

Monitor System Activity

This section describes how to monitor IoT FND system activity, including the following topics:

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- Using the Dashboard, on page 2
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Quick Start for New Installs

Quick Start for New Installs prompts you for information to determine the appropriate deployment. No Devices or licenses are added during the Quick Start Process. When you first open a new install of FND software, the DASHBOARD page appears and you select QUICK SETUP.

To quick start for new installs:

Procedure

Step 1 At first login, as a root user, click **Dashboard**. A No Devices or Dashlets panel appears, which displays the following options:

- ADD LICENSE
- ADD DEVICES
- ADD DASHLET
- GUIDED TOUR

Step 2 Click **GUIDED TOUR**.

Note You may need to add a license or create a dummy device to enable the Guided Tour. The Guided Tour feature must be enabled by the first-time FND root user that logs into the FND system before you can use the feature.

Step 3 At the root user menu (upper-right corner) that appears, select **Guided Tour**. This opens a Guided Tour Settings window that lists all available Guided Tours:

- Add Devices
- Device Configuration
- Device Configuration Group Management
- Tunnel Group Management
- Tunnel Provisioning
- Provisioning Settings
- Device Configuration and Device Groups
- Firmware Update

Step 4 After you select one of the Guided Tours, you will be redirected to that configuration page and windows appear to step you through the configuration steps and let you Add or Update Values as necessary.



Note When you select the Zero Touch Provisioning option list in step 3 above, a Zero Touch Provisioning setup guided tour window appears that lists all the prerequisites for the device on-boarding: (Provisioning Settings, Group Management, Manage Configuration: Bootstrap Template, Tunnel Provisioning, Device Configuration, Add Devices).

Using the Dashboard

The Cisco IoT FND Dashboard displays *dashlets* to provide a visual overview of important network metrics for a device. You can select what you want to display.

Types of Dashlets

The Dashboard displays three types of dashlets for a selected device:

- Pie-chart dashlets display a ratio of the device properties as a pie chart.
- Bar-chart dashlets display device properties.
- Line-graph dashlets display graphs that show device variances over time.

Tip Graphs set to intervals longer than one day may not display the data at the last datapoint exactly as shown in the matching field on the Device Info page. This is because data aggregation is occurring less frequently than polling done to update the fields on the Device Info page. Set these graphs to the 6h or 1d intervals to update the data more frequently. Use intervals longer than one day to view data trends.

Customize Dashboard Dashlets

At the DASHBOARD page use the three icons (Cog, Pencil, Refresh) in the upper-right hand-corner of the page to customize your Dashlets.

To customize the dashoard dashlets:

Procedure

Step 1 Click the Dashboard Settings Cog icon to Add Dashlets and Set Refresh Interval for all active dashlets.

Step 2 Click the pencil icon to Add or Remove a Filter for a device.

Step 3 Click the **Refresh** icon to refresh the dashlet.

At individual dashlets you can:

Step 4 Click the dash (-) icon to minimize the dashlet.

Step 5 Click the Refresh icon to refresh the dashlet.

Step 6 Click the (+) icon to export data (.csv format) from the dashlet.

Step 7 Click the filter icon (pencil icon) to: (Options vary by dashlet type):

Define reporting intervals by selecting defined periods such as (6h, 1d, 1w, 4w), Last Billing Period and Current Billing Period, or define your own Custom time period.
Define a Series Selector, which allows you to define different possible states for a chart. For example, the Endpoint Config Group Mismatch Over Time chart has the following Series Selector options: Config Out of Sync and Config in Sync. Clicking the Series Selector option names on the chart can cause the data to display or not display on the chart. When not selected, a name appears in a faded hue on the chart.
Use drop-down menus found in some table headings to display data in an ascending or descending order or display an additional heading option (such as Down Routers Over Time) in the table.
Define the number of entries that display on the chart by selecting a value from the Show drop-down menu.
Display data as either a bar chart or pie chart.
Define a custom line-graph chart. Select the number of devices to chart for line-graph chart displays.
Select a series to refine data in line-graph chart displays.
Filter line-graph chart displays by group.

Add a Filter.

Step 8 Click (**X**) to close the dashlet.

Pre-defined Dashlets

Table 1: Feature History

Feature Name	Release Information	Description
User Experience Enhancements	Cisco IoT FND Release 5.0	The Cisco IoT FND dashboard includes pre-defined dashlets, where an additional **Name** field is added along with the Element Identifier (**EID**). You can delete the default views of the devices you select in the **Devices** > **Field Devices** page. You can also add the user-defined properties in the customized tab in the **Field Devices** page.

Dashlet	Description
Config Group Template Mismatch	This pie chart shows the number of devices with matched and mismatched configuration group templates. (Chart applies only to mesh endpoint configuration groups).
Devices with interfaces enabled but down	This gauge chart displays the count of devices that have interfaces that are enabled but down and the count of interfaces. To display this dashlet, click add (Operation column) at the Dashboard Settings page, and then define the device type and interface (such as Type:cgr1000, Interface:Async 1/1) and save your entries. Once the dashlet is on the Dashboard, click the needle of the gauge chart to launch the Device Details list page that shows all devices that meet the criteria of having enabled, but down interfaces.
Distribution of modulations across meters	This line graph shows the distribution of modulations across meters. Modulations graphed: 8PSK, QPSK, BPSK, ROBO, OFDM600,OFDM200, FSK150, QPSK12.5.
Distribution of modulations across IR500 Devices	This line graph shows the distribution of modulations across IR500 devices. Modulations graphed: 8PSK, QPSK, BPSK, ROBO, OFDM600,OFDM200, FSK150, QPSK12.5.
Endpoint Config Groups Template Mismatch Over Time	This line graph shows the number of endpoints across all configuration groups and particular configuration groups that are out of sync for the configured time interval.

Dashlet	Description
Endpoint Firmware Group Membership Mismatch Over Time	This line graph shows the number of endpoints across all firmware groups and particular firmware groups that are out of sync for the configured time interval.
Endpoint Inventory	This endpoint status displays the proportion (and count) of endpoints. For example, the count of devices with an Unheard status relative to the other states: Registering, Up, Down, and Outage.
Endpoint States Over Time	This line graph shows a count of endpoints and their states for the configured time interval. States shown: Registering, Down, Outage, Unheard, Up, Restored, Unmanaged.
Firmware Group Membership Mismatch	This pie chart shows the number of devices with mismatched firmware groups (applicable only to endpoint firmware groups).
Gateway Inventory	This pie chart shows the gateway count and its percentage of the whole by the following states: Unheard, Up, Down.
Hop Count Distribution	This pie chart shows the hop count distribution for mesh devices.
Router Inventory	This pie chart shows a router count and its percentage of the whole by the following states: Unheard, Up, Down.
Router States Over Time	This line graph shows the state of all routers over a configured time interval. States supported: Up, Down, Unmanaged, Unsupported and Unheard. Use the Add Filter button to track: • Specific router (Type) • Router Configuration Groups • Router Firmware Groups
Routers With Top Cellular Bandwidth Usage	This bandwidth chart displays the following information for the top *n* routers: EID, NAME, Interface, Bandwidth Usage and Bandwidth Usage (in Bytes) for a router per the defined filter. The filter defines possible time periods (6h, 1d, 1w, 4w, Custom, Last Billing Period) to display. To define the filter, click the pencil icon. **Note** You must define the Monthly Cellular Billing Period Start Day for the Last Billing Period option at the following page: **Admin** > **System Management** > **Server Settings** > **Billing Period Settings** .

Dashlet	Description
Routers With Top Ethernet Bandwidth Usage	This bandwidth chart displays the following information for the top *n* routers: EID, NAME, Interface, Bandwidth Usage and Bandwidth in Usage (in Gigabits) for a router per the defined filter. The filter defines possible time periods (6h, 1d, 1w, 4w, Custom, Last Billing Period) to display. To define the filter, click the pencil icon. **Note** You must define the Monthly Ethernet Billing Period Start Day for the Last Billing Period option at the following page: **Admin** > **System Management** > **Server Settings** > **Billing Period Settings** .
Routers With Least Cellular RSSI	This Cellular RSSI chart displays the following information for the top *n* routers: EID, NAME, Interface, Cellular RSSI and Cellular RSSI (in dBm) for a router.
Service Providers with Maximum Down Routers for Cellular 1	This dashlet shows the service provider names, their associated cell IDs (if available), their associated total router count, the count of down routers, and a sparkline showing the down routers over time (when you select the option per Tip noted below). This dashlet displays the aggregated maximum Down Routers for device types CGR1000 and IR800 for single modem routers. **Tip** Move your cursor over any column heading to display the Down Routers Over Time listings in either ascending or descending order.
Service Providers with Maximum Down Routers for Cellular 2	This dashlet shows the service provider names, their associated cell IDs (if available), their associated total router count, the count of down routers, and a sparkline showing the down routers over time (when you select the option per Tip noted below). This dashlet displays the aggregated maximum Down Routers for device types CGR1000 and IR800 for dual modem routers. **Tip** Move your cursor over any column heading to display listings in either ascending or descending order or to display the Down Routers Over Time column.

Repositioning Dashlets

You can configure the Dashboard to display charts in your preferred arrangement.

Procedure

Step 1 Click and drag the title bar of a chart to the desired position.

Step 2 Click (x) within a chart to remove the chart from the page.

Step 3 Collapse a dashlet to display only its title bar (such as Endpoint Inventory) by clicking the Minimize button (**-**).

Step 4 To refresh a dashlet, click the **Refresh** button.

Set time filters to view charts

Use this task to set custom time filters for charts.

Use the **Filter** option to view charts for default or custom-defined time intervals. The chart provides statistical information on devices (such as device information, events, or issues) and FND servers.

- Default time intervals: The options available are **6h** (6 hours), **1d** (one day), **1w** (one week), or **4w** (four weeks). For example, **6h** collects the device data for the last 6 hours and **1d** collects the device data for the last 24 hours.



Note You can hover over the chart to view the tooltip information. The tooltip appears by default in the charts for small data and displays information in the combination of data values, text, and/or tokens. For charts with a huge dataset, the tooltip doesn't appear by default. You have to select and expand the specific portion of the chart for which you need the information and then hover over to see the tooltip.



Note You see only aggregated data for **1w**, **4w**, and **Custom** charts and not real-time data, to avoid performance impact on Cisco IoT FND. The processing of a huge amount of data and displaying them in real-time slows down Cisco IoT FND.

- Custom: This option allows you to customize the time frame for collecting the device data. The chart in the dashlets provides the device data specific to the time frame set by you.



Note In some cases, the date and time displayed in the chart varies from the time frame customized by you. This time discrepancy is due to the time difference in the respective location of the Cisco IoT FND server and the Cisco IoT FND client. To rectify this time difference, you have to set the time zone in the Cisco IoT FND to your current location, using **User** > **Time Zone** (right top corner in the user interface).

Procedure

Step 1 Click **Filter** (pencil icon) in the right corner of the dashlet.

Step 2 Click the **Custom** button.

Step 3 In the **Enter Custom Time** window, select the time frame from the **From** and **To** fields.

Step 4 Click **OK**.

Note The **From** and **To** fields are only enabled when the time range is set to Custom.

Setting the Dashlet Refresh Interval

To set the refresh interval for dashlets:

Procedure

Step 1 Choose **DASHBOARD** menu.

Step 2 Click the **Dashboard Settings** button (cog icon) in the upper-right corner of the page under the root <user> icon.

The Dashboard Settings panel appears.

Step 3 From the drop-down menu, choose a refresh interval.

Step 4 Close the Dashboard Settings dialog box when finished.

Adding Dashlets

To add dashlets to the Dashboard:

Procedure

Step 1 Choose **DASHBOARD** menu.

Step 2 Click the **Settings** button (cog icon) in the upper-right hand corner of the page.

Step 3 Click **Add Dashlets (+)**.

Note No dashlets display in this dialog box if all are displaying on the Dashboard.

Step 4 To add a listed dashlet to the Dashboard, select the name of dashlet.

Step 5 Close the Dashboard Settings dialog box by clicking (x) in upper-right corner of panel when finished.

Table 2: Router Metrics

Field Name	Key	Description
Bandwidth Usage	cellularBandwidth	The total accumulated amount of bytes sent and received over the cellular uplink backhaul.
Battery 0 Level	battery0Level	The percentage of charge remaining in battery 0.
Battery 0 Remaining Time	battery0Runtime	The runtime remaining on battery 0.
Battery 1 Level	battery1Level	The percentage of charge remaining in battery 1.
Battery 1 Remaining Time	battery1Runtime	The runtime remaining on battery 1.
Battery 2 Level	battery2Level	The percentage of charge remaining in battery 2.
Battery 2 Remaining Time	battery2Runtime	The runtime remaining on battery 2.
C1222 Multicast Incoming Traffic	c1222McastInTraffic	C1222 multicast receive traffic on the WPAN interface.
C1222 Multicast Outgoing Traffic	c1222McastOutTraffic	C1222 multicast transmit traffic on the WPAN interface.
C1222 Multicast Traffic	c1222McastTraffic	C1222 multicast traffic on the WPAN interface.
C1222 Total Incoming Traffic	c1222InTraffic	Total C1222 receive traffic on the WPAN interface.
C1222 Total Outgoing Traffic	c1222OutTraffic	Total C1222 transmit traffic on the WPAN interface.
C1222 Total Traffic	c1222Traffic	Total C1222 traffic on the WPAN interface.
C1222 Unicast Incoming Traffic	c1222UcastInTraffic	C1222 unicast receive traffic on the WPAN interface.
C1222 Unicast Outgoing Traffic	c1222UcastOutTraffic	C1222 unicast transmit traffic on the WPAN interface.
C1222 Unicast Traffic	c1222UcastTraffic	C1222 unicast traffic on the WPAN interface.
Cellular Module Temperature	cellModuleTemp	The internal temperature of 3G module.
Chassis Temperature	chassisTemp	The internal temperature of the device.
CINR	wimaxCinr	The measured CINR value of the WiMAX RF uplink.
CSMP Incoming Traffic	csmpInTraffic	CSMP receive traffic on the WPAN interface.
CSMP Multicast Incoming Traffic	csmpMcastInTraffic	CSMP multicast receive traffic on the WPAN interface.
CSMP Multicast Outgoing Traffic	csmpMcastOutTraffic	CSMP multicast transmit traffic on the WPAN interface.
CSMP Multicast Traffic	csmpMcastTraffic	CSMP multicast traffic on the WPAN interface.
CSMP Outgoing Traffic	csmpOutTraffic	CSMP transmit traffic on the WPAN interface.
CSMP Traffic	csmpTraffic	Total CSMP traffic on the WPAN interface.
CSMP Unicast Incoming Traffic	csmpUcastInTraffic	CSMP unicast receive traffic on the WPAN interface.

Field Name	Key	Description
CSMP Unicast Outgoing Traffic	csmpUcastOutTraffic	CSMP unicast transmit traffic on the WPAN interface.
CSMP Unicast Traffic	csmpUcastTraffic	Total CSMP unicast traffic on the WPAN interface.
Current Call Duration	cellConnectTime	The amount of time the current call lasted; applicable to CDMA only.
DHCP Incoming Traffic	dhcpInTraffic	DHCP receive traffic on the WPAN interface.
DHCP Outgoing Traffic	dhcpOutTraffic	DHCP transmit traffic on the WPAN interface.
DHCP Traffic	dhcpTraffic	Total DHCP traffic on the WPAN interface.
Dot 1x Traffic	dot1xTraffic	Total Dot 1x traffic on the WPAN interface.
Dot1x Incoming Traffic	dot1xInTraffic	Dot1x receive traffic on the WPAN interface.
Dot1x Outgoing Traffic	dot1xOutTraffic	Dot1x transmit traffic on the WPAN interface.
ECIO	cellularEcio	The signal strength of CDMA at individual sector level.
ICMP Incoming Traffic	icmpInTraffic	ICMP receive traffic on the WPAN interface.
ICMP Outgoing Traffic	icmpOutTraffic	ICMP transmit traffic on the WPAN interface.
Lowpan Incoming Traffic	lowpanInTraffic	Lo WPAN receive traffic on the WPAN interface.
Lowpan Outgoing Traffic	lowpanOutTraffic	Lo WPAN transmit traffic on the WPAN interface.
Mcast Incoming Traffic	mcastInTraffic	Multicast receive traffic on the WPAN interface.
Mcast Outgoing Traffic	mcastOutTraffic	Multicast transmit traffic on the WPAN interface.
Mesh Endpoint Count	meshEndpointCount	Number of active connected mesh endpoints.
ND NS Incoming Traffic	ndnsInTraffic	ND NS receive traffic on the WPAN interface.
Outage Incoming Traffic	outageInTraffic	Outage on receive traffic on the WPAN interface.
Overall Battery Remaining Time	batteryRuntime	Battery runtime remaining (all batteries).
Raw Socket Rx S1	rawSocketRxSpeedS1	Raw socket receive data rate for serial interface 1.
Raw Socket Rx S2	rawSocketRxSpeedS2	Raw socket receive data rate for serial interface 2.
Raw Socket Rx(Frames) S1	rawSocketRxFramesS1	Raw socket receive data rate, in frames, for serial interface 1.
Raw Socket Rx(Frames) S2	rawSocketRxFramesS2	Raw socket receive data rate, in frames, for serial interface 2.
Raw Socket Tx S1	rawSocketTxSpeedS1	Raw socket transmit data rate for serial interface 1.
Raw Socket Tx S2	rawSocketTxSpeedS2	Raw socket transmit data rate for serial interface 2.
Raw Socket Tx(Frames) S1	rawSocketTxFramesS1	Raw socket transmission data rate, in frames, for serial interface 1.

Field Name	Key	Description
Raw Socket Tx(Frames) S2	rawSocketTxFramesS2	Raw socket transmission data rate, in frames, for serial interface 2.
Receive Packet Reassembly Drops	meshRxReassemblyDrops	The rate of receive packet fragments dropped because of no space in the reassembly buffer.
Receive Speed	ethernetRxSpeed	The rate of data received by the Ethernet uplink network interface, in bits per second, averaged over a short element-specific time period (for example, an hour).
Receive Speed	wimaxRxSpeed	The rate of data received by the WiMAX uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Receive Speed	cellularRxSpeed	The rate of data received by the cellular uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Receive Speed	meshRxSpeed	The rate of data received by the uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Remaining ICMP Incoming Traffic	remainIcmpInTraffic	Remaining ICMP receive traffic on the WPAN interface.
Remaining ICMP Outgoing Traffic	remainIcmpOutTraffic	Remaining ICMP transmit traffic on the WPAN interface.
Remaining ICMP Traffic	remainIcmpTraffic	Total remaining ICMP traffic on the WPAN interface.
Remaining IP Incoming Traffic	remainIpInTraffic	Remaining IP receive traffic on the WPAN interface.
Remaining IP Outgoing Traffic	remainIpOutTraffic	Remaining IP transmit traffic on the WPAN interface.
Remaining IP Traffic	remainIpTraffic	Total remaining IP traffic on the WPAN interface.
RPL DAO Incoming Traffic	rplDaoInTraffic	DAO receive traffic on the WPAN interface.
RPL DIO Incoming Traffic	rplDioInTraffic	DIO receive traffic on the WPAN interface.
RPL Incoming Traffic	rplInTraffic	RPL receive traffic on the WPAN interface.
RPL RA Outgoing Traffic	rplRaOutTraffic	RA transmit traffic on the WPAN interface.
RPL Source Route Table Entries	meshRoutes	The number of entries a given router has in its source-route table. This provides a way to measure the number of elements in the PAN.
RPL Total Traffic	rplTraffic	Total RPL traffic on the WPAN interface.
RSSI	cellularRssi	The measured RSSI value of the cellular RF uplink.
RSSI	wimaxRssi	The measured RSSI value of the WiMAX RF uplink.
Total Incoming Traffic	totalInTraffic	Total receive traffic on the WPAN interface.

Field Name	Key	Description
Total Outgoing Traffic	totalOutTraffic	Total transmit traffic on the WPAN interface.
Transmit Packet Drops	ethernetTxDrops	The rate of packets dropped because the outbound queue was full while trying to transmit on the Ethernet uplink interface.
Transmit Packet Drops	meshTxDrops	The rate of packets dropped because the outbound queue was full while trying to transmit on the mesh uplink interface.
Transmit Speed	ethernetTxSpeed	The current speed of data transmission over the Ethernet uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Transmit Speed	cellularTxSpeed	The current speed of data transmission over the cellular uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Transmit Speed	wimaxTxSpeed	The current speed of data transmission over the WiMAX uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Transmit Speed	meshTxSpeed	The current speed of data transmission over the uplink network interface, in bits per second, averaged over a short element-specific time period (for example, one hour).
Ucast Incoming Traffic	ucastInTraffic	Unicast receive traffic on the WPAN interface.
Ucast Outgoing Traffic	ucastOutTraffic	Unicast transmit traffic on the WPAN interface.
Uptime	uptime	The amount of time, in seconds, that the device has been running since last boot
Utilization Bytes (slots 1–8)	ethernetUtilBytes[slot number]	The data, in bytes, transmitted and received by the Ethernet on the uplink or downlink network interface at slot x.
Utilization Bytes (slot 9-11)	ethernetUtilBytes[9-11]	(Cisco IOS CGRs running GOS only) The data, in bytes, transmitted and received by the Ethernet on the uplink or downlink network interface at module/slot 0/0, 0/1, or 0/2, respectively.

Table 3: Router Properties

Field Name	Key	Description
Battery 0 State	battery0State	The state of battery 0 charge (combined attribute).
Battery 1 State	battery1State	The state of battery 1 charge (combined attribute).
Battery 2 State	battery2State	The state of battery 2 charge (combined attribute).
Cellular Roaming Status	cellRoamingStatus	The roaming status of the cellular module on the CGR.
Network Name	cellularNetworkName	The network that the cellular device is associated with.

Field Name	Key	Description
Module Status	cellularStatus	The status and state of the cellular module.
Cellular Network Type	cellularType	The cellular network type (CDMA or GSM).
Door Status	doorStatus	The device door status (Open or Closed).
Power Source	powerSource	The device current power source.
Link State	wimaxLinkState	The device WiMAX link state.

Removing Dashlets

To remove dashlets from the Dashboard:

Procedure

Step 1 Choose **DASHBOARD** menu.

Step 2 Close the dashlet by clicking (X) in the upper-right corner of the panel.

Using Pie Charts to Get More Information

Roll over any segment of a pie chart to display a callout with information on that segment.

Click the Router Inventory and Mesh Endpoint Inventory pie charts to display the devices in List View.

Setting Time Filters To View Charts

Use the **Filter** option to view charts for default or custom-defined time intervals. The chart provides statistical information on devices (such as device information, events, or issues) and FND servers.

- Default time intervals: The options available are **6h** (6 hours), **1d** (one day), **1w** (one week), or **4w** (four weeks). For example, **6h** collects the device data for the last 6 hours and **1d** collects the device data for the last 24 hours.



Note You can hover over the chart to view the tooltip information. The tooltip appears by default in the charts for small data and displays information in the combination of data values, text, and/or tokens. For charts with a huge dataset, the tooltip doesn't appear by default. You have to select and expand the specific portion of the chart for which you need the information and then hover over to see the tooltip.

Note You see only aggregated data for **1w**, **4w**, and **Custom** charts and not real-time data, to avoid performance impact on Cisco IoT FND. The processing of a huge amount of data and displaying them in real-time slows down Cisco IoT FND.

- Custom: This option allows you to customize the time frame for collecting the device data. The chart in the dashlets provides the device data specific to the time frame set by you.

Note In some cases, the date and time displayed in the chart varies from the time frame customized by you. This time discrepancy is due to the time difference in the respective location of the Cisco IoT FND server and the Cisco IoT FND client. To rectify this time difference, you have to set the time zone in the Cisco IoT FND to your current location, using **User** > **Time Zone** (right top corner in the user interface).

To set time filters to view charts:

Procedure

Step 1 Click **Filter** (pencil icon) in the right corner of the dashlet.
Step 2 Click the **Custom** button.
Step 3 In the **Enter Custom Time** window, select the time frame from the **From** and **To** fields.
Step 4 Click **OK**.

Note The **From** and **To** fields are only enabled when the time range is set to Custom.

Collapsing Dashlets

To collapse the dashlets:

Procedure

Step 1 Choose **DASHBOARD** menu.
Step 2 Click the minimize icon **(-)** at the upper-right of the dashlet window to hide the window.

Using the Series Selector

You use the Series Selector to refine line-graphs to display by device status. The device options are:

- Routers: Down, Outage, Unsupported, Unheard, and Up
- Mesh Endpoint Config Group: Config Out of Sync and Config In Sync
- Mesh Endpoint Firmware Group: Membership Out of Sync and Membership In Sync
- Mesh Endpoint States: Down, Outage, Unheard, and Up

To use the Series Selector:

Procedure

Step 1 Click **Series Selector**.

Step 2 In the **Series Selector** dialog box, check the check boxes for the data series to show in the graph.

Step 3 Click **Close**.

Using Filters

You use filters to refine the displayed line-graph data by groups. Applied filters display after the dashlet title.

To use the filters:

Procedure

Step 1 Click the interval icon (pencil) in the upper-right corner of the panel to display the 2 filtering parameters on the chart: a time frame (such as 6h) and components (such as Endpoint Configuration Groups, Mesh Endpoints (MEs).

Step 2 Click a time frame.

Step 3 From the first drop-down menu, choose a group type.

Step 4 From the first drop-down menu, choose a group type.

Step 5 From the third drop-down menu, choose a group.

Step 6 Click **Apply**.

The pencil icon is green and the filter displays next to the dashlet name to indicate that a filter is applied.

Note Click the **Remove Filter** button to remove the filter and close the filter options.

Exporting Dashlet Data

You can export dashlet data to a CSV file.

To export dashlet data:

Procedure

Step 1 On the desired dashlet, click the export button (+).

A browser download session begins.

Step 2 Navigate to your default download directory to view the export file.

Note The filename begins with the word "export-" and includes the dashlet name (for example, export-Node_State_Over_Time_chart-1392746225010.csv).

Monitoring Events

This section provides an overview of events and how to search and sort events.

Set Time Range and Page View Preferences for Operations > Events

In the Events tab of a device, you can define the following information:

- Relative time periods: 'Last 24 hours', 'Last 15 Minutes', 'Last 4 hours', 'Last 7 days', 'Last 30 days' and 'All Time' from the drop-down menu at the left-hand side of the page
- Absolute time periods reference a specific day such as Sunday, April 25, Saturday, April 24, Friday, April 24

You can also select the number of events to display on a page (such as '10', '50', '100', and '200') by selecting that value from the drop-down menu at the far-right side of the page.

View Events

Feature Name	Release Information	Description
Endpoint outage or restoration event message	Cisco IoT FND Release 5.1	Cisco IoT FND captures the endpoint outage and restoration timestamp along with Cisco IoT received timestamp in the **Field Device Events Events** pages.

The **Events** page lists all events related to the devices that Cisco IoT FND tracks. All events are stored in the Cisco IoT FND database server and Cisco IoT FND displays them as events chart, which is a visual view of events in a time-line.

Click one of the warning messages from the left tree, for example, severity or router to view more information. The **Device Info** tab displays detailed information of the selected device. You can view the events chart of the device for default or custom-defined time intervals. For more information on viewing the chart for default or custom-defined time intervals, refer to Setting Time Filters To View Charts, on page 13.

However, depending on the number of devices the Cisco IoT FND server manages, the **Events** page can sometimes timeout. Choose **User Name** > **Preferences**, and uncheck the **Show chart on events page** and **Show summary counts on the events/issues page** check boxes.

Procedure

Step 1 To limit the amount of event data displayed on this page, use the Filter drop-down menu (at the top of the left pane).

Note For example, you can show the events for the last 24 hours relative to the last 30 days, or events for a specific day within the last seven days.

Step 2 To enable automatic refresh of event data to refresh every 14 seconds, check the checkbox next to the **Refresh** button. To immediately refresh event data click the **Refresh** button or the refresh icon.

Note The number of event data displayed on the **Events** page is dependent on your data retention settings. For more information see, Data retention.

All Events Pane Filters

Use the preset filters in the All Events pane to only view those event types.

Device Events

In the left pane, IoT FND tracks events for the following devices:

- Routers
- Endpoints
- Head-end Devices
- CR Mesh Devices
- NMS Servers
- Database Servers

Event Severity Level

In the left pane, select an event severity level to filter the list view to devices with that severity level:

- Critical
- Major
- Minor
- Info

Each event type has a preset severity level. For example, a Router Down event is a Major severity level event.

Filtering by Severity Level

To filter by severity level, click the pencil icon:

Procedure

Step 1 Choose **OPERATIONS** > **Events**

Step 2 Click the **SEVERITY** show/hide arrow (left-pane).

Note Only those severity levels (**CRITICAL**, **MAJOR**, **MINOR**, or **INFO**) that have occurred display in the left pane under the SEVERITY heading.

Step 3 Click a severity level to display all events of that severity level in the Events pane (right-pane).

Preset Events By Device

IoT FND has a preset list of events it reports for each device it tracks. A list of those events is summarized under each device in the left pane on the Events page. For example, in the left pane click the show/hide icon ( ) next to Routers to expand the list of all events for routers.

Advanced Event Search

To use the filter to search for events:

Procedure

Step 1 Choose **OPERATIONS** > **Events**.

Step 2 Above the All Events heading (left pane), select a Relative (such as 7 days, 24 hours, 15 minutes) or Absolute (Day of the Week such as March 12) search time frame and an event category [SEVERITY | ROUTER or ENDPOINT} from

the drop-down menu to narrow down your search. For example, you can select a SEVERITY option of MAJOR, MINOR or INFO and information for the chosen severity will display for all systems being managed by FND.

Step 3 Click the **Show Filter** link at the top of the main pane.

Step 4 Use the filter drop-down menus and fields to specify your search criteria.

Step 5 Click the plus button (+) to add the search strings to the Search field.

Repeat the process of adding search strings to the Search field as needed.

Step 6 Click **Search Events** or press Enter.

The search results display in the Events pane.

You can also add search strings manually, as shown in the following examples:

- To filter events by Name (EID), enter the following string in the Search Events field:
  - **name:** *router eid string*
  - Search Events by Name Filter

Note Note the use of the asterisk (*) wild card with this filter.

- To filter by event time period, enter the following string in the Search Events field, as shown in graph below:
  - **eventTime** *operator"YYYY-MM-DD HH:MM:SS:SSS"*
  - Supported operators are: <, >, >=, <=, :

Note Do not enter a space between **eventTime** and the operator.

Sorting Events

To sort events in ascending or descending order, roll over any column and select the appropriate option from the heading drop-down menu.

Searching By Event Name

To search by event name (for example, Battery Low):

Procedure

Step 1 Choose **OPERATIONS** > **Events**.

Step 2 In the left pane, click the device type.

Step 3 Click the **Show Filter** link at the top of the right pane to display the search fields.

Step 4 Choose **Event Name** from the left drop-down menu.

Step 5 Choose the event name from the options in the right drop-down menu.

Step 6 Click the plus button (+) at the right to add the filter to the Search Events field.

The filter syntax appears in the Search Events field.

Step 7 Click the **Search Events** button (magnifying glass icon).

The search results display in the Events pane.

Searching by Labels

Allows you to search and filter events based on Label names tagged to Field Devices.

To search by labels:

Procedure

Step 1 Choose **OPERATIONS** > **Events**.

Step 2 Click **All Events** in the left pane.

Step 3 Click the **Show Filter** link at the top of the right pane.

Step 4 Choose **Label** from the left drop-down menu.

Step 5 Choose the event name from the options in the right drop-down menu or create your own.

Step 6 Click the plus button (+) at the right to add the filter to the Search Events field.

The filter syntax appears in the Search Events field.

Step 7 Click the **Search Events** button (magnifying glass icon).

The search results display in the Events pane.

Export events

You can export events to a CSV file to examine as a log of event severity, time, name and event description by device.

To export events:

Procedure

Step 1 Choose **Operations** > **Events**.

Step 2 Click the desired severity level or device type in the left pane.

Step 3 Click the **Export** button .
A browser download session begins.

Step 4 Navigate to your default download directory to access the CSV file.

Events Reported

The table lists the events reported by IoT FND. Details include the event severity (Critical, Major, Minor, Information) and the devices that report those events.

Table 4: Events Reported

Events	Devices	Severity
CRITICAL EVENTS		
Certificate Expired	AP800, CGR1000, FND, IR800	Critical
DB FRA Space Critically Low	Database	Critical
DB Table Space Critically Low	Database	Critical
Invalid CSMP Signature	CGMESH, IR500	Critical
Outage	Cellular, CGMESH, IR500	Critical
RPL Tree Size Critical	CGR1000	Critical
SD Card Removal Alarm	CGR1000	Critical
MAJOR EVENTS		
AAA Failure	CGR1000, IR800	Major
ACT2L Failure	CGR1000, IR800	Major
Archive Log Mode Disabled	Database	Major
Battery Failure	CGR1000	Major
Battery Low	CGR1000, IR500	Major
BBU Configuration Failed	IR500	Major
BBU Firmware Download Failed	IR500	Major
BBU Firmware Mismatch Found	CGR1000	Major
BBU Firmware Upgrade Failed	IR500	Major
BBU Lock Out	IR500	Major
BBU Power Off	IR500	Major

Events	Devices	Severity
Block Mesh Device Operation Failed	CGR1000	Major
Certificate Expiration	AP800, CGR1000, FND, IR800	Major
DB FRA Space Very Low	Database	Major
Default Route Lost	CGMESH, IR500	Major
Device Unknown	FND	Major
Door Open	CGR1000, IR800, LORA	Major
Dot1X Authentication Failure	CGR1000	Major
Dot1X Authentication Flood	CGR1000, IR800	Major
Down	AP800, ASR, C8000, Cellular, CGMESH, CGR1000, Database, FND, IR500, IR800, ISR3900, LORA	Major
Element Configuration Failed	CGR1000, IR800	Major
High CPU Usage	LORA	Major
High Flash Usage	LORA	Major
High Temperature	LORA	Major
HSM Down	FND	Major
Interface Down	ASR, C8000, ISR3900	Major
Linecard Failure	CGR1000, IR800	Major
Line Power Failure	CGR1000, IR800	Major
Link Down	IR500	Major
Low Flash Space	CGR1000, IR800	Major
Low Memory/Memory Low	CGR1000, FND, IR800, LORA (Memory Low)	Major
Low Temperature	LORA	Major
Mesh Connectivity Lost/ Node Connectivity Lost	CGMESH, IR500	Major
Mesh Link Key Timeout/ Node Link Key Timeout	CGMESH, IR500	Major

Events	Devices	Severity
Metric Retrieval Failure	ASR, C8000, CGR1000, IR800, ISR3900	Major
Modem Temperature Cold Alarm	CGR1000, IR800	Major
Modem Temperature Warm Alarm	CGR1000, IR800	Major
Node Connectivity Lost	CGMESH, IR500	Major
Node Link Key Timeout	CGMESH, IR500	Major
Packet Forwarder Usage High	LORA	Major
Port Down	AP800, CGR1000, IR800	Major
Port Failure	AP800, CGR1000, IR800	Major
Refresh Router Mesh Key Failure	CGR1000, IR8100	Major
Refresh Router Mesh LFN Key Failure	IR8100	Major
RPL Tree Size Warning	CGR1000	Major
Software Crash	CGR1000, IR800	Major
SSM Down	FND	Major
System Software Inconsistent	CGR1000, IR800	Major
Temperature Major Alarm	CGR1000, IR800	Major
Time Mismatch	CGMESH, IR500	Major
Tunnel Down	CGR1000, IR800	Major
Tunnel Provisioning Failure	CGR1000, IR800	Major
Unknown WPAN Change	CGMESH, IR500	Major
MINOR EVENTS		
DB FRA Space Low	Database	Minor
Dot1X Re-authentication	CGMESH, IR500	Minor
Temperature Minor Alarm	CGR1000, IR800	Minor
Temperature Low Minor Alarm	CGR1000, IR800	Minor
RPL Tree Reset	CGR1000	Minor
INFORMATION EVENTS		
Archive Log Mode Enabled	Database	Information

Events	Devices	Severity
Battery Normal	CGR1000	Information
Battery Power	CGR1000	Information
BBU Firmware Download Passed	CGR1000	Information
Certificate Expiration Recovery	AP800, CGR1000, FND, IR800	Information
Cold Boot	AP800, CGMESH, CGR1000, IR500, IR800	Information
Configuration is Pushed	FND	Information
Configuration Rollback	AP800, CGR1000, IR800	Information
DB FRA Space Normal	Database	Information
DB Table Space Normal	Database	Information
Device Added	Cellular, CGMESH, CGR1000, IR500, IR800	Information
Device Location Changed	CGR1000, IR800	Information
Device Removed	Cellular, CGMESH, CGR1000, IR500, IR800	Information
Door Close	CGR1000, IR800, LORA	Information
Dot11 Deauthenticate Send	CGR1000, IR800	Information
Dot11 Disassociate Send	CGR1000, IR800	Information
Dot11 Authentication Failed	CGR1000, IR800	Information
Hardware Insertion	CGR1000, IR800	Information
Hardware Removal	CGR1000, IR800	Information
High CPU Usage Recovery	LORA	Information
High Flash Usage Recovery	LORA	Information
High Temperature Recovery	LORA	Information
HSM Up	FND	Information
Interface Up	ASR, C8000, ISR3900	Information
Line Power	CGR1000, IR800	Information
Line Power Restored	CGR1000, IR800	Information
Link Up	IR500	Information

Events	Devices	Severity
Low Flash Space OK	CGR1000, IR800	Information
Low Memory OK/Low Memory Recovery	CGR1000, IR800, LORA (Low Memory Recovery)	Information
Manual Close	ASR, C8000, Cellular, CGMESH, CGR1000, IR500, IR800, ISR3900	Information
Major RPL Tree Size Warning OK	CGR1000	Information
Manual NMS Address Change	CGMESH, IR500	Information
Manual Re-Registration	CGMESH, IR500	Information
Mesh Certificate Change/ Node Certificate Change	CGMESH, IR500	Information
Mesh Module Firmware Upgrade has been successful	CGR1000	Information
Migrated To Better PAN	CGMESH, IR500	Information
Modem Status Changed	LORA	Information
Modem Temperature Cold Alarm Recovery	CGR1000, IR800	Information
Modem Temperature Warm Alarm Recovery	CGR1000, IR800	Information
NMS Address Change	CGMESH, IR500	Information
NMS Returned Error	CGMESH, IR500	Information
Node Certificate Change	CGMESH, IR500	Information
Packet Forwarded High Usage Recovery	LORA	Information
Packet Forwarder Status	LORA	Information
Packet Forwarded High Usage Recovery	LORA	Information
Port Up	AP800, CGR1000, IR800	Information
Power Source OK	CGR1000, IR800	Information
Power Source Warning	CGR1000, IR800	Information
Registered	ASR, C8000, ISR3900	Information
Registration Failure	AP800, Cellular, CGR1000, IR800, LORA	Information

Events	Devices	Severity
Registration Request	AP800, CGR1000, IR800, LORA	Information
Registration Success	AP800, Cellular, CGR1000, IR800, LORA	Information
Rejoined With New IP Address	CGMESH, IR500	Information
Restoration	Cellular, CGMESH, IR500	Information
Restoration Registration	CGMESH, IR500	Information
RPL Tree Size Critical OK	CGR1000	Information
Rule Event	ASR, C8000, CGMESH, CGR1000, Database, FND, IR500, IR800, ISR3900	Information
SSM Up	FND	Information
Temperature Low Recovery	LORA	Information
Temperature Low Minor Alarm Recovery	CGR1000, IR800	Information
Temperature Major Recovery	CGR1000, IR800	Information
Temperature Low Major Alarm Recovery	CGR1000, IR800	Information
Temperature Minor Recovery	CGR1000, IR800	Information
Time Mismatch Resolved	CGMESH, IR500	Information
Tunnel Provisioning Request	CGR1000, IR800	Information
Tunnel Provisioning Success	CGR1000, IR800	Information
Tunnel Up	CGR1000, IR800	Information
Unknown Event	AP800, ASR, C8000,Cellular, CGMESH, CGR1000, Database, FND, IR500, IR800, ISR3900, LORA	Information
Unknown Registration Reason	CGMESH, IR500	Information
Unsupported	AP800, CGR1000, IR800, LORA	Information
Up	AP800, ASR, C8000,Cellular, CGMESH, CGR1000, Database, FND, IR500, IR800, ISR3900, LORA,	Information
Warm Start	IR500	Information

Events	Devices	Severity
WPAN Watchdog Reload	CGR1000	Information

Monitoring Issues

This section provides an overview of issues and how to search for and close issues in IoT FND.

Viewing Issues

IoT FND offers different ways to monitor issues:

The **OPERATIONS** > **ISSUES** page provides a snapshot of the health of the network by highlighting only major and critical issues that are active within the network.

You can also view the device information by clicking on one of the devices listed under router or endpoint on the left pane. The **Device Info** tab displays detailed information of the selected device along with the issues chart. You can view the issues chart of the device for default or custom-defined time intervals. For more information on viewing the chart for default or custom-defined time intervals, refer to Setting Time Filters To View Charts, on page 13.

The issues status bar bar displays in the footer of the browser window and shows a count of all issues by severity for selected devices. You can set the device types for issues that display in the Issues status bar in User Preferences.

The Issues page provides an abbreviated subset of unresolved network events for quick review and resolution by the administrator. Issues remain open until either the associated event is resolved (and IoT FND generates a resolution event) or the administrator manually closes the event.

Only one issue is recorded when multiple entries for the same event are reported. Each issue has a counter associated with it. As an associated event is closed, the counter decrements by one. Every open or closed issue has an associated event.

Click the Issues status bar to view the Issues Summary pane, which displays issues listed by the selected device category. Click count links in the Issues Summary pane to view complete issue criteria filtered by severity on the **OPERATIONS** > **Issues** page.

Note The closed issues data that displays on the Issues page is limited by the **Keep Closed Issues** for data retention setting (**ADMIN** > **System Management** > **Data Retention**), which is based on the time the issue was closed. When the issue was closed displays as the Last Update Time for the issue.

Displaying Truncated Views of the OPERATIONS > Issues Page

At the **DEVICES** > **FIELD DEVICES** > **Browse Devices** > **Inventory** page, multiple entries of the same Open Issue (such as Device-NMS Time Mismatch, Down) for a given device will display as one entry only. This reduces multiple entries of the same Open Issue for a Field Device from filling up the display window.

At the **DEVICES** > **FIELD DEVICES** > **Browse Devices** > **Inventory** page, you can also minimize the width of the Open Issues column by clicking on the column and dragging the cursor to the left.

To indicate that the column display has been reduced, the column displays three periods (...). You can later view the expanded view of that content by clicking on the column and expanding the column to the right. If you want to see more details for an Open Issue, you can go to the **OPERATIONS** > **Issues** page.

Viewing Device Severity Status on the Issues Status Bar

A tally of issues listed by severity for the selected devices displays in the issues status bar in the bottom-right of the browser window frame. You can set the device types for issues that display in the Issues status bar in User Preferences.

To view the device severity status on the issue status bar:

Procedure

Step 1 Click the Issues status bar to view the **Issues Summary** pane, which displays issues listed by the selected device category.

Step 2 Click the count links in the Issues Summary pane to view complete issue criteria filtered by severity on the **OPERATIONS** > **Issues** page.

Adding Notes to Issues

On the **OPERATIONS** > **Issues** page, you can add notes about Issues for a device.

Click the **Notes** link inline to access any notes entered for the Issue or add a note on the Notes for Issues Name page.

You can edit and delete notes from issues on this page. Issues can have multiple notes. Notes on the Issues Name page display the time the note was created, the name of the user who wrote the note, and the text of the note. You can also add a note when closing an Issue. Notes are purged from the database with the issue.

Note In some cases, existing notes may exist for the system and the Notes for Issues Name pane displays.

To add a note to an issue:

Procedure

Step 1 Click the **Notes** link inline or check the check box of the device and click **Add Note**.

The Notes for Issues Name pane displays.

Step 2 Click **Add Note**.

The Add Note dialog displays.

Step 3 Insert your cursor in the **Note** field and type your note.

Step 4 Click **Add** when finished.

To edit an existing note in an issue:

a) Click the **Notes** link inline with the issue.

The Notes for Issues Name pane displays.

b) Click the pencil icon at the right of the note that you want to edit.
c) Edit the note, and click **Done** when finished.

To delete a note from an issue:

a) Click the **Notes** link inline with the issue.

The Notes for Issues Name pane displays.

b) Click the red (X) icon at the right of the note.
c) Click **Yes** to confirm the deletion.

To add a note when closing an issue:

a) At the **Operations** > **Issues** page, check the box next to the issue you are closing.
b) Click the **Close Issue** button that appears above the event listings.
c) In the Confirm dialog box, insert your cursor in the Note field and type the note text.
d) To confirm that you want to close the issue and save the note, click **Yes**.

Searching Issues Using Predefined Filters

To search for open issues for a specific system or severity level:

Procedure

Step 1 Choose **OPERATIONS** > **Issues**.

To list only open issues, click **All Open Issues** (left pane).

Note By default, IoT FND displays all issues that occurred within the specified data retention period (see Configure data retention):

- To see Closed Issues associated with an event type or severity level, change **issueStatus:OPEN** to **issueStatus:CLOSED** in the Search Issues field, and then click **Issues Search**.
- To list all closed issues, in the left pane, click **All Closed Issues**.

Step 2 Click a device category, event type, or severity level to filter the list.

The filter syntax appears in the Search Issues field, and the search results display in the main pane.

Search Issues Using Custom Filters

To search by creating custom filters:

Procedure

Step 1 Choose **OPERATIONS** > **Issues**.

Step 2 Click **Show Filter**.

Step 3 From the Filter drop-down menus, choose the appropriate options.

For example, to filter Severity levels by Name (EID):

- In the left pane, select a Severity level (such as Major). The filter name populates the first field (top) of the Filter.
- From the second Filter drop-down menu on the left, choose **Name**.
- In the third Filter field, enter the EID of the device to discover issues about.
- Click the search icon (magnifying glass) to begin the search.

You can also enter the search string in the Search Issues field.

For example: issueSeverity:MAJOR issueStatus:OPEN name:IR807G-LTE-GA-K9+FCW21320020

Step 4 Click **Search Issues**.

The issues, if any, display in the Search Issues section (right pane).

Step 5 Click the **Events** link to display events associated with an issue.

The Events for Issue Name pane displays all events for that device.

Step 6 Click **Search Issues** or any link in the left pane to return to the Issues pane.

Closing an Issue

In most cases, when an event is resolved, the issue is closed automatically by the software. However, when the administrator has actively worked on resolving the issue, it might make sense to close the issue directly. When the issue is closed, IoT FND generates an event.

To close a resolved issue:

Procedure

Step 1 Choose **OPERATIONS** > **Issues**.

Step 2 Locate the issue by following the steps in either the Searching Issues Using Predefined Filters or Search Issues Using Custom Filters, on page 30 section.

Step 3 In the Search Issues section (right pane), check the check boxes of the issues to close.

Step 4 Click **Close Issue**.

Note You can also add a note to the issue at this time.

Step 5 Click **Yes**.

Viewing Device Charts

This section explains about the router and mesh endpoint charts.

Router Charts

IoT FND provides these charts in the Device Info pane on the Device Details page for any router:

Table 5: Device Detail Charts

Chart	Description
Link Traffic	Shows the aggregated WPAN rate for a router over time. To view the chart for default or custom-defined time intervals, refer to Setting Time Filters To View Charts, on page 13.
Mesh Endpoint Count	Shows the number of MEs over time.
Cellular Link Metrics	Shows the metrics (transmit and receive speed), RSSI, Bandwidth Usage (current Billing Cycle) for all logical cellular GSM and CDMA interfaces.
Cellular Link Settings	Shows properties for cellular physical interfaces with dual and single modems.
Cellular Link Traffic	Shows the aggregated WPAN rate per protocol over time.
Cellular RSSI	Cellular RSSI.
WiMAX Link Traffic	Shows the receiving and sending rates of the WiMAX link traffic for the router over time.
WiMAX RSSI	Shows the receiving and sending rates of the WiMAX RSSI traffic for the router over time.
Ethernet Link Traffic	Shows the receiving and sending rates of the Ethernet traffic for the router over time.
Cellular Bandwidth Usage Over Time	Shows the bandwidth usage over time for the cellular interface.
Ethernet Bandwidth Usage Over Time	Shows the bandwidth usage over time for the Ethernet interface.

The Router Device Page provides information on the router device.

Mesh Endpoint Charts

IoT FND provides the device detail charts in the Device Info pane on the Device Details page for any mesh endpoint.

Table 6: Device Detail Charts

Chart	Description
Link Traffic	Shows the aggregated WPAN rate for an endpoint over time. To view the chart for default or custom-defined time intervals, refer to Setting Time Filters To View Charts, on page 13
Path Cost and Hops	Shows the RPL path cost value between the element and the root of the routing tree over time (see Configuring RPL Tree Polling).
Link Cost	Shows the RPL cost value for the link between the element and its uplink neighbor over time.
RSSI	Shows the measured RSSI value of the primary mesh RF uplink (dBm) over time.