



# BEA WebLogic RFID Enterprise Server™

## Using the Telemetry Console Extension

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# Introduction and Roadmap

The following sections describe the contents, audience for, and organization of this guide—*Using the Telemetry Console Extension*.

- [“What Is the Telemetry Console Extension?”](#) on page 1-1
- [“Document Scope and Audience”](#) on page 1-1
- [“Guide to This Document”](#) on page 1-2
- [“Related Documentation”](#) on page 1-2

## What Is the Telemetry Console Extension?

The Telemetry Console Extension is a part of the WebLogic RFID Edge Server Administration Console that provides views and tools for graphically presenting real-time Edge Server and RFID device telemetry data. The underlying functionality for generating, retrieving, and persisting telemetry data is provided by the WebLogic RFID Edge Server. The Telemetry Console Extension provides additional tools for presenting that data in tables, charts, and graphs.

## Document Scope and Audience

This document describes Telemetry Console Extension features and use.

This document is written for system administrators, operators, support engineers, and other IT professionals responsible for configuring, administering, deploying, and monitoring RFID software and devices.

## Guide to This Document

This document is organized as follows:

- This chapter, “[Introduction and Roadmap](#),” introduces the organization of this guide and lists related documentation.
- “[Overview of the Telemetry Console Extension](#),” describes the features and the user interface of the Telemetry Console Extension.
- “[Working with Views](#),” describes how to create, modify, and use views, which are panels that contain charts and graphs.
- “[Working with Charts and Graphs](#),” describes how to create, modify, and use charts and graphs, which graphically display the telemetry data.
- “[Working with Metrics Charts and Graphs](#),” describes how metrics data is collected, maintained, and displayed by the Telemetry Console Extension.
- “[Keyboard Reference](#),” describes how to use the keyboard (instead of the mouse) to accomplish tasks in the Telemetry Console Extension.

## Related Documentation

- *[Installing WebLogic RFID Enterprise Server](#)*
- *[RFID Edge Server Administration Console Online Help](#)*



# Overview of the Telemetry Console Extension

The Telemetry Console Extension provides a set of visual tools you can use to directly manipulate objects to display telemetry information about configured Edge Server instances and RFID devices. The following sections provide a high level overview of its features and functionality:

- [“Displaying the Telemetry Console Extension”](#) on page 2-2
- [“Scope of the Telemetry Information Displayed”](#) on page 2-2
- [“Two Main Panels”](#) on page 2-3
- [“View Panel Overview”](#) on page 2-3
- [“Tabs Panel Overview”](#) on page 2-5
- [“Toolbar and Status Bar Overview”](#) on page 2-6
- [“Working with On-Screen Elements”](#) on page 2-7
- [“Displaying Tooltips for Controls, Views, Graphs, and Charts”](#) on page 2-7
- [“Creating Views, Graphs, and Charts: Main Steps”](#) on page 2-8
- [“Alternative Ways to Manipulate Objects”](#) on page 2-8

## Displaying the Telemetry Console Extension

When you launch the Edge Server Administration Console, the Console appears with three tabs, **RFID Console**, **Alerts**, and **Telemetry**, as shown in [Figure 2-1](#).

**Figure 2-1** Telemetry Console Extension Tab



By default, the **RFID Console** is initially selected on login, which shows the standard Edge Server Administration Console. Select **Telemetry** to display the Console extension.

These tabs are always present, so you can easily move back and forth between the primary Edge Server Administration Console pages and the Telemetry Console Extension.

**Note:** All Telemetry Console Extension functionality occurs in the context of a Java applet. Each time you select the **Telemetry** tab, the applet is loaded.

When you select the **RFID Console** tab, the applet is unloaded, and you are returned to the Edge Server Administration Console context that existed before you displayed the Telemetry Console Extension. All activity related to the applet and the Telemetry Console Extension is terminated; for example, data collection stops.

## Scope of the Telemetry Information Displayed

You can display telemetry data (metrics) about any running Edge Server instances and RFID devices that are configured in the Edge Server Administration Console.

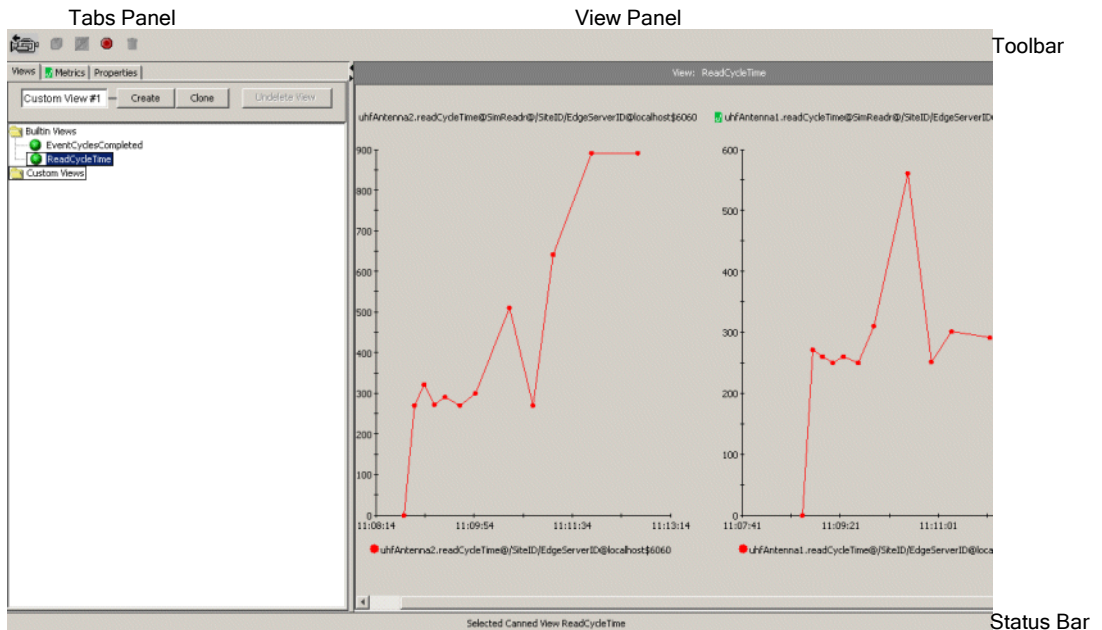
You can display metrics from different Edge Servers or readers in telemetry charts; typically, charts should contain similar metrics. Thus, a single chart can provide a comprehensive view of the performance and behavior of various Edge Servers or RFID devices. For example, you can create a chart for `tagsInField` for all the antennas configured for a reader. If one antenna is reading fewer tags, it could be due to bad positioning or perhaps, because the antenna is not functioning properly.

For more information, see [“Available Edge Server and Reader Telemetry Metrics”](#) on page 5-2.

## Two Main Panels

The Telemetry Console Extension has two panels, the **Tabs** panel and the **View** panel, plus a toolbar and a status bar, as shown in [Figure 2-2](#).

**Figure 2-2 Telemetry Console Extension Panels**



## View Panel Overview

A *view* is a collection of one or more charts which display real-time telemetry data, as shown in [Figure 2-3](#) and [Figure 2-4](#). Views are displayed in the **View** panel, on the right side of the Telemetry Console Extension page. The **View** panel displays a single view at a time.

Figure 2-3 A View Containing One Chart

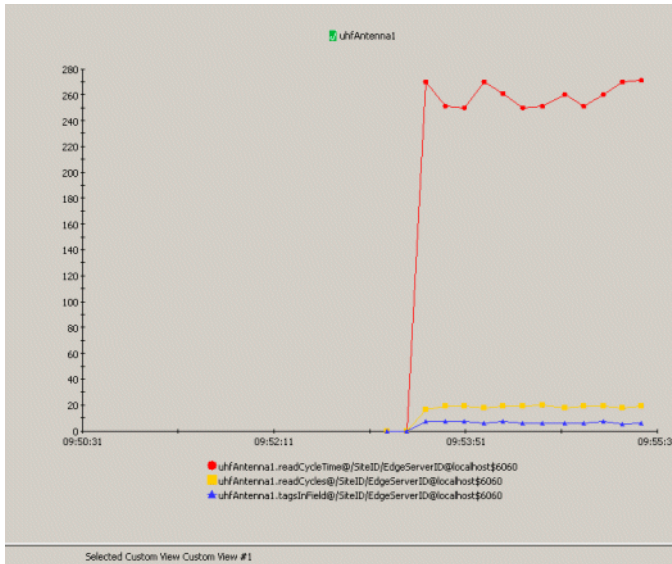
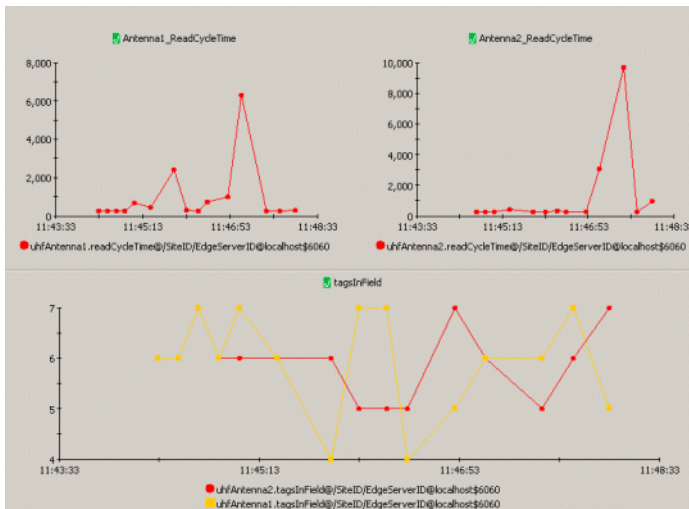


Figure 2-4 A View Containing Three Charts

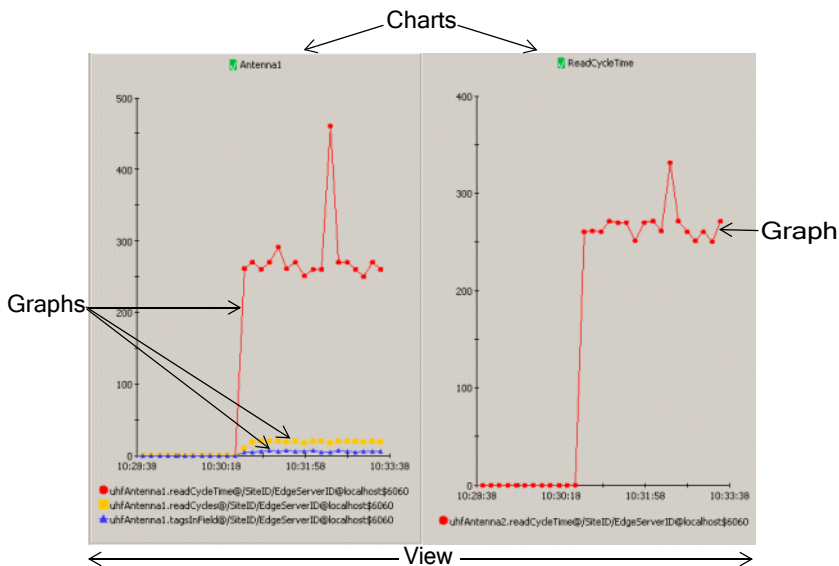


Each *chart* contains a legend, labels, and controls for identifying and displaying the data. A chart can display data from one or more data sources. The data sources include one or more metrics from one or more Edge Servers and readers.

Each data source is displayed as a distinct *graph*, which shows the values of data points over a time span. The relationship between views, charts, and graphs is shown in [Figure 2-5](#).

In the figure, the view contains two charts, “Antenna1” and “ReadCycleTime,” based on metrics data from an RFID Edge Server (SiteID/EdgeServerID@localhost:6060). The “Antenna1” chart contains three metrics graphs, “tagsInField,” “readCycles,” and “readCycleTime.” The “ReadCycleTime” chart contains one metrics graph, “readCycleTime.”

**Figure 2-5 Relationships of Graphs to Charts and of Charts to Views**



**Note:** A chart can include graphs based on data from one or more Edge Servers.

## Tabs Panel Overview

The **Tags** panel, on the left side of the page, contains tabs with controls for creating and modifying the views and charts that are displayed in the **View** panel, on the right.

The **Tags** panel contains three tabs:

- **Views** contains controls for creating, modifying, and deleting views. See [“Working with Views” on page 3-1](#).
- **Metrics** contains a tree of all known runtime metric types, instances, and attributes for the selected Edge Server. You can drag attributes onto a view to create one or more graphs that show the state of those attributes over time. See [“Working with Metrics Charts and Graphs” on page 5-1](#).
- **Properties** contains two subtabs:
  - Use the controls in the **Selected Item Properties** subtab to change the appearance of individual graphs and charts. See [“Setting Chart Properties” on page 4-19](#) and [“Setting Individual Graph Properties” on page 4-24](#).
  - Use the controls in the **Global Properties** subtab to set polling and display properties that apply to all active views. See [“Working with Charts and Graphs” on page 4-1](#).

## Toolbar and Status Bar Overview

The toolbar and status bar are available at all times, regardless of which tab is displayed in the **Tabs** panel.

The toolbar is displayed directly above the **Tabs** and **View** panels. The buttons and icon in the toolbar are described in [Table 2-1](#).

**Table 2-1 Buttons and Icon in the Toolbar**







Button or Icon	Description	Action
	Focus context	Click to change focus between the <b>Tabs</b> panel and the <b>View</b> panel.
	Save all modified views	Click to save all custom views. If no views have been modified since they were last saved, this button is disabled and is colored gray.
	Discard all unsaved view changes	Click to discard all changes you made to all views since you last saved them.
	Stop all active views	Click to stop all active views.

Table 2-1 Buttons and Icon in the Toolbar

	Delete	Click to delete selected graph or chart.
	Status of data polling	<p>Displays the status of the data poller:</p> <ul style="list-style-type: none"> <li>• Green indicates that data is being retrieved from the server with no problem.</li> <li>• Yellow indicates that there are some problems retrieving data from the server.</li> <li>• Red indicates that no data is being retrieved from the server.</li> </ul>

The status bar at the bottom of the page displays information about the selected item.

## Working with On-Screen Elements

The following terms are used to describe on-screen elements.

- *Controls* are the individual items on Telemetry Console Extension pages that you use to perform actions or view information, including buttons, tabs, text fields, sliders, and such.
- An *enabled control* is a control that is available for use. Disabled controls appear gray, which means they are not available in the current context. For example, if no changes have been made to any views, the **Save All** button is disabled.
- An item can be *selected*, have *focus*, or both. This distinction may not be obvious when you use the mouse, but there are tasks that you perform using the keyboard where you must understand the distinction, as described in [“Selecting Items and Giving Focus to Items Using the Keyboard”](#) on page 6-5.

## Displaying Tooltips for Controls, Views, Graphs, and Charts

You can display short messages, called *tooltips*, about several types of objects in the Telemetry Console Extension, by positioning the mouse pointer over the objects. To display a tooltip for an item, move the mouse pointer to point to the object, and pause. Do not click the mouse. After a momentary delay, a short message about the item is displayed.

In all areas of the Telemetry Console Extension, you can display tooltips for standard controls such as buttons, text fields, scrollbars, and such, which tell you what each control does. But you

can also display details about the objects you use to display information, as described in [“Working with Charts and Graphs” on page 4-1](#).

## Creating Views, Graphs, and Charts: Main Steps

To create a view and add charts and graphs:

1. From the **Views** tab, create or select a view. See [“Working with Views” on page 3-1](#).
2. Select the **Metrics** tab.
3. In the **Metrics** tab, select the Edge Server for which you want to display telemetry data.
4. Drag items from the **Metrics** tab in the left panel to the active view in the right panel. Drop an item into a blank area in the view to create a new chart and graph, or drop it into an existing chart to add a new graph to the other graphs in the chart. See [“Working with Charts and Graphs” on page 4-1](#) and [“Working with Metrics Charts and Graphs” on page 5-1](#).
5. Optionally, select the **Properties** tab, and use the tools on that tab to change the appearance of graphs and charts, then click **Apply Changes**. See [“Working with Charts and Graphs” on page 4-1](#).
6. If you created a custom view, save the view. See [“Working with Views” on page 3-1](#).

## Alternative Ways to Manipulate Objects

The Telemetry Console Extension is a graphical user interface with visual tools for manipulating objects to display telemetry data. Alternative interaction techniques are available for accomplishing many activities:

- **Drag and drop and other direct manipulation with the mouse.** For example, you can drag a metric from the **Tabs** panel to the **View** panel to create a new chart. Another direct manipulation technique is to **Shift-drag** across a graph in a chart to zoom in on the data.
- **Right-click, then select from a context menu.** You can right-click attributes in the **Metrics** tab and charts in the **View** panel to display context menus, from which you can select a command to act on the selected object. For example, you can right-click a metric in the **Tabs** panel, then choose **Create New Chart** to incorporate it into a new chart.
- **Keyboard interaction.** You can use the **Tab** key, the arrow keys, and the **Enter** key to select different tools and objects on the page and then perform actions on them. For more information, see [“Keyboard Reference” on page 6-1](#).



# Working with Views

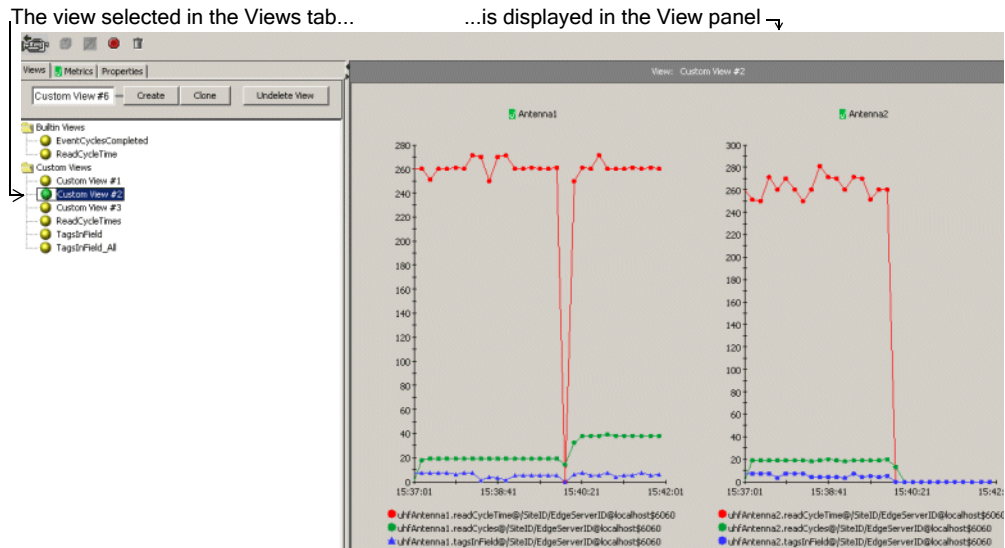
A view is a named collection of charts and graphs that present graphical information of telemetry data. The following sections describe how to work with views:

- “The Views Tab and the View Panel” on page 3-1
- “Displaying and Modifying an Existing View” on page 3-3
- “Creating a Custom View” on page 3-4
- “Creating a View Based on an Existing View (Cloning)” on page 3-4
- “Saving a Custom View” on page 3-4
- “Deleting a View” on page 3-5
- “Starting and Stopping Views” on page 3-5

## The Views Tab and the View Panel

The **Views** tab in the **Tabs** panel, on the left side of the page, contains a list of the views configured in the Telemetry Console Extension. It also provides the means to create, select, modify, and delete views. When you select (click) the name of a view in the **Views** tab on the left, the view is displayed in the **View** panel on the right, as shown in [Figure 3-6](#). That view remains displayed in the **View** panel, even when you select different tabs in the **Tabs** panel.

Figure 3-6 Views Tab and View Panel



The **Views** tab lists both built-in and custom views.

- **Built-in views** are a set of predefined views of available runtime metrics for all running Edge Server instances configured in the Edge Server Administration Console. These views surface some of the more typical RFID performance metrics and serve as examples of the Telemetry Console Extension’s view and graphing capabilities. The Telemetry Console Extension includes the following built-in views:
  - **EventCyclesCompleted**—For each Edge Server configured in the Console, a chart displays the number of event cycles completed within the specified telemetry interval. The telemetry time interval is configurable. See [“Changing the Sample Interval” on page 4-22](#).
  - **ReadCycleTime**—For each RFID Device configured on an Edge Server, a chart displays the amount of time each logical reader (antenna) is taking for a read cycle.

Built-in views are available for every user logged into the Edge Server Administration Console and using the Telemetry Console Extension.

You can modify a built-in view, but the modification is only visible during your current session; it is lost when you switch back to the primary RFID Console view. If you want to modify and save one of the built-in views, you can clone it and save it as a custom view.




- A *custom view* is any view created by a user. Custom views are available only to the user who created them. You can save a custom view and access it again when needed.

The Telemetry Console Extension provides no pre-defined custom views.

The charts and graphs in a view can display telemetry data for any of the Edge Servers configured in the Edge Server Administration Console.

[Table 3-1](#) describes the visual cues that help identify the views in the **Views** tab.

**Table 3-1 Views Tab Icons**



Visual Cue	Description	What it Means
 EventCyclesCompleted	Green icon adjacent to a view name	The view is active and data polling is occurring for all charts in that view. (This is true whether or not the view is currently displayed in the <b>View</b> panel.)
 EventCyclesCompleted	Yellow icon adjacent to a view name	The view is inactive and data polling is not occurring for the charts in that view.
 <i>TagsInField_All</i>	View name in italic font	The view has not yet been saved.

## Displaying and Modifying an Existing View

To display and modify an existing view:

1. Select the **Views** tab to display the list of available views.
2. Click the name of the view.

The view appears in the **View** panel, replacing the view that is currently displayed. (Only one view can be displayed at a time.)


3. Add and modify charts, as desired. See [“Working with Charts and Graphs” on page 4-1](#).
4. To roll back unsaved changes, click the  (**Discard All Unsaved Changes**) button or right-click on the name of the view and select **Discard Changes** from the context menu.
5. Save the view (custom views only) by clicking the  (**Save All Modified Views**) button on the toolbar.

## Creating a Custom View

To create and display a new custom view:

1. Select the **Views** tab.
2. In the text field, enter a name for the view.
3. Click **Create**.

The new, empty view is displayed in the **View** panel.


4. Add and modify charts, as desired. See [“Working with Charts and Graphs” on page 4-1](#).
5. Save the view by clicking the  (**Save All Modified Views**) button on the toolbar.

## Creating a View Based on an Existing View (Cloning)

To create and display a view based on an existing view:

1. Select the **Views** tab.
2. Click the name of the existing view on which you want to base a new view.
3. In the text field, enter a name for the new view.
4. Click **Clone** to copy the current view with a new name.

The new, cloned view is displayed in the **View** panel. Until you make changes, the cloned view has the same properties as the view upon which it is based.

5. Add and modify charts, as desired. See [“Working with Charts and Graphs” on page 4-1](#).
6. Save the view by clicking the  (**Save All Modified Views**) button on the toolbar.

## Saving a Custom View


While you can modify any view for the current session, you can save only custom views. To save a custom view:

1. Select the **Views** tab.
2. Right-click the name of the custom view you want to save and select **Save Changes** from the context menu.

Alternatively, click the  (**Save All Modified Views**) button on the toolbar.

## Deleting a View

You can only delete custom views. To delete a custom view:

1. Select the **Views** tab.
2. Click the name of the view you want to delete.
3. Click the  (**Delete**) button in the toolbar.

## Starting and Stopping Views

When you start a view, polling commences for the charts in the view. That is, the client starts polling for data from the Edge Server, so that the data can be represented in one or more graphs. When you stop a view, polling for the view ends.

To start a view:

1. Select the **Views** tab.
2. Click the name of the view you want to start or right-click and select **Start** from the context menu.

To stop a view:

1. Select the **Views** tab.
2. Right-click the view you want to stop, and select **Stop** from the context menu.

To stop all active views, click the  (**Stop All Active Views**) button in the toolbar.

## Working with Views

# Working with Charts and Graphs

The Telemetry Console Extension supports charts containing one or more graphs that display real-time telemetry information. The following sections describe how to work with charts and graphs.

- [“The Parts of a Chart” on page 4-2](#)
- [“Adding Charts to Views” on page 4-3](#)
- [“Adding Graphs to Existing Charts” on page 4-7](#)
- [“Repositioning a Chart” on page 4-8](#)
- [“Merging Charts” on page 4-9](#)
- [“Moving a Graph to a Different Chart or to a New Chart” on page 4-9](#)
- [“Arranging Charts and Graphs in Views” on page 4-10](#)
- [“Starting and Stopping Data Collection for Charts in a View” on page 4-15](#)
- [“Scrolling and Zooming the Data Displayed in a Chart” on page 4-16](#)
- [“Deleting a Graph from a Chart” on page 4-18](#)
- [“Deleting a Chart” on page 4-19](#)
- [“Setting Chart Properties” on page 4-19](#)
- [“Creating a Y-Axis Label for a Chart” on page 4-21](#)

- “Setting a Chart Graphing Style” on page 4-21
- “Setting a Chart Graphing Style” on page 4-21
- “Turning a Chart Legend On and Off” on page 4-22
- “Turning a Chart Scrollbar On and Off” on page 4-23
- “Changing Chart Foreground and Background Colors” on page 4-24
- “Setting Individual Graph Properties” on page 4-24
- “Changing a Graph Name” on page 4-25
- “Changing a Graph Scaling Factor” on page 4-25
- “Changing a Graph’s Colors” on page 4-26
- “Setting Global Properties” on page 4-26

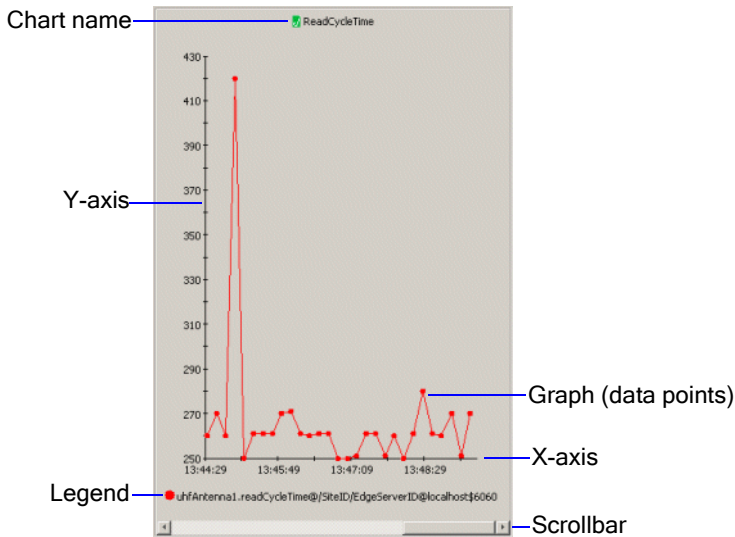
## The Parts of a Chart

A *chart* consists of the following:

- One or more *graphs* that show data points over a specified time span
- X- and Y-axes for plotting data
  - A time-based X-axis
  - A scaled Y-axis, adjusted based upon the plotted data series
- A legend that identifies the scope of each of the graphs in the chart.
  - The legend for a metrics chart uses the scope in the form `attributeName@SiteID/EdgeServerID@hostname$portnumber`.
  - The legend can be hidden or displayed.
- A scrollbar for changing the time span displayed on the chart X-axis. The scrollbar can be hidden or displayed.
- Optional Y-axis label

These parts are shown in [Figure 4-7](#).



**Figure 4-7 Parts of a Chart**

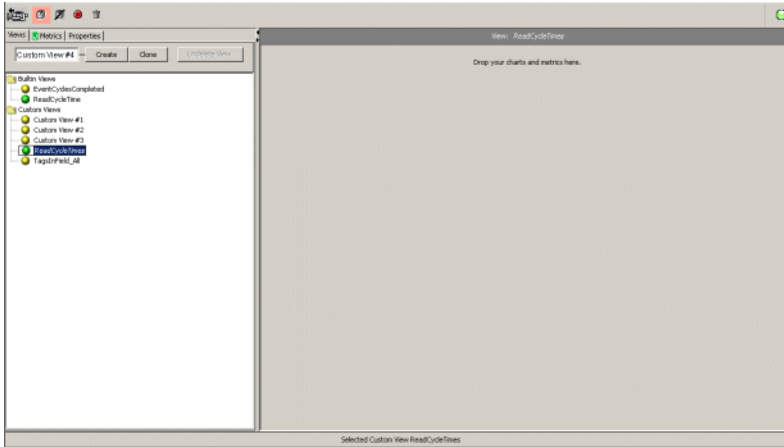
Several graph styles are available for presenting data: area, area radar, bar, plot, scatter plot, stacking area, and stacking bar. For instructions on how to set those styles, see [“Setting a Chart Graphing Style”](#) on page 4-21.

## Adding Charts to Views

You create and add charts to views by dragging items from the **Metrics** tab, as described in the following steps.

1. Select the **Views** tab and select the view to which you want to add a chart (or create a new view). [Figure 4-8](#) shows an empty view.

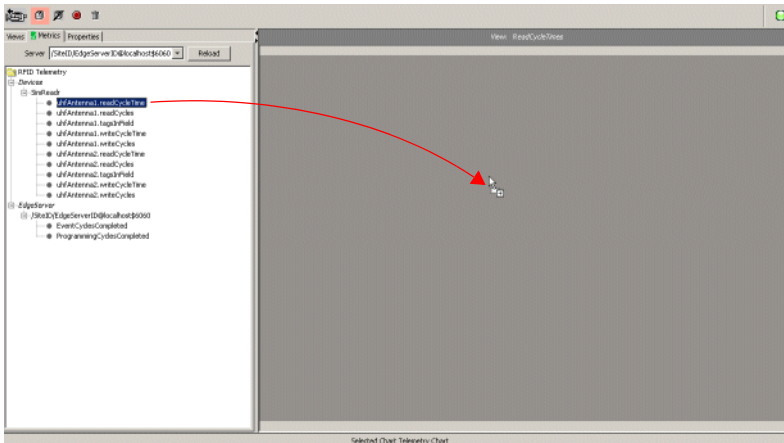
Figure 4-8 Empty View



2. Select the **Metrics** tab.
3. Drag a item from the tree to the view.

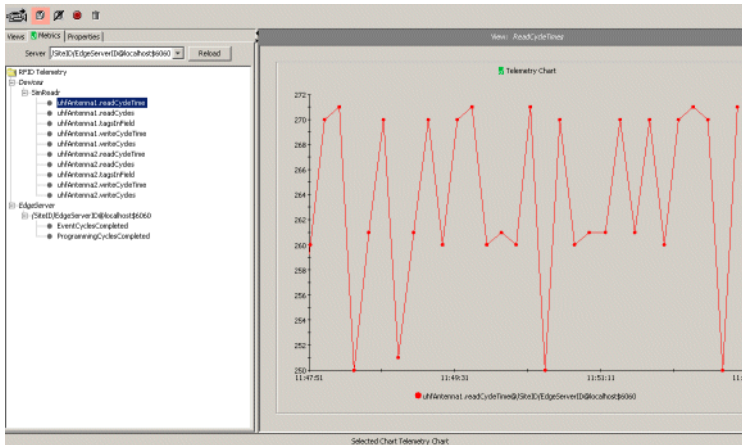
The cursor changes shape, and the background darkens when you drag it into an area where you can insert a chart, as shown in [Figure 4-9](#). For information about what items can be dragged from the **Metrics** tab, see [“Working with Metrics Charts and Graphs”](#) on [page 5-1](#).

Figure 4-9 Dragging a Metric to Create a New Chart in an Empty View



When you release the mouse button, a chart is created that contains a graph based on the item you dragged from the tree in the left panel, as shown in [Figure 4-10](#).

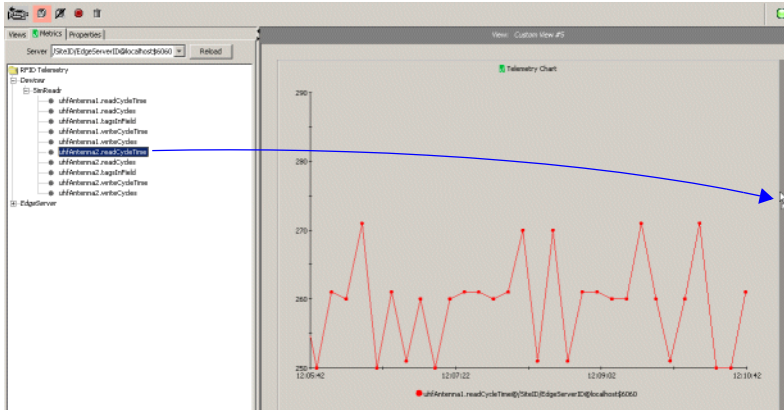
**Figure 4-10 A Chart in a View**



An alternative to dragging an item into a chart is as follows:

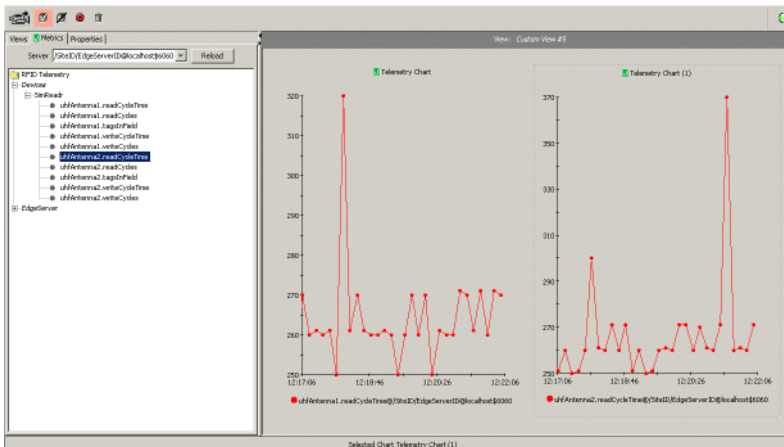
- a. Right-click the item in left panel (the **Metrics** tab).  
The **Add to Chart** menu is displayed.
  - b. Select **Create New Chart** to create a new chart containing a graph based on the selected item, or select the name of an existing chart, to add a graph to that chart.
4. To add another chart to the view, drag another item from the tree to a position above, below, or to the side of an existing chart. [Figure 4-11](#) shows an item dragged to the right of a chart.

Figure 4-11 Dragging a Metric Into an Existing View to Create a Second Chart



The new chart appears where it was dropped, as shown in Figure 4-12. All charts in the view are resized to fit together.

Figure 4-12 Two Charts in a View



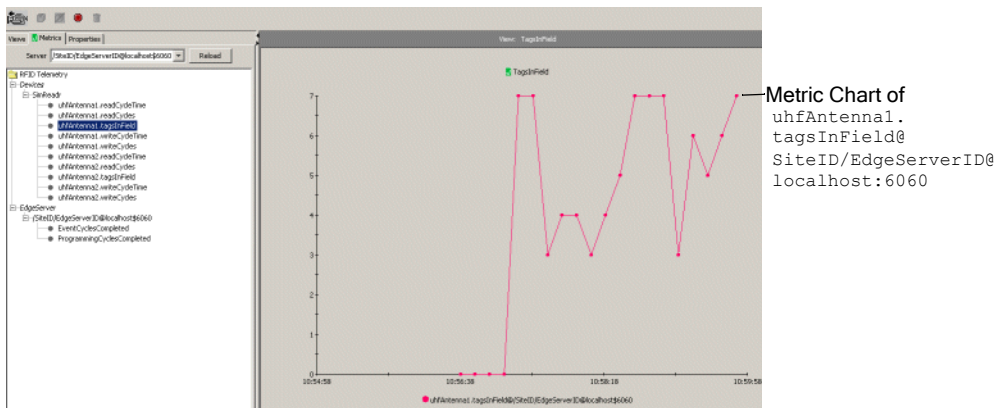
For alternative ways to arrange charts and graphs, see [“Arranging Charts and Graphs in Views”](#) on page 4-10.

## Adding Graphs to Existing Charts

To graph more than one metric on the same chart (that is to add a graph to an existing chart), drag the appropriate item from the **Metrics** tab to the existing chart in the **View** panel, as described in the following steps:

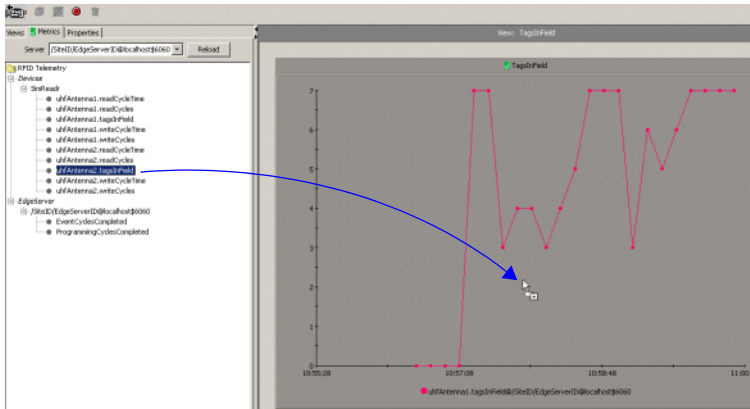
1. Select the **Views** tab to display the list of views.
2. Click the view containing the chart to which you want to add another graph (data source).  
[Figure 4-13](#) shows a chart with one graph.

**Figure 4-13 Chart with One Graph**



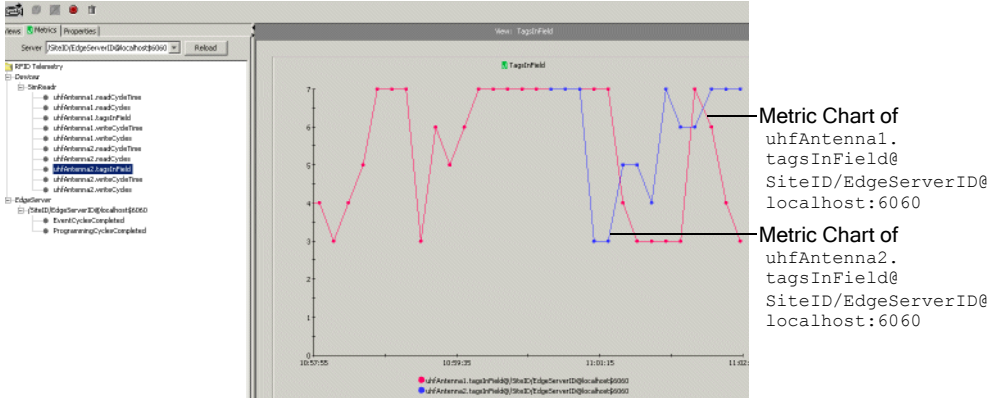
3. Select the **Metrics** tab.
4. Drag a item from the tree to the view, as shown in [Figure 4-14](#). For information about what items can be dragged from the **Metrics** tab, see [“Working with Metrics Charts and Graphs” on page 5-1](#).

Figure 4-14 Dragging a New Telemetry Data Source to an Existing Chart



The new graph is added to the chart, as shown in Figure 4-15.

Figure 4-15 Resulting Graph with Two Charts



For alternative ways to arrange charts and graphs, see “Arranging Charts and Graphs in Views” on page 4-10.

## Repositioning a Chart

To reposition a chart in a view:

1. Select the **Views** tab and select the view containing the chart you want to reposition.

2. Drag the chart to the new position in the view. That is, select the chart and hold the mouse button down while you drag. You can position the chart above, below, to the left, or to the right of an existing chart. When the chart is in an acceptable position, a band of the background is darkened. This behavior is the same as when creating a new chart, as illustrated in [Figure 4-11](#).
3. Release the mouse button.

For alternative ways to arrange charts and graphs, see [“Arranging Charts and Graphs in Views” on page 4-10](#).

## Merging Charts

When you merge charts, all the graphs and associated legend entries of the source chart are added to the graphs and the legend of the target chart. Properties of the target chart—such as the title, colors, and the Y-axis label—are maintained, and any conflicting properties from the source chart are lost. Once successfully merged, the source chart is deleted.

You can merge one or more charts in the same view or in different views.

To merge one chart with another in the same view:

1. Select the **Views** tab and select the view containing the charts you want to merge. All charts to be merged must be in the same view.
2. Drag the source chart onto the target chart. That is, select the chart and hold the mouse button down while you drag. When the source chart is positioned correctly over the target chart, the background of the target chart is darkened.
3. Release the mouse button.

All the graphs and associated legend entries of the source chart are added to the graphs and the legend of the target chart. Properties of the target chart—such as the title, colors, and the Y-axis label—are maintained, and any conflicting properties from the source chart are lost. Once successfully merged, the source chart is deleted.

For alternative ways to arrange charts and graphs, see [“Arranging Charts and Graphs in Views” on page 4-10](#).

## Moving a Graph to a Different Chart or to a New Chart

You can move a graph to a different chart only if the target chart does not already contain a graph based on the same data source.

To move a graph from one chart to another:

1. Select the **Views** tab and select the view containing the graph you want to move. The source chart and the target chart must be in the same view.
2. **Shift**-click the graph (or its legend entry) to select it.
3. Release the **Shift** key and the mouse button, and do not click or select anything else until you perform the instructions in the following step.
4. Drag the graph from the source chart to the target chart or to an empty area in the view. That is, click the already selected graph and hold the mouse button down while you drag. When the graph is positioned correctly over the target chart (or over the empty area), the background of the target chart (or the empty area) is darkened.
5. Release the mouse button. The graph and its legend are added to the target chart and removed from the source chart. If you dragged to an empty area, a new chart containing the graph is created.

For alternative ways to arrange charts and graphs, see [“Arranging Charts and Graphs in Views” on page 4-10](#).

## Arranging Charts and Graphs in Views

[Table 4-1](#) shows how to copy, move, and duplicate charts and graphs by dragging and dropping with the mouse, by using context menus with the mouse, and by using the keyboard. For brevity, some common information is not repeated for each item in the table. That information is as follows:

- When you *move* a chart or graph, the original is deleted (that is, it is removed from its original position).
- When you *copy* or *duplicate* a chart or graph, the original remains unchanged.
- When you *merge* a chart, the original chart is deleted.
- *Drag and drop* means to click an item with the mouse, move it to a new location without releasing the mouse button, then releasing the mouse button to place the item in the new location.
- To copy a graph or chart by dragging and dropping, start dragging the item, press the **Ctrl** key before releasing the mouse button, then drop the item (release the button) in the selected position.



- When you right-click in the **View** panel, a *context menu* is displayed. The menu contains commands that are appropriate for the current context. Context menus in the **View** panel contain several commands for arranging charts and graphs.
- To select a chart using the mouse, click the chart in the **View** panel. To select a graph in a chart, **Shift**-click the graph, or **Shift**-click the name of the graph in the chart legend. You can then right-click the selected graph (or graph name) to display a context menu.
- To select a chart in the **View** panel using the keyboard, press **Tab** or **Shift+Tab** to cycle through the items, that is, to select one item after the other. See also [“Keyboard Reference” on page 6-1](#).
- When you select **Paste chart to new chart** from a context menu or press **Ctrl+Shift+V** from the keyboard, the most recently cut or copied item is inserted at the bottom of the current view. If the item is a graph, a new chart containing that graph is created.
- You can drag and drop a graph or chart to place it in a specific location above, below, or to the left or right of an existing chart. To do this, you drag the item to a border area, which is highlighted when it is selected. However, you cannot select a border area using context menus or the keyboard. Therefore you cannot use those methods to select a specific location to insert a chart. However, you can select **Paste chart to new chart** from a context menu or press **Ctrl+Shift+V** from the keyboard to insert an item at the bottom of the current view
- To use the keyboard to select a different view:
  - a. Press **Ctrl+←** to select the **Tabs** panel.
  - b. Press **Tab** repeatedly until the current tab title is selected.
  - c. If the current tab is not the **Views** tab, press **→** or **←** repeatedly until the **Views** tab is selected.
  - d. Press **Tab** to enter the **Views** tab.
  - e. Press **↑** or **↓** repeatedly until the desired view is selected.
  - f. Press **Enter**.
  - g. Press **Ctrl+→** to select the **View** panel again.

**Table 4-1 Arranging Charts and Graphs**

Action	Using Drag and Drop	Using Context Menus	Using the Keyboard
Move a chart to a different position in the same view	<ol style="list-style-type: none"> <li>1. Drag the chart to the new position.</li> <li>2. Drop the chart.</li> </ol>	<ol style="list-style-type: none"> <li>1. Right-click the chart.</li> <li>2. Select <b>Move Chart</b>, then select a position from the submenu.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the chart.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Press <b>Ctrl+Shift+V</b>.</li> </ol>
Move a chart to a different view	Not available	<ol style="list-style-type: none"> <li>1. Right-click the chart.</li> <li>2. Select <b>Cut Chart</b>.</li> <li>3. Select the target view.</li> <li>4. Right-click anywhere in the view.</li> <li>5. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select chart.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the target view.</li> <li>4. Press <b>Ctrl-Shift-V</b>.</li> </ol>
Copy a chart to a different view	Not available	<ol style="list-style-type: none"> <li>1. Right-click the chart.</li> <li>2. Select <b>Copy Chart</b>.</li> <li>3. Select the target view.</li> <li>4. Right-click in view.</li> <li>5. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the chart.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the target view.</li> <li>4. Press <b>Ctrl+Shift+V</b>.</li> </ol>
Duplicate a chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the chart to the new position</li> <li>2. Press <b>Ctrl</b> while dragging.</li> <li>3. Drop the chart.</li> </ol>	<ol style="list-style-type: none"> <li>1. Right-click the chart.</li> <li>2. Select <b>Copy Chart</b>.</li> <li>3. Right-click anywhere in the view.</li> <li>4. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the chart.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Press <b>Ctrl+Shift+V</b>.</li> </ol>
Merge a chart with another chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the source chart to the target chart.</li> <li>2. Drop the chart.</li> </ol>	<ol style="list-style-type: none"> <li>1. Right-click the source chart.</li> <li>2. Select <b>Cut Chart</b>.</li> <li>3. Right-click the target chart.</li> <li>4. Select <b>Paste chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source chart.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the target chart.</li> <li>4. Press <b>Ctrl+V</b>.</li> </ol>

**Table 4-1 Arranging Charts and Graphs**

<b>Action</b>	<b>Using Drag and Drop</b>	<b>Using Context Menus</b>	<b>Using the Keyboard</b>
Merge a copy of a chart with another chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the source chart to the target chart</li> <li>2. Press <b>Ctrl</b> while dragging.</li> <li>3. Drop the chart.</li> </ol>	<ol style="list-style-type: none"> <li>1. Right-click the source chart.</li> <li>2. Select <b>Copy chart</b>.</li> <li>3. Right-click the target chart.</li> <li>4. Select <b>Paste chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source chart.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the target chart.</li> <li>4. Press <b>Ctrl+V</b>.</li> </ol>
Merge a chart with a chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. Right-click the source chart.</li> <li>2. Select <b>Cut chart</b>.</li> <li>3. Select the other view.</li> <li>4. Right-click the target chart.</li> <li>5. Select <b>Paste chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source chart.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the other view.</li> <li>4. Select the target chart.</li> <li>5. Press <b>Ctrl+V</b>.</li> </ol>
Merge a copy of a chart with a chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. Right-click the source chart.</li> <li>2. Select <b>Copy Chart</b>.</li> <li>3. Select another view.</li> <li>4. Right-click the target chart.</li> <li>5. Select <b>Paste chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source chart.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the other view.</li> <li>4. Select the target chart.</li> <li>5. Press <b>Ctrl+V</b>.</li> </ol>
Move a graph to a different chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the graph to the target chart.</li> <li>2. Drop the graph.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Cut graph</b>.</li> <li>4. Right-click the target chart.</li> <li>5. Select <b>Paste graph</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the target chart.</li> <li>4. Press <b>Ctrl+V</b>.</li> </ol>

**Table 4-1 Arranging Charts and Graphs**

Action	Using Drag and Drop	Using Context Menus	Using the Keyboard
Copy a graph to another chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the graph to the target chart.</li> <li>2. Press <b>Ctrl</b> while dragging.</li> <li>3. Drop the graph.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Copy graph</b>.</li> <li>4. Right-click the target chart.</li> <li>5. Select <b>Paste graph</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the target chart.</li> <li>4. Press <b>Ctrl+V</b>.</li> </ol>
Move a graph to a chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Cut graph</b>.</li> <li>4. Select the other view.</li> <li>5. Right-click the target chart.</li> <li>6. Select <b>Paste graph</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the other view.</li> <li>4. Select the target chart.</li> <li>5. Press <b>Ctrl+V</b>.</li> </ol>
Copy a graph to a chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Copy graph</b>.</li> <li>4. Select the other view.</li> <li>5. Right-click the target chart.</li> <li>6. Select <b>Paste graph</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the target chart.</li> <li>4. Press <b>Ctrl+V</b>.</li> </ol>
Copy a graph to create a new chart in the same view	<ol style="list-style-type: none"> <li>1. Drag the graph to a border in the view.</li> <li>2. Press <b>Ctrl</b> while dragging.</li> <li>3. Drop the graph.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Copy graph</b>.</li> <li>4. Right-click anywhere in the view.</li> <li>5. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Press <b>Ctrl+Shift+V</b>.</li> </ol>

**Table 4-1 Arranging Charts and Graphs**

<b>Action</b>	<b>Using Drag and Drop</b>	<b>Using Context Menus</b>	<b>Using the Keyboard</b>
Move a graph to create a new chart in the same view	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Drag the selected graph to a border area in the view.</li> <li>3. Drop the graph to create a new chart.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Cut graph</b>.</li> <li>4. Right-click anywhere in the view.</li> <li>5. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Press <b>Ctrl+Shift+V</b>.</li> </ol>
Copy a graph to create a new chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Copy graph</b>.</li> <li>4. Select the other view.</li> <li>5. Right-click anywhere in the view.</li> <li>6. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+C</b>.</li> <li>3. Select the other view.</li> <li>4. Press <b>Ctrl+Shift+V</b>.</li> </ol>
Move a graph to create a new chart in a different view	Not available	<ol style="list-style-type: none"> <li>1. <b>Shift</b>-click the graph.</li> <li>2. Right-click the selected graph.</li> <li>3. Select <b>Cut graph</b>.</li> <li>4. Select the other view.</li> <li>5. Right-click anywhere in the view.</li> <li>6. Select <b>Paste chart to new chart</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select the source graph.</li> <li>2. Press <b>Ctrl+X</b>.</li> <li>3. Select the other view.</li> <li>4. Press <b>Ctrl+Shift+V</b>.</li> </ol>

## Starting and Stopping Data Collection for Charts in a View

To start data collection for the charts in a view:


1. Select the **Views** tab.

2. Click the name of the view you want to start. Alternatively, right-click the name of the view and select **Start**.

The view is displayed in the **View** panel, and data collection begins.

To stop data collection for the charts in a view:

1. Select the **Views** tab.
2. Right-click the name of the view you want to stop and select **Stop**.

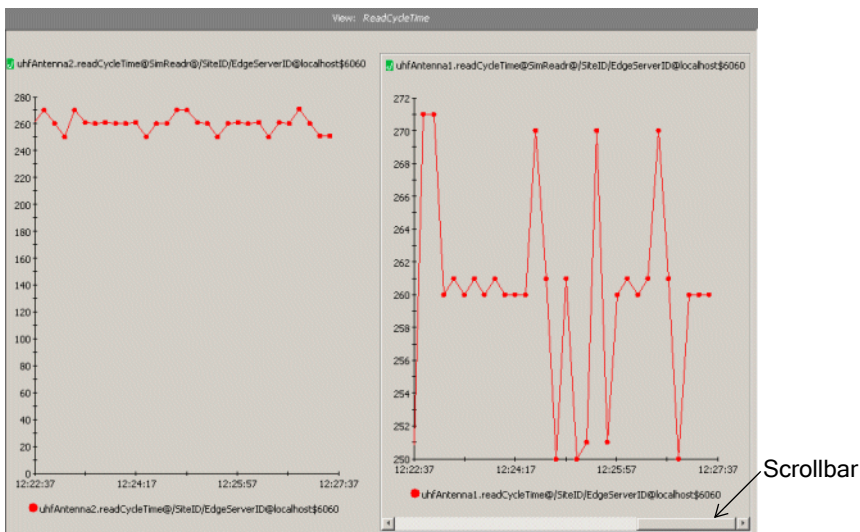
To stop all data collection for all views, click the  (**Stop All Active Views**) button in the toolbar. (It is not necessary to first select the **Views** tab.)

## Scrolling and Zooming the Data Displayed in a Chart

You can display or hide the scrollbar for a chart, as explained in “[Turning a Chart Scrollbar On and Off](#)” on page 4-23.




The scrollbar includes controls for scrolling through data in the chart and is displayed below the chart, as shown in [Figure 4-16](#).

**Figure 4-16** Scrollbar for a Chart



The controls are shown in [Table 4-2](#).

**Table 4-2 Controls in the Scrollbar**

Control	Name	Use
	Thumb	Drag to scroll through data.
	Left scroll arrow	Click to scroll backwards through data.
	Right scroll arrow	Click to scroll forwards through data.


To display or hide the scrollbar for a chart:



1. Right-click anywhere in the chart.
2. From the context menu, select **Show Scrollbar** to display the scrollbar or **Hide Scrollbar** to hide it.

## Scrolling Through Data in a Chart

You can scroll back and forth through a chart's data. The data is retrieved from a data cache. For more information about chart data, see [“How Metrics Data is Collected and Presented” on page 5-1](#).

To scroll through data:

1. Select the chart containing the data you want to monitor.
2. Drag the scrollbar's thumb control  to the interval you want to monitor. As you drag the thumb control, a message is displayed that shows the beginning and end times of the intervals you are scrolling through.

Alternatively, click  (left scroll arrow) to scroll backwards or click  (right scroll arrow) to scroll forward. Clicking these buttons scrolls the viewport (the span displayed in the chart) by 10% of the viewport width. Clicking directly on the scrollbar (not on the thumb control) scrolls the viewport by 50% of the viewport width.

While you scroll, a message is displayed showing the time intervals you are scrolling through. When you stop scrolling, the data is retrieved for the selected interval. To display the dates and times for the visible interval, position the mouse pointer anywhere on the scrollbar.

Only the data available in the cache of actively polled metrics can be displayed. If you scroll to a point earlier than the data available in the cache, no data is displayed for that graph.

To display current data after scrolling:

1. Select the chart.
2. Do one of the following:
  - Move the thumb control all the way to the right on the scroll bar, or
  - Right-click the chart, then select **View Current Data** from the context menu.

## Zooming In and Out of Data in a Chart

You can zoom into the data shown in a chart to expand the view of data points for a shorter time span, and you can zoom out to show details about a longer time span.


Zoom in and out as follows:

- To zoom in on the X-axis, right-click anywhere in the chart and select **Zoom In** (or press **Alt-z**). You zoom in to a percentage of the displayed time interval. Set the percentage in the **Global Properties** tab.
- To zoom out of the X-axis, right-click anywhere in the chart and select **Zoom Out** (or press **Alt-o**).
- To zoom in on the X-axis by a custom interval, **Shift**-drag over an area of the chart. That is, press and hold the **Shift** key, then drag the mouse pointer over the area of the chart you want to display. (You must release the mouse button before you release the **Shift** key.)
- To reset the interval to its state before it was zoomed, right-click the chart and select **Zoom Reset (R)** from the context menu (or press **Alt-r**). Resetting the zoom state resets the interval back to the default interval of five minutes, starting at the start time which was in effect before zooming.

## Deleting a Graph from a Chart

To delete a graph from a chart:




1. Select the **Views** tab and select the view containing the chart containing the graph you want to delete.
2. Select the graph in either of the following ways:
  - **Shift**-click anywhere on the graph.
  - **Shift**-click on the legend entry for the graph.
3. Click the  (Delete) button in the toolbar, or press the **Delete** key.

The graph is permanently deleted and cannot be recovered.

## Deleting a Chart

To delete a chart:

1. Select the **Views** tab and select the view containing the chart you want to delete.
2. Select the chart.

A border appears around the chart to show it has been selected.
3. Click the  (Delete) button in the toolbar, or press the **Delete** key.

**Note:** If you discard changes to the view containing the deleted graph, you can recover it. However, you cannot selectively discard changes, so you will lose any other changes you made, too. Once you save changes to the view, the deleted graph is permanently deleted and cannot be recovered.

## Setting Chart Properties

When you create a chart, it is created with default visual and control properties. To change those properties:

1. Select the **Views** tab and select the view containing the chart whose properties you want to change.
2. In the **View** panel, click anywhere in the chart to select it.
3. Select the **Properties > Selected Item Properties** tab to display controls for changing properties.

4. Make changes by setting the properties in the **Properties > Selected Item Properties** tab, as described in the following sections:
  - [“Changing a Chart Name” on page 4-20](#)
  - [“Creating a Y-Axis Label for a Chart” on page 4-21](#)
  - [“Setting a Chart Graphing Style” on page 4-21](#)
  - [“Changing the Sample Interval” on page 4-22](#)
  - [“Turning a Chart Legend On and Off” on page 4-22](#)
  - [“Turning a Chart Scrollbar On and Off” on page 4-23](#)
  - [“Changing Chart Foreground and Background Colors” on page 4-24](#)
5. Click the **Apply Changes** button to apply your changes to the selected chart.

Alternatively, click **Discard Changes** to restore the settings that were in effect when you started changing them, or click **Restore Defaults** to restore the Telemetry Console Extension default settings for charts.

**Note:** Applying a change to a property does not save it for future use. See step 6.

6. If this is a chart in a custom view, you can save the changes so they will be restored the next time you open the Telemetry Console Extension. (You cannot save changes to a chart in a built-in view.) To save a custom chart, you must save the view, as follows: on the toolbar, click



the **(Save All Modified Views)** button to save all custom views.

**Note:** You cannot save changes to the properties of a chart in a built-in view.

## Changing a Chart Name

You can change the name of charts in built-in and custom views. But you can save the name only for charts in custom views. To change the name of a chart:

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 of [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. Enter a new name in the **Name** field.
4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

## Creating a Y-Axis Label for a Chart





No Y-Axis label is assigned by default for a chart, but you can create one, as follows:

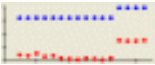


1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. In the **Y-Axis** field, enter text to be used as the Y-Axis label.
4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

## Setting a Chart Graphing Style

By default, graphs are created using the “plot” style (dots connected by lines). However, you can change the style, as follows:

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. Select a style from the **Style** drop down list to change the visual style of each graph on the selected chart. Styles include:

Style	Example	Description
Area		Solid area under a line
Area radar		Circular area, with new data sweeping clockwise, as with a radar
Bar		Bars alternating for each graph
Plot		Sequential dots connected by lines

Style	Example	Description
Scatter plot		Dots only
Stacking area		Areas for each graph, stacked on top of each other
Stacking bar		Bars for each graph, one stacked on top of the other

4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

## Changing the Sample Interval

The sample interval is the frequency (in seconds) at which chart data samples are gathered. The default value is 10 seconds. You can modify the sample interval as follows:

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. Move the **Sample Interval** slider to a position corresponding to the desired number of seconds or type in the desired number of seconds in the text field.
4. Click **Apply Changes**.

## Turning a Chart Legend On and Off

A chart legend identifies each graph on the chart. Each line in the legend shows the color and graphic used to plot the data points and identifies the data source for the graph.

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. Select the **Legend** check box to display the legend, or deselect it to hide the legend.

4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

Alternatively:

1. Display the view containing the chart.
2. Right-click anywhere in the chart.
3. Choose **Show Legend** from the context menu to display the legend, or choose **Hide Legend** to hide the legend.
4. Save the changes, as explained in step 6 of [“Setting Chart Properties” on page 4-19](#).

## Turning a Chart Scrollbar On and Off

You can use the scrollbar to scroll back through data and the attached zoom controls to zoom in and out of data, as explained in [“Scrolling and Zooming the Data Displayed in a Chart” on page 4-16](#). The scrollbar is hidden by default, however, you can display it and hide it again, as follows:

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in step 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **General** subtab.
3. Select the **Scrollbar** check box to display the scrollbar, or deselect it to hide the scrollbar.
4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

Alternatively:

1. Display the view containing the chart.
2. Right-click anywhere in the chart.
3. From the context menu, select **Hide Scrollbar** to turn the scrollbar off, or select **Show Scrollbar** to turn the scrollbar back on. (You can also press **Alt-S** to toggle the scrollbar on and off.)

## Changing Chart Foreground and Background Colors

The foreground color for a chart includes the color of the text used for the legend and the color of the X- and Y-axis lines and values. The background color is the color used for the background of the entire chart.

1. Select the chart and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Chart Properties” on page 4-19](#).
2. Select the **Colors > Foreground** subtab to change the foreground colors, or select the **Colors > Background** subtab to change the background colors.
3. Select your preferred color chooser, by selecting one of the subtabs: **Swatches**, **HSB**, or **RGB**.
4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Chart Properties” on page 4-19](#).

## Setting Individual Graph Properties

When you create a graph in a chart, it is created with default visual and control properties. To change those properties:

1. Select the Views tab and select the view containing the chart with the graph whose properties you want to change.
2. In the View panel, select the graph in either of the following ways:
  - **Shift-click** anywhere on the graph.
  - **Shift-click** on the legend entry for the graph.
3. Select the **Properties > Selected Item Properties** tab to display controls for changing graph properties.
4. Make changes by setting the properties in the **Properties > Selected Item** tab, as described in the following sections:
  - [“Changing a Graph Name” on page 4-25](#)
  - [“Changing a Graph’s Colors” on page 4-26](#)
5. Click **Apply Changes**.

Alternatively, click **Discard Changes** to restore the settings that were in effect when you started changing them, or click **Restore Defaults** to restore the Telemetry Console Extension default settings for charts.

**Note:** Applying a change to a property doesn't save it for future use. See step 6.

- If this graph is in a chart in a custom view, you can save the changes so they will be restored the next time you open the Telemetry Console Extension. (You cannot save changes to a chart in a built-in view.) To save a custom chart, you must save the view, as follows: on the toolbar,



click the **(Save All Modified Views)** button to save all custom views.

**Note:** You cannot save changes to the properties of a chart in a built-in view.

## Changing a Graph Name

When you drag an item onto a chart to create a graph of the item's data points, a name is assigned by default. This name appears in the legend for the chart containing the graph. You can change the name, as follows:

- Select the graph and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Individual Graph Properties” on page 4-24](#).
- Select the **General** subtab.
- Enter a new name in the **Name** field.
- Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Individual Graph Properties” on page 4-24](#).

## Changing a Graph Scaling Factor

Adjusting the scaling factor for a graph adjusts the units used for the Y-Axis. For example, if a Y-Axis unit of 60,000 is scaled to 1, and you change the scaling factor to 10, the units are changed to 600,000. Changing the scaling factor of a graph is useful when a chart contains more than one graph, and you want to adjust the different graphs to see them more clearly in relation to each other.

- Select the graph and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Individual Graph Properties” on page 4-24](#).
- Select the **General** subtab.
- Select a scaling factor from the **Scale** drop-down list.
- Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Individual Graph Properties” on page 4-24](#).

## Changing a Graph's Colors

The foreground color for a graph includes the color of the line and symbols used to plot data in the graph, where appropriate. The background color is the fill color for the graph, where appropriate for the selected graph style. These colors are assigned by default, but you can change them, as follows:

1. Select the graph and select the **Properties > Selected Item Properties** tab, as explained in steps 1-3 in [“Setting Individual Graph Properties” on page 4-24](#).
2. Select the **Colors > Foreground** subtab to change the foreground colors, or select the **Colors > Background** subtab to change the background colors.
3. Select your preferred color chooser, by clicking one of the subtabs: **Swatches**, **HSB**, or **RGB**.
4. Apply, revert, or save the changes, as explained in steps 5 and 6 of [“Setting Individual Graph Properties” on page 4-24](#).

## Setting Global Properties

Global properties apply to all active views. To set global properties, click the **Properties** tab, then click the **Global Properties** subtab. You can set the following properties:

- **Polled Data Set Size.** The number of dynamically gathered samples retained in the data cache on the server for each monitored metric. For information about the data caches, see [“How Metrics Data is Collected and Presented” on page 5-1](#).
- **Autoscroll Speed.** If a view contains several charts, you may have to scroll the window to see all the charts. If you drag an item from the **Tabs** panel towards an edge of such a view, the window scrolls so you can add the item to the hidden part of the view. The **Autoscroll Speed** setting sets the speed of the scrolling, in centimeters per second.
- **Autoscroll Insets.** The width of the region surrounding a panel that is used to trigger automatic scrolling.
- **Default Viewport Size.** The default size of the chart viewport in minutes. You can change the viewport size by zooming in or out.
- **Zoom Percentage.** The percentage by which the chart viewport size is changed during a zoom in (**Alt-z**) or a zoom out (**Alt-o**) operation.



# Working with Metrics Charts and Graphs

Metrics charts and graphs plot the values of metric attributes. The values are real-time polled telemetry data values obtained from a running RFID Edge Server.

To create charts and graphs based on metrics data, you drag metrics attributes from the **Metrics** tab to the **View** panel. Each new graph shows the value of the selected attribute over time.

The following sections describe metrics charts and graphs:

- [“How Metrics Data is Collected and Presented”](#) on page 5-1
- [“Available Edge Server and Reader Telemetry Metrics”](#) on page 5-2
- [“Selecting a Server”](#) on page 5-3
- [“Understanding the Contents of the Metrics Tab”](#) on page 5-3
- [“Displaying Items in the Metrics tab”](#) on page 5-3
- [“Displaying Details About Instances and Attributes in the Metrics Tab”](#) on page 5-4
- [“Displaying Details About Metrics Charts and Graphs”](#) on page 5-4

For general information about working with charts and graphs, see [“Working with Charts and Graphs”](#) on page 4-1.

## How Metrics Data is Collected and Presented

When a view containing one or more metrics charts is activated in the Telemetry Console Extension, data collection for viewing those metrics in real time is started on the server. The data

is gathered continually and placed in a "wrap-around" cache. That is, as new data fills the cache, the oldest data in the cache is lost. When a view is stopped (see [“Starting and Stopping Data Collection for Charts in a View” on page 4-15](#)), data collection for the contained charts is stopped.

To display current data, the Telemetry Console Extension periodically polls the data cache for a current data set and displays it in a chart.

**Note:** The size of the data set returned to the client is configurable. See [“Setting Global Properties” on page 4-26](#).

## Available Edge Server and Reader Telemetry Metrics

Edge Server telemetry metrics display information about the number of event and programming cycles that have completed within the specified telemetry interval. For information about event cycles and programming cycles, see [Reading and Writing Tags in \*Programming with the ALE and ALEPC APIs\*](#).

Edge Server metrics include:

- **EventCyclesCompleted**—shows the number of event cycles completed within the specified telemetry interval. When the telemetry interval is very short, this value is likely to be either zero (no event cycles) or one (one event cycle). If the telemetry interval is longer, larger values are displayed when many event cycles are completed within one telemetry interval.
- **ProgrammingCyclesCompleted**—shows the number of programming cycles completed within the specified telemetry interval.

The telemetry time interval is configurable; the default value is 10 seconds. See [“Changing the Sample Interval” on page 4-22](#).

RFID Device telemetry metrics let you monitor how long read cycles are taking, and keep track of how many read cycles have occurred in the specified time interval. Also, you can see how many tags each reader is reading. Telemetry information for each logical reader (antenna) is displayed.

RFID Device metrics include:

- **readCycles**—shows when read cycles occurred.
- **readCycleTime**—shows how much time each reader is taking for a read cycle.
- **tagsInField**—shows how many tags this logical reader (antenna) has read.
- **writeCycles**—shows when write cycles (programming cycles) occurred.

- writeCycleTime—shows how much time each reader or printer is taking for a write cycle.

For more information, see [Monitoring Edge Servers](#) and [Monitoring Readers](#).

## Selecting a Server

The **Metrics** tab displays metrics available for a single Edge Server at a time. To select a different Edge Server, select the server from the **Server** drop-down list. The **Server** drop-down list displays all the Edge Servers configured in the Edge Server Administration Console.







## Understanding the Contents of the Metrics Tab

The **Metrics** tab displays a tree containing the following:

- Metric types
- Currently registered instances of the metric types
- Attributes of the listed registered instances



[Table 5-1](#) describes the visual cues that help to identify items in the metrics tree.

**Table 5-1 Visual Cues for the Metrics Tree**

Visual Cue	Description
 Devices	An metric type with at least one registered instance
 Devices  SimReadr	A registered instance of the metric type
 Devices  SimReadr  uhfAntenna1.readCycleTime	An attribute of a registered metric instance

## Displaying Items in the Metrics tab

The tree shows the available runtime metric types, instances, and attributes for an Edge Server. Display items in the **Metrics** tab, as follows:

- To view the metrics from a different Edge Server, select the server from the **Server** drop-down list. (You can display metrics from only one Edge Server at a time.)
- To refresh the tree for the selected Edge Server, click the **Reload** button next to the **Server** drop-down list.
- To show all currently registered instances of a listed metric type, click the  (Expand) button to the left of the type name.
- To show all attributes of a listed metric instance, click the  (Expand) button to the left of the metric name.

## Displaying Details About Instances and Attributes in the Metrics Tab

You can display details about metric instances and attributes by placing the mouse pointer over items displayed in the **Metrics** tab:

- Point to an metric instance name to display the full object name of the instance.
- Point to an metric attribute name to display the type and description of the attribute.

For more information about displaying these kinds of details, see [“Displaying Tooltips for Controls, Views, Graphs, and Charts” on page 2-7](#).

## Displaying Details About Metrics Charts and Graphs

You can display details about metrics charts and graphs displayed in the **View** panel by pointing the mouse pointer at objects in the panel:

- Point to a data point in a graph to display the time the data point was plotted and the sampled metric value at that time.
- Point to a chart legend to display the object instance name for each attribute listed in the legend.
- Point to a chart scrollbar to display the beginning date and time and the ending date and time for the visible interval. This tooltip also tells if this interval is the current interval.

For more information about displaying these details, see [“Displaying Tooltips for Controls, Views, Graphs, and Charts” on page 2-7](#).

# Keyboard Reference

Most of the Telemetry Console Extension documentation tells how to accomplish tasks using the mouse. However, you can accomplish virtually all of those tasks using the keyboard only, as described in the following sections:

- “Terms and Conventions” on page 6-1
- “Navigating and Selecting” on page 6-2
- “Keyboard Reference” on page 6-2
- “Selecting Items and Giving Focus to Items Using the Keyboard” on page 6-5

## Terms and Conventions

The following terms and conventions are used in [Table 6-1](#):

- *Controls* are items such as buttons, tabs, text fields, and sliders that you use to perform actions or view information. In some circumstances, a control may be *disabled*, which means that it is not available in the current context. For example, if no views have unsaved changes, the button for saving all views is disabled, and you are unable to select it using the keyboard. In that case, the appearance of the button is changed; for example it may be all gray, depending on the platform.
- Two key names separated by a + (plus sign), for example **Shift+Tab**, indicates that you must hold down the first key, then press the second named key, then release both keys.

## Navigating and Selecting

You can use the keyboard to navigate through the Telemetry Console Extension, for example, press the **Tab** key to move from one control to the other. However, navigating to a control does not initiate an action with the control; it simply makes it available for receiving the next keyboard input. For example, you can press **Tab** to navigate to a button but you must then press **Enter** to press the button. In most cases, this is straightforward, and you do not have to be aware of the distinction. A visual cue indicates that an item is selected. For example, a chart is surrounded by a box, or the data points and (legend entry icon) in a scatter plot graph may be displayed as stars. (The visual cues may be different on different platforms.)

The Telemetry Console Extension has two main panels, the **Tabs** panel and the **View** panel, and one of those tabs is always active. Keyboard input affects whatever control is selected in the active panel. For example, if an edit field is selected in the active panel, any characters you type on the keyboard are added to that edit field.

Certain actions affect the selected item in the panel that is not active. For example, you can navigate to a chart in the **View** panel and select the chart. You can then navigate to the **Selected Item Properties** tab in the **Tabs** panel and make a change to a property (that is, select the control that sets the property's value, change the value, navigate to the **Apply Changes** button, and press **Enter** to push the button). When you apply the changes, the property is changed in the chart selected in the (non-active) **View** tab.



The **(Focus Context)** button on the toolbar indicates which panel is active. When the arrow on the button points left, the **Tabs** panel (on the left) is active. When it points right, the **View** panel (on the right) is active.

## Keyboard Reference

[Table 6-1](#) describes how to use the keyboard to accomplish tasks in the Telemetry Console Extension.

Table 6-1 Telemetry Console Extension Keyboard Access

Pressing this key or these keys...	When this item is selected...	Does this...
<b>Enter</b>	Any button	Presses the button.
<b>Tab</b>	<b>Tabs</b> panel (the panel on the left side of the page)	Selects the next active control. Repeatedly pressing the <b>Tab</b> key cycles through all active controls in the toolbar and the current tab. (That is, one control after another is selected, while the previously selected control is deselected. After the last control is selected, pressing the <b>Tab</b> key again starts the process again.)
<b>Shift+Tab</b>	<b>Tabs</b> panel	Same as <b>Tab</b> , above, but selects the previous instead of the next active control.
<b>Tab</b>	<b>View</b> panel (the panel on the right side of the page)	Selects the next chart in the view. Repeatedly pressing the <b>Tab</b> key cycles through all the charts.
<b>Shift+Tab</b>	<b>View</b> panel	Same as <b>Tab</b> , above, but selects the previous instead of the next chart.
→ (Right arrow)	Toolbar	Selects the next active button in the toolbar. Repeatedly pressing the arrows cycles through the active buttons in the toolbar.
← (Left arrow)	Toolbar	Same as →, above, but selects the previous instead of the next button.
→ (Right arrow)	Tab controls (labels) in the <b>Tabs</b> panel	Selects the next tab. Repeatedly pressing the arrows cycles through all tabs.
← (Left arrow)	Tab controls (labels) in the <b>Tabs</b> panel	Same as →, above, but selects the previous instead of the next tab.
↓ (Down arrow)	Tree of view names in the <b>Views</b> tab	Selects the next view or folder.

Table 6-1 Telemetry Console Extension Keyboard Access (Continued)

Pressing this key or these keys...	When this item is selected...	Does this...
↑ (Up arrow)	Tree of view names in the <b>Views</b> tab	Selects the previous view or folder.
<b>Shift+</b> → (Right arrow)	<b>View</b> panel	Selects the next chart in the current view. Repeatedly pressing the <b>Shift+</b> → cycles through all the charts in the view.  <b>Note:</b> If the <b>Tabs</b> panel is active when you click <b>Shift+</b> →, the <b>View</b> panel becomes active, and the next chart is selected.
<b>Shift+</b> ← (Left arrow)	<b>View</b> panel	Same as <b>Shift+</b> →, above, but selects the previous instead of the next chart.
<b>Shift+</b> ↓ (Down arrow)	<b>View</b> panel	Selects the next graph in the current chart, or if there are no more graphs in the chart, selects the first graph in the next chart. Repeatedly pressing <b>Shift+</b> ↓ cycles through all the graphs in all the charts in the view.  <b>Note:</b> If the <b>Tabs</b> panel has is active when you click <b>Shift+</b> ↓, the <b>View</b> panel becomes active, and the next graph is selected.
<b>Shift+</b> ↑ (Up arrow)	<b>View</b> panel	Same as <b>Shift+</b> ←, above, but selects the previous instead of the next graph.
↓ (Down arrow)	<b>View</b> panel	Scrolls the contents of the panel up, if they extend beyond the visible area.
↑ (Up arrow)	<b>View</b> panel	Scrolls the contents of the panel down, if they extend beyond the visible area.



**Table 6-1 Telemetry Console Extension Keyboard Access (Continued)**

Pressing this key or these keys...	When this item is selected...	Does this...
→ (Right arrow)	Slider control	Moves the slider control to the right.
← (Left arrow)	Slider control	Moves the slider control to the left.
Space bar	Check box	Selects or deselects the check box.

## Selecting Items and Giving Focus to Items Using the Keyboard

An item can be *selected*, have *focus*, or both at the same time. When you use the mouse to manipulate objects, the distinction may not be obvious, nor does it have to be. For example, you can click a chart in the **View** panel to select it and then click a control in the **Selected Item Properties** tab to change some property of the selected chart. You do not have to know anything about selection and focus except that you selected the chart and now you are doing something to it.

However, if you use the keyboard, you will sometimes have to make more explicit decisions about selecting and giving focus to objects. The instructions for selecting and giving focus to items are given in [Table 6-1](#). The principles are as follows:

- When an item has the *focus*, it is available to accept the next input from the keyboard. In most cases, a visual cue indicates that an item has focus. For example, a chart is surrounded by a box, or the data points and (legend entry icon) in a scatter plot graph may be displayed as stars. The visual cues may be different on different platforms.



The **(Focus Context)** button indicates which panel has focus. When the arrow on the button points left, the **Tabs** panel (on the left) has focus. When it points right, the **View** panel (on the right) has focus.

- In certain cases, an item can be *selected* but not have focus, so that the action initiated with the control that has focus affects the item that is selected. For example, you can select a chart in the **View** panel, then switch focus to the **Selected Properties** tab to make changes to the selected chart. The chart remains selected, but the focus switches to whichever

## Keyboard Reference

control you choose in the **Selected Properties** tab, for example, the **Name** field. In most cases, a visual cue indicates that an item is selected. For example, the cursor blinks in a text entry field. The visual cues may be different on different platforms.

- When you select an item using the keyboard or the mouse, you both select it and give it focus. However, if you are working in one panel and then select an item in the other panel, whatever had focus in the original panel remains selected in that panel.

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