

Using Custom Graphs

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Getting Started with Custom Graphs

Custom graphs enable you to generate graphs for elements that are monitored by Service Statistics Manager. Custom graphs offer flexibility. You select a combination of monitor types, monitored instances, and attributes to correlate data effectively. For example, you can create graphs with data from:

- A single monitor type, comparing one or more attributes across monitored instances.
- Multiple monitor types, comparing a single attribute from each, but viewing the statistics from multiple sites.

Custom graphs that focus on a single monitor type enable you to view raw data for the previous day, for a single monitor type. See [Creating a Graph for a Single Monitor Type, page 4-6](#).

Custom graphs that focus on multiple monitor types enable you to compare data across sites. See [Creating Graphs for Multiple Monitor Types, page 4-7](#).

Creating Custom Graphs

On the Custom Graphs tab, you can select from the following format options for creating your graph:

- Line Graphs—Most commonly used.
- Area Graphs—Use when creating a graph for a single monitored instance and a single attribute.
- X-Y Graphs—Use to correlate two metrics.
- Top N Graphs—Compare top N or bottom N elements for a single monitor type.

Creating Line Graphs

Line graphs are the most common type of graphs that plot linear relationships.

Figure 4-1 Line Graph Icon

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- Step 1** Select the **Custom Graphs** tab.
- Step 2** Select the line graph icon as the graph type.
- Step 3** Select a group filter.
- Step 4** Select one or more monitor types from the Monitor Type list.
- Step 5** Click **Next**. One or more Monitor Element lists appear, showing elements available for each monitor type that you selected.
- Step 6** Select monitor elements.
- Step 7** Click **Apply**. The Custom Graphs (Line Graphs) page appears. A list of attributes is displayed for each monitor type that you selected in [Step 5](#).
- Step 8** Select the attributes to plot.
- Step 9** If you selected only one attribute, you can also select one or more indicators to display the minimum, maximum, and average values for the period. For each indicator that you select, a line is displayed on the graph.
- Step 10** From the Schedule list, select the schedule during which the data that you want to include was recorded:
- No Filter—Any time.
 - 24x7—24 hours a day and 7 days a week.
 - Business Hours—9:00 a.m. to 5:00 p.m., Monday through Friday.



Note You can define additional schedules. Create a new schedule by clicking **New** or edit a schedule by clicking **Edit**. (See [Adding a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-17](#) and [Editing a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-18](#).)

- Step 11** Select one of the following as the graph option:
- Show All Attributes on a Single Graph—All attributes that you select are plotted on one graph.
 - Show Each Monitor Element on a Separate Graph—If you select more than one element, each element is plotted on a separate graph.
 - Show Each Attribute on a Separate Graph—If you select more than one attribute, each attribute is plotted on a separate graph.
- Step 12** Click **Generate Graph**. A graph appears on the lower part of the page. (If you created multiple graphs, view them by scrolling down.)
- Step 13** (Optional) You can also:
- Change the time window that is being displayed, by using the paging icons to move the time window backward or forward.
 - Change the attributes that are being displayed.

- Perform other functions using the icons located to the right of the graph. For more information, see [Understanding and Interacting with Custom Graphs, page 4-8](#).

Creating Area Graphs

Area graphs are specialized line graphs. You can use them to plot a graph for only a single instance and a single attribute.

Figure 4-2 Area Graph Icon



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- Step 1** Select the **Custom Graphs** tab.
 - Step 2** Select the area graph icon as the graph type.
 - Step 3** Select a group filter.
 - Step 4** Select one or more monitor types from the Monitor Type list.
 - Step 5** Click **Next**. One or more Monitor Element lists appear, showing elements available for each monitor type that you selected.
 - Step 6** Select monitor elements.
 - Step 7** Click **Apply**. The Custom Graphs (Area Graph) page is displayed.
 - Step 8** Select the attributes to plot. Separate attributes are available for each selected monitor.
 - Step 9** From the Schedule list, select the schedule during which the data that you want to include was recorded:
 - No Filter—Any time.
 - 24x7—24 hours a day and 7 days a week.
 - Business Hours—9:00 a.m. to 5:00 p.m., Monday through Friday.



Note You can define additional schedules. Create a new schedule by clicking **New** or edit a schedule by clicking **Edit**. (See [Adding a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-17](#) and [Editing a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-18](#).)

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- Step 10** Select one of the following as the graph option:
 - Show All Attributes on a Single Graph—All attributes that you select are plotted on one graph.
 - Show Each Monitor Element on a Separate Graph—If you select more than one element, each element is plotted on a separate graph.
 - Show Each Attribute on a Separate Graph—If you select more than one attribute, each attribute is plotted on a separate graph.
 - Step 11** Click **Generate Graph**. A graph appears in the lower half of the page. (If you created multiple graphs, view them by scrolling down.)
 - Step 12** (Optional) You can also:

- Change the time window that's being displayed. by using the paging icons to move the time window backward or forward.
- Change the attributes that are being displayed.
- Perform other functions using the icons located to the right of the graph. For more information, see [Understanding and Interacting with Custom Graphs, page 4-8](#).

Creating X-Y Graphs

Use an X-Y graph to show a correlated view of two metrics. An X-Y graph is especially useful for related metrics where the dependency is not very clearly known. Displaying this graph over a period of time can give you a visual representation of the relationship. A good example for online stores might be to correlate a business metric (such as dollars per hour) with web server performance. This allows IT groups to justify performance improvements on IT hardware and software.

All such scenarios, where the relationship between two metrics needs to be qualified, are appropriate for X-Y graphs.

Figure 4-3 X-Y Graph Icon



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- Step 1** Select the **Custom Graphs** tab.
 - Step 2** Select the X-Y graph icon as the graph type.
 - Step 3** Select a group filter.
 - Step 4** Select up to two monitor types from the Monitor Type list.
 - Step 5** Click **Next**. Two Monitor Element lists appear, showing elements available for the monitor type that you selected.
 - Step 6** Select a monitored instance for the X axis and another for the Y axis.
 - Step 7** Click **Apply**.
 - Step 8** On the Custom Graphs (X-Y Graphs) page, select one attribute to plot for the X axis and one attribute to plot for the Y axis.
 - Step 9** From the Schedule list, select the schedule during which the data that you want to include was recorded:
 - No Filter—Any time.
 - 24x7—24 hours a day and 7 days a week.
 - Business Hours—9:00 a.m. to 5:00 p.m., Monday through Friday.



Note You can define additional schedules. Create a new schedule by clicking **New** or edit a schedule by clicking **Edit**. (See [Adding a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-17](#) and [Editing a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-18](#).)

- Step 10** Click **Generate Graph(s)**. A graph appears on the bottom half of the page. (If you created multiple graphs, view them by scrolling down.)
- Step 11** Optional) You can also:
- Change the time window that's being displayed, by using the paging icons to move the time window backward or forward.
 - Change the attributes that are being displayed.
 - Perform other functions using the icons located to the right of the graph. For more information, see [Understanding and Interacting with Custom Graphs, page 4-8](#).

Creating Top N Graphs

A Top N graph is a Pareto bar chart used to compare top N or bottom N elements.

Figure 4-4 Top N Graph Icon



Top N graphs compare monitored instances based on a common measurement (a single attribute). The resulting Pareto bar chart displays the elements with the highest or lowest average in order based on the common measurement. A table under the graph lists the elements that correspond to the bars and provides links to individual graphs.

- Step 1** Select the **Custom Graphs** tab.
- Step 2** Select the Top N graph icon as the graph type.
- Step 3** Select a group filter.
- Step 4** Select one monitor type.
- Step 5** Click **Next**. The system populates the attributes from which to select.
- Step 6** Select one attribute.
- Step 7** Click **Apply**. The Custom Graphs (Top N Graph) page opens.
- Step 8** Select the graph options:
- Graph Type—Select Top N or Bottom N.
 - Number of Bars—Select from 1 to 15.
 - Duration—Enter the number and select Days or Hours.



Note Depending on the monitor type that you selected, data is generally available for 30 to 90 days. For more information, see [Understanding Data Rollup and Data Retention, page 3-12](#).

- Values to Be Displayed—Select one:
 - Average and High
 - Average and Low

- Step 9** Select a graph preference—2 Dimensional or 3 Dimensional.
- Step 10** From the Schedule list, select a schedule during which the data that you want to include was recorded:
- No Filter—Any time.
 - 24x7—24 hours a day and 7 days a week.
 - Business Hours—9:00 a.m. to 5:00 p.m., Monday through Friday.



Note You can define additional schedules. Create a new schedule by clicking **New** or edit a schedule by clicking **Edit**. (See [Adding a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-17](#) and [Editing a Schedule When Configuring Custom Graphs, Reports, and SLAs, page 5-18.](#))

- Step 11** Click **Generate Graph**.



Note The paging icons that enable you to move the time window backward or forward are not available for Top N graphs.

Using the List All Button in a Top N Graph Display

Most monitored categories, such as Availability and Utilization, contain numerous devices, interfaces, and services. Clicking List All at the bottom of the Top N table expands the table to list all elements that comprise the selected category. A list of sources used to compile the graph is displayed. The List All feature allows you to generate a maximum of 100 items per page. You can also generate individual graphs from each of these items.

Using the Description Table in a Top N Graph Display

The description table located below the graph lists the elements of the Top N graph. The Num column provides a link from which you can open the individual graph for the element. To modify the graph, see [Using the Attributes Tab to Update a Graph, page 4-10](#) and [Understanding and Interacting with Custom Graphs, page 4-8.](#)

Do the following to view a stacked graph for any of the listed instances.

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- Step 1** Select the box corresponding to the monitored instances.
- Step 2** Click **Show Graphs**.
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Creating a Graph for a Single Monitor Type

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- Step 1** Select the **Custom Graphs** tab.
- Step 2** Select the graph type.
- Step 3** Select a group filter.

Choosing a filter limits your choices to elements in the selected group and provides a means of organizing your data. Choosing No Filter enables you to generate a graph from all elements in the system, regardless of whether or not they are in a group.

- Step 4** Select only one monitor type.
- Step 5** Click **Next**. The Monitor Element lists appear, showing elements available for the monitor type that you selected.
- Step 6** Select the elements to monitor, and click **Apply**. The Custom Graphs page is displayed.
- Step 7** Select the time period for which you want to plot data from one of the following:
- Show Graph for the Last—Select from 1 hour up to 3 months.
 - From—Select a time range using the To and From lists. This enables you to select a particular day and hour or a particular duration of time, such as the last 4 hours.
- Step 8** For each monitored instance, select the attributes to graph.
- The attributes that are displayed vary depending on the monitor type that you selected. You can plot up to 12 attributes per graph. However, you are limited to 2 units of measure; for example, number (#) and milliseconds (ms).
- Step 9** If you selected only one attribute, you can also select one or more indicators to display the minimum, maximum, and average values for the period. For each indicator that you select, a line is displayed on the graph.
- Step 10** Select one of the following as the graph option:
- Show All Attributes on a Single Graph—All attributes that you select are plotted on one graph.
 - Show Each Monitor Element on a Separate Graph—If you select more than one element, each element is plotted on a separate graph.
 - Show Each Attribute on a Separate Graph—If you select more than one attribute, each attribute is plotted on a separate graph.
- Step 11** Click **Generate Graph**. The graph displays attributes selected. (If you created multiple graphs, view them by scrolling down.)
- Step 12** (Optional) You can also:
- Change the time window that's being displayed. by using the paging icons to move the time window backward or forward.
 - Change the attributes that are being displayed.
 - Perform other functions using the icons located to the right of the graph. For more information, see [Understanding and Interacting with Custom Graphs, page 4-8](#).
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Creating Graphs for Multiple Monitor Types

- Step 1** On the Custom Graphs tab, select a graph type.
- Step 2** Select a group filter.

Choosing a filter limits your choices to elements in the selected group and provides a means of organizing your data. Choosing No Filter enables you to generate a graph from all elements in the system, regardless of whether they are in a group or not.

- Step 3** Select more than one monitor type and click **Next**. The Monitor Element area appears, displaying one list of elements for each monitor type that you selected.
- Step 4** Select elements from each Monitor Element list and click **Apply**. The Custom Graph page appears.
- Step 5** Select the time period for which you want to plot data from one of the following:
- Show Graph for the Last—Select from 1 hour up to 3 months.
 - From—Select a time range using the To and From lists. This enables you to select a particular day and hour or a particular duration of time, such as the last 4 hours.
- Step 6** Select appropriate options in the Attributes section.
- Select the attributes that you want to graph for each instance and monitor. Attributes available vary depending on the monitor types that you selected. As with graphs for single monitor types, you can plot up to 12 attributes per graph and you are limited to 2 units of measure; for example, number (#) and milliseconds (ms).
- Step 7** If you selected only one attribute, you can also select one or more indicators to display the minimum, maximum, and average values for the period. For each indicator that you select, a line is displayed on the graph.
- Step 8** Select one of the following as the graph option:
- Show All Attributes on a Single Graph—All attributes you select are plotted on one graph.
 - Show Each Monitor Element on a Separate Graph—If you selected more than one element, each element is plotted on a separate graph.
 - Show Each Attribute on a Separate Graph—If you select more than one attribute, each is plotted separately on separate graphs.
- Step 9** Click **Generate Graph**. A graph for one instance is displayed on the lower part of the page.
- Step 10** Use arrow keys to view additional graphs, one per instance.
- You can dynamically change the attributes displayed in the graph; see [Using the Attributes Tab to Update a Graph, page 4-10](#). You can also use the icons located to the right of the graph to perform other graphing functions. See [Understanding and Interacting with Custom Graphs, page 4-8](#).
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Understanding and Interacting with Custom Graphs

Most graphs are displayed in a tabbed area of either a Graph Display page or a Custom Graphs page. X-Y graphs provide the same information and flexibility without using a tabbed display. You can interact with and customize graphs from three areas, Graph, Attributes, and Monitor Information:

- Graph—Displays the detailed graph that you generated or that you launched, for example, from a thumbnail on the Views tab. If there is no data for the selected time period, No Data Available is displayed over an inverted triangle instead.

To the right of the graph are icons that enable you to do more. (See [Table 4-1](#).) The available icons change depending on the type and status of the graph.

Table 4-1 Additional Options on the Graph Tab

Icon	Reference
	Zooming In and Out, page 4-11
	Exporting to Excel, page 4-12
	Adding New Monitors to a Graph, page 4-12
	Viewing More Information, page 4-12
	Adding a Specific Graph to a View, page 4-13
	Deleting a Graph from a Multiple-Graph Display, page 4-13

At the bottom of the page, there are three buttons:

- Generate Graph(s)—Generates graphs after you have selected options.
- Add Graph—Adds another graph to the set of graphs that are already plotted.
- Add All to View—Adds all displayed graphs to a view. See [Adding a Multiple-Graph \(MG\) Display to a View, page 4-10](#).
- Attributes—Enables you to change the data displayed for the element by changing the attributes, or the start and end time of the current graph. Data is available for the last 30 to 90 days (see [Understanding Data Rollup and Data Retention, page 3-12](#)). You can use the options on the Attributes tab to view data that is not currently part of the display, or focus on a specific type of data to analyze and isolate a problem. See [Using the Attributes Tab to Update a Graph, page 4-10](#).



Note For an X-Y graph, attributes are displayed below the graph.

- Monitor Information—Displays pertinent information about monitored instances. See [Viewing Instance Details on the Monitor Information Tab, page 4-11](#).



Note For an X-Y graph, monitor information is displayed at the top of the graph.

When you select two monitored instances—each of a different monitor type—and include them in a single graph:

- Raw data might be plotted for one element and rate data might be plotted for the other element. This can happen due to differences in raw data retention periods.
- Rate data can be plotted for both elements. In this case, Condensed is displayed on the Y axis of the graph.

Using the Attributes Tab to Update a Graph

On Custom Graph and Graph Display pages, the Attributes tab enables you to dynamically change the statistical data displayed in the graph that you are viewing. The attributes that are displayed vary based on the monitor type. (For an X-Y graph, attributes are displayed below the graph instead of on a tab.)

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- Step 1** Select up to twelve attributes and two units of measure.
 - Step 2** If you are updating a line graph and have selected only one attribute, you can also select one or more indicators. An indicator introduces an additional line that shows the minimum, maximum, or average value for the period, depending on which you select.
 - Step 3** Click **Generate Graph**. The graph redisplay and includes data for the attributes and units of measure that you selected.
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Adding a Multiple-Graph (MG) Display to a View

You can add a set of graphs that you always want to see together to a view. In this case, MG is displayed to the left of the thumbnail link on the Views tab.



Note

You can also add a single graph to a view using this procedure. If, in [Step 1](#), you create one graph instead of multiple graphs, you can add the graph to a view; MG is not displayed with the thumbnail.

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- Step 1** Create multiple graphs. (You can do so from the Custom Graphs tab. Alternatively, while viewing a graph, you can add graphs, beginning by clicking **Add Graph** on a Custom Graph or Graph Display page.)
 - Step 2** At the bottom of the Custom Graph or Graph Display page, click **Add All to View**. The Add This Graph to View window appears.
 - Step 3** In the Add This Graph to View window, fill in these fields:
 - Graph Name—Enter a name.
 - Graph Duration—Select from 1 hour to 3 months.
 - Add to View—Select the view to which you want to add graphs. (To add the graphs to a new view, select Create New View.)
 - Step 4** Click **Add to View**. If you selected an existing view, a message is displayed and the graph is now part of the selected view; click **OK**. If you selected Create New View, the Create View window appears:
 - a. Fill in these fields:
 - View Title—Enter a title.
 - Layout Type—Select the number of columns to display.
 - Update—Select one: Hourly, Daily, Manually.
 - b. Click **Add to View**. A confirmation window appears.
 - c. Click **OK**.
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Viewing Instance Details on the Monitor Information Tab

On Custom Graph and Graph Display pages, the Monitor Information tab provides more information for the monitored instance. A description table lists pertinent information for the selected element. In some cases, the table contains these items:

- Device IP/device name—Device IP address or DNS name.
- Instance name—Device IP address or name plus any additional detail.
- Monitor version—Version; usually 1.0.
- Port or card name—Name or None.
- Source agent—IP address where the SSM agent is collecting data—on an Operations Manager or Service Monitor system—and the port being used.
- Collect data—True or false.
- Statistics poll interval—Number of seconds between start of SSM agent polling.
- Statistics poll timeout—Number of seconds after which the SSM agent times out on the polling request.

Other information—such as gateway type, trunk type, or trunk name—can be displayed depending on the monitor type.

Using Additional Graphing Functions

When a graph is generated, you will notice a series of icons located to the right of the graph. These are additional options that you can select:

- Zoom In/Out
- Add New Monitors to This Graph
- Add This Graph to View
- Delete Graph

In addition, to view the exact value for any point in the graph, move the cursor to that point. Service Statistics Manager displays the value as a tooltip.

Zooming In and Out

Use the Zoom function to adjust the vertical axis of the graph for viewing data more closely or from a higher level. The left axis is Y1 and the right axis is Y2.

Figure 4-5 *Zoom In/Out Icon*



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- Step 1** Click the **Zoom** icon to display a separate window.
- Step 2** Based on the values used to plot the graph, enter the maximum and minimum values to use to zoom the graph. By default, the graphs are auto-scaled.

Step 3 Click the **Zoom** icon to view results.

You can view only one axis change at a time, and the Zoom option does not permanently change the graph.

The browser instance might sometimes cache the zoomed view of a graph. Using the browser navigation buttons can result in the display of cached pages. To avoid this, use the navigation options provided within Service Statistics Manager.

Exporting to Excel

Use the Export to Excel icon to export all data to an Excel file for viewing outside Service Statistics Manager. This icon launches a File Download window from which you can select:

- Open—Launch the Excel application and display all data in the .csv file.
- Save—Save the .csv file to the local disk.



Note

In some systems or browsers, launching Excel directly might not work for Call Volume by Cluster monitor types due to file length restrictions. In this case, save the file on the local disk before opening it.

Figure 4-6 *Export to Excel Icon*



Adding New Monitors to a Graph

Use the Add New Monitors to This Graph icon to add new monitors to a graph.

When you click this icon, the Custom Graph page appears. Follow the same procedure as creating a Custom Graph; see [Creating Custom Graphs, page 4-1](#).

Figure 4-7 *Add New Monitors to This Graph Icon*



Viewing More Information

You can use the More Information icon to see any additional information for a monitor; for example, whether any errors have occurred.

Figure 4-8 *More Information Icon*



This icon launches the More Information for Graph table, which provides information about the graph and the possible error. If the table contains more than 25 rows, click **Next** to bring up additional items.

Adding a Specific Graph to a View

Use the Add This Graph to View icon to add a particular graph to a view.

Figure 4-9 Add This Graph to View Icon



This icon launches the Add This Graph to View popup window.

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- Step 1** Open the graph to be added to an existing view.
 - Step 2** On the Graph Display page, click the **Add This Graph to View** icon to the right of the graph.
 - Step 3** Enter the following information in the **Add Graph to View** page:
 - Graph Name
 - Graph Duration
 - Add to View—Select the view to which you want to add the graph. If you select Create New View, the Create View page displays to allow you to add a new view.
 - Step 4** Click **Add to View**. The graph is now part of the selected view.
 - Step 5** On the Views tab, select the view to which you added the graph. The graph now appears in the view.
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Deleting a Graph from a Multiple-Graph Display

This icon is displayed only when there are two or more graphs on the Custom Graph or Graph Display page. You can use this icon to delete a graph from a multiple-graph view.

Figure 4-10 Delete Icon



Graphing Restrictions and Limitations

When creating graphs, keep the following limitations in mind:

- Only twelve attributes and two measurement types can be included for a line graph.
For example, while creating a line graph, if two statistics are measured in percentage and two in seconds, then all four appear in the graph. Service Statistics Manager labels both Y axes, Y1 and Y2, each with one unit of measure, supporting two measurement types in each graph. However, if you have three statistics, one measured in percentage, one measured in units, and one measured in time, an error message appears and the graph does not display.
- The graph displays the NO_DATA image (see [Figure 2-1](#)) when there are no data available for the total graph period.
- Due to the graphing tick policy, sometimes thumbnails may show 120% as the Y-axis maximum value (because the multiplication factor is 40), but the actual graph may show 100% as the maximum Y-axis value.

