${shipunit.shipUnitNumber} • \${shipunit.trip.name} • \${shipunit.shipUnitKey} • \${shipunit.shipUnitType}
ShipItem	<ul style="list-style-type: none"> • \${shipitem.id} • \${shipitem.shipItemNumber} • \${shipitem.trip.name} • \${shipitem.shipItemKey}
Rule	\${rule.id}

The following examples describe the usage of the parameters:

- Vehicle Parameters

- \${vehicle.name}: Retrieves the name of the asset for which the incident is generated.

For example: The entity \${vehicle.name} has low fuel.

May translate to:

The asset RedTruck has low fuel.

- \${vehicle.id}: Retrieves the ID (GUID) of the asset for which the incident is generated.

- Sensor Parameters

- \${event.sensor.attributeName}: Retrieves the value of the specified sensor attribute name.

For example: The entity \${vehicle.name} has low fuel level: \${event.sensor.fuel} %.

May translate to:

The entity Truck1 has low fuel level: 10%.

Here, fuel is a sensor attribute for the truck asset.

- Metric Parameters: You can use metric-related parameters only if the rule condition uses the metric.

- \${event.metric.name}: Retrieves the name of the metric that triggered the rule.

- \${event.metric.value}: Retrieves the value of the metric that triggered the rule.

For example: \${event.metric.name} for \${vehicle.name} is High: It is \${event.metric.value}.

May translate to:

Average Temperature for Engine1 is High: It is 150.

- Rule Parameter

`${rule.id}`: Retrieves the ID (GUID) of the rule for which the incident is generated.

- Location Parameters: You can use these contextual parameters only in location-based rules.
 - `${event.location.deviceId}`: Retrieves the Device ID of the asset device.
 - `${event.location.latitude}`: Retrieves the latitude co-ordinates of the device.
 - `${event.location.longitude}`: Retrieves the longitude co-ordinates of the device.
 - `${event.location.altitude}`: Retrieves the altitude reading of the device.

For example: The entity `${vehicle.name}` has exited its designated location. The entity's co-ordinates are: `${event.location.longitude}` `${event.location.latitude}`.

May translate to:

The vehicle Truck21 has exited its designated location. The vehicle's co-ordinates are: -122 37.

Edit a Rule

Edit a rule to change the assets the rule applies to and the rules for generating the incident or alert report.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Organization** from the **Design Center** sub-menu.
3. Click **Rules**.
4. Select a rule in the **Rules** list.

You can also search for an asset type.

5. Click the **Edit** (✎) icon.
6. Edit the rule name.
7. Edit the options in the **Apply To** area.
8. Edit the settings in the **Condition** area.
9. Edit the settings in the **Fulfillment** area.
10. Click **Save**.
11. Click **Back** to return to the **Rules** list.

Duplicate a Rule

Duplicate a rule to quickly copy the settings of an existing rule to a new rule.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Organization** from the **Design Center** sub-menu.
3. Click **Rules**.
4. Select a rule in the **Rules** list.

You can also search for an asset type.

5. Click the **Duplicate** () icon.
6. Enter a name for the rule in the **Name** field and then modify the other rule settings including the apply to, condition, type, create incident, and create alert values.
7. Click **Save**.

Delete a Rule

Delete a rule when it is no longer required.

1. Click **Menu** (≡), and then click **Design Center**.
2. Select **Organization** from the **Design Center** sub-menu.
3. Click **Rules**.
4. Select a rule in the **Rules** list.
You can also search for a rule.
5. Click the **Delete** () icon.
6. Click **Yes**.

Activate or Deactivate a Rule

Activate an existing rule to generate incidents or alerts when the rule criteria are met. Deactivate a rule to stop rule evaluation.

1. Click **Menu** (≡), and then click **Design Center**.
2. To see all rules in the organization, select **Organization** from the **Design Center** sub-menu.
Alternatively, for vehicle-based rules, you can select **Vehicle Types** from the **Design Center** sub-menu.
For trip-based rules, you can select **Trips** from the **Design Center** sub-menu.
3. Click **Rules** on the Organization, Vehicle Types, or Trips page.
4. Select a rule in the **Rules** list.
5. Select one on these options:
 - a. To deactivate a rule, clear the **Enabled** checkbox.
 - b. To re-enable a rule, select the **Enabled** checkbox.

Send Notifications for Incidents or Alerts

Oracle IoT Fleet Monitoring Cloud Service integrates with the Twilio SMS service to help provide seamless SMS notifications. You can also use the default SMTP account, or your own SMTP server, for sending out email notifications. To send notifications to a webhook, configure a HTTP subscriber.

You can configure Oracle IoT Fleet Monitoring Cloud Service to send SMS notifications for incidents or alerts. When a rule triggers an incident or an alert, SMS notifications are sent to all configured subscribers on their mobile devices.

You can also send out email notifications for incidents. When a rule triggers an incident or an alert, email notifications are sent to all configured subscribers.

SMS and email notifications eliminate the need to monitor the Oracle IoT Fleet Monitoring Cloud Service application continuously. All subscribers are actively informed about incidents or alerts that need attention. You can then use the Oracle IoT Fleet Monitoring Cloud Service mobile application or web interface to look at, and address, the issues.

To use the SMS notification service, you must have a Twilio account subscription. Add your Twilio account information to Oracle IoT Fleet Monitoring Cloud Service to start using the notification service. After adding your account, you can add subscribers that need to receive these notifications, and select the rules that should send the notifications.

To use email notifications, you can use the built-in, default SMTP account. The default account has a usage limit of 100,000 messages. Alternatively, you can use your own SMTP server to channel Oracle IoT Fleet Monitoring Cloud Service email notifications. After choosing your SMTP account, you can add subscribers that need to receive these notifications, and select the rules that should send the notifications.

To send notifications to external webhooks, you configure an HTTP provider by adding a web URL of the external system and its authentication information. A rule that is configured with a webhook subscription, when triggered will transmit an incident or alert event payload to the HTTP server.

 **Note:**

Whenever the admin configures an integration with Oracle Transportation Management Cloud (OTM), then a notification account of type HTTP provider is automatically configured by using the OTM URL and credentials.

Add Your SMS Notification Account Details

To start using the notification feature, add your notification account details in Oracle IoT Fleet Monitoring Cloud Service. For SMS notifications, add your Twilio account details.

Make sure that the IoT administrator has already added the Twilio domain as a trusted CN in the Oracle Fusion Cloud IoT Intelligent Applications management console. To do this, the administrator adds *.twilio.com under **Trusted CN** in the Settings page.

To add the notification account details globally in Oracle IoT Intelligent Applications:

1. Click **Menu (≡)**, and then click **Settings**.
2. Click **Notification Accounts** .
3. Click **Add** ().
4. Enter a **Name** for your notification account.

For example, *My Twilio Account*.

5. Select your **Provider**.

Oracle integrates with Twilio, as the third-party notification service provider.

6. Enter the **SID** for your Twilio account.

This is your Twilio account SID that you can get from your Twilio console.

7. Enter the **Authentication Token** associated with your Twilio account.

You can get the authorization or authentication token from your Twilio console.

8. Enter the **Sender Phone No** for notification messages.

The sender phone number is provided by Twilio, and can be generated in your Twilio account.

9. Click **Create** to add the notification account.

You can next add subscribers or recipients for the SMS notifications.

Add Your Email Notification Account Details

To start using the email notification feature, you can use the built-in, default SMTP service in Oracle IoT Fleet Monitoring Cloud Service. Alternatively, you can add your own SMTP server to send unlimited email notifications.

The default SMTP service in Oracle IoT Fleet Monitoring Cloud Service lets you send limited email notifications. The usage limit is 100,000 messages per cycle. If your usage needs are different, you can add your own SMTP notification account.

Make sure that the IoT administrator has already added the SMTP domain as a trusted CN in the Oracle Fusion Cloud IoT Intelligent Applications management console. To do this, the administrator adds `*.yourSMTPdomain.com` under **Trusted CN** in the Settings page.

To add the SMTP notification account details that is globally applicable in organizations of Oracle IoT Intelligent Applications:

1. Click **Menu (≡)**, and then click **Settings**.
2. Click **Notification Account** .
3. Click **Add** ().
4. Enter a **Name** for your notification account.
For example, *My SMTP Account*.
5. Under **Provider**, select **SMTP**.
6. Enter the **User Name** and **Password** for your SMTP account.
7. Enter the **SMTP Host** server name.

8. Enter the **SMTP Port**.

The default port number is 465.

9. Under **From**, enter the sender email ID to be used for sending email notifications.

10. Optionally select **Use TLS** (Transport Layer Security) to secure SMTP with an encryption protocol.

11. Click **Create** to create the notification account.

You can next add subscribers or recipients for the email notifications.

Add the HTTP Server Details

To start using the notification feature, add your notification account details in Oracle IoT Fleet Monitoring Cloud Service. For sending messages to an HTTP Server, add the details such as the HTTP Server's URL that'll consume the notification messages and its credentials.

To add the notification account details of an HTTP Server, globally in Oracle IoT Intelligent Applications:

1. Click **Menu (≡)**, and then click **Settings**.

2. Click **Notification Accounts** .

3.  **Note:**

On the **Settings > Notifications Accounts** page, the HTTP provider account for Oracle Transportation Management (OTM) is preseeded and configured.

To add a new notification account, click **Add** .

4. On the Create Notification Account dialog. Select the **Provider** as **HTTP**.

5. Enter a **Name** for your notification account.

6. Enter the **URL** of the HTTP server that will be receive and consume the notification payload.

The URL is provided by the external server that receives the notification as an event-payload and is capable consumes it.

7. Select the **Authentication Type** as **Basic**.

8. Enter the **User Name** to access the webhook.

9. Enter the **Password** to authenticate the user name.

10. Click **Create**.

The notification accounts are listed on the **Settings > Notification Accounts** page.

Add Subscribers for the Notifications

In an organization, you can add one or more subscribers to notification accounts. You can also create different subscriber groups and add them to rules, as desired.

You should have added and configured a notification account from **Settings**.

1. Click **Menu (≡)**, and then click **Settings**.

2. Select **IoT Organizations** from the **Settings** tile and select your organization for which you need to add subscribers.
3. Click **Subscribers**.

4.  **Note:**

For sending notifications to Oracle Transportation Management System (OTM), a subscriber named OTM is pre-seeded and configured for you.

Click **Create Subscriber**  to add a new subscriber or group or subscribers..

5. Enter a **Name** for the subscriber or group of subscribers that you are creating.
For example, *Warehouse Team*.
You may want to create different subscriber groups based on the fleet assets managed by each group.
6. Select your **Notification Account**. Note that the preseeded **OTM** HTTP provider and the **Default SMTP** provider are listed in the drop down along with any other notification account that you've created from **Settings > Notification Accounts**.
See [Add Your SMS Notification Account Details](#) , [Add Your Email Notification Account Details](#), or [Add the HTTP Server Details](#) that shows how to add SMS, email and HTTP based notification accounts.
7. (Optional) Select existing **Rules** to subscribe to events from the selected rules.
Note that you can also add notification subscribers to an individual rule by editing the rule, or when creating a new rule.
8. (Optional) Select existing **Users** to add them as subscribers.
Depending on whether you have chosen an SMS or email notification account, the phone numbers or emails of the users are added to the subscriber group.
9. If you are configuring an SMS subscriber group, you can individually enter the subscriber **Phone Numbers**.
Precede the phone numbers with the country codes. Press enter after entering each phone number.
10. If you are configuring an email subscriber group, you can individually enter the subscriber **Emails**.
Press enter after entering each email address.
11. Click **Create** to finish creating the subscriber group.

Use Key Performance Indicators to Monitor the Efficiency of Fleet Operations

Would it be helpful to be informed of an issue before it causes unplanned down time? Would you like to schedule maintenance at the most cost effective time? Key performance indicator (KPI) and sensor data sent by your fleet vehicles can help you better predict when a vehicle needs maintenance and can prevent unplanned down time. KPIs and sensor data can move you from a reactive operational model to a proactive operational model. Oracle IoT Fleet Monitoring Cloud Service lets you easily connect your fleet vehicles to the cloud, collect real-time sensor data, leverage predictive maintenance, and prevent failures in the field.

What's a KPI?

A metric or a key performance indicator (KPI) is any measurable value that demonstrates how efficiently your fleet is operating and helps you meet your business objectives. For example, fuel economy or average speed. Sensors and OBD-II data loggers installed in fleet vehicles collect and transmit KPI and sensor data to the Oracle IoT Fleet Monitoring Cloud Service.

The collection of KPI and sensor data for an extended period creates a historical record of operational data. You can analyze current and historic KPI data to predict what is likely to happen in future. KPI data helps you know where to make changes to reduce risk, improve the efficiency of your fleet, and enhance customer service.

Choosing the right KPIs to monitor is dependent on your business objectives and knowing what problems you need to solve. KPIs are typically grouped in three categories: safety, efficiency, and compliance. This table lists the typical KPI categories and provides descriptions and examples for each category.

KPI Category	Sample KPI Type	Description
Safety	<ul style="list-style-type: none"> Speed violations Driving speed Alerts Incidents 	Monitor driver behavior and provide data that you can use to promote and improve driver safety.
Efficiency	<ul style="list-style-type: none"> Consumed fuel cost Idling violations Idling duration Fuel consumed 	Monitor operational performance and provide data that you can use to reduce wear and tear on vehicles and maintenance costs.
Compliance	<ul style="list-style-type: none"> Distance driven 	Monitor driver behavior and provide data that you can use to ensure compliance with local, municipal, and federal regulations.

Pre-configured Key Performance Indicators

Not interested in coding or hiring a data scientist? That's not an issue. Every Oracle IoT Fleet Monitoring Cloud Service instance includes a catalog of pre-configured key performance indicators (KPIs) for entities of an organization including trips, vehicles, drivers, and

shipments. These out-of-box metrics provide valuable data such as the number of vehicle incidents, the distance a vehicle has travelled, the number of driver speed violations, and more. These pre-configured KPIs let you quickly transform raw data into predictive maintenance insights that you can use to anticipate problems well ahead of failure.

You cannot edit, duplicate, or delete pre-configured KPIs. However, you can display pre-configured KPI data of the entities of an organization on dashboards and KPI ribbons in the map views of the **Operation Center**.

Custom Key Performance Indicators

If the catalog of pre-configured key performance indicators (KPIs) does not provide the data you need to meet your unique business requirements, use the **Design Center** to create custom or user-defined KPIs for vehicles, drivers, trips, and shipments of an organization.

You can edit, duplicate, or delete user-defined KPIs. Similar to the pre-configured KPIs, you can display user-defined KPIs on the dashboards and KPI ribbons in the map views that are viewed from the **Operation Center**.

View the KPI List

View all the key performance indicator (KPI) or metrics of an organization including out-of-box and user-defined KPIs for the entities of the active organization in your

Oracle IoT Fleet Monitoring Cloud Service instance. The **Edit** (), **Duplicate** (), and **Delete** () icons are active for custom or user-defined metrics only.

You can view all the metrics of the current organization from **Design Center** and filter the list based on search criterion.

1. Click **Menu** () and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** () icon that appears in the lower section of the organization view.
Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. To view specific metrics, click **Search Filter** and select one of these search options in the list:
 - **Description:** Select this option to search for a metric having a specific description
 - **Type:** Select this option to search for metrics of a type such as ad hock, custom, formula, direct, or custom.
 - **Category:** Select this option to search for metrics that are either out-of-box or user-defined.
 - **Entity Type:** Select this option to search for metrics for a specific entity such as vehicles, trips, vehicle types, drivers, shipments, or facilities.

Note:

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

4. Select one of these secondary options:
 - **contains**: Select this option to search for metrics containing the search term exactly or partially anywhere in the words in the field and in the same sequence.
 - **matches**: Select this option to search for metrics containing the exact search terms in the same sequence.
 - **does not contain**: Select this option to search for metrics containing the search term exactly or partially anywhere in the words in the field and in the same sequence but filtered out from the result set.
 - **is**: Select this option to search for a metric that includes the search criteria you specify.
 - **is not**: Select this option to search for a metric that does not include the search criteria you specify
5. Enter or select the search criteria in the adjacent field, and then click **Apply**.
The metrics that match your filter criteria are displayed.
6. (Optional) To add an additional search condition, click the **Add** (+) icon.
7. (Optional) To remove search conditions, click the **Remove** (-) icon.
8. Click **Clear Filter** to remove the filter options and view all the metrics.
9. To return to the organization page, from the breadcrumb information, click **Organization**.

Create a Formula-Based Custom KPI

Create a custom or user-defined key performance indicator (KPI) for the entities of an organization from the **Design Center**. You can display KPI data on dashboards or use them in rule conditions.

1. Click **Menu** (≡) and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** () icon that appears in the lower section of the organization view.
Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. Click **Create Metric** (+).
4. Enter a name for the metric in the **Name** field.
5. Enter a description for the metric in the **Description** field.
6. Select one of these options in the **Entity Type** drop down:
 - **All Shipments**: Select this option to create a KPI for all shipments of the organization. For example, a metric that computes the average delay of all shipments.

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

- **All Trips:** Select this option to create a KPI that displays KPI data for all trips. For example, a metric that calculated the total number of incidents raised.
- **All Drivers:** Select this option to create a KPI that displays KPI data for all drivers.
- **Vehicles:** To create a KPI that displays KPI data for vehicles and vehicle , select the vehicle or vehicle type listed beneath this option²⁴⁵.
- **All Equipment:** Select this option to create a KPI that displays KPI data for all the equipment..
- **All Ship Items:** Select this option to create a KPI that displays KPI data for the selected type.
- **All Ship Units:** Select this option to create a KPI that displays KPI data for the selected type.

7. For the **Metric Type** drop down, select **Formula Based**. For a **Duration Based** metric, see [Create a Duration-Based Metric](#).
8. For the **Keep Metric Data For** drop down, if needed, change the **Use Global Setting** default option to one of the available options for storing the metric data for that duration.

For example, if you calculate metrics for a large number of an entity type and the metric data is not required beyond a month, then you can select 7 Days to optimize storage.

To know how to view or update the global setting from the **Settings > Storage Management > Data Management** option, see [Perform Data Management Tasks](#).

9. Under **Calculation Scheduling**, select one of these options from the **Type** drop down:
 - **Calculate on Demand for All (Shipments/Trips/Drivers):** Select this option to generate KPI data on demand for all shipments, trips, or drivers. On-demand metrics are calculated when they are requested and use less computational resources.
 - **Calculate on Schedule for Each (Shipment/Trip/Driver):** Select this option to generate KPI data on a specific interval for individual shipment, trips, or drivers.
 - **Calculate on Schedule for All (Shipments/Trips/Drivers):** Select this option to generate KPI data on a specific interval for all vehicles, shipments, trips, or drivers.

 **Note:**

You can change the metric type if your business requirements change. For example, you can use an on-demand metric for testing and development and then change it to a scheduled metric when your testing is complete.

10. For a scheduled metric type, specify a **Schedule**:

- **Live** calculates the metric every two minutes.
Use this option sparingly, as it may require a lot of computational and storage resources depending on your number of assets. The **Live** option may be used in special circumstances: For example, when the metric is to be used for anomaly detection purposes.
- **Hourly** aggregates the metric for every hour.
- **Daily** aggregates the metric for every day.
- **Weekly** aggregates the metric for every week.

11. (Optional) To configure the **Data Window**, click **Edit** .

By default, the **Data Window** is the same as the calculation schedule. For example, if you have set the metric schedule to **Hourly**, the data from the previous hour is used to calculate the metric.

You can also use flexible data windows for your scheduled metric calculations. The data window can be different from the calculation schedule. For example, you may wish to compute the total output for the past twenty-four hours, and calculate this metric hourly.

In addition to sliding data windows, you can also use dynamic custom data windows. For example, you may wish to do an hourly calculation of the cumulative output for the day, starting 9 am. in the morning.

a. On the **Configure Data Window** dialog, select one of the following from the **App Settings** drop down:

- **Default:** Uses the default data window as per the selected schedule. For example, if you have set the metric schedule to **Hourly**, the data from the previous hour is used to calculate the metric.
- **Data Window Start Time:** Lets you pick from a number of fixed options. For example, you may use data from the last one week, and calculate the metric hourly.

When choosing larger data windows, ensure that the data life span settings for your custom metrics are large enough in the application settings, so that there is data available for the selected window.

- **Custom Data Window Start Time:** Lets you choose a fixed start time for the data window. For example, you may wish to do an hourly calculation of the cumulative output for the day, starting 9 am. in the morning.
This option is only available when selecting the **Live** or **Hourly** schedule.

b. Select the **Data Window** value corresponding to the selected value in **App Setting**:

- If you selected **Default**, the **Data Window** value is automatically selected to match the metric calculation schedule.
- If you selected **Data Window Start Time**, specify the **Offset** value to be used. For example, choose **One Week Ago**, to use the data from the past one week.

- If you selected **Custom Data Window Start Time**, then specify the fixed start **Time** for the data window in the **UTC** (Coordinated Universal Time) time zone.

12. Enter a formula for the metric in the **Formula** area:

- (Optional) Click **Advanced** to directly enter the expression in a text editor.
- Click **Click here to insert formula** to create your KPI formula using the expression builder.
- Select an aggregate function in the **Aggregations** list. For example, select **Average** if you wish to calculate the average hourly temperature for a sensor.
- Click **Up** () to view the **Formula** menu and select functions, operators, property

 **Note:**

If you are using imperial units of measurement, use the `ToMetric` function, enter the imperial value in the **Number** field, and then enter a value in the **Unit** field. For example, enter `mi` for distance or `gal` for volume. Additional unit values include: `lb` for weight, `mph` for speed, `F`, for temperature, and `mpg` for fuel economy.

- (Optional) Repeat step d to add additional aggregations, functions, operators, properties, or elements.
- (Optional) Click **Add Filter** to return only the values that satisfy the set conditions.
- (Optional) Click **Advanced** to modify the expression in a text editor. To return to the expression builder, click **Basic**.
- (Optional) Click **Validate Formula** to validate your formula.

The following are some examples of formulae:

- `AVG (FuelLevel)`: Returns the average `FuelLevel` over the specified time period.
- `MIN(MaxPressure/2 + MinPressure/2)`: First uses the `MaxPressure` and `MinPressure` sensor values to compute the average pressure, and then returns the minimum of this average pressure over the specified time period.

Your expression can contain the following elements:

- Parenthesis: Use parenthesis to group operations and indicate precedence.
- Symbols: You can use arithmetic (`+`, `-`, `*`, `/`), relational (`=`, `<`, `>`, `<=`, `>=`, `!=`), and logic (`AND`, `OR`, `LIKE`) operators. When you click the **Symbol** button, the `add` operator appears in our formula. If you want to select another operator, click the **Add** icon and select a different operator from the list.
- Numbers, text, and boolean values.
- Properties: A list of system attributes, sensor attributes or in-built metrics that you can use to build your own metrics. This list is based on the entity type and function that you selected.

The following example of the **Create Metric** editor shows a computed.

The screenshot shows the Oracle IoT Fleet Monitoring Cloud Service metric editor. The 'DETAILS' tab is active. The metric is named 'Driving violations' and is set to apply to 'All Drivers'. The 'Metric Type' is 'Formula Based'. In the 'CALCULATION SCHEDULING' section, the 'Type' is set to 'Calculate on Schedule for Each Driver', the 'Schedule' is 'Hourly', and the 'Data Window' is 'Use data from the start of the previous hour'. The 'FORMULA' section shows the aggregation 'Sum' of the metric 'Idling Violations'.

The preceding example shows the metric editor for a formula-based metric that calculates the sum of driving violations by using a system-defined metric.

13. (Optional) Under **Testing**, click **Run Test** to view sample metric results on live asset data.

 **Note:**

You must successfully validate the formula before **Run Test** is enabled for you.

Sampling the metric values lets you validate whether your computations work along expected lines. Sampling also lets you determine if the metric can go live, and if the metric is ready to be used in analytics artifacts, such as predictions.

Computations are made using live data scheduling. Results may take a few minutes to compute and are available for two hours. Metric results may be shown for a sample selection of assets to cover the range of metric values.

14. Click **Save**.

A **Save successful** message is displayed.

15. (Optional) Click **Close** to return to the metric list.
16. (Optional) Add the new KPI to the map view ribbon. See [Add a KPI to the Fleet and Trip Metrics Ribbon](#). You can also add the newly created metric to your dashboards, or use the metric in rule conditions.

Create a Duration-Based Metric

Duration-based metrics let you track duration based on the conditions that you specify for an entity. Your conditions can use the vehicle location, sensor attribute values, and other metrics.

For example, the administrator may track the duration for which a vehicle was inactive in a trip. Like other metrics, you can add duration tracker metrics to your organization and trip dashboards. You can also use duration tracker metrics in your rule conditions to generate incidents, warnings, or alerts if the threshold duration is violated.

1. Click **Menu (≡)** and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** () icon that appears in the lower section of the organization view.
- Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. Click **Create Metric** ()
4. Enter a name for the metric in the **Name** field.
5. Enter a description for the metric in the **Description** field.
6. Select one of these options in the **Entity Type** drop down:
 - **All Shipments**: Select this option to create a KPI for all shipments of the organization. For example, a metric that computes the average delay of all shipments.

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

- **All Trips**: Select this option to create a KPI that displays KPI data for all trips. For example, a metric that calculated the total number of incidents raised.
- **All Drivers**: Select this option to create a KPI that displays KPI data for all drivers.
- **Vehicles**: To create a KPI that displays KPI data for vehicles and vehicle , select the vehicle or vehicle type listed beneath this option²⁴⁵.
- **All Equipment**: Select this option to create a KPI that displays KPI data for all the equipment..
- **All Ship Items**: Select this option to create a KPI that displays KPI data for the selected type.
- **All Ship Units**: Select this option to create a KPI that displays KPI data for the selected type.

7. For the **Metric Type** drop down, select **Duration Based**. For a **Formula Based** metric, see [Create a Formula-Based Custom KPI](#).

8. For the **Keep Metric Data For** drop down, if needed, change the **Use Global Setting** default option to one of the available options for storing the metric data for that duration.

For example, if you calculate metrics for a large number of an entity type and the metric data is not required beyond a month, then you can select 7 Days to optimize storage.

To know how to view or update the global setting from the **Settings > Storage Management > Data Management** option, see [Perform Data Management Tasks](#).

9. Select a **Mode** for the duration based metric:

- **Live:** The time duration for which the metric conditions are currently being met. If the metric conditions are currently not met, then the **Live** value is zero.

- **Last:** The time duration for which the metric conditions were last met.

When the metric conditions go from *currently being met* to *currently not being met*, the value of **Live** is transferred to **Last**, and the **Live** value becomes zero.

- **Cumulative:** The total time duration of all occurrences when the metric conditions were met.

For **Cumulative**, you need to select a **Time Window** as the cumulative occurrences are tracked over the **Time Window** you select. For example, if you select **Weekly**, then the total time duration of all occurrences over the past week is tracked.

You can select more than one mode if required.

10. Under **Target**, based on your selection for the **Entity Type** field, select **All Entity types**. Alternatively, select **Specific Entity** and select one or more specific entity name you wish to monitor.

11. Under **Conditions**, create one or more conditions.

You can create location conditions based on whether an asset enters or exits a location. You can also create threshold conditions based on whether a sensor attribute, or a pre-existing metric, exceeds a set threshold.

To create a location condition:

- a. Select **Location** from the drop-down list.

- b. Select **Entered** or **Exited** in the second drop-down list:

- c. Select the location in the third list.

The location is the name of a predefined place that you must have previously created in the application.

To create a threshold condition:

- a. Select an asset sensor attribute or existing metric from the drop-down list.

- b. Select a threshold condition for the attribute in the second drop-down list.

For example, a numeric attribute specifies conditions like **Greater Than** and **Less Than**.

- c. Specify an attribute value in the third field.

For example, a complete condition may look like: `maxtemp Greater Than 50`.

A complete condition that uses a system metric may look like: `sys_openIncidents Greater Than 5`.

12. (Optional) Add additional conditions, as required.

13. In the Fulfillment section, select an option for the **Fulfill when** field:

- **All Conditions Apply** : Select this option to track the duration when all the conditions are met.
- **Any Conditions Apply**: Select this option to track the duration when any of the conditions are met.

The screenshot shows the metric editor interface for a duration-based metric. The 'Description' field is set to 'Duration of vehicle within Fence'. The 'Metric Type' is 'Duration Based'. The 'Keep Metric Data For' setting is 'Use Global Setting'. The 'Mode' is 'Live'. The 'Target' is 'All vehicles of type : Vehicle_type_storage'. Under 'CONDITIONS', there is a condition for 'Entered' location, specifically 'RedWoodCity'. In the 'FULFILLMENT' section, the 'Fulfill when' condition is set to 'All Conditions Apply'.

The preceding example shows the metric editor for a duration-based metric that checks the duration spent by vehicles of a specific vehicle type within a selected geo-fence.

14. Click **Save.**

A **Save successful** message is displayed.

15. (Optional) Click **Close to return to the metric list.**

16. (Optional) Add the new KPI to the map view ribbon. See [Add a KPI to the Fleet and Trip Metrics Ribbon](#). You can also add the newly created metric to your dashboards, or use the metric in rule conditions.

Edit a Custom KPI

Edit a custom or user-defined key performance indicator (KPI) to change its name or modify its formula from the **Design Center**. Pre-configured or out-of-box KPIs cannot be edited.

1. Click **Menu (≡)** and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** (graph icon) icon that appears in the lower section of the organization view. Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. Select the user-defined KPI that you need to modify and click **Edit** (pencil icon).

If required, use the **Filter** (magnifying glass icon) option to search for a specific user-defined metric.

4. Edit the name of the metric or in the **Formula** section, edit the formula of the user-defined metric.
5. Click **Save**.
A **Save successful** message is displayed.
6. (Optional) Click **Back** to return to the KPI list.

Duplicate a Custom KPI

Duplicate a custom or a user-defined key performance indicator (KPI) to quickly copy the settings of an existing KPI to a new KPI. Pre-configured KPIs cannot be duplicated.

1. Click **Menu (≡)** and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** () icon that appears in the lower section of the organization view.
Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. Select a custom KPI in the **Metrics** list.

If required, use the **Filter** () option to search for a specific user-defined metric.

4. Click **Duplicate** ()
5. Enter a name for the KPI in the **Name** field.
6. (Optional) Edit the remaining KPI settings.
7. Click **Save**.
A **Save successful** message is displayed.
8. (Optional) Click **Back** to return to the KPI list.

Delete a Custom KPI

Delete a custom or user-defined key performance indicator (KPI) when it is no longer required. Pre-configured KPIs cannot be deleted.

1. Click **Menu (≡)** and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**, and then click the **Metrics** () icon that appears in the lower section of the organization view.
Metrics for all the entities of the organization are listed and their details including name, description, category, entity type, and calculation schedule are displayed.
3. Select a custom KPI in the **Metrics** list.

If required, use the **Filter** () option to search for a specific user-defined metric.

4. Click **Delete** ()
5. Click **Yes**.

Create and Detect Geofence Violations

A geofence is a virtual geographic boundary defined by Global Positioning System (GPS) coordinates that restricts a fleet vehicle to a specific, real-world geographic area. When a vehicle enters or leaves the geofence boundary, its current position is sent from the vehicle's sensor device to the Oracle IoT Fleet Monitoring Cloud Service instance. A rule created in the instance detects the position changes and notifies the administrator and users.

To detect fleet vehicles moving outside of its designated geofence, you can create rules that would generate alerts and notify you immediately. This can help you recover stolen vehicles quickly, improve fuel management, reduce liability, and identify unexpected route deviations.

A geofence also lets you monitor and prevent unauthorized after hours use of your fleet vehicles. Rules help you generate alerts that notify you when a vehicle departs from a garage's geofence and arrives at a customer location's geofence. This can help you determine the average time spent traveling to and from the departure location.

Create a New Geofence

Create a geofence to define a geographic area for a fleet asset of an organization.

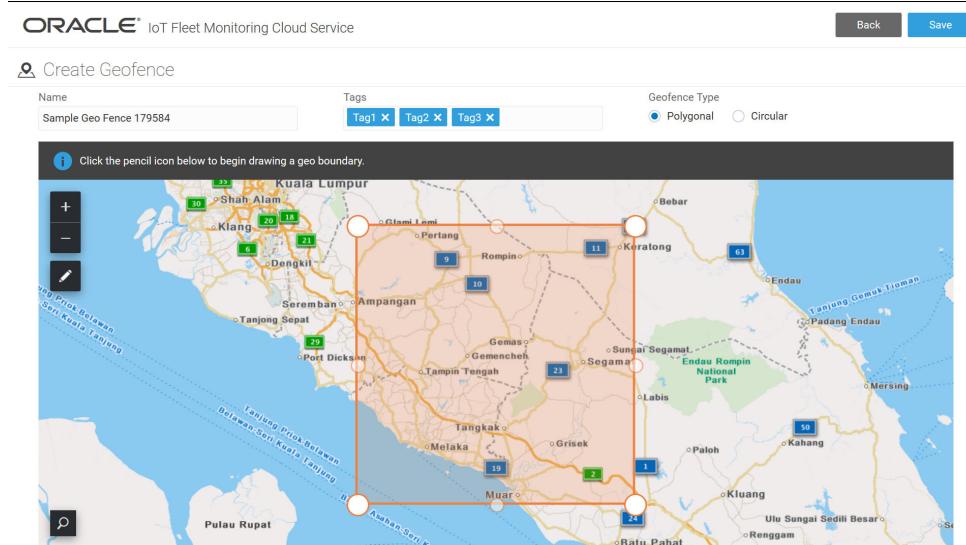
 **Note:**

If you are using HERE maps, then you can create geofences not only in the standard map view, but also in the satellite image view of your location.

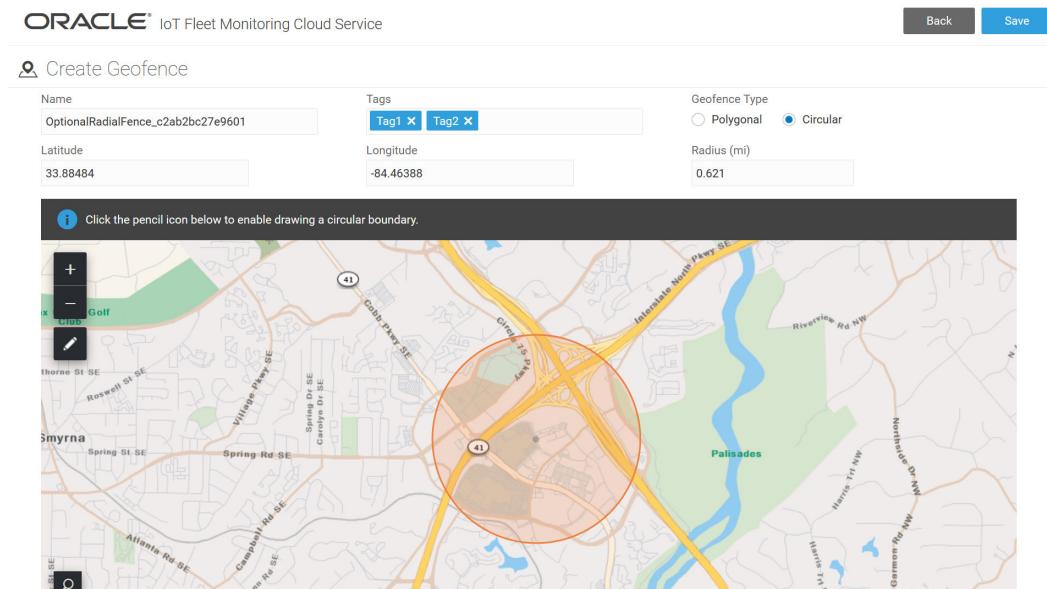
1. Click **Menu (≡)**, click **Design Center** and then, click **Geofences** ().
2. On the **Geofences** page, click **Create Geofence** ().
3. If you are using HERE maps and you want to create geofences using satellite imagery, then in the map area, click **Map Layers** () , and then select the **Satellite** option.
4. On the **Create Geofence** page, enter or select the following values:
 - **Name:** Enter the name of the geofence
 - **Tags:** Optionally, enter tag values to make it easier to locate and identify the geofence
 - **Geofence Type:** Select **Polygonal** or **Circular** based on the type of boundary area you want to fence.
5. Use **Search Geofence** () to enter or select the specific address of the area you wish to fence
The address or the region appears highlighted on the map.
6. Click the **Zoom in** () icon to zoom in to a map location, or click the **Zoom out** () icon to zoom out from a map location to narrow down to the location where you want to

create a geofence. Alternatively, you can enter the **Latitude** and **Longitude** values to directly zoom in to the location where you want to create the geofence.

7. For the polygonal geofence type, draw it on the map:
 - a. Click and hold the left mouse button to move the map.
 - b. Click the **Draw** (铅笔) icon to draw the permitted area for the geofence.
 - c. Click the left mouse button on the map to add a polygon and to start drawing the permitted location boundary.
 - d. Click the left mouse button and drag it to a new location and the release the left mouse button.
 - e. Continue drawing the permitted location boundary until all the polygons are joined as displayed in the image.



8. For a circular geofence, enter the **Radius** value in miles and select the area on the map:
 - a. Click and hold the left mouse button to move the map.
 - b. Click the **Draw** (铅笔) icon and then double click the desired location of the geofence, on the map.
 - c. You can optionally modify the **Latitude** and **Longitude** values that are populated when you click the area on the map.
 - d. You can increase or decrease the **Radius** value of the circular geofence.



9. Click **Save**.
10. Click **Back** to return to the **Geofences** page.
11. Assign the geofence to a vehicle location rule. See [Create a Rule](#).

Show or Hide Geofences in the Map View

Show a geofence in the map view to quickly view the geofences in the current map view. Hide geofences in the map view to reduce the information displayed in the current map view.

You can show or hide geofences in the **Fleet Map** view or the **Trip or Shipment Map** view from the **Operation Center** of your current organization. In addition, you can view the geofence name by hovering the mouse over a given geofence in the map view.

 **Note:**

The Shipment business object will be deprecated in a future release. Hence it is recommended to use Trips for real-time monitoring of in-transit movements.

1. From the **Operation Center** click **Fleet Map** (ⓘ) or click **Shipment Map** (ⓘ).
2. Click **Map Layers** (ⓘ) that appears below the **Zoom Out** icon.
3. Select one of these options:
 - Select the **Geofences** checkbox to show geofences in the current map view.
 - Clear the **Geofences** checkbox to hide geofences in the current map view.

Enable Route Geofencing

Enable route geofencing to receive rule based notifications when a vehicle moves beyond the route corridor width and when the route deviation tolerance value is met or exceeded. You

enable this setting at the organization level and it applies to all the geofences that you've created in that organization.

1. Click **Menu**  and then click **Design Center**.
2. Click **Organization** and then **Settings** .
3. Click **Enable Route Geofencing** in the **Route Geofence Settings** area.
4. (Optional) Edit these settings:
 - **Route Corridor Width:** Enter a value to define the width of the trip corridor in miles or kilometers. When a vehicle moves beyond the corridor value, a notification is sent to the Fleet Administrator.
 - **Route Deviation Tolerance:** Enter a value to define the number of times a vehicle can deviate from a defined trip route. When the vehicle meets or exceeds the defined value, a notification is sent to the Fleet Administrator.

Set the Route Corridor Width Value

When route geofencing is enabled, the route corridor width defines the width of the trip corridor in miles. The larger the value, the greater the allowable deviation. When a vehicle moves beyond the corridor value, a geofence violation occurs which can be tracked by a rule that can then send a notification to the administrator.

1. Click **Menu**  and then click **Design Center**.
2. Click **Organization** and then **Settings** .
3. In the **Route Geofence Settings** area, enter the width of the trip corridor in miles in the **Route Corridor Width** field.

Set Route Deviation Tolerance Value

When route geofencing is enabled, the route deviation tolerance defines the number of times a vehicle can deviate from a defined trip route. The higher the value, the more times a vehicle can deviate from a planned route. When a vehicle meets or exceeds the deviation tolerance value, a geofence violation occurs which can be tracked by a rule that can then send a notification to the administrator.

1. Click **Menu**  and then click **Design Center**.
2. Click **Organization** and then **Settings** .
3. In the **Route Geofence Settings** area, enter a value in the **Route Deviation Tolerance** field to define the number of times a vehicle can deviate from a defined trip route.

Import and Manage Facilities

After configuring an integration with Oracle Warehouse Management Cloud Service, you can import the facilities that you need to monitor. You can update the default check-in geofence, create custom geofences, upload a floor plan, and update the uploaded floor plan of the imported facilities.

A facility is a distribution center, a site, or a store where loading and unloading of shipments from vehicles are performed. After integrating with Oracle Warehouse Management Cloud Service, you select the facilities to import and monitor in your Oracle IoT Fleet Monitoring Cloud instance. A facility is imported with a default check-in geofence that you can edit. You can optionally create up to three geofences in an imported facility. You cannot modify any other facility details except the facility type icon.

Import Facilities from Oracle Warehouse Management Cloud Service

A fleet administrator can import those facilities into Oracle IoT Fleet Monitoring Cloud Service which have been marked as **WMS Managed** by the facility manager in Oracle Warehouse Management Cloud Service

You should have already configured and enabled an integration with Oracle Warehouse Management Cloud Service in an organization. To import facilities in that organization, sign in as the administrator and complete the steps:

1. Click **Menu (≡)** and then, click **Facilities**.

For the first time, the **Import Facilities** button is displayed at the center. Otherwise, the **Import/Update Facility** icon is displayed above the list of facilities, on the left navigation bar.

Design Center  Facilities

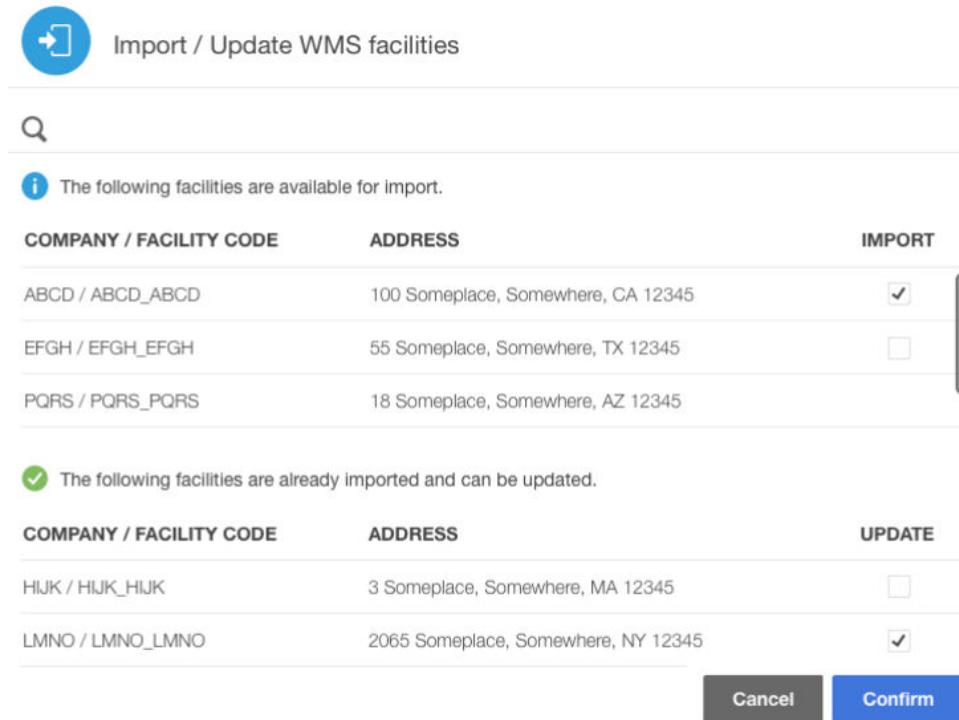
WMS Integration Configured

 Import Facilities

2. Click **Import Facilities** or click the **Import/Update Facility** icon whichever is displayed.

You need to wait for sometime as Oracle IoT Fleet Monitoring Cloud Service fetches the facilities from Oracle Warehouse Management Cloud Service. A list of facilities that are available for import and a list of already imported facilities available for update are

displayed.



COMPANY / FACILITY CODE	ADDRESS	IMPORT
ABCD / ABCD_ABCD	100 Someplace, Somewhere, CA 12345	<input checked="" type="checkbox"/>
EFGH / EFGH_EFGH	55 Someplace, Somewhere, TX 12345	<input type="checkbox"/>
PQRS / PQRS_PQRS	18 Someplace, Somewhere, AZ 12345	<input type="checkbox"/>

✓ The following facilities are already imported and can be updated.

COMPANY / FACILITY CODE	ADDRESS	UPDATE
HJK / HJK_HJK	3 Someplace, Somewhere, MA 12345	<input type="checkbox"/>
LMNO / LMNO_LMNO	2065 Someplace, Somewhere, NY 12345	<input checked="" type="checkbox"/>

Cancel **Confirm**

3. To select the facilities, click **IMPORT** for each facility and then, click **Confirm**.

On the **Facilities** page, the imported facilities are listed on the left navigation bar.

List and View Facilities

An administrator of an organization, you can obtain the list of facilities imported in that organization and also view the details of each facility including its facility code, address, check-in geofence, custom geofences, rules, and floor plans.

To list and view the facilities of an organization, you as an administrator should have imported the facilities from the Oracle Warehouse Management Cloud Service instance that is integrated with your Oracle IoT Fleet Monitoring Cloud Service instance for the organization.

1. Click **Menu (≡)**, **Design Center**, and then, click **Facilities**.

The list of facilities imported in the organization are displayed on the left navigation bar.

2. To view the details of a facility, from the left navigation bar, click a facility.

The facility details such as the map preview of the check-in geofence, the **Facility/ Company Code**, **Address**, the status of **Check-in Geofence**, the number of custom **Geofences**, the number of **Rules**, and the status of the facility **Floor Plan**

are displayed.

The screenshot shows the Oracle IoT Fleet Monitoring Cloud Service interface. At the top, the navigation path is: Default Organization > Design Center > Facilities > IOT. The left sidebar shows organization details: IOT_FAC_SQE, IOT_FAC_UI, and W1-KANSAS CITY DISTRIBUTION. The main content area displays a map of a facility with a red polygon representing the check-in geofence. To the right of the map are facility details: FACILITY/COMPANY CODE (IOT_FAC / IOT_COMP) and ADDRESS (100 Galleria Parkway, Atlanta, GA 30305). Below the map are three buttons: CHECK-IN GEOFENCE (Custom), GEOFENCES (1), and RULES (1). At the bottom, there are two status indicators: FLOOR PLAN (Uploaded) and IOT (status: 1).

3. A polygonal geofence by fitting a regular hexagon inside a circle of radius of around 2 KM is provided when a facility is imported. To view the details of the default check-in geofence, click **CHECK-IN GEOFENCE** and examine the default geofence of the facility.
4. You can create additional custom geofences in the facility. To view the custom geofences, click **GEOFENCES**.
5. To view the rules created for the facility click **RULES**.
6. You can upload and update an image of the floor plan. To view the uploaded floor plan of the facility, click **FLOOR PLAN**.

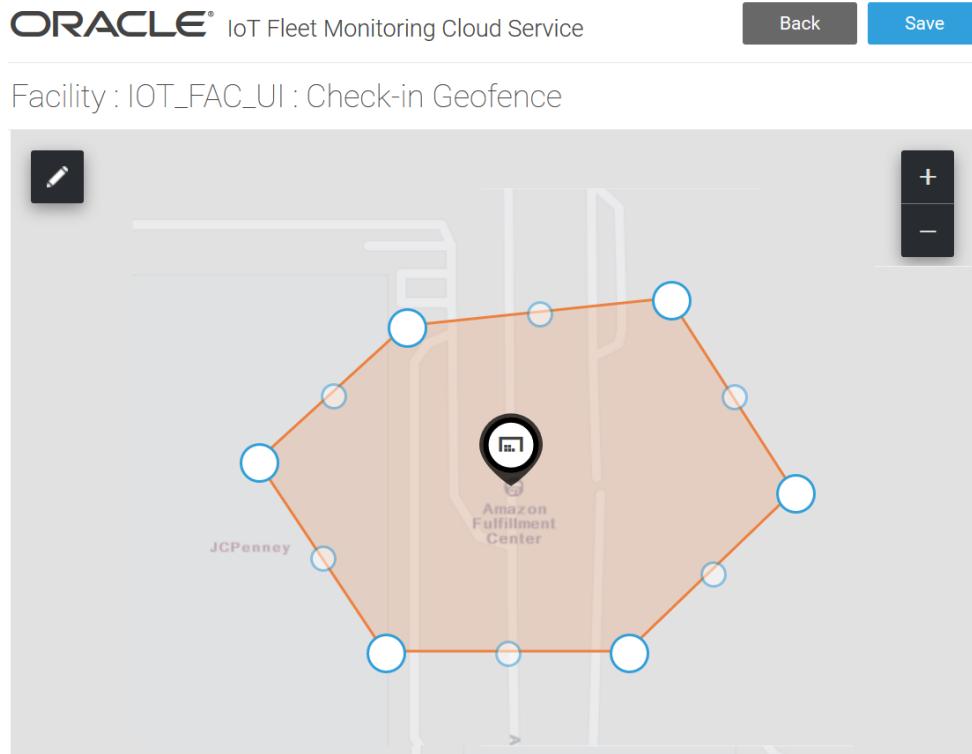
Update the Check-in Geofence of a Facility

After integrating with Oracle Warehouse Management Cloud Service, when you import a facility in an organization of your Oracle IoT Fleet Monitoring Cloud Service instance, a geofence is provided by default to the facility. As a user, you can update this default check-in geofence.

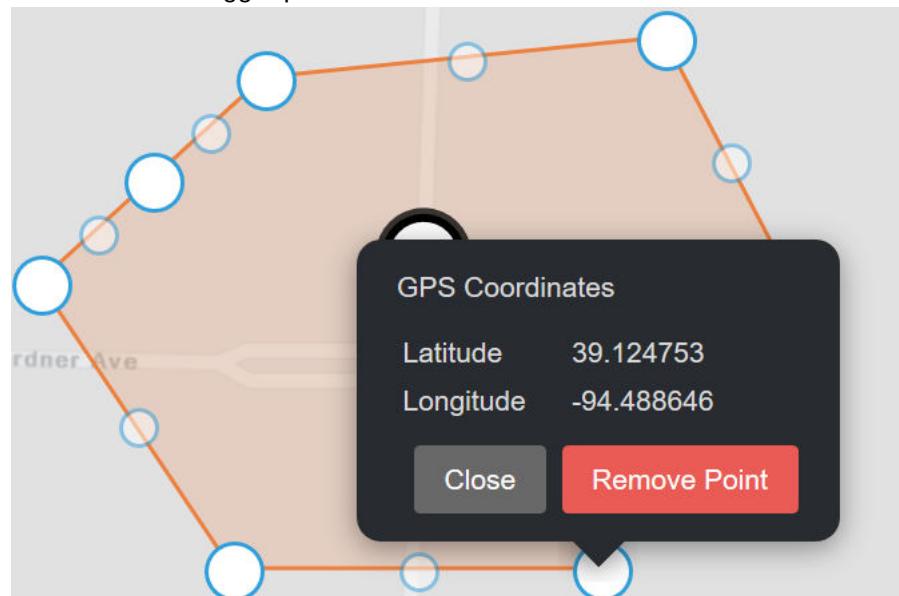
Sign in as a user of the organization to update the check-in geofence that is provided in a facility by default.

1. Click **Menu (≡)**, **Design Center** and then, click **Facilities**.
The list of facilities imported in the organization are displayed on the left navigation bar.
2. Click a facility from the left navigation bar.
The facility details are displayed.
3. Click **CHECK_IN GEOFENCE (edit)**, whose status is displayed as **Default**.
4. On the **Check-in Geofence** map view page, click **Edit (edit)**.

In a map view, the default geofence's polygon appears highlighted with circular points, each representing a GPS coordinate.



5. Complete one of the two methods to edit the default check-in geofence:
 - **Modify the shape of the polygon:** Drag a bigger circular point to modify the polygon's shape. To delete a point, right click the bigger points. If you left click a bigger circular point, the latitude and longitude values of the point are displayed that you can select to remove. You can click the smaller points to convert them to bigger points with GPS coordinates.

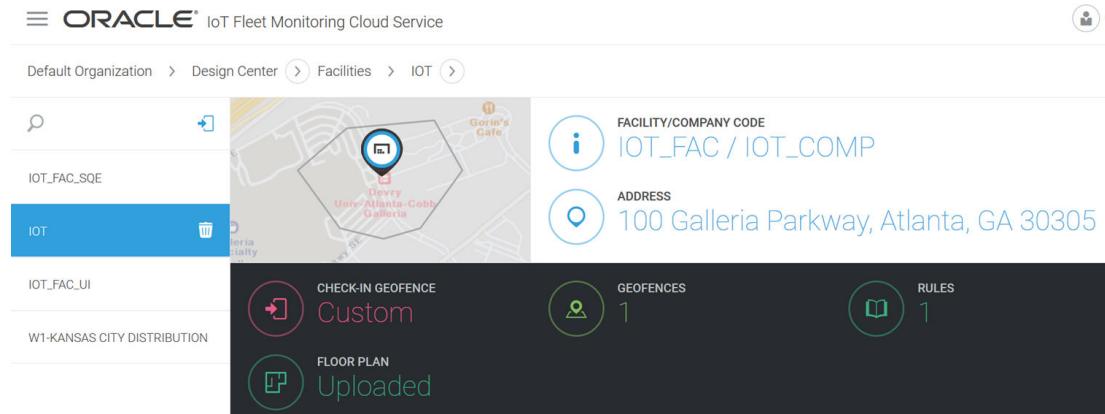


- **Delete the default polygon and create a new geofence:** Click anywhere on within the red border of the polygon to display a **Delete Polygon** button and

click the button. Use the **Draw** (铅笔) icon to [create a new geofence](#) around the facility.

6. Click **Save** and then **Back**. You're on the **Check-in Geofence** page of the facility.
7. To return to the facility details page, from the breadcrumb information, click the facility name.

You are on the facility details page and the status of **CHECK-IN GEOFENCE** is displayed as **Custom**.



Create Geofences for a Facility

The facilities imported from Oracle Warehouse Management Cloud Service are provided with a default check-in geofence. Besides the default geofence, you can create multiple custom geofences for the facilities.

In Oracle IoT Fleet Monitoring Cloud Service after the administrator has configured an integration with Oracle Warehouse Management Cloud Service and imported the facilities into an organization, as a user of the organization, you can create geofences for a facility. Besides the check-in geofence provided by default, you may need custom geofences for a facility boundary fence, a yard boundary fence, or a dock area boundary fence.

1. Click **Menu (≡)**, **Design Center** and then, click **Facilities**.

The list of facilities imported in the organization are displayed on the left navigation bar.

2. From the left navigation bar, click the facility for which you need to create a geofence.

The facility details are displayed.

3. Click **GEOFENCES** (地点) and then on the **Geofences** page, click **Create Geofence** (+).

The **Custom Geofences** page for the facility is displayed

4. Complete the Steps 3 - 7 in [Create a New Geofence](#).

You are on the **Geofences** page of the facility and a snapshot of the new geofence is displayed.

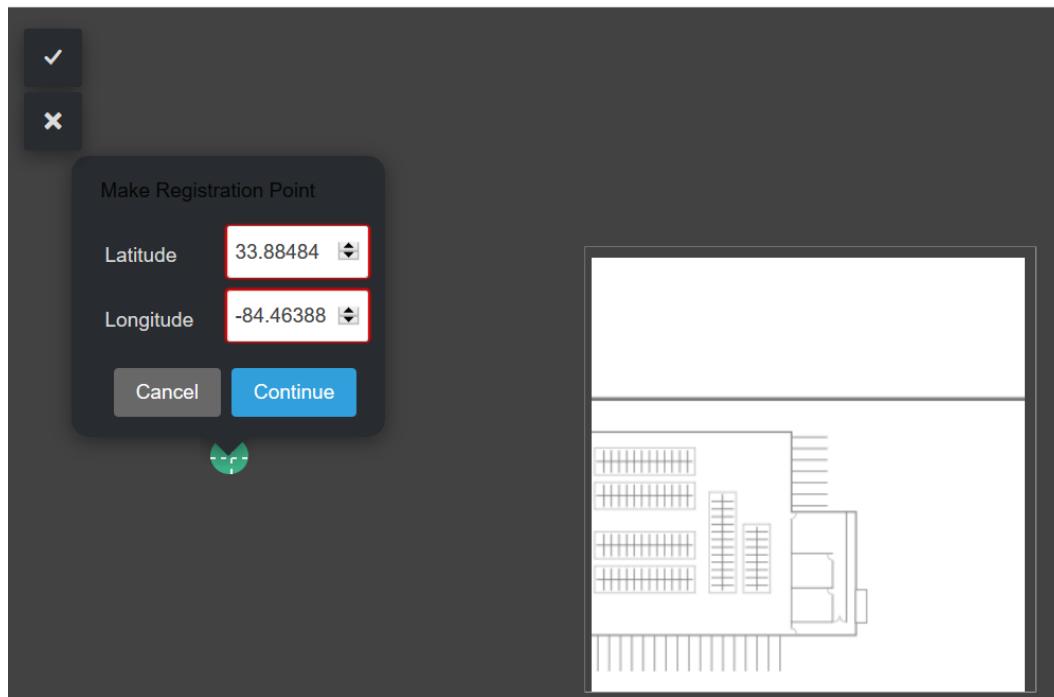
To edit the newly created geofence, hover your mouse over the geofence, click **Edit** (-pencil), modify, and save the updates. To delete the newly created geofence, click **Delete** (trash bin). On the **Confirm Delete** dialog box, click **Delete**.

Upload a Floor Plan for a Facility

As an organization administrator, you can upload a floor plans for a facility imported from an Oracle Warehouse Management Cloud Service instance that is already integrated with your Oracle IoT Fleet Monitoring Cloud Service instance.

After configuring an integration with Oracle Warehouse Management Cloud Service, facilities can be imported into an organization of your Oracle IoT Fleet Monitoring Cloud Service instance. As an administrator, you can upload an image of a facility floor plan.

1. Click **Menu (≡)**, **Design Center** and then, click **Facilities**.
The list of facilities imported in the organization are displayed on the left navigation bar.
2. From the left navigation bar, click the facility for which you need to upload a floor plan.
The facility details are displayed.
3. Click **FLOOR PLAN (P)** and then on the **Floor Plan** page, click **Select a File to Upload**
4. On the **File Upload** dialog box, browse to the location where you've saved the floor plan image file, select it, and click **Open**. Alternatively, you can drag and drop the image file on the **Floor Plan** page.
The image of the floor plan is displayed on the **Floor Plan** page.
5. Before you can save the floor plan, you need to provide its geo-coordinates to position the floor plan accurately on the map.
 - a. Click the **Globe** icon (globe) and then, click on a position of the map.
 - b. Enter the latitude and longitude values and then, click **Continue**
 - c. Click on another position of the map and repeat the previous step.
 - d. Click the **Right Mark (checkmark)** icon to complete the process.



6. Click **Save** and then click **Back** to return to the facility details page.

On the facility details page, the **FLOOR PLAN** status is displayed as **Uploaded**.

Update the Floor Plan of a Facility

As an organization administrator, you can update the floor plan of a facility imported from an Oracle Warehouse Management Cloud Service instance that is already integrated with your Oracle IoT Fleet Monitoring Cloud Service instance.

Sign in as an administrator of an organization in your Oracle IoT Fleet Monitoring Cloud Service instance and update the position, background, or size of the floor plan of a facility that is imported from an Oracle Warehouse Management Cloud Service instance. To upload a floor plan, you should have uploaded and saved the floor plan for a facility.

1. Click **Menu (≡)**, **Design Center** and then, click **Facilities**.
The list of facilities imported in the organization are displayed on the left navigation bar.
2. From the left navigation bar, click the facility for which you need to upload a floor plan.
The facility details are displayed.
3. Click **FLOOR PLAN** (FP) that displays the status as **Uploaded**.
4. On the **Floor Plan** page of the facility, update the following attributes of the floor plan
 - From the left bar, click the **Crop** (C) icon. The floor plan is highlighted with a border. Drag and drop the four points of the border to re-size the floor plan. Click the **Right** or the **Cross** icon to accept or undo the changes.
 - From the left bar, click the **Slide Bar** (S) icon. Use the slide bar to modify the background of the floor plan. Click the **Right** or the **Cross** icon to accept or undo the changes.

5. Before you can save the changes to the floor plan, you need to provide its geo-coordinates again similar to what you had done when uploading the floor plan. See Step 5 in [Upload a Floor Plan for a Facility](#)
6. Click **Save** and then click **Back** to return to the facility details page.

Create a Facility Rule

Create a rule to generate an incident or an alert when a facility's KPI value meets or exceeds a set threshold.

Create a rule for one or more facilities imported from Oracle Warehouse Management Cloud Service into an organization. Facility rules are based on their associated KPI values.

1. Enter the text of the first step here.
(Optional) Enter the result of the step here.
2. Click **Menu (≡)**, **Design Center** and then, click **Facilities**.
The list of facilities imported in the organization are displayed on the left navigation bar.
3. From the left navigation bar, click the facility for which you need to create a rule.
The facility details are displayed.
4. Click **Rules** (grid icon) and then on the **Rules** page, click **Create Rule** (+).
The **Create Rule** page for the facility is displayed
5. Enter a name for the rule in the **Name** field.
6. Select one or more facilities from the **Facility** list:
7. Select the rule condition(s) in the **Condition** area:
 - **Attribute**: Select one of the system defined facility metrics
 - **Operator**: Select one of the operators from the list.
 - **Value**: Select an attribute to generate an alert or incident notification.
8. (Optional) Select additional conditions.
9. Select these options in the **Fulfillment** area:
 - **All Conditions Apply**: Select this option to generate an incident report when all of the conditions are met or exceeded. or select **Any Conditions Apply** to generate an incident report when any of the conditions are met or exceeded.
 - **Any Conditions Apply**: Select this option to generate an incident report when any of the conditions are met or exceeded.
 - **Incident**: Select this option to generate an incident notification when the specified conditions are met or exceeded.
 - **Alert**: Select this option to generate an alert when the specified conditions are met or exceeded.
10. If you selected **Incident** in the **Fulfillment** area, complete these fields in the **Incident Details** area:
 - **Summary**: Enter a summary that describes the rule.

- **Type:** Select the rule type.
- **Priority:** Select an optional priority for the rule.
- **Tags:** Enter optional tags for the rule.
- **Description:** Enter an optional description for the rule.

11. (Optional) If you selected **Incident** in the **Fulfillment** area, select subscriber(s) in the **Subscribers** list in the **Notification Subscription** area.

When you add a subscriber, the subscriber receives an SMS incident notification on their mobile device when the rule conditions are met or exceeded.

12. If you selected **Alert** in the **Fulfillment** area, complete these fields in the **Alert Details** area:

- **Summary:** Enter a summary that describes the rule.
- **Severity:** Select an optional priority for the rule.
- **Type:** Select the severity for generating the alert.
- **Suppression Period:** Select the time in minutes to suppress the alert.

13. (Optional) If you selected **Alert** in the **Fulfillment** area, select the data to include in the alert notification:

- **Source Attributes:** Select this option to include the source attributes in the alert notification.
- **Context Information:** Select this option to include the context information in the alert notification.
- **Message Payload:** Select this option to include the message that generated the rule, in the alert notification.

14. Select a **Rule Schedule**.

15. For the **Custom**, rule schedule, select these options:

- **Repeat Weekly:** The rule will be triggered once every week
- **Repeat Monthly:** The rule will be triggered once every month
- Select cells or drag over the rows to define a data window for the weekly or monthly rule schedule. The rule will use the selected day to trigger and the time range for metric data.

16. Click **Save**.

17. Click **Back** to return to the **Rules** list.

You can view the incidents or alerts generated by a rule from the **Incidents** and **Alerts** options in **Operation Center** respectively.

 **Note:**

Alternatively, you can create a facility rule from the **Organization** view in **Design Center**. The organization's rule option lets you create rules for all the entities of that organization.

Use External Storage Options for Long-Term Data Availability and Analysis

You can choose to use one of the external storage options, namely Oracle Autonomous Database or OCI Object Storage, to safely and cost-effectively store your IoT sensor and analytics data for long-term persistence.

The application can use your external storage to store raw or aggregated sensor attribute data, and data related to analytics artifacts, such as metrics. You can also store your rule incidents. In addition, you can use the historical data for visualization and analysis in external and third-party applications.

You can use the rich querying functionality in Oracle Autonomous Database, or chart and analyze the stored data in external applications, such as Oracle Analytics Cloud. For example, you can use analysis, projects, and dashboards in Analytics Cloud to find the answers that you need from key IoT data displayed in graphical formats. You can use applications such as Oracle Visual Builder to create dashboards and mashups.

Use OCI Object Storage to Store Historical IoT Data

The Oracle Cloud Infrastructure (OCI) Object Storage service is an internet-scale, high-performance storage platform that offers reliable and cost-efficient data durability. If you have a subscription for OCI Object Storage, you can use it to store your IoT sensor and analytics data for long-term persistence.

You can learn more about OCI Object Storage here:

- [Overview of Object Storage](#)
- [Get Started with Object Storage](#)

Use the following steps to add and configure your external OCI Object Storage:

1. [Add an Oracle Cloud Account](#)
2. [Connect to an OCI Object Storage Instance](#)
3. [Add and Configure Your External OCI Object Storage Integration](#)

Add an Oracle Cloud Account

Use the **Settings > Integrations** page in your IoT application to configure an Oracle Cloud account. This Oracle Cloud account is used when specifying integration settings, such as OCI Object Storage settings.

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **Oracle Cloud Account** and click **Add**.

Tip: You can also search for an integration name in the list.

NAME	INFORMATION	ADD
Oracle Analytics Cloud Service	⚠️ deprecated and will be removed in a future release.	<input type="checkbox"/>
Oracle B2B Service	Requires • Oracle Maintenance Cloud Service ⚠️ Cannot be used in conjunction with Oracle B2C Service	<input type="checkbox"/>
Oracle B2C Service	⚠️ Cannot be used in conjunction with Oracle B2B Service	<input type="checkbox"/>
Oracle Cloud Account		<input checked="" type="checkbox"/>
Oracle Demand Management Cloud	Requires • Oracle Cloud Account • Oracle Object Storage	<input type="checkbox"/>
Oracle Maintenance Cloud Service		<input type="checkbox"/>
Oracle Manufacturing Cloud Service		<input type="checkbox"/>
Oracle Object Storage Classic Service	⚠️ Oracle Object Storage Classic Service is now deprecated and will be removed in a future release	<input type="checkbox"/>

Oracle Cloud Account integration gets added to the Integrations page.

5. Under **Oracle Cloud Account**, add your cloud account details:
 - a. Enter your **Tenant OCID**.

The tenancy details are available from the Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **Tenancy: <YourTenancyName>**.

The tenancy OCID is shown under Tenancy Information. Click **Copy** to copy it to your clipboard.

The screenshot shows the OCI console with the following details:

- Tenant Information:**
 - OCID: ...suvx6a [Show](#) [Copy](#)
 - Name: T
 - Audit Retention Period: 90 Days
 - Home Region: us-ashburn-1
 - CSI Number: 21893728
- Object Storage Settings:**
 - Amazon S3 Compatibility API Designated Compartment:
 - SWIFT API Designated Compartment:
 - Object Storage Namespace:

Below the main content, there are navigation links: Resources, Regions, and a status message: Displaying 2 Regions.

Paste this value under **Tenant OCID** in your IoT application.

b. Enter the **User OCID**.

The user details are available from the Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **User Settings**.

The user OCID is shown under User Information. Click **Copy** to copy it to your clipboard.

Paste this value under **User OCID** in your IoT application.

- Under Public Key, click **Generate**.
- Click **Close**.

6. Set the public key in OCI Object Storage.

- On the **Settings>Integration** page of your IoT application, under **Oracle Cloud Account**, click **Copy** against **Public Key** to copy the public key that you generated earlier.
- Log in to your Oracle Cloud Infrastructure Console.
- Under the **Profile** menu, click **User Settings**.
- Click **API Keys** under **Resources**.
- Click **Add Public Key**.

Note: If three public keys are already listed under API Keys, you have to first delete one public key. An OCI Object Storage service user can't have more than three public keys.

- Select **Paste Public Keys** and paste the key that you copied from your IoT application.
- Click **Add**.

The fingerprint for the added public key appears under API Keys. The fingerprint should be the same as that displayed on the Settings page of your IoT application.

Connect to an OCI Object Storage Instance

Use the Integrations page in your IoT application to configure OCI Object Storage connection details and to enable Object Storage.

Before configuring the OCI Object Storage connection, you should have already added your Oracle Cloud account on the Settings page.

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **Oracle Object Storage Service** and click **Add**.

Tip: You can also search for an integration name in the list.

Oracle Object Storage integration gets added to the Integrations page.

5. On the Integrations page, under Object Storage Service, click **Connect**.
6. In the Oracle Object Storage dialog, provide your object storage connection details.
 - a. Enter the **Storage URL** for your OCI Object Storage.
For example, `https://objectstorage.us-phoenix-1.oraclecloud.com`.
 - b. Enter the object storage **Namespace** for your tenancy.
You can find the object storage namespace in your Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **Tenancy: <YourTenancyName>**.
 - c. Enter the **Default Bucket** name that stores the data.
The bucket name must already exist in your OCI Object Storage instance and must be public.
 - d. Click **Verify Connectivity** to verify the connection details and bucket name.
 - e. Click **Save** to save the OCI Object Storage connection details.
7. To enable the connection on the Integrations page, click **Edit Configuration** under **Oracle Object Storage**.
8. Toggle the **Integration Status** switch to ON, and click **Save**.

Add and Configure Your External OCI Object Storage Integration

To start storing IoT historical data in your OCI Object Storage, add and configure a new integration for **External Data Storage (Oracle Object Storage)**.

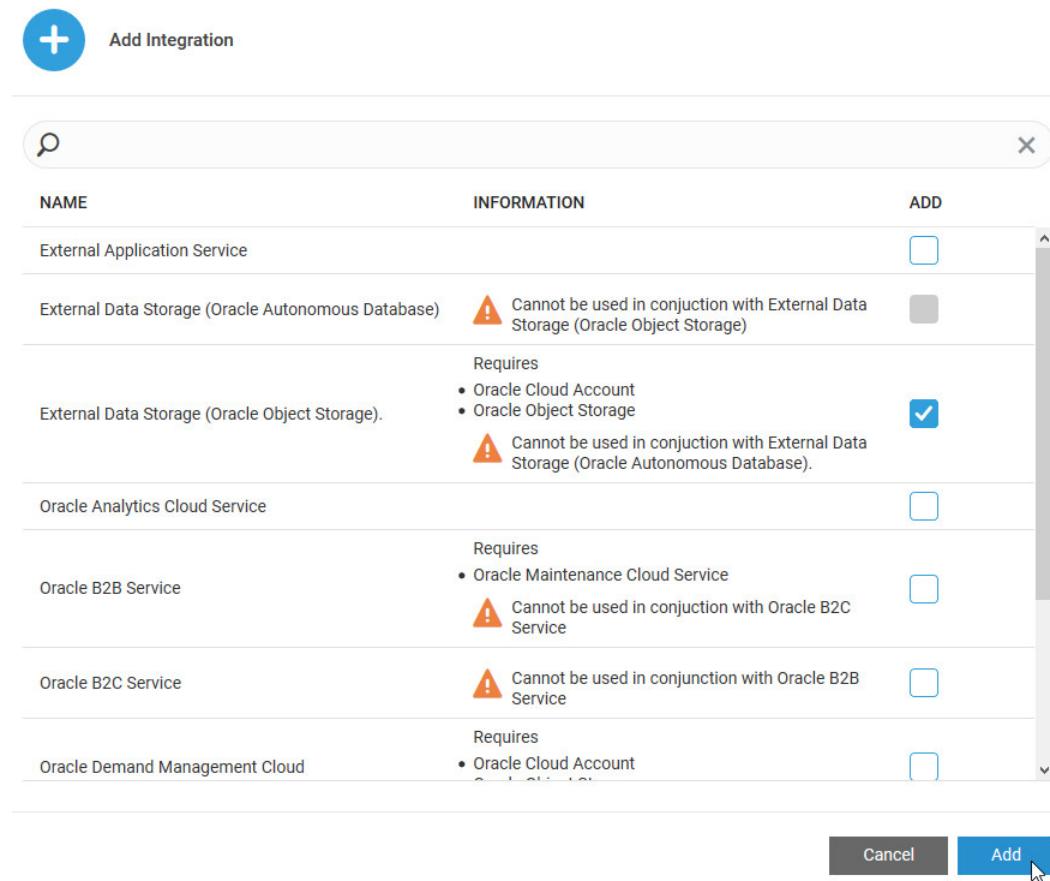
Note:

You should have already added an Oracle Cloud account and specified the connection settings for your OCI Object Storage instance.

 Video

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **External Data Storage (Oracle Object Storage)** and click **Add**.

Tip: You can also search for an integration name in the list.



NAME	INFORMATION	ADD
External Application Service		<input type="checkbox"/>
External Data Storage (Oracle Autonomous Database)	 Cannot be used in conjunction with External Data Storage (Oracle Object Storage)	<input type="checkbox"/>
External Data Storage (Oracle Object Storage)	 Requires • Oracle Cloud Account • Oracle Object Storage  Cannot be used in conjunction with External Data Storage (Oracle Autonomous Database).	<input checked="" type="checkbox"/>
Oracle Analytics Cloud Service		<input type="checkbox"/>
Oracle B2B Service	 Requires • Oracle Maintenance Cloud Service  Cannot be used in conjunction with Oracle B2C Service	<input type="checkbox"/>
Oracle B2C Service	 Cannot be used in conjunction with Oracle B2B Service	<input type="checkbox"/>
Oracle Demand Management Cloud	 Requires • Oracle Cloud Account	<input type="checkbox"/>

Add **Cancel**

 **Note:**

You can only have one external data storage integration at a time. So, you cannot add both Oracle Autonomous Database and Oracle Object Storage integrations at the same time. If you need to switch from Oracle Autonomous Database integration to Oracle Object Storage, you should first remove the Oracle Autonomous Database integration from the Integrations page.

The **External Data Storage (Oracle Object Storage)** integration gets added to the Integrations page.

5. On the Integrations page, under **External Data Storage (Oracle Object Storage)**, click **Edit Configuration**.

- a. Optionally enter a **File Prefix**.

Your IoT application prefixes the specified **File Prefix** to the file names that it stores in OCI Object Storage. This helps with easy identification of files.

- b. The **Default Bucket** is pre-populated with the bucket that you have used in your Object Storage connection settings.
- c. Optionally change the **Export Interval** if you want your application to write more frequently to OCI Object Storage.

The default data export interval is **4 Hours**.

- d. Select the IoT data that you wish to store externally:

 **Note:**

For Fleet Monitoring, only Attributes, Metrics, and Incidents are applicable.

- **Attributes:** You can choose to export all raw sensor attribute data. Alternatively, you can choose to export only aggregated attribute data, which exports aggregates, such as *Average*, *Maximum*, and *Minimum* values of your attribute values. Under **Attributes Granularity Level**, select **Aggregated** to export only aggregated attribute data. Under **Attributes Granularity Level Interval**, specify the aggregation interval. This determines the frequency at which the aggregated values are calculated.
If you select **None (raw data)**, then all raw sensor data is exported.
- **Metrics:** Select to export metric data corresponding to system metrics and computed metrics.
- **Anomalies:** Select to export anomaly data.
- **Predictions:** Select to export prediction data.
- **Trends:** Select to export data related to trends.
- **Incidents:** Select to export your rule incidents.
- **Warnings:** Select to export your rule warnings.

- e. Toggle the **Integration Status** switch to **Enabled**.
6. Click **Save** to save your configuration settings.

Use Oracle Autonomous Database to Store Historical IoT Data

Oracle Autonomous Database runs on Oracle Cloud Infrastructure and provides workload-optimized cloud services for transaction processing and data warehousing. If

you have a subscription for Oracle Autonomous Database, you can use it to store your IoT sensor and analytics data for long-term persistence.

You can choose either an Oracle Autonomous Transaction Processing database , or an Oracle Autonomous Data Warehouse database to externally store your IoT data.

You can learn more about Oracle Autonomous Database options here:

- [Oracle Autonomous Database Solutions](#)
- [Getting Started with Autonomous Transaction Processing](#)
- [Getting Started with Autonomous Data Warehouse](#)

Use the following steps to add and configure your external Oracle Autonomous Database storage:



[Video](#)

1. [Add an Oracle Autonomous Database Integration](#)
2. [Enable and Configure the Oracle Autonomous Database Integration](#)

Add an Oracle Autonomous Database Integration

To start storing IoT historical data in an Oracle Autonomous Database, add and configure a new integration for **External Data Storage (Oracle Autonomous Database)**.

1. In your IoT application, click **Menu** (≡), and then click **Settings**.
2. Click **Integrations**.
3. Click **Add** + to add a new integration.
4. In the Add Integration dialog, select **External Data Storage (Oracle Autonomous Database)** and click **Add**.

Tip: You can also search for an integration name in the list.

NAME	INFORMATION	ADD
External Application Service		<input type="checkbox"/>
External Data Storage (Oracle Autonomous Database)	<p>⚠ Cannot be used in conjunction with External Data Storage (Oracle Object Storage)</p>	<input checked="" type="checkbox"/>
External Data Storage (Oracle Object Storage)	<p>Requires</p> <ul style="list-style-type: none"> • Oracle Cloud Account • Oracle Object Storage <p>⚠ Cannot be used in conjunction with External Data Storage (Oracle Autonomous Database).</p>	<input type="checkbox"/>
Oracle Analytics Cloud Service		<input type="checkbox"/>
Oracle B2B Service	<p>Requires</p> <ul style="list-style-type: none"> • Oracle Maintenance Cloud Service <p>⚠ Cannot be used in conjunction with Oracle B2C Service</p>	<input type="checkbox"/>
Oracle B2C Service	<p>⚠ Cannot be used in conjunction with Oracle B2B Service</p>	<input type="checkbox"/>
Oracle Demand Management Cloud	<p>Requires</p> <ul style="list-style-type: none"> • Oracle Cloud Account • Oracle Object Storage 	<input type="checkbox"/>

 **Note:**

You can only have one external data storage integration at a time. So, you cannot add both Oracle Autonomous Database and Oracle Object Storage integrations at the same time. If you need to switch from Oracle Object Storage integration to Oracle Autonomous Database, you should first remove the Oracle Object Storage integration from the Integrations page.

The **External Data Storage (Oracle Autonomous Database)** integration gets added to the Integrations page.

5. On the Integrations page, under **External Data Storage (Oracle Autonomous Database)**, click **Connect** to specify the connection details.
 - a. In the External Data Storage Connection dialog, click **Upload Wallet Zip File** to upload the wallet required to securely connect to your database.

Oracle client credentials (wallet files) are downloaded from Oracle Autonomous Database by a service administrator. If you are not the database administrator, your administrator should provide you with the client credentials. The wallet file for the ATP/ADW database can be downloaded from the ATP/ADW service console.

After you upload the wallet file, the application verifies the wallet and prompts you for the database login credentials.
 - b. Enter the **User Name** and **Password** used to log into the database.

- c. Select the **Service Name** for the database.

The list of service name options is retrieved from the wallet that you uploaded earlier.

- d. Click **Verify Connectivity** to verify connectivity to your Oracle Autonomous Database instance.

External Data Storage Connection

Upload Wallet Zip File ✓ Verification Successful

User Name * Admin

Service Name * myatpdb_high

Verify Connectivity ✓ Successful

Cancel Save

The **Save** button is enabled after successful verification of the connection credentials.

- 6. Click **Save** to save your Oracle Autonomous Database connection settings.

Enable and Configure the Oracle Autonomous Database Integration

To start storing IoT historical data in your Oracle Autonomous Database, enable and configure the integration for **External Data Storage (Oracle Autonomous Database)**.

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Under **External Data Storage (Oracle Autonomous Database)**, click **Edit Configuration**.
 - a. Optionally enter a **Table Prefix**.
Your IoT application prefixes the specified **Table Prefix** to the table names that it creates in Oracle Autonomous Database. This helps with easy identification of tables.
 - b. Optionally change the **Export Interval** if you want your application to write more frequently to Oracle Autonomous Database.
The default data export interval is **4 Hours**.
 - c. Select the IoT data that you wish to store externally:

Note:

For Fleet Monitoring, only Attributes, Metrics, and Incidents are applicable.

- **Attributes:** You can choose to export all raw sensor attribute data. Alternatively, you can choose to export only aggregated attribute data, which exports aggregates, such as *Average*, *Maximum*, and *Minimum* values of your attribute values. Under **Attributes Granularity Level**, select **Aggregated** to export only aggregated attribute data. Under **Attributes Granularity Level Interval**, specify the aggregation interval. This determines the frequency at which the aggregated values are calculated.
If you select **None (raw data)**, then all raw sensor data is exported.
- **Metrics:** Select to export metric data corresponding to system metrics and computed metrics.
- **Anomalies:** Select to export anomaly data.
- **Predictions:** Select to export prediction data.
- **Trends:** Select to export data related to trends.
- **Incidents:** Select to export your rule incidents.
- **Warnings:** Select to export your rule warnings.

d. Toggle the **Integration Status** switch to **Enabled**.

4. Click **Save** to save your configuration settings.

Use Oracle Analytics Cloud to Chart and Analyze Externally Stored Data

You can chart and analyze the stored data in external applications, such as Oracle Analytics Cloud. For example, you can use analyses, projects, and dashboards in Analytics Cloud to find the answers that you need from key IoT data displayed in graphical formats.



Understand the Format of Your Externalized IoT Data

Learn the format in which your IoT sensor and analytics data is stored in an external store.

The IoT data that is externalized depends on the options that you choose to export while adding and configuring your external storage such as Oracle Autonomous Database or OCI Object Storage. In addition to externalizing data about entities in your application, you can choose to externalize IoT data for Metrics, Attributes, and Incidents.

The underlying schema for the externalized data remains the same irrespective of whether you use Oracle Autonomous Database or OCI Object Storage. In the case of Oracle Autonomous Database, externalized data is stored in tables and for OCI Object Storage, data is stored in CSV files. The rest of this topic is explained based on OCI Object Storage.

There are two types of externalized data:

- **Data of all entities in your application and the schema of the IoT data.**

This data is exported to the following set of CSV files that are explained later in this topic:

- *File_Prefix_ENTITY_TYPES*
- *File_Prefix_ENTITY_TYPE_ATTRIBUTES*
- *File_Prefix_ENTITIES*
- *File_Prefix_ENTITY_ATTRIBUTES*
- *File_Prefix_ANALYTICS*

These CSV files are created and present in the **ORG_NAME > Fleet Monitoring** folder, where **ORG_NAME** represents the organization under which the entities are present in your application.

In the preceding CSV files list, *File_Prefix* is the prefix that you specified in the **File Prefix** field while adding and configuring your OCI Object Storage. When you externalize data, the IoT application prefixes the specified File Prefix to the file names that it stores in OCI Object Storage. This helps with easy identification of files.

Note that if you are using Oracle Autonomous Database, then data is exported into tables with the same naming convention as that of the CSV files. The only difference is that *File_Prefix* is replaced with *Table_Prefix* which is the prefix that you specified in the **Table Prefix** field while adding and configuring your Oracle Autonomous Database for externalization.

The following are the entities for which data is exported when an externalization job is run:

- Vehicles
- Drivers
- Trips
- Shipments
- Stops
- Ship orders
- Equipments
- Ship units
- Ship items

Each time an externalization job is run, all the entities and corresponding data in the previously listed CSV files are overwritten. In the case of Trips and Shipments entities, the ones that are in running status are externalized to one of the relevant CSV files listed earlier and the ones that are in Completed status are externalized to timestamp-based CSV files that are explained later in this topic. This is illustrated by the following example:

Suppose the externalize job runs every one hour. When the job runs at 4 PM, all trips/shipments and their stops, ship orders, equipments, ship units, ship items completed between 3 PM and 4 PM are included in the *File_Prefix_ENTITIES_timestamp.csv* file located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > entities** folder, and their respective attributes are included in the

File_Prefix_ENTITY_ATTRIBUTES_timestamp.csv file located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > entitiesAttributes** folder. Any running trips and the corresponding trip attributes including ship orders, equipments, ship units, and ship items are included in the *File_Prefix_ENTITIES.csv* and *File_Prefix_ENTITY_ATTRIBUTES.csv* files, respectively.

- **IoT data of attributes, metrics, and incidents.**

These files are created based on the IoT data that you chose to externalize while adding and configuring your external store. The files are located in a set of time series subfolders under the **ORG_NAME > Fleet Monitoring** folder. The following is the list of files:

- *File_Prefix_ATTRIBUTE_VALUES_timestamp.csv* and *File_Prefix_AGG_ATTRIBUTE_VALUES_timestamp.csv*: Depending on whether you chose to store raw attribute data or aggregated attribute data, the *File_Prefix_ATTRIBUTE_VALUES_timestamp.csv* or *File_Prefix_AGG_ATTRIBUTE_VALUES_timestamp.csv* file is created, respectively.

While configuring your external store, if you selected to export only raw data (selected the **None (raw data)** option), then the *File_Prefix_ATTRIBUTE_VALUES_timestamp.csv* file is created. This file contains all raw sensor attribute data and is located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > attributeValues** folder.

If you selected to export only aggregated attribute data (selected the **Aggregated** option), then the *File_Prefix_AGG_ATTRIBUTE_VALUES_timestamp.csv* file is created. This file is located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > attributeValues** folder.

The following image shows a sample *File_Prefix_ATTRIBUTE_VALUES_timestamp.csv* file extract:

APP_ID	ORG_ID	ENTITY_TYPE_ID	ENTITY_ID	ATTRIBUTE_ID	EVENT_TIME	NUMERIC_VALUE	STRING_VALUE	BOOLEAN_VALUE
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J282Q8G	2022-12-13T05:54:30.441	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2C2Q8G	2022-12-13T05:54:30.441	3466.909947		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2G2Q8G	2022-12-13T05:54:30.441	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42M2Q8G	2022-12-13T05:54:30.441	170		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42R2Q8G	2022-12-13T05:54:30.441	5000		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J4282Q8G	2022-12-13T05:54:31.479	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2C2Q8G	2022-12-13T05:54:31.479	3344.86843		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2G2Q8G	2022-12-13T05:54:31.479	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42M2Q8G	2022-12-13T05:54:31.479	152		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42R2Q8G	2022-12-13T05:54:31.479	5000		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J4282Q8G	2022-12-13T05:54:32.478	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2C2Q8G	2022-12-13T05:54:32.478	3302.140661		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2G2Q8G	2022-12-13T05:54:32.478	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42M2Q8G	2022-12-13T05:54:32.478	160		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42R2Q8G	2022-12-13T05:54:32.478	5000		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J4282Q8G	2022-12-13T05:54:35.992	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2C2Q8G	2022-12-13T05:54:35.992	3146.060517		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J2G2Q8G	2022-12-13T05:54:35.992	0		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42M2Q8G	2022-12-13T05:54:35.992	162		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J42R2Q8G	2022-12-13T05:54:35.992	5000		
0-AD	ORA_DEFAULT_ORG	5Y9H4J202Q8G	5Y9J1QR82M0D0	5Y9H4J4282Q8G	2022-12-13T05:54:36.072	0		

The following image shows a sample *File_Prefix_AGG_ATTRIBUTE_VALUES_timestamp.csv* file extract:

APP_ID	ORG_ID	ENTITY_TYPE_ID	ENTITY_ID	ATTRIBUTE_ID	BEGIN_TIME	END_TIME	MAX_NUMERIC_VALUE	MIN_NUMERIC_VALUE	AVG_NUMERIC_VALUE
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	0	0	0
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	0	0	0
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	170	164	167
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	5000	5000	5000
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	336.681789	336.397233	3402.039511
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	0	0	0
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	0	0	0
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	62	0	61.31415929
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	0	0	0
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	170	150	159.7094431
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	169	150	159.6338496
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	5015.496	5000	5007.670863
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	5013.72	5000	5006.768518
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	56	0	55.114407
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	3857.49242	2932.522573	3459.610161
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	3879.355782	2363.926076	3468.613964
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	3907.823353	2241.730501	3484.111946
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	170	150	159.6091025
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E1K8M2Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	5012.646667	5000	5006.2311469
0-AD	ORA_DEFAULT_ORG	662DRHV82Q30	662E4542Q30	662DRHV2Q30	2023-01-09T05:00:00.000	2023-01-09T05:15:00.000	56	0	55.31019037

- *File_Prefix_METRIC_VALUES_Timestamp.csv*: This file contains all your metric data corresponding to system metrics and computed metrics. This file is

located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > metricValues** folder.

The following image shows a sample *File_Prefix_METRIC_VALUES_timestamp.csv* file extract:

- *File_Prefix_INCIDENTS_Timestamp.csv*: This file contains your rule incidents data and is located in the **ORG_NAME > Fleet Monitoring > Year > Month > Date > incidents** folder. This folder additionally contains the *File_Prefix INCIDENT_OCCURRENCESTimestamp.csv* and *File_Prefix INCIDENT_COMMENTSTimestamp.csv* files that contain information about every occurrence of an incident and incident progress comments, respectively.

The following image shows a sample *File_Prefix_INCIDENTS_timestamp.csv* file extract:

ID	ORG_ID	RULE_ID	ENTITY_ID	EXTERNAL_LIDS	EVENT_TIME	GEO_LOCATION	INCIDENCE_TYPE	ES_COUNT	TYPE	STATE	PRIORITY	SUMMAION	DESCRIPTION	TAGS	CREATED	LAST_MODIFIED
5958BD782PVG	ORA_DEFAULT_ORG	5959QNETM2M0D	5919JQR82MD0		2022-12-13T06:40:908	37.417813,-122.08792	MAINTENANCE	16	LOW	Speed violation	Speed violation	13T06:14:41.361	13T06:14:54.517	2022-12-13T06:41:36.1	2022-12-13T06:45.517	
5959E9NC2PVG	ORA_DEFAULT_ORG	5959QNETM2M0D	5919JHOH2Q8G		2022-12-13T06:15:04.518	37.4426,-122.11627	MAINTENANCE	4	LOW	Speed violation	Speed violation	13T06:15:04.874	13T06:15:07.721	2022-12-13T06:15:04.874	2022-12-13T06:15:07.721	

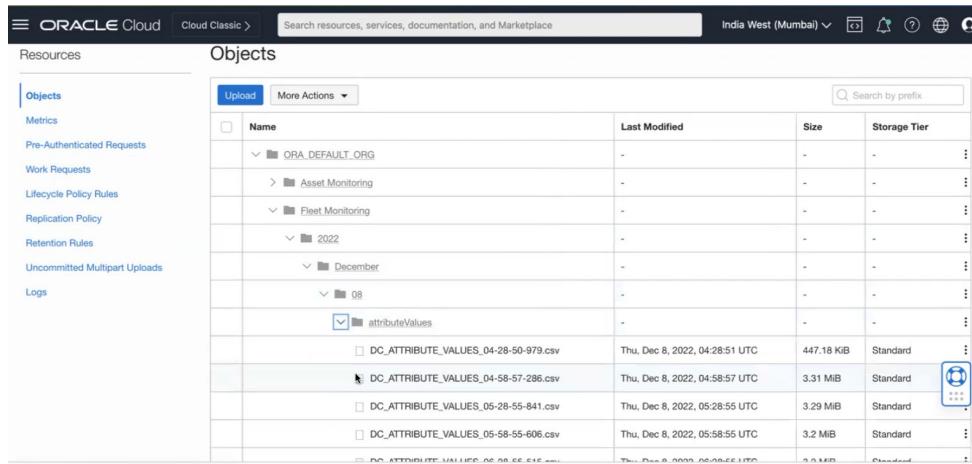
The following image shows a sample *File Prefix INCIDENT OCCURRENCES timestamp.csv* file extract:

ID	INCIDENT_ID	EVENT_TIME	DATA
5Y9SBF902PVG	5Y9SBDT82PVG	2022-12-13T06:14:40.908	[{
5Y9SBK7C2PVO	5Y9SBDT82PVG	2022-12-13T06:14:41.477	[{
5Y9SBKC82PVO	5Y9SBDT82PVG	2022-12-13T06:14:42.477	[{
5Y9SBPC42PVG	5Y9SBDT82PVG	2022-12-13T06:14:43.477	[{
5Y9SBT6C2PVO	5Y9SBDT82PVG	2022-12-13T06:14:44.477	[{
5Y9SBY3M2PVO	5Y9SBDT82PVG	2022-12-13T06:14:45.477	[{
5Y9SC21R2PVO	5Y9SBDT82PVG	2022-12-13T06:14:46.477	[{

The following image shows a sample *File Prefix INCIDENT COMMENTS timestamp.csv* file extract:

ID	INCIDENT_ID	STATE	COMMENT_TEXT	CREATED	CREATED_BY
67165V4R2Q30	67160VEC2ZT0	OPEN	Incident transitioned from 'NEW' to 'OPEN'	2023-01-09T09:17:45.114	iot-cloudops_www_grpc
67166KGX2Q30	67160VEC2ZT0	WORK_IN_PROGRESS	Incident transitioned from 'OPEN' to 'WORK_IN_PROGRESS'	2023-01-09T09:17:51.461	iot-cloudops_www_grpc
671682PQ2Q30	67160VEC2ZT0	RESOLVED	Incident transitioned from 'WORK_IN_PROGRESS' to 'RESOLVED'	2023-01-09T09:18:03.438	iot-cloudops_www_grpc

The following screenshot displays the folder structure for attributeValues with timestamp-based CSV files:



The *File_Prefix_ENTITY_TYPES.csv* and *File_Prefix_ENTITY_TYPE_ATTRIBUTES.csv* files contain schema of IoT data, whereas the *File_Prefix_ENTITIES.csv*, *File_Prefix_ENTITY_ATTRIBUTES.csv*, and *File_Prefix_ANALYTICS.csv* files contain the IoT data of all entities.

Schema Files

- ***File_Prefix_ENTITY_TYPES.csv***: Describes the types of entities used in your application. These are vehicles, drivers, trips, shipments, stops, ship orders, equipments, ship units, and ship items. Except for vehicles, all other entities have only one type per organization. As you can have multiple vehicle types in your application, there can be corresponding multiple entries of vehicle types in the file.

The following image shows a sample *File_Prefix_ENTITY_TYPES.csv* file extract:

ID	NAME	DESCRIPTION	KIND	ORG_ID	EXTERNAL	INTEGRATION	IMAGE	ICON	CREATED	CREATED_BY	LAST_MODIFIED	LAST_MODIFIED_BY	IS_DELETED
SY9HJ4202Q8G	TruckType		VEHICLE_TYPE	ORA_DEFAULT_ORG					2022-12-13T05:40:38.994	iot-cloudops_ww_grp	4	iot-cloudops_ww_grp	F
SY2W132M2PVG	drivers		DRIVER_TYPE	ORA_DEFAULT_ORG									F
SY2W13XM2PVG	trips		TRIP_TYPE	ORA_DEFAULT_ORG									F
SY2W13QM2PVG	shipments		SHIPMENT_TYPE	ORA_DEFAULT_ORG									F
SY2W13VM2PVG	stops		STOP_TYPE	ORA_DEFAULT_ORG									F

- ***File_Prefix_ENTITY_TYPE_ATTRIBUTES.csv***: Each entity type has several attributes associated with it. This CSV file has the definition for all the attributes associated with each of the entity types. Each attribute is in a separate row along with the associated fields. The ENTITY_TYPE_ID field indicates the entity type with which the particular attribute is associated. All entity types have a set of core attributes that are static, being built-in. The vehicle type can additionally have custom and sensor attributes that you might have defined in the application. The type of an attribute is accordingly indicated in the TYPE field as static, custom, or sensor.

The following image shows a sample *File_Prefix_ENTITY_TYPE_ATTRIBUTES.csv* file extract:

ID	NAME	DESCRIPTION	ENTITY_TYPE_ID	TYPE	DATA_TYPE	CATEGORY	ALLOWED_VALUES	STRING_VALUE	NUMBER_VALUE	DATE_VALUE	BINARY_VALUE	IS_MANATORY	LOW_THRESHOLD	LOW_Critical_threshold	HIGH_THRESHOLD	HIGH_Critical_threshold	IS_DELETED
5Y9HJ428ZQ8G	Speed		5Y9HJ420ZQ8G	SENSOR	NUMBER							F					F
5Y9HJ42CZQ8G	EngineRPM		5Y9HJ420ZQ8G	SENSOR	NUMBER							F					F
5Y9HJ42GZQ8G	NumberOfTCS		5Y9HJ420ZQ8G	SENSOR	NUMBER							F					F
5Y9HJ42MZQ8G	EngineCoolantTemp		5Y9HJ420ZQ8G	SENSOR	NUMBER							F					F
5Y9HJ42R2Q8G	Odometer		5Y9HJ420ZQ8G	SENSOR	NUMBER							F					F
5D8CF8RCZT0	Make		5Y9HJ420ZQ8G	STATIC	STRING					Truck		F					F
5D8CF8R2ZT0	Model		5Y9HJ420ZQ8G	STATIC	STRING				AZ100			F					F
5D8CF8W2ZT0	Years		5Y9HJ420ZQ8G	STATIC	STRING			2018, 2019,				F					F
5D8CF90ZT0	CategoryRegistration		5Y9HJ420ZQ8G	STATIC	STRING			2020				F					F
5D8CF84ZT0	Number		5Y9HJ420ZQ8G	STATIC	STRING			TRUCK				F					F

IoT Data Files

- **File_Prefix_ENTITIES.csv**: Contains the basic data for all entity types. The basic data for an entity includes its name, entity type ID, Org ID, Parent ID, Status, State, and timestamp columns such as created, created by, and so on.

The following image shows a sample *File_Prefix_ENTITIES.csv* file extract:

ID	NAME	DESCRIPTION	ENTITY_TYPE_ID	ORG_ID	EXTRACTION_ID	INTEGRATION_ID	PARENT_ID	STATUS	STATE	LAST_HEARD_TIME	EXTERNAL_DEVICE_ID	GEO_LOCATION	TAGS	CREATED	CREATED_BY	LAST_MODIFIED	LAST_MODIFIED_BY	IS_DELETED	
5Y9JA6582M00	Truck-6GLN086		5Y9H42	ORA_DEFAULT	02Q8G	_ORG			STOPPED					2022-12-13T05:43:56.201	iot-cloudops_vww_grp	2022-12-13T07:28:18.897	iot-cloudops_vww_grp	system	F
5Y9J1QR82M00	Truck-7GLUS550		5Y9H42	ORA_DEFAULT	02Q8G	_ORG			STOPPED					2022-12-13T05:42:46.977	iot-cloudops_vww_grp	2022-12-13T07:31:28.508	iot-cloudops_vww_grp	system	F
5Y9JH0HG2Q8G	Truck-N15151		5Y9H42	ORA_DEFAULT	02Q8G	_ORG			STOPPED					2022-12-13T05:44:52.106	iot-cloudops_vww_grp	2022-12-13T07:19:15.146	iot-cloudops_vww_grp	system	F
5Y9MAH3M2M00	IoTfMDriver1		5Y2W132	ORA_DEFAULT	M2PVG	_ORG			DRIVING					2022-12-13T05:52:42.735	iot-cloudops_vww_grp	2022-12-13T05:52:42.735	iot-cloudops_vww_grp	system	F
5Y9MEA3G2M00	IoTfMDriver2		5Y2W132	ORA_DEFAULT	M2PVG	_ORG			DRIVING					2022-12-13T05:53:13.702	iot-cloudops_vww_grp	2022-12-13T05:53:13.702	iot-cloudops_vww_grp	system	F
5Y9M6A5C2Q8G	IoTfMDriver3		5Y2W132	ORA_DEFAULT	M2PVG	_ORG			DRIVING					2022-12-13T05:52:07.722	iot-cloudops_vww_grp	2022-12-13T05:52:07.722	iot-cloudops_vww_grp	system	F
5Y9KQ742M00	Trip 102		5Y2W13X	ORA_DEFAULT	M2PVG	_ORG			REACHED_DESTINATION					2022-12-13T05:50:13.494	iot-cloudops_vww_grp	2022-12-13T07:19:15.312	iot-cloudops_vww_grp	iot-cloudcfc	

- **File_Prefix_ENTITY_ATTRIBUTES.csv**: Contains the attributes and their values for all entities. The entity to which each attribute belongs to can be determined from the ENTITY_ID column value. Each attribute value is represented by one row in the file and the values can be either in the STRING_VALUE, NUMBER_VALUE, DATE_VALUE, or BINARY_VALUE column, depending on the data type.

The following image shows a sample *File_Prefix* ENTITY_ATTRIBUTE.csv file extract:

NAME	ENTITY_ID	ENTITY_TYPE_ID	STRING_VALUE	NUMBER_VALUE	DATE_VALUE	BINARY_VALUE	IS_DELETED
Speed	5Y9JA6582MD0	5Y9HJ4202Q8G					F
EngineRPM	5Y9JA6582MD0	5Y9HJ4202Q8G					F
NumberOfDTCS	5Y9JA6582MD0	5Y9HJ4202Q8G					F
EngineCoolantTemp	5Y9JA6582MD0	5Y9HJ4202Q8G					F
Odometer	5Y9JA6582MD0	5Y9HJ4202Q8G					F
Speed	5Y9J1QR82MD0	5Y9HJ4202Q8G					F
EngineRPM	5Y9J1QR82MD0	5Y9HJ4202Q8G					F
NumberOfDTCS	5Y9J1QR82MD0	5Y9HJ4202Q8G					F
EngineCoolantTemp	5Y9J1QR82MD0	5Y9HJ4202Q8G					F
Odometer	5Y9J1QR82MD0	5Y9HJ4202Q8G					F
Speed	5Y9JH0HG2Q8G	5Y9HJ4202Q8G					F
EngineRPM	5Y9JH0HG2Q8G	5Y9HJ4202Q8G					F
NumberOfDTCS	5Y9JH0HG2Q8G	5Y9HJ4202Q8G					F
EngineCoolantTemp	5Y9JH0HG2Q8G	5Y9HJ4202Q8G					F
Odometer	5Y9JH0HG2Q8G	5Y9HJ4202Q8G					F
Make	5Y9JA6582MD0	5Y9HJ4202Q8G	Truck				F
Model	5Y9JA6582MD0	5Y9HJ4202Q8G	AZ100				F
Registration Number	5Y9JA6582MD0	5Y9HJ4202Q8G	6GLN086				F
				JHMFA165X7S00			
Vin	5Y9JA6582MD0	5Y9HJ4202Q8G	2027				F
Year	5Y9JA6582MD0	5Y9HJ4202Q8G		2019			F

- **File_Prefix_ANALYTICS.csv:** Contains the list of all custom or user-defined KPIs for vehicles, drivers, trips, shipments, ship orders, equipments, ship units, and ship items in your application.

The following image shows a sample *File_Prefix_ANALYTICS.csv* file extract:

ID	NAME	DESCRIPTION	ORG_ID	APP_ID	CATEG	KIND	TYPE	PARA METER S	OPTI ONS	FORM ULA	SCHEDU LE	ENABLED	CREATED	CREATED_BY	LAST MODIF IED_BY	IS_DELETED		
5Y2W14AR2PVG	sys_trackingStatus	Current tracking status of Trip	ORA_DEFAULT	0-AD	S	KPI	FORMULA				EVERY5 MINUTE	T	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F
5Y2W14CC2PVG	sys_openOutageInciden	Number of open outage incidents against this vehicle	ORA_DEFAULT	0-AD	S	KPI	FORMULA				T		2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	
5Y2W14FW2PVG	sys_geolocation	Geo-location of the shipments associated with the trip	ORA_DEFAULT	0-AD	S	KPI	FORMULA				T		2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	
5Y2W14HG2PVG	sys_actualDriveDuratio	The actual drive duration of the shipment in seconds	ORA_DEFAULT	0-AD	S	KPI	FORMULA				T		2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	
5Y2W14K82PVG	sys_loads_checkedIn_la	Loads checked-in in the last 24 hours	ORA_DEFAULT	0-AD	S	KPI	FORMULA				HOURLY	T	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	
5Y2W14MM2PVG	sys_averageFuelEconomy	Average fuel economy of the vehicle	ORA_DEFAULT	0-AD	S	KPI	FORMULA				HOURLY	T	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	
5Y2W14P42PVG	sys_idlingDuration	Total idling duration of the vehicle	ORA_DEFAULT	0-AD	S	KPI	FORMULA				EVERY5 MINUTE	T	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	2022-12- 2022-12- 2022-12- 2022-12-	F	

Core Attributes for Entities

Core attributes are attributes of entities present in the entity schema.

The following is the list of core attributes for every entity that is externalized:

Vehicle

- Category
- Driver Id
- Driver Name
- Make
- Model
- Registration Number
- Trip Id

- Trip Name
- Type Name
- Vin
- Year
- Years

Driver

- Login Id
- Trip Id
- Vehicle Id
- Vehicle Name

Trip

- Actual End Time
- Actual Start Time
- Asset Or Tracker Source
- Bill Of Lading
- Capacity Utilization
- Carrier Name
- Carrier Ref Num
- Commodities
- Completed Remark
- Cost
- Cost Currency
- Cost In USD
- Creation Source
- Delivered
- Domain Name
- Driver External Id
- Driver Id
- Driver Login Id
- Driver Name
- Earliest Start Time
- End Location
- Equipment Count
- Estimated Duration Seconds
- External Id
- Has Error

- Integration Id
- Integration Type
- Is Hazardous
- Is Temperature Controlled
- Latest Start Time
- Next Stop Index
- Planned Drive Distance
- Planned Drive Duration Seconds
- Planned End Time
- Planned Start Time
- Priority
- Service Mode
- Ship Order Count
- Ship Unit Count
- Start Location
- Status
- Stops Classification
- Stops Completed
- Toll Road
- Total Loaded Distance
- Total Loaded Distance In KM
- Total Loaded Distance UOM
- Total Planned Transit Duration
- Total Stops
- Total Unloaded Distance
- Total Unloaded Distance In KM
- Total Unloaded Distance UOM
- Total Volume
- Total Volume In CBM
- Total Volume UOM
- Total Weight
- Total Weight In KG
- Total Weight UOM
- Tracker Id For Third Party Carrier
- Trip Class
- Trip Distance
- Trip Length Classification

- Trip Type
- Vehicle Id
- Vehicle Name
- Vehicle Registration Number
- Vehicle Type
- Version

Shipment

- Carrier Id
- Carrier Name
- Completed Remark
- Cost
- Cost Currency
- Delivered
- Domain Name
- Driver External Id
- Driver Id
- Driver Login Id
- Earliest End Time
- Earliest Start Time
- End Time
- Equipment External Id
- Equipment Group Id
- Equipment Utilization
- External Id
- External Reference
- Latest Start Time
- Loaded Distance
- Next Stop Sequence
- Number Of Orders
- Number Of Ship Units
- Planned Drive Distance
- Planned Drive Duration
- Power Unit External Id
- Power Unit Id
- Power Unit Registration Number
- Shipper Id

- Shipper Name
- Start Time
- Stops Completed
- Toll Road
- Total Stops
- TPL Managed
- Tracker Status
- Tracking Id
- Transport Mode
- Trip Id
- Unloaded Distance
- Volume
- Volume Utilization
- Weight
- Weight Utilization

Stop

- Actual Arrival Time
- Actual Departure Time
- City
- Country
- Equipment Drop Count
- Equipment Pickup Count
- Estimated Arrival Time
- Estimated Departure Time
- Estimated Distance To Next Stop
- Estimated Time To Next Stop
- External Stop Sequence
- Facility Id
- Fence Id
- Inner Fence Arrival Time
- Inner Fence Departure Time
- Load Id
- Location Ref
- Planned Arrival Time
- Planned Departure Time
- Planned Stop Duration

- Postal Code
- Ship Unit Drop Count
- Ship Unit Pickup Count
- State
- Stop Duration
- Stop Number
- Stop Type
- Street
- Time Zone

Ship Order

- Trip Id
- Order Number
- Order Key
- Early Pickup Date
- Late Pickup Date
- Early Drop Date
- Late Drop Date
- Ship Unit Count
- Ship Item Count
- Special Instruction

Equipment

- Trip Id
- Trip Equipment Ref
- Equipment Number
- Equipment Type
- Pickup Stop Sequence
- Drop Stop Sequence
- Length In Metre
- Length
- Length UOM
- Max Volume In Cbm
- Max Volume
- Max Volume UOM
- Max Weight In Kg
- Max Weight
- Max Weight UOM

- Is Detached
- Is Linked
- Asset Or Tracker Source
- Alerts
- Open Incidents
- Is Hazardous
- Commodities
- Parent Entity Id
- Parent Entity Name
- Parent Entity Type
- Asset Id
- Asset Name
- Asset Type
- Asset External Id
- Custom Attributes
- Device Endpoint Ids
- Device Endpoint Names

Ship Unit

- Trip Id
- Ship Order Numbers
- Ship Unit Number
- Ship Unit Key
- Ship Unit Type
- Special Instruction
- Trip Equipment Ref
- Count
- Pickup Stop Sequence
- Drop Stop Sequence
- Volume In Cbm
- Volume
- Volume UOM
- Weight In Kg
- Weight
- Weight UOM
- Is Detached
- Is Linked

- Asset Or Tracker Source
- Alerts
- Open Incidents
- Is Hazardous
- Commodities
- Parent Entity Id
- Parent Entity Name
- Parent Entity Type
- Asset Id
- Asset Name
- Asset Type
- Asset External Id
- Custom Attributes
- Device Endpoint Ids
- Device Endpoint Names

Ship Item

- Trip Id
- Ship Order Number
- Ship Item Number
- Ship Item Key
- Ship Unit Number
- Special Instruction
- Trip Equipment Ref
- Quantity
- Pickup Stop Sequence
- Drop Stop Sequence
- Volume In Cbm
- Volume
- Volume UOM
- Weight In Kg
- Weight
- Weight UOM
- Is Detached
- Is Linked
- Asset Or Tracker Source
- Alerts

- Open Incidents
- Is Hazardous
- Commodities
- Parent Entity Id
- Parent Entity Name
- Parent Entity Type
- Asset Id
- Asset Name
- Asset Type
- Asset External Id
- Custom Attributes
- Device Endpoint Ids
- Device Endpoint Names

Integrate Oracle IoT Fleet Monitoring Cloud Service with Other Applications

Use integrations to share information between Oracle IoT Fleet Monitoring Cloud Service and other applications. You can integrate Oracle IoT Fleet Monitoring Cloud Service with payroll, customer relationship management (CRM), and supply chain management (SCM) applications.

Application integration provides numerous benefits, including:

- Increased agility. Respond to customer requests and business opportunities more quickly.
- Information sharing. Integration allows information to flow between separate applications operating inside and outside your business.
- Process automation. Streamline processes that include data from multiple applications. For example, incident information can be integrated with data from your CRM application to help you respond to and resolve customer issues more quickly.
- Reduced complexity. Integration combines the information and functionality of multiple applications into a single, easy-to-use interface.

Integrations let you realize the full benefit of your software investment. Integrate with other applications to use all of the data you collect as fully as possible.

Understand Built-In Integrations

Built-in integrations simplify integrating Oracle IoT Fleet Monitoring Cloud Service with your existing applications. Integrations can be completed quickly without coding or development.

Using a built-in integration removes the complexity of applications integration. There is no need to learn and code to a vendor's API. The built-in connectors take care of the integration for you. Harness the data available in all of your applications by integrating together in a single, user friendly interface.

Oracle IoT Fleet Monitoring Cloud Service provides the following built-in integrations with existing Oracle Cloud Applications:

- [Integrate with Oracle Transportation Management](#)
- [Integrate with Oracle Warehouse Management Cloud Service](#)
- [Integrate with Oracle Intelligent Track and Trace](#)

Build Custom Integrations with REST APIs

A custom integration integrates Oracle IoT Fleet Monitoring Cloud Service features into an enterprise application created by your development team. The development team can use the REST API to implement a corporate look and feel and provide functionality to meet your unique business requirements.

Integrate with Oracle Transportation Management

Integrating Oracle Transportation Management with Oracle IoT Fleet Monitoring Cloud Service makes it easier to access and share Oracle Transportation Management shipment data. The integration increases efficiency and provides a better customer experience because you always know the location of a shipment.

To integrate Oracle Transportation Management with Oracle IoT Fleet Monitoring Cloud Service your systems integrator completes these tasks in Oracle Transportation Management:

- Create an External System

The endpoint URL for this external system is `https://hostname/iotapps/serviceapi/v1/transportation?defaultNS=true` where `hostname` is the name of the computer hosting your Oracle Internet of Things Cloud Service instance.

- Set up External Status Type
- Create Saved Queries and Conditions
- Create Custom Contacts for Agent Errors
- Create a Remark Qualifier
- Create Send, Update, Delete, Fleet Monitoring Tracking Agents

When the Oracle Transportation Management tasks are complete, the systems integrator completes these tasks in Oracle IoT Fleet Monitoring Cloud Service:

- [Map Oracle Transportation Management Users](#)
- [Connect to an Oracle Transportation Management Cloud Service Instance](#)

When your systems integrator completes the integration tasks, drivers select a shipment, vehicle, and a route in the Oracle IoT Fleet Monitoring Mobile Application. After the shipment is selected it can be monitored in the shipment map view. See [Monitor Shipments and Facilities](#).

See [Oracle Transportation and Global Trade Management Cloud Integrating with Oracle Internet of Things Fleet Monitoring Guide](#) for details about the integration set up, sample work flows, and seeded data.

To request assistance configuring Oracle Transportation Management, contact Oracle Fusion Cloud IoT Intelligent Applications support. See [How to Get Support](#).

Map Oracle Transportation Management Users

To map Oracle IoT Fleet Monitoring Cloud Service drivers to Oracle Transportation Management drivers, create and upload a comma-separated value (CSV) file that

maps the Oracle Transportation Management driver identifier to the Oracle IoT Fleet Monitoring Cloud Service driver identifier.

 **Note:**

User mapping is only necessary if you are operating in private fleet mode and the drivers are Oracle IoT Fleet Monitoring Cloud Service and Oracle Transportation Management (OTM) users.

Obtain a valid OTM user with a driver role from the OTM admin .

The Oracle IoT Fleet Monitoring Cloud Service user is a valid user with a driver role and has been added to the default organization's users list.

Before you upload the mapping file, [View Existing User Mapping Information](#).

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**
3. Click **Import Data**
4. From the **Import Data for** drop down, select **User Mapping**, and then click [Click here to download a sample CSV file for: User Mapping](#).
5. Click **Save File** .
6. Click **OK** and browse to a location to save the file.
7. Click **Save**.
8. Browse to the location where you saved the .csv file.
9. Open the .csv file and complete these fields:
 - **#TM User Id:** Enter the Oracle Transportation Management user identifier.
 - **FM User Id:** Enter the Oracle IoT Fleet Monitoring Cloud Service to which the Oracle Transportation Management user should be associated.
 - **Actions:** (Optional) Enter `delete` or `DELETE` to remove mapping for the specified user.
10. Save and close the .csv file.
11. From the **Import Data for** drop down, select **User Mapping**, and then click **Select File**
12. Browse to the location where you saved the csv file and select it. On the **Import Data** page, verify that your csv file is visible and then click **Import**
13. On the **Upload User Mapping CSV Data** page, after you receive a successful message, click **Back**.

View Existing User Mapping Information

After integrating Oracle Transportation Management (OTM) with Oracle IoT Fleet Monitoring Cloud Service, you need to map the registered drivers of Oracle IoT Fleet Monitoring Cloud Service with the OTM drivers.

You should have configured an integration between Oracle IoT Fleet Monitoring Cloud Service and OTM, and then uploaded a comma-separated value (CSV) file that maps their respective driver users. Complete these steps to view this user mapping information.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**.
3. On the **Organization** page's lower section, click **Users Mapping** .

A table is displayed with two columns where each row has an OTM user ID mapped to its corresponding Fleet Monitoring app's user ID.

Connect to an Oracle Transportation Management Cloud Service Instance

To share Oracle Transportation Management (OTM) shipment data in an organization, you specify the URL, domain name, and access credentials for the Oracle Transportation Management instance.

You can create the integration in **Default Organization** or switch to the appropriate organization before you configure the integration. See [Change Your Current Organization](#). You should have the OTM instance URL, domain name, and the credentials to access it.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** sub-menu, click **Organization**
The **Default Organization** page appears
3. Click the **Integrations**  icon.
4. Expand **Oracle Transportation Management** and then click **OTM Configuration**.
On the **OTM Configuration** screen, to enable the integration, slide the **Integration Status** button.

You need to perform this step only once for an organization.

5. (Optional) If attributes' data, such as sensor values or metrics of an entity that have been used in rule conditions, need to be sent with the event payload, then enable the **Send Rule Attributes** flag.

OTM is configured with refnums/value pairs and mapped to relevant attributes and values for it to accurately interpret the attributes that it receives in event notifications.

If this flag is enabled only then the refnum/value pair would be sent to OTM otherwise it would be excluded from the event notification.

6. If you want the arrival and departure date and time that a third-party carrier driver manually enters in the mobile app for Shipment stops to be propagated to OTM, then you must enable the **Send Driver Manual Events** flag. Optionally, you can

enter the event codes that must be transmitted to OTM in the **Driver Arrived Location** and **Driver Departed Location** fields. The default values are DRIVER ARRIVE and DRIVER DEPART respectively. If the **Send Driver Manual Events** flag is disabled, then the arrival and departure values are captured and saved as driver-provided start and end times only in Fleet Monitoring.

7. To save the changes, click **Save** and then click **Close** .
8. In the **Oracle Transportation Management System** section, click **Add Integration**.
The **OTM Connection** screen appears and the **Integration Status** appears enabled.
9. Enter the following values in these fields:
 - **URL**: Enter the URL for the Oracle Transportation Management Cloud Service instance. Replace `myOTM.com` in the example and do not modify the remaining URL components. The complete URL must include `/GC3/glog.integration.servlet.WMServlet`.
 - **Domain**: Enter the external ID of OTM whose shipment data is exported to this organization of Oracle IoT Fleet Monitoring Cloud Service.
 - **Username**: Enter the user name to access the Oracle Transportation Management Cloud Service instance in this field.
 - **Password**: Enter the password to access the Oracle Transportation Management Cloud Service instance in this field.
 - (Optional) **Description**: Enter a description for this integration.
 - (Optional) **Verify Connectivity**: Click to verify the connection to the Oracle Transportation Management Cloud Service instance. You'll receive a connection successful message.
10. Click **Save**.

On the **Integrations** screen, beneath **Oracle Transportation Management**, the domain name and its description, if you've added, are displayed. OTM integration and mapping its domain with the organization is complete. To map another domain with this organization, repeat the previous three steps of this task.

Customize Oracle Transportation Management Cloud Service Transmission Codes

Transmission codes identify the data being sent to your Oracle Transportation Management Cloud Service instance. Edit these codes to meet your specific business requirements.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**
3. Click **Integrations** () icon.
4. In the **Oracle Transportation Management** section, click **OTM Configuration**.
The transmission codes are displayed with their descriptions. There are 4 categories of codes such as **Arrival Event Codes**, **Departure Event Codes**, **En-route Position Event Codes**, and **Shipment Link Event Codes**.
5. Make sure that **Integration Status** is enabled.

6. (Optional) In the **Arrival Events** area, edit the values in the **Status** fields.
7. (Optional) In the **Departure Events** area, edit the values in the **Status** fields.
8. (Optional) In the **En-route Position Events** area, edit the values in the **Status** fields.
9. (Optional) In the **Shipment Link Events** area, edit the values in the **Status** fields..
10. Click **Save**.

Set the Oracle Transportation Management Security Settings

Oracle Transportation Management uses wildcard security certificates. To exchange data with Oracle IoT Fleet Monitoring Cloud Service you need to set the trusted CN to work with wildcard certificates.

1. Open a web browser and browse to the location of your Oracle Fusion Cloud IoT Intelligent Applications instance.
Typically, the format of the URL for the Oracle Fusion Cloud IoT Intelligent Applications instance is <https://hostname/ui> where *hostname* is the host name of your Oracle Fusion Cloud IoT Intelligent Applications instance.
2. Enter your user name and password and then click **Sign In** .
3. Click **Menu (≡)** and then click **Settings** .
4. Scroll to the **Security** area and then complete these fields:
 - **Allowed Hosts for Cross-Origin Resource Sharing:** Enter *
 - **Trusted CN:** Enter *.<OTMdomain>.com

Enable Transit Time Predictions for Shipments

Oracle IoT Fleet Monitoring Cloud Service applies feature-based machine learning on data from Oracle Transportation Management Cloud (OTM) to gain insights and predict transit time for planned shipments and also provide real-time updates to that prediction for shipments that are enroute.

You can configure and enable an integration with Oracle Cloud Infrastructure Object Storage that stores the required shipment data from Oracle Transportation Management Cloud Service (OTM). Oracle IoT Fleet Monitoring Cloud Service creates training models from the ingested data, performs scoring to calculate on-demand forecasts, and then transmits the predictions to OTM.

Complete these tasks to enable Oracle IoT Fleet Monitoring Cloud Service to compute transit time predictions for shipments in OTM.

Tasks	Description	More Information
1. Add Your Cloud Account	You retrieve your tenancy details from Oracle Cloud Infrastructure Object Storage, create your cloud credential configuration in Oracle IoT Fleet Monitoring Cloud Service, copy the generated public key to the OCI Object Storage console, and then validate the fingerprint values.	Add an Oracle Cloud Account
2. Connect to an OCI Object Storage Instance	In Oracle IoT Fleet Monitoring Cloud Service, you enter the values for the storage URL, name-space, and default bucket to configure the integration with Oracle Cloud Infrastructure Object Storage.	Connect to an OCI Object Storage Instance
3. Configure an Integration with Oracle Transportation Management Cloud Service	In Oracle IoT Fleet Monitoring Cloud Service, you enable and configure the OTM integration with Oracle Object Storage container. You enter the required values to connect to an OTM instance and map its domain to an organization in Oracle IoT Fleet Monitoring Cloud Service.	<p>1. Enable Integration with Oracle Transportation Management Cloud</p> <p>2. Connect to an Oracle Transportation Management Cloud Service Instance</p>

After you enable the integration, OCI Object Storage stores the shipment data as batches of compressed csv files (.gz). OTM then triggers a training request to Oracle IoT Fleet Monitoring Cloud Service to gain insights into the data provided.

After the training is completed, OTM triggers scoring requests for forecasts and retrieves the ETA predictions from Oracle IoT Fleet Monitoring Cloud Service.

Add an Oracle Cloud Account

Use the **Settings > Integrations** page in your IoT application to configure an Oracle Cloud account. This Oracle Cloud account is used when specifying integration settings, such as OCI Object Storage settings.

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **Oracle Cloud Account** and click **Add**.

Tip: You can also search for an integration name in the list.

The screenshot shows a list of Oracle services under the 'INFORMATION' column. The 'Oracle Cloud Account' service is selected (checked). Other services listed include Oracle Analytics Cloud Service, Oracle B2B Service, Oracle B2C Service, Oracle Demand Management Cloud, Oracle Maintenance Cloud Service, Oracle Manufacturing Cloud Service, and Oracle Object Storage Classic Service. The 'Oracle Cloud Account' service has a note indicating it requires Oracle Cloud Account and Oracle Object Storage. The 'Oracle Object Storage Classic Service' has a note indicating it is deprecated and will be removed in a future release.

NAME	INFORMATION	ADD
Oracle Analytics Cloud Service	⚠️ deprecated and will be removed in a future release.	<input type="checkbox"/>
Oracle B2B Service	Requires • Oracle Maintenance Cloud Service ⚠️ Cannot be used in conjunction with Oracle B2C Service	<input type="checkbox"/>
Oracle B2C Service	⚠️ Cannot be used in conjunction with Oracle B2B Service	<input type="checkbox"/>
Oracle Cloud Account	Requires • Oracle Cloud Account • Oracle Object Storage	<input checked="" type="checkbox"/>
Oracle Demand Management Cloud		<input type="checkbox"/>
Oracle Maintenance Cloud Service		<input type="checkbox"/>
Oracle Manufacturing Cloud Service		<input type="checkbox"/>
Oracle Object Storage Classic Service	⚠️ Oracle Object Storage Classic Service is now deprecated and will be removed in a future release	<input type="checkbox"/>

Cancel Add

Oracle Cloud Account integration gets added to the Integrations page.

5. Under **Oracle Cloud Account**, add your cloud account details:

a. Enter your **Tenant OCID**.

The tenancy details are available from the Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **Tenancy: <YourTenancyName>**.

The tenancy OCID is shown under Tenancy Information. Click **Copy** to copy it to your clipboard.

The screenshot shows the 'Tenancy Information' page in the Oracle Cloud Infrastructure console. The Tenant OCID is listed as `...suwfa` with a **Show Copy** button. Other information shown includes Home Region: us-ashburn-1 and CSI Number: 21893728. The 'Object Storage Settings' section is also visible.

☰ MENU ORACLE Cloud Infrastructure Search us-ashburn-1 Regions

Tags

Tenancy Information

OCI ID: ...suwfa [Show Copy](#)

Audit Retention Period: 90 Days

Object Storage Settings

Amazon S3 Compatibility API Designated Compartment: SWIFT API Designated Compartment:

Object Storage Namespace:

Resources Regions Displaying 2 Regions

Paste this value under **Tenant OCID** in your IoT application.

b. Enter the **User OCID**.

The user details are available from the Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **User Settings**.

The user OCID is shown under User Information. Click **Copy** to copy it to your clipboard.

Paste this value under **User OCID** in your IoT application.

c. Under Public Key, click **Generate**.

d. Click **Close**.

6. Set the public key in OCI Object Storage.

a. On the **Settings>Integration** page of your IoT application, under **Oracle Cloud Account**, click **Copy** against **Public Key** to copy the public key that you generated earlier.

b. Log in to your Oracle Cloud Infrastructure Console.

c. Under the **Profile** menu, click **User Settings**.

d. Click **API Keys** under **Resources**.

e. Click **Add Public Key**.

Note: If three public keys are already listed under API Keys, you have to first delete one public key. An OCI Object Storage service user can't have more than three public keys.

f. Select **Paste Public Keys** and paste the key that you copied from your IoT application.

g. Click **Add**.

The fingerprint for the added public key appears under API Keys. The fingerprint should be the same as that displayed on the Settings page of your IoT application.

Connect to an OCI Object Storage Instance

Use the Integrations page in your IoT application to configure OCI Object Storage connection details and to enable Object Storage.

Before configuring the OCI Object Storage connection, you should have already added your Oracle Cloud account on the Settings page.

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click **Integrations**.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **Oracle Object Storage Service** and click **Add**.

Tip: You can also search for an integration name in the list.

Oracle Object Storage integration gets added to the Integrations page.

5. On the Integrations page, under Object Storage Service, click **Connect**.
6. In the Oracle Object Storage dialog, provide your object storage connection details.

- a. Enter the **Storage URL** for your OCI Object Storage.

For example, <https://objectstorage.us-phoenix-1.oraclecloud.com>.

- b. Enter the object storage **Namespace** for your tenancy.

You can find the object storage namespace in your Oracle Cloud Infrastructure Console. You need to log in to your Oracle Cloud Infrastructure Console. From the **Profile** menu, click **Tenancy: <YourTenancyName>**.

- c. Enter the **Default Bucket** name that stores the data.

The bucket name must already exist in your OCI Object Storage instance and must be public.

- d. Click **Verify Connectivity** to verify the connection details and bucket name.

- e. Click **Save** to save the OCI Object Storage connection details.

7. To enable the connection on the Integrations page, click **Edit Configuration** under **Oracle Object Storage**.

8. Toggle the **Integration Status** switch to ON, and click **Save**.

Enable Integration with Oracle Transportation Management Cloud

Before you create and configure an integration with Oracle Transportation Management Cloud Service in Oracle IoT Fleet Monitoring Cloud Service, you need to enable the integration and provide an Oracle Object Storage container name if required.

You should have the name of the bucket in your Oracle Cloud Infrastructure Object Storage

1. In your IoT application, click **Menu (≡)**, and then click **Settings**.
2. Click the **Integrations** tile.
3. Click **Add +** to add a new integration.
4. In the Add Integration dialog, select **Oracle Transportation Management Cloud Service** and click **Add**.

Tip: You can also search for an integration name in the list.

Oracle Transportation Management Cloud Service integration gets added to the Integrations page.

5. On the **Integrations** page, under **Oracle Transportation Management Cloud Service**, click **Connect**.

The Oracle Transportation Management Cloud Connection dialog is displayed.

6. In the **Object Storage container** field, enter the bucket name of OCI Object Storage that stores the shipment data from Oracle Transportation Management Cloud Service.
7. Click **Save**.
8. Click **Edit Configuration**.
9. In the Oracle Transportation Management Cloud Configuration dialog box, enable the **Integration Status** flag, and then click **Save**.

You have successfully configured the integration between Oracle Cloud Infrastructure Object Storage and Oracle Transportation Management Cloud Service that allows shipment data to be stored in OCI Object Storage.

Connect to an Oracle Transportation Management Cloud Service Instance

To share Oracle Transportation Management (OTM) shipment data in an organization, you specify the URL, domain name, and access credentials for the Oracle Transportation Management instance.

You can create the integration in **Default Organization** or switch to the appropriate organization before you configure the integration. See [Change Your Current Organization](#). You should have the OTM instance URL, domain name, and the credentials to access it.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** sub-menu, click **Organization**

The **Default Organization** page appears

3. Click the **Integrations** (🔗) icon.
4. Expand **Oracle Transportation Management** and then click **OTM Configuration**. On the **OTM Configuration** screen, to enable the integration, slide the **Integration Status** button.

You need to perform this step only once for an organization.

5. (Optional) If attributes' data, such as sensor values or metrics of an entity that have been used in rule conditions, need to be sent with the event payload, then enable the **Send Rule Attributes** flag.

OTM is configured with refnums/value pairs and mapped to relevant attributes and values for it to accurately interpret the attributes that it receives in event notifications. If this flag is enabled only then the refnum/value pair would be sent to OTM otherwise it would be excluded from the event notification.

6. If you want the arrival and departure date and time that a third-party carrier driver manually enters in the mobile app for Shipment stops to be propagated to OTM, then you must enable the **Send Driver Manual Events** flag. Optionally, you can enter the event codes that must be transmitted to OTM in the **Driver Arrived Location** and **Driver Departed Location** fields. The default values are **DRIVER ARRIVE** and **DRIVER DEPART** respectively. If the **Send Driver Manual Events** flag is disabled, then the arrival and departure values are captured and saved as driver-provided start and end times only in Fleet Monitoring.

7. To save the changes, click **Save** and then click **Close** ✎.
8. In the **Oracle Transportation Management System** section, click **Add Integration**.

The **OTM Connection** screen appears and the **Integration Status** appears enabled.

9. Enter the following values in these fields:
 - **URL**: Enter the URL for the Oracle Transportation Management Cloud Service instance. Replace `myOTM.com` in the example and do not modify the remaining URL components. The complete URL must include `/GC3/glog.integration.servlet.WMServlet`.
 - **Domain**: Enter the external ID of OTM whose shipment data is exported to this organization of Oracle IoT Fleet Monitoring Cloud Service.

- **Username:** Enter the user name to access the Oracle Transportation Management Cloud Service instance in this field.
- **Password:** Enter the password to access the Oracle Transportation Management Cloud Service instance in this field.
- (Optional) **Description:** Enter a description for this integration.
- (Optional) **Verify Connectivity:** Click to verify the connection to the Oracle Transportation Management Cloud Service instance. You'll receive a connection successful message.

10. Click **Save**.

On the **Integrations** screen, beneath **Oracle Transportation Management**, the domain name and its description, if you've added, are displayed. OTM integration and mapping its domain with the organization is complete. To map another domain with this organization, repeat the previous three steps of this task.

Integrate with Oracle Warehouse Management Cloud Service

The integration of Oracle Warehouse Management Cloud Service with Oracle IoT Fleet Monitoring Cloud Service enables efficient floor management of facilities, reduces wait time at locations, and results in faster turnaround.

What is Oracle Warehouse Management Cloud Service

Oracle Warehouse Management Cloud Service is a cloud application designed to support warehouse or distribution center management and staff. This application facilitates management of available resources to move and store materials into, within, and out of a warehouse, while supporting staff in material movement and storage.

Need for Integrating with Oracle IoT Fleet Monitoring Cloud Service

Solutions were needed to reduce the loading and unloading time at the warehouse facilities and eliminate the driver wait-time. If the dock personnel are notified of the real-time location of trucks and their arrival time, then the team can plan for the vehicles and stage cargo, which will considerably reduce loading and unloading time and also allow trucks to get back on the road faster.

About the Integration

Enterprise businesses can have various business benefits out of the integration between Oracle Warehouse Management Cloud Service and Oracle IoT Fleet Monitoring Cloud Service. Shipment planners, truck drivers, and dock operations team use this integration.

Benefits of the Integration

Enterprises that manage and maintain warehouse operations or businesses that own private fleet or manage third -party logistics/carriers experience these benefits from the integration:

- Increase in facility throughput due to improved efficiency in dock appointments and reduction in loading and unloading time

- Improved delivery times of all shipments
- Improved turnaround time for vehicles to get back on road
- Elimination of driver's idle time or wait time at the docks

End Users and Devices

These roles and devices are involved in the integration:

- Dock manager or warehouse manager - Uses Oracle Warehouse Management Cloud Service to determine freight weight on an incoming truck, track the truck location, and identify the dock door available for the truck on arrival.
- Truck Driver - Drives the truck carrying the shipment.
- Dock Workers - Performs loading and unloading of shipments.
- Truck - Equipped with GPS sensors that communicate real-time location through on-board gateway.
- Driver's mobile device - Information is used by fleet operator to learn about dock assignments.
- (optional) Dock worker's mobile device - Used by dock worker to learn about incoming truck, associated freight, and dock assignments.
- (optional) Dock doors - Equipped with sensors that notify drivers about doors that are available.

Connect to an Oracle Warehouse Management Cloud Service Instance

To import, configure, and monitor warehouse facilities from Oracle Warehouse Management Cloud Service, you provide its instance URL, credentials, and values for some configurable parameters including inbound and outbound dock type names, expected time of arrival (ETA) update tolerance value, and check-in geo-fence radius.

An administrator can create the integration in **Default Organization** or switch to the appropriate organization before creating the integration.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**
3. Click **Integrations** () icon.
4. On the **Integrations** page, click **Warehouse Management Cloud**.
5. Click **Connect to WMS**.
6. Enter the values for these fields:
 - **URL:** The URL of the Oracle Warehouse Management Cloud Service instance such as https://xxx.wms.ocs.oraclecloud.com/lgf_100_ora/wms
 - **User Name:** The user name to access the Oracle Warehouse Management Cloud Service instance
 - **Password:** The password to access the Oracle Warehouse Management Cloud Service instance
7. Click **Verify Connectivity** and ensure that you receive a connection successful message.
8. Click **Save**.

9. On the **Integrations** page, your integration is listed. Click **Edit Connection Details** () to modify the connection details or click **Delete** () to remove the integration.
10. To configure the integration, click **Configure WMS Integration**.
11. On the **WMS Configuration** dialog box, enter values for these fields:
 - **Inbound Dock Type Name:** Enter **IB** as the Dock Type definition to map inbound shipping data
 - **Onbound Dock Type Name:** Enter **OB** as the Dock Type definition to map outbound shipping data
 - **ETA Update Tolerance (seconds):** Enter the time interval at which the appointment in Oracle Warehouse Management Cloud Service gets updated
 - **Check-in Geo-fence Radius (miles):** Enter the value for the radius of the default check-in geo-fence of the imported facilities, in miles
12. Click **Save**.

After you've configured the integration, to import the IoT enabled facilities from Oracle Warehouse Management Cloud Service, see [Import and Manage Facilities](#).

About IoT Enabled Warehouse and Transportation Management Solution

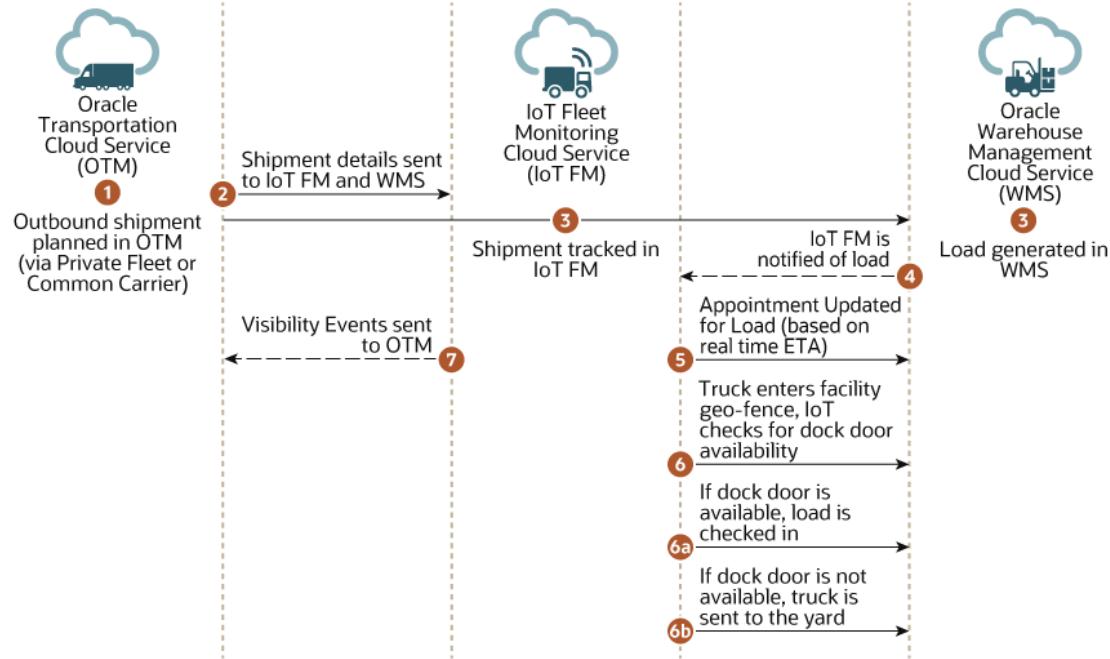
Integrating Oracle Transportation Management Cloud Service and Oracle Warehouse Management Cloud Service with Oracle IoT Fleet Monitoring Cloud Service improves global supply chain efficiency by increasing facility throughput, improving efficiency of dock appointments, and accelerating delivery times of subsequent shipments.

After you integrate Oracle Transportation Management Cloud Service and Oracle Warehouse Management Cloud Service with Oracle IoT Fleet Monitoring Cloud Service, you can track the location and activity of fleet vehicles and efficiently manage warehouse yard operations. Sensors connected to each vehicle use cellular, satellite, or bluetooth connections to transmit real-time vehicle location and performance data to your Oracle IoT Fleet Monitoring Cloud Service instance.

You can use real-time and historic vehicle location and performance data to determine where changes can be implemented to improve customer satisfaction, reduce operating costs, and increase driver safety. Moreover, by watching over your shipments, you can keep customers aware of any potential delays and you always know where their packages are and when they will be delivered.

Typical Workflow Between the Three Applications

The flow between the three service is illustrated in the image and explained after it.



1. Oracle Transportation Management Cloud Service plans shipments for outbound orders that are required to be shipped out from a warehouse facility.
2. The planned shipment information is sent to Oracle IoT Fleet Monitoring Cloud Service and Oracle Warehouse Management Cloud Service by Oracle Transportation Management Cloud Service.
3. Planned shipments and routes are synchronized with Oracle IoT Fleet Monitoring Cloud Service, so that it can perform accurate in-transit shipment monitoring and freight charge reconciliation.
4. An internal load is generated in Oracle Warehouse Management Cloud Service for the planned shipment and Oracle IoT Fleet Monitoring Cloud Service is notified of the warehouse load.
5. If an appointment does not exist in Oracle Warehouse Management Cloud Service for this load, Oracle IoT Fleet Monitoring Cloud Service creates an appointment in Oracle Warehouse Management Cloud Service based on the ETA of the planned shipment.
6. With the help of Oracle Transportation Management Cloud Service, a truck is sent out to load the shipment from the warehouse facility.
 - 6a. If dock door is available, the truck is checked in at the dock door.
 - 6b. If dock door is not available, the truck is directed to the yard.
7. Oracle IoT Fleet Monitoring Cloud Service continues to monitor the truck, and any change to the ETA due to unexpected events, is updated on the appointment in Oracle Warehouse Management Cloud Service.
8. As the truck enters the geo-fence area, a device connected to the vehicle sends real time data to Oracle IoT Fleet Monitoring Cloud Service, which checks with Oracle Warehouse Management Cloud Service for dock door availability. If a dock door is available, the truck is checked-in at the dock door. If a dock door is not available, the truck is directed to the yard.

To learn how to integrate the three services, see [Improve supply chain efficiency by integrating IoT with warehousing and transportation workflows](#).

Integrate with Oracle Intelligent Track and Trace

The integration of Oracle Intelligent Track and Trace with Oracle IoT Fleet Monitoring Cloud enables the fleet monitoring app to send periodic updates about shipments to Oracle Intelligent Track and Trace, which includes their geo-location, telemetry attributes and date/time of events.

What is Oracle Intelligent Track and Trace?

Oracle Intelligent Track and Trace is a blockchain application that lets businesses to manage, track, trace, and monitor transaction documents in their supply chain network. The application tracks the status of all the business flows between the business partners and monitors the associated transaction documents such as, work orders, purchase orders, sales orders, invoice orders, receiving receipts, shipment documents, and many more.

Need for Integrating with Oracle IoT Fleet Monitoring Cloud

In a supply chain network, shipments are transported from the manufacturer to the supplier, from the supplier to the distributor, or from the distributor to the retailer. Oracle Intelligent Track and Trace leverages the capabilities of Oracle IoT Fleet Monitoring Cloud to obtain real-time updates about a shipment's location, telemetry attributes, or occurrence of an event, such as a shipment's arrival or departure from a stop.

About the Integration

Oracle IoT Fleet Monitoring Cloud provides out-of-the-box integration with Oracle Intelligent Track and Trace. The application monitors shipment data through vehicle sensors and periodically pushes the data to Oracle Intelligent Track and Trace that uses the shipment data for its business flows.

Oracle IoT Fleet Monitoring Cloud sends periodic updates, which contain shipment data, such as its geo-location, attribute values of temperature or humidity of the shipment's vehicle, and date or time of an event. Oracle Intelligent Track and Trace utilizes this shipment information to effectively trace the entity that is being tracked and monitored.

Steps to Configure the Integration

To configure the out-of-the-box integration, you need to complete the following steps:

1. Configure Oracle Fleet Monitoring Cloud
2. Establish a communication channel between Oracle Intelligent Track and Trace and Oracle IoT Fleet Monitoring Cloud
3. Associate integration endpoints and configure filters in Oracle Intelligent Track and Trace

For Step 1, as an administrator, complete [Connect to an Oracle Intelligent Track and Trace Instance](#).

After performing Step 1, to complete Step 2 and Step 3, see [Integrate with Oracle IoT Fleet Monitoring Cloud](#).

Connect to an Oracle Intelligent Track and Trace Instance

To send periodic shipment updates to Oracle Intelligent Track and Trace, you provide its instance URL, credentials, and a value for a configurable parameter that denotes the frequency of sending the geo-location data.

An administrator can create the integration in **Default Organization** or switch to the appropriate organization before creating the integration. You need to obtain the endpoint URL of Oracle Intelligent Track and Trace and the credentials to access it.

1. Click the **Menu** (≡) icon, and then click **Design Center**.
2. From the **Design Center** menu options, click **Organization**.
3. Click the **Integrations** (🔗) icon.
4. On the **Integrations** page, click **Intelligent Track and Trace**.
5. Click **Connect to ITT**.
6. Enter the values for these fields:
 - **URL:** The endpoint URL of the Oracle Intelligent Track and Trace instance to which shipment data has to be sent.

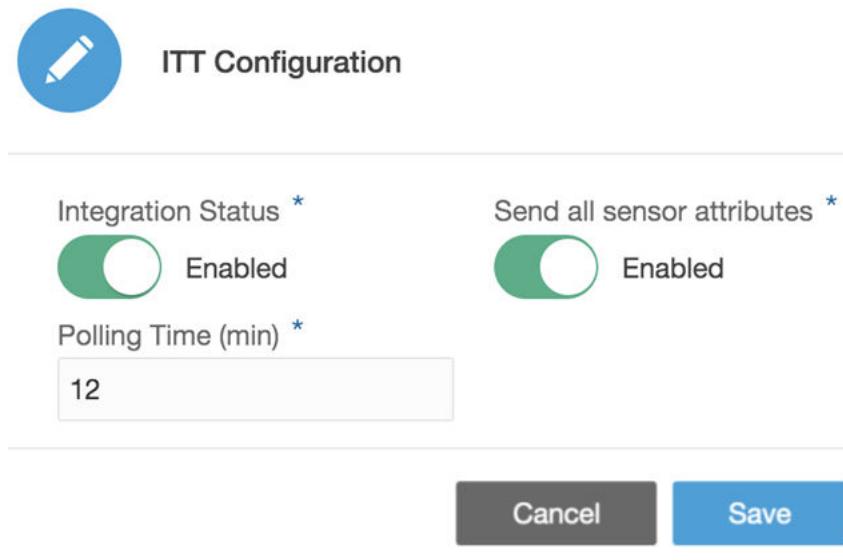
Note:

You need to obtain the relevant endpoint URL from the Oracle Intelligent Track and Trace instance. An example of such an endpoint URL is
<https://ht3prod.iadprd.bca.ocs.oraclecloud.com/bca/api/documentReceiver/v1/networks/local/flows/42/steps/46>

- **User Name:** The user name to access the Oracle Intelligent Track and Trace instance.
- **Password:** The password to access the Oracle Intelligent Track and Trace instance.

The screenshot shows a configuration dialog box for an 'ITT connection'. The title bar says 'ITT connection'. The 'URL' field contains the URL: <https://ht3prod.iadprd.bca.ocs.oraclecloud.com/bca/api/documentReceiver/v1/networks/local/flows/42/steps/46>. The 'User Name' field contains 'ITTAdmin' and the 'Password' field contains '*****'. Below these fields is a 'Verify Connectivity' button. At the bottom are 'Cancel' and 'Save' buttons.

7. Click **Verify Connectivity** and ensure that you receive a connection successful message.
8. Click **Save**.
9. On the **Integrations** page, your integration is listed. Click **Edit Connection Details** () to modify the connection details or click **Delete** () to remove the integration.
10. To configure the integration, click **Configure ITT Integration**.
11. On the **ITT Configuration** dialog box, enable or enter values for these fields:
 - **Integration Status**: Enable the slide bar to activate the integration.
 - **Send all sensor attributes**: Enable the slide bar to ensure all the associated sensor attributes' values are sent .
If you disable, none of the attribute values are sent.
 - **Polling Time (min)**: Enter a value in minutes that provides the frequency at which the shipment data are sent to Oracle Intelligent Track and Trace.
By default, the value is 30 minutes and a value less than 5 minutes is not supported.



12. Click **Save**.

After you've configured the integration, to push shipment data, configure the integration in Oracle Intelligent Track and Trace, see [Integrate with Oracle IoT Fleet Monitoring Cloud](#).

View Transaction Logs

Use the Transaction Logs dashboard to view and understand the status of all transactions exchanged between external systems (Oracle Transportation Management Cloud Service (OTM) or Oracle Intelligent Track and Trace (ITT)) and Oracle IoT Fleet Monitoring Cloud. Transaction logs can assist with troubleshooting

communication issues with OTM or ITT when shipment data is sent from or received by Oracle IoT Fleet Monitoring Cloud.

The Transaction Logs dashboard displays all shipment data details that were sent to (outbound) or received from (inbound) OTM or ITT, including whether a transaction is a success or failure, along with the reason for failure and corresponding corrective actions to be taken, if any.

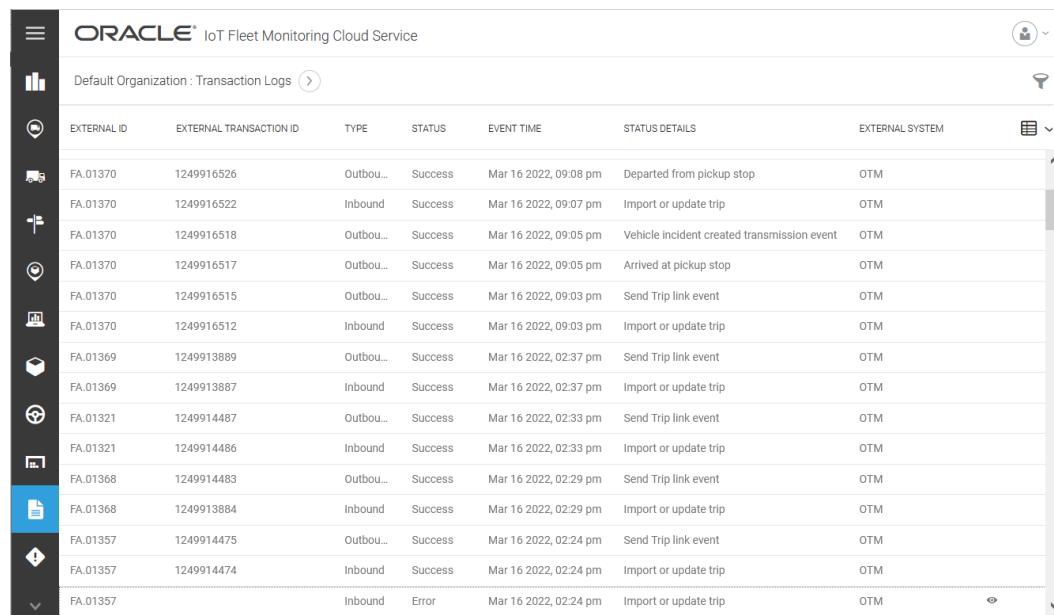
The following are examples of scenarios for which transaction logs are generated:

- If you haven't done driver mapping between OTM and Oracle IoT Fleet Monitoring Cloud and you are using a driver while importing OTM shipment, then the import fails and a corresponding transaction log is generated. You can view this log and take the corresponding corrective action.
- If OTM integration is not enabled in Oracle IoT Fleet Monitoring Cloud and you try to import an OTM shipment, then the import fails and a corresponding transaction log is generated and displayed in the Transaction Log dashboard.

To view the transaction logs dashboard, you should be in the **Operation Center** area of the current organization.

1. From the **Operation Center** menu options, click **Transaction Logs** (📄)

In the right pane, the transaction logs dashboard is displayed.



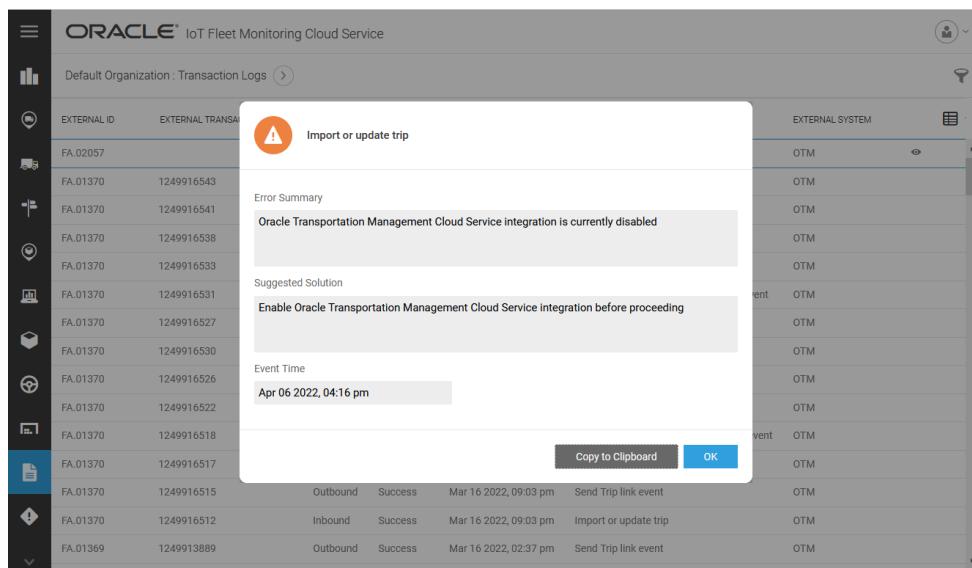
EXTERNAL ID	EXTERNAL TRANSACTION ID	TYPE	STATUS	EVENT TIME	STATUS DETAILS	EXTERNAL SYSTEM
FA.01370	1249916526	Outbou...	Success	Mar 16 2022, 09:05 pm	Departed from pickup stop	OTM
FA.01370	1249916522	Inbound	Success	Mar 16 2022, 09:07 pm	Import or update trip	OTM
FA.01370	1249916518	Outbou...	Success	Mar 16 2022, 09:05 pm	Vehicle incident created transmission event	OTM
FA.01370	1249916517	Outbou...	Success	Mar 16 2022, 09:05 pm	Arrived at pickup stop	OTM
FA.01370	1249916515	Outbou...	Success	Mar 16 2022, 09:03 pm	Send Trip link event	OTM
FA.01370	1249916512	Inbound	Success	Mar 16 2022, 09:03 pm	Import or update trip	OTM
FA.01369	1249913889	Outbou...	Success	Mar 16 2022, 02:37 pm	Send Trip link event	OTM
FA.01369	1249913887	Inbound	Success	Mar 16 2022, 02:37 pm	Import or update trip	OTM
FA.01321	1249914487	Outbou...	Success	Mar 16 2022, 02:33 pm	Send Trip link event	OTM
FA.01321	1249914486	Inbound	Success	Mar 16 2022, 02:33 pm	Import or update trip	OTM
FA.01368	1249914483	Outbou...	Success	Mar 16 2022, 02:29 pm	Send Trip link event	OTM
FA.01368	1249913884	Inbound	Success	Mar 16 2022, 02:29 pm	Import or update trip	OTM
FA.01357	1249914475	Outbou...	Success	Mar 16 2022, 02:24 pm	Send Trip link event	OTM
FA.01357	1249914474	Inbound	Success	Mar 16 2022, 02:24 pm	Import or update trip	OTM
FA.01357		Inbound	Error	Mar 16 2022, 02:24 pm	Import or update trip	OTM

The transaction logs dashboard contains the following columns:

- **External ID:** Shipment ID as received from OTM or ITT.
- **External Transaction ID:** Transaction ID of a transaction as recorded by OTM or ITT.
- **Type:** The type of transaction, whether Inbound or Outbound. Shipment data details sent from Oracle IoT Fleet Monitoring Cloud to OTM or ITT are Outbound type of transactions. Shipment data details received by Oracle IoT Fleet Monitoring Cloud from OTM are Inbound type of transactions.

- **Status:** The status of a transaction. Its value can be Success or Error.
- **Event Time:** The transaction timestamp in the timezone of the Oracle IoT Fleet Monitoring Cloud server.
- **Status Details:** A short message summarizing the transaction status.
- **External System:** Specifies whether the transaction log is for events exchanged with OTM or ITT.

2. (Optional) Click **Information**  to view details for transactions that display **Error** in the **Status** column. In the dialog box that is displayed, click **Copy to Clipboard** to copy the error information to the clipboard, or click **OK** to return to the Transaction Logs dashboard.



3. (Optional) Click the  icon and specify a search criterion to view only those transaction logs that match the search criteria.

You can configure the number of days for which transaction logs are retained. The default value is 90 days. You can change the default value in the **Data Storage** page that can be accessed from **Menu > Settings > Storage Management** tile.

Add Punch-Out URLs for Views Within Your Own Application or Web Page

Oracle Fleet Monitoring provides URLs to a set of dashboards and digital twin views that you can include and use within your own external application or web pages. To add and use these views, you can copy the URL and add as links in your application or web page.

The following are the views for which punch-out URLs are available:

- Trip map
- Trip dashboard

- Vehicle details
- Vehicle digital twin
- Ship item digital twin
- Ship unit digital twin
- Equipment digital twin
- Fleet map
- Organization dashboard

1. Log in to your Fleet Monitoring instance.

2. Navigate to the following URL using the address bar in your browser:

`https://Your_FW_URL/syndicatedWidgetExamples.html`

Here, replace `Your_FM_URL` with the URL of your Fleet Monitoring instance.

For example: `https://mysamplefmhost/fm/syndicatedWidgetExamples.html`

3. Click **Copy URL** against any given view to copy the URL for the view.

For example, the following is the URL for Trip map view:

`https://mysamplefmhost/commonui/indexWidget.html?`

`app=FM&page=trip_map_view&tripId=<TRIP_ID>&orgId=<ORG_ID>`

4. Use the copied URL in your web page or application and then replace any variables in the URL such as `<TRIP_ID>`, `<ORG_ID>`, `<VEHICLE_ID>`, and so on with the respective entity IDs.

The following is a sample URL for a Trip map view:

`https://mysamplefmhost/commonui/indexWidget.html?`

`app=FM&page=trip_map_view&tripId=54E6AZ9D277H&orgId=54E1LME92781`