



BEA JRockit® Mission Control™

Introduction to BEA JRockit Management Console

JRockit Mission Control 3.0.2
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Welcome to the Management Console

The Management Console, part of Oracle JRockit Mission Control 3.0, allows you to monitor and control running instances of the Oracle JRockit JVM. It provides real-time information about the running Java application's characteristics, such as memory consumption and CPU usage. This information can be used both during development—for example, to find where in an application's life cycle it consumes more memory—and in a deployed environment—for example, to monitor the system health of a running application server.

This section includes the following topics:

- [How Does the Management Console Work?](#)
- [Management Console Components](#)
- [The Role of JMX](#)
- [Management Console Overhead](#)

How Does the Management Console Work?

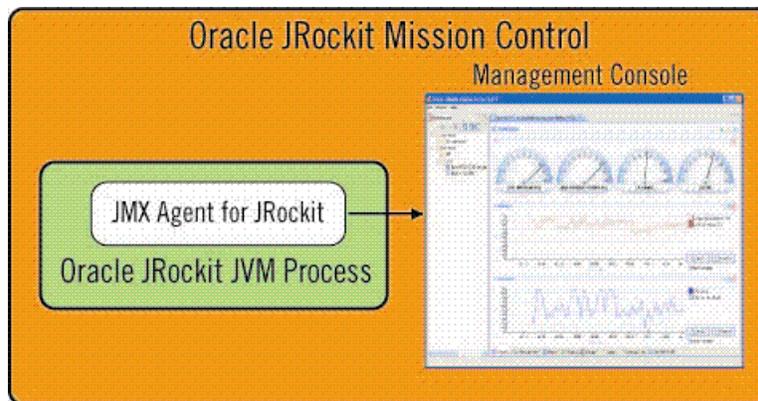
The JRockit JVM is highly instrumented for monitoring and management. The platform provides information on performance, resource consumption, and the JRockit JVM and logging settings of applications running on the Java platform.

JRockit Mission Control uses the Java Management Extensions (JMX) interface for monitoring and managing resources on a network. JMX provides a standard way to connect to the Java runtime environment and applications; the JMX Remote API allows that environment to be accessed remotely. The environment is accessible through the JMX managed bean (MBean)

Welcome to the Management Console

interfaces, which are registered in the management server. Applications can also create their own MBeans and register them in the management server, which can serve as a single point for remote access. A JMX-compliant client, such as the Management Console, can connect to the platform management server and manage the application (as well as the Java platform) using JMX technology (see [Figure 1-1](#)).

Figure 1-1 Overview of the Management Console



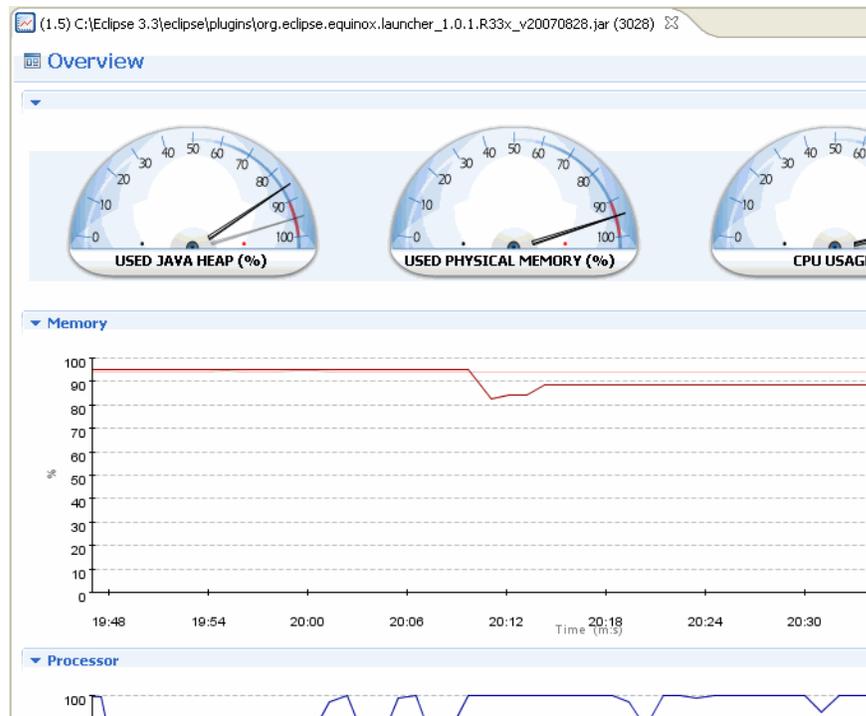
For More Information

- For information on JMX, see [The Role of JMX](#).
- For information on Management Console components, see [Management Console Components](#)

Management Console Components

The Management Console is a multi-tabbed interface, each tab allowing you to monitor and/or manage an aspect of a running application. Which tabs your version of the Management Console uses depends on which Java plug-ins you have installed with the Management Console. When fully-implemented, the Management Console will include eight tabs ([Figure 1-2](#)) and one menu, which map to seven plug-ins.

Figure 1-2 Fully Implemented Management Console



This topic describes each of these Management Console components. It includes these sections:

- [Overview Tab](#)
- [MBean Browser Tab](#)
- [Triggers Tab](#)
- [Memory Tab](#)
- [Threads Tab](#)
- [Runtime Tab](#)
- [Exception Count Tab](#)
- [Method Profiler Tab](#)

Overview Tab

Plug-in: `com.jrockit.mc.console.ui.overview`

The **Overview** tab allows you to monitor processor behavior and memory statistics during system runtime. The **Overview** tab is helpful in analyzing a system's general health as it can reveal behavior that might indicate bottlenecks or other sources of poor system performance.

MBean Browser Tab

Plug-in: `com.jrockit.mc.console.ui.mbeanbrowser`

The Management Console uses management beans (MBeans) to provide a unified and consistent interface for monitoring and managing application performance. The **MBean Browser** tab is a tool for monitoring the performance of these MBeans.

Triggers Tab

Plug-in: `com.jrockit.mc.console.ui.notification`

The **Triggers** tab lists all trigger rules that you have created for an application and allows you to activate or deactivate any trigger. These rules, when violated, launch a user-defined notification that advises users of the violating condition.

Memory Tab

Plug-in: `com.jrockit.mc.console.ui.overview`

The **Memory** tab allows you to monitor how efficiently your application is using the memory available to it. This tab focuses on heap usage, memory usage, and garbage collection schemes. The information provided on this tab can greatly assist you in determining whether you have configured the JRockit JVM to provide optimal application performance.

Threads Tab

Plug-in: `com.jrockit.mc.console.ui.threads`

The **Threads** tab allows you to monitor thread activity for a running application. This tab contains both a graph that plots thread usage by an application over time and a sortable list of all live threads used by the application. It will also display thread stack traces.

Runtime Tab

Plug-in: `com.jrockit.mc.console.ui.system`

The **Runtime** tab allows you to monitor system performance during runtime. This tab provides such information as the average processor load over time and as a percentages of the overall load, the number of Java processes currently running, and the percentage of overall processor load. It also lists all system properties loaded with the application.

Exception Count Tab

Plug-in: `com.jrockit.mc.console.ui.profiler`

The **Exception Count** tab provides a type of profiling that counts the number of exceptions of a certain type, providing information that is helpful when you are troubleshooting your Java application.

Method Profiler Tab

Plug-in: `com.jrockit.mc.console.ui.profiler`

The **Method Profiler** tab allows you to monitor method execution in a non-intrusive way. Method profiling can provide information about the average time spent in selected methods and the number of times methods are invoked. monitor you running application's methods and find out where in the code you might have glitches.

Note: This is not the primary way of profiling the JRockit JVM. For more comprehensive profiling of the JRockit JVM, use JRA.

Alerts Menu

Plug-in: `com.jrockit.mc.alert`

The **Alerts** menu is associated with `com.jrockit.mc.console.ui.notification`, which plugs in here. This menu launches the **Application Alerts** dialog box, which displays alerts generated when rules set on the [Triggers Tab](#).

The Role of JMX

Like SNMP and other management standards, the Java Management Extensions (JMX) is a public specification and many vendors of commonly used monitoring products support it. JMX provides a standard way to monitor the Java runtime environment and applications; the JMX

Welcome to the Management Console

Remote API allows that monitoring to be accessed remotely. The instrumentation is accessible through the JMX managed bean (MBean) interfaces, which are registered in the management server. Applications can also create their own MBeans and register them in the management server, which can serve as a single point for remote access. A JMX-compliant client, such as the Management Console, can connect to the platform management server and manage the application (as well as the Java platform) using JMX technology.

Compatibility with J2SE 1.4.2

Generally, JMX is a feature available only on applications running on J2SE 1.5.0 (5.0). To accommodate Management Console users running on J2SE 1.4.2, JRockit Mission Control provides an adapter layer that allows it to access legacy protocols as if over JMX.

For a complete reference on the JMX standard, please refer to:

<http://java.sun.com/j2se/1.5.0/docs/api/javax/management/package-summary.html>

Management Console Overhead

The extra cost of running the Management Console against a running JRockit JVM is small and can almost be disregarded. This provides for a low cost monitoring and profiling of your application.

Note: We do not recommend that you run the Management Console on the same machine as the JRockit JVM you are monitoring. If you run the Management Console on the same machine, the Management Console GUI will steal valuable resources from the applications running on the JVM and you risk performance degradation as a result.

Using the Management Console

The Management Console is comprised of many components, some of which can be manipulated while others remain static. For example, graphs plot such information as CPU usage and thread counts, while tables display raw statistical information such as how many CPUs are in use and how long the application has been running. The topics in this section serve as general instructions for using the Management Console components to properly manage your running application. It includes these topics:

- [Starting the Management Console](#)
- [Customizing Settings](#)
- [Parts of the Management Console](#)
- [Maximizing and Minimizing a Tab](#)
- [Changing the Panel View](#)
- [Adding and Removing an Attribute](#)

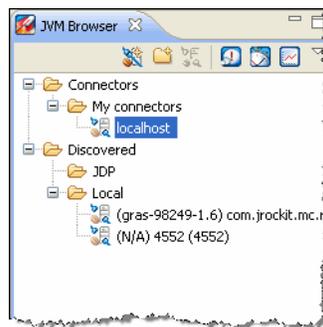
Starting the Management Console

To start the Management Console, you attach it to a management server or local host, depending upon how you have deployed your system. Before you can start the Management Console, you must have an application running on an instance of the Oracle JRockit JVM.

To start the Management Console

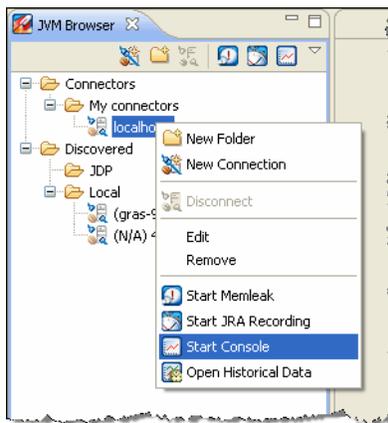
1. With Oracle JRockit Mission Control running, locate the server to which you want to connect in the JVM Browser (Figure 2-1).

Figure 2-1 Locating the server in the JVM Browser



2. Right-click the mouse.
A context menu for the connection opens (Figure 2-2).

Figure 2-2 Connection context menu



3. Select **Start Console**.
After a few moments, the Management Console appears in the right panel of the JRockit Mission Control Client.

Note: If you attempt to start the Management Console for a non-JRockit JVM, you will receive a warning message advising you that Oracle will only guarantee performance if you are using a JRockit JVM.

Customizing Settings

You can change preferences for updating frequency, persistence directory, maximum log size, etc. for the Management Console.

This section is divided into the following topics:

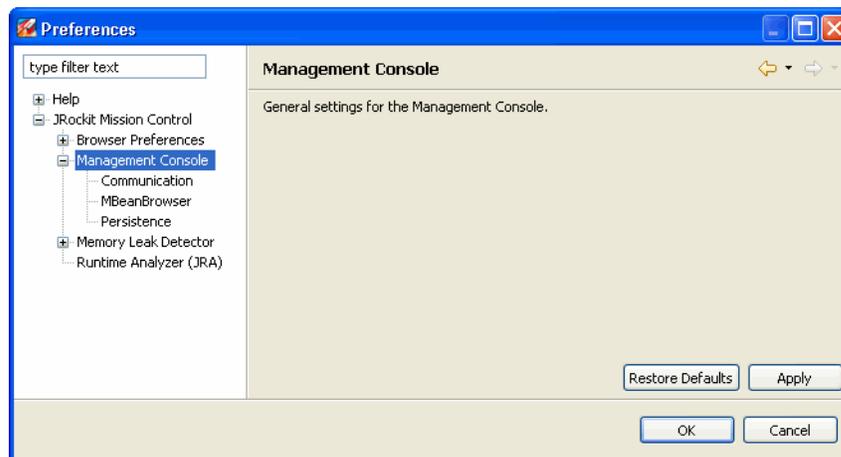
- [To open the preferences window for the Management Console](#)
- [To change communication settings](#)
- [To change persistence settings](#)

To open the preferences window for the Management Console

- Click **Window > Preferences > JRockit Mission Control > Management Console**.

The **Preferences** window opens (Figure 2-3).

Figure 2-3 Preferences for Management Console



To change communication settings

1. Click **Window > Preferences > JRockit Mission Control > Management Console > Communication**.

2. Set the communication options for the Management Console.
 - **Default update interval [ms]**—this is the time interval that the Management Console updates displayed information.
 - **Mail server (SMTP)**—this is the mail server that is used when, for example, sending notifications.
 - **E-mail address**—this is the e-mail address that is used as the sender address when the system sends notifications.
 - **Update interval for thread stacks [ms]**—this is the e-mail address that is used when the system sends notifications.
3. Click **OK**.

To change persistence settings

1. Click **Window > Preferences > JRockit Mission Control > Management Console > Persistence**.

The following can be set:

- **Persistence directory**—this is where the Management Console saves the persisted values of attributes (in the attribute subscription log). Values that are saved are, for example, any changes that you make to MBeans, i.e., name changes or such. If there, for some reason, arises problems with the logs, you can clear the logs by deleting them and then have the Management Console create a new one for you.
 - **Enable log rotation**—when enabling log rotation, you can set a size on the persisted log. By doing so, you let the Management Console create a new log file as soon as the limit is reached.
 - **Limit maximum log size**—when combining the log rotation setting with a setting for the maximum log size, you will enable full log rotation, i.e. the Management Console will delete the oldest log file as soon as the maximum log size limit is reached, and you will always know how much space the log files take on your computer.
2. Click **OK**.

Parts of the Management Console

As described in [Welcome to the Management Console](#), the Management Console is a multi-tab interface, with the tabs linked to specific Java plug-ins that ship with the Management Console (which itself is a plug-in of JRockit Mission Control 3.0). Each tab is comprised of different

elements that you use to manage and monitor a running application. These elements are listed in this topic.

- [Panels](#)
- [Data Input Panels](#)
- [Graphs](#)
- [Tables](#)
- [Lists](#)

Panels

Each tab is divided into panels (Figure 2-4), “boxes” of information that separate different groups of tenuously- or specifically-related data into logical collections.

Figure 2-4 Panels contain different types of information, such as these panels on the Trigger Tab

The screenshot displays the configuration interface for a trigger rule, organized into three distinct panels:

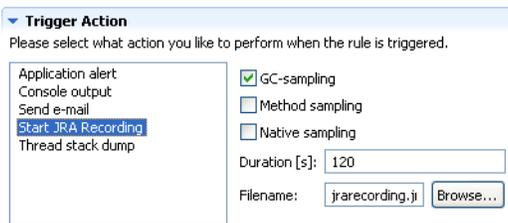
- Trigger Condition:** This panel is titled "Please select what kind of event the rule should trigger on." It includes:
 - An "Attribute:" field with the value "UsedPhysicalMemory" and a "Browse..." button.
 - A "Max trigger value:" field with the value "100.0".
 - A "Sustained [s]:" field with the value "10".
 - A "Limit period [s]:" field with the value "10".
 - Two checkboxes: "Trigger on ascending flank" (unchecked) and "Trigger on descending flank" (unchecked).
- Trigger Action:** This panel is titled "Please select what action you like to perform when the rule is triggered." It contains a list of actions:
 - Application alert
 - Console output
 - Send e-mail
 - Start JRA Recording
 - Thread stack dump
- Trigger Constraints:** This panel is titled "Set the constraints (optional)." It includes:
 - Three checkboxes on the left: "Date span" (unchecked), "Day of week" (checked), and "Time span" (unchecked).
 - A list of days of the week on the right, each with a checkbox:
 - Monday (checked)
 - Tuesday (unchecked)
 - Wednesday (checked)
 - Thursday (unchecked)
 - Friday (checked)
 - Saturday (unchecked)
 - Sunday (unchecked)

Panels contain the other components of the tab; for example, [Graphs](#), [Tables](#), and [Lists](#) and some panels also include input fields (the use of these input fields is described in the topic covering the specific tab). Panels allow data input and viewing. The number of panels is different on each tab and is determined by the number of different data sets shown on the tab. Panels can be hidden and some can be reformatted from vertical to horizontal layout, as described in [Changing Table Orientation](#).

Data Input Panels

Data input panels ([Figure 2-5](#)) contain input fields where you can enter specific data to apply to an attribute.

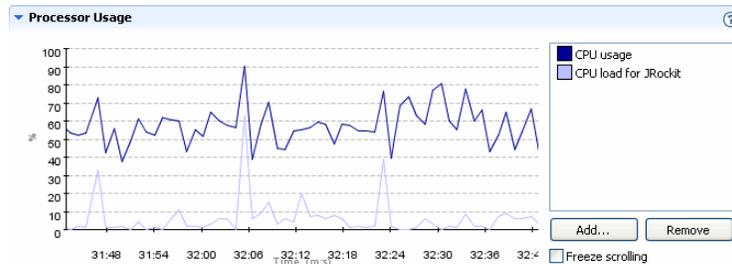
Figure 2-5 Typical data input panel (actual fields will vary)



Graphs

Graphs ([Figure 2-6](#)) show performance of an attribute over time.

Figure 2-6 Typical Management Console graph



The values are plotted on the X-axis (vertical axis) and are usually specified in percentages or raw numbers. The time element is plotted on the Y-axis (horizontal axis). Time is displayed in increments of seconds, minutes, or hours. Each graph has a legend that uses a color patch to

identify the attribute being plotted. You can add or remove attributes from a graph by following the procedures in [Adding and Removing an Attribute](#).

Zooming-in to a Graph

You can zoom-in on either a selected portion of the graph or to different time granularities, as described in [Table 2-1](#).

Table 2-1 Graph Zoom Levels

This zoom level	Shows this information
Selection	A specific, user-defined range on the graph.
Seconds	Second-by-second CPU usage.
Minutes	Minute-by-minute CPU usage.
Hours	Hour-by-hour CPU usage.
Zoom In	Zooms in one incremental step of time; for example, if the graph is incrementing time by the second, selecting this command changes the time increment to minutes. Selecting it a second time changes the time increment to hours.
Zoom Out	Zooms out one incremental step of time; for example, if the graph is incrementing time by the hour, selecting this command changes the time increment to minutes. Selecting it a second time changes the time increment to seconds.

This section explains the following:

- [To zoom-in on a selected range on the graph](#)
- [To zoom-in to a specific time increment](#)

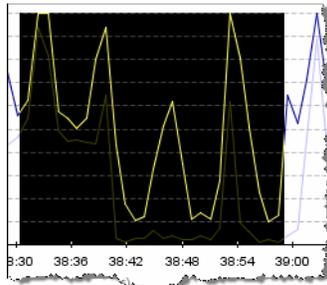
To zoom-in on a selected range on the graph

1. Select the **Freeze scrolling** checkbox.

The graph stops scrolling. This step is important because the data will scroll out of the selected range if you don't freeze it, skewing your results.

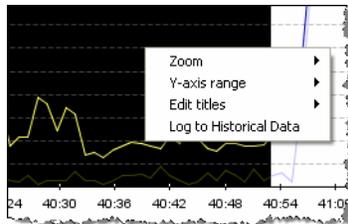
2. Place the pointer at the far left edge of your selected data range and, holding down the left mouse button, drag to the far right edge of the range, as shown in [Figure 2-7](#).

Figure 2-7 Graph with range selected



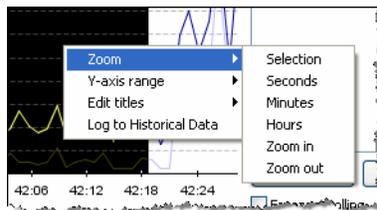
3. Place the pointer over the selection and right-click the mouse. A context menu for the graph appears ([Figure 2-8](#)).

Figure 2-8 Graph context menu



4. Select **Zoom...** A submenu for **Zoom...** appears ([Figure 2-9](#)).

Figure 2-9 Graph context menu with zoom level submenu open



5. Select **Selection**.

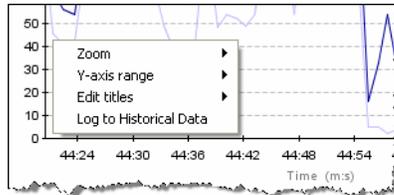
The graph refreshes and now shows a detailed view of the selected data range.

To zoom-in to a specific time increment

1. Place the pointer anywhere on the graph and right-click the mouse.

The graph's context menu appears (Figure 2-10).

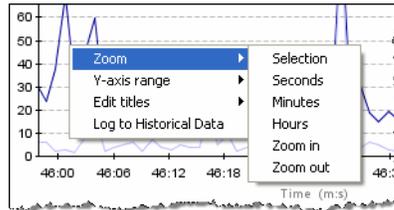
Figure 2-10 Graph context menu



2. Select **Zoom...**

The zoom level context menu appears (Figure 2-11).

Figure 2-11 Zoom level context menu



3. Select the time increment at which you want to monitor data.

The graph refreshes to show the data within the selected time increment.

Changing the Y-Axis on a Graph

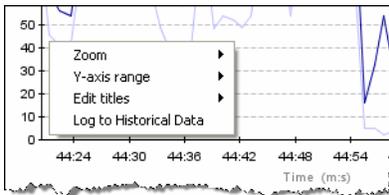
Graph data expressed in percentages shown on the Process Usage graph's Y (vertical) axis. By default, these percentages run from 0 to 100%. Use the following procedure to change the Y-axis range.

To change the Y-axis range

1. Place the pointer anywhere on the graph and right-click the mouse.

The graph's context menu appears (Figure 2-12).

Figure 2-12 Graph context menu



2. Select **Y-axis range...**

The Y-axis range context menu appears (Figure 2-13).

Figure 2-13 Y-axis range context menu

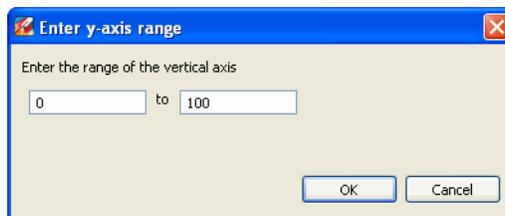


3. Select the range type you want to use.

- **Auto** sets the range to that which will include all attributes selected for the graph.
- **Percent** sets the range at 0 to 100%.
- **Custom** sets any range.

If you select **Custom**, the **Enter y-axis range** dialog box appears (Figure 2-14).

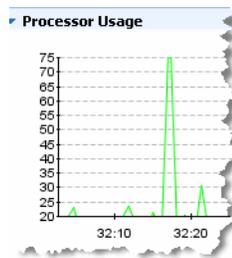
Figure 2-14 Enter y-axis range dialog box



4. Enter the range you want to show on the Y-axis and click **OK**.

The Y-axis reformats to show the new range; for example, if you set the range from 20% to 75%, the graph would reformat like the example in [Figure 2-15](#).

Figure 2-15 Reformatted Y-Axis with custom range



Changing Graph Titles

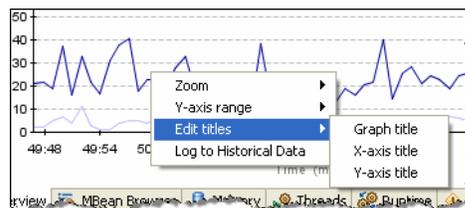
All graphs in the Management Console have titles, for example, the **Memory** graph on the **Overview** tab. The default names come from the attributes that are put in the graph, but you can of course change the attributes in any of the graphs to fit your specific needs. Therefore, you might need to change the name of the graphs, to suit the changes. This topic shows you how:

- [To change a graph title](#)
- [To change an X or a Y-axis graph title](#)

To change a graph title

1. Right click anywhere in the graph that you want to change the title ([Figure 2-16](#)).

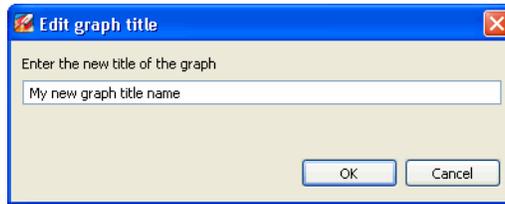
Figure 2-16 The edit titles sub-menu



2. Click **Edit titles > Graph title**.

The **Edit graph title** window opens (Figure 2-17).

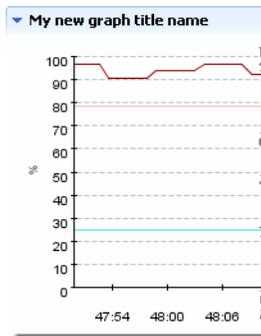
Figure 2-17 The Edit graph title window



3. Type in a new name for the graph, for example, My new graph title name.
4. Click **OK**.

The new title name appears on the graph (Figure 2-18).

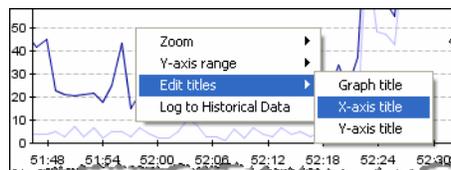
Figure 2-18 New title name on graph



To change an X or a Y-axis graph title

1. Right click anywhere in the graph for which you want to change that you want to change the title (Figure 2-19).

Figure 2-19 The edit X and Y-axis titles sub-menu



2. Click **Edit titles > X-axis title** or **Y-axis title**.

Depending on your choice, either the **X-axis** or the **Y-axis title** window opens.

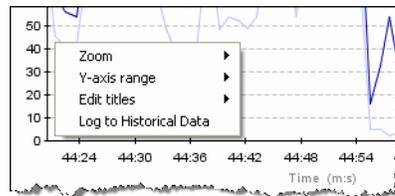
3. Type in a new name for the axis.
4. Click **OK**.

Logging to Historical Data

Historical data recreates the graph titles and attribute selections, color settings, and so on, and will *start* recording attribute data when logging is enabled. To save, or *log*, the data from an individual graph to the Historical Data view, do the following:

1. Place your pointer on the graph for which you want to log historical data and right-click the mouse to open the context menu ([Figure 2-20](#)).
2. Select **Log to Historical Data**.

Figure 2-20 Logging Graph Information to Historical Data



Logging is enabled for the chart, including all attributes and the chart's metadata

Tables

Tables ([Figure 2-21](#)) show statistics and other quantifiable information about a running application.

Figure 2-21 Typical Management Console table

Live Threads 2:39:21 PM

Filter column Thread Name * *

Thread Name	Thread State	Unknown name	Is Native
Main Thread	TIMED_WAITING	N/A	Yes
(Signal Handl...	RUNNABLE	N/A	Yes
(Code Gener...	RUNNABLE	N/A	Yes
(Code Optimi...	RUNNABLE	N/A	Yes
(GC Main Thr...	RUNNABLE	N/A	Yes
(VM Periodic ...	RUNNABLE	N/A	Yes
Finalizer	RUNNABLE	N/A	Yes
Reference H...	RUNNABLE	N/A	Yes
Timer-0	TIMED_WAITING	N/A	Yes
RMI TCP Acc...	RUNNABLE	N/A	Yes
RMI TCP Acc...	RUNNABLE	N/A	Yes
RMI TCP Con...	RUNNABLE	N/A	Yes
RMI TCP Con...	RUNNABLE	N/A	Yes
RMI LeaseCh...	TIMED_WAITING	N/A	Yes
JMX server c...	WAITING	N/A	Yes

Tables show data in columnar (or tabular) form and on some tables, data is selectable; that is, you can select a line of data and perform some function on it such as on the **Live Threads** table on the [Threads Tab](#).

The following functions can be performed in a table:

- [Changing Data Elements in a Management Console Table](#)
- [Changing Table Orientation](#)
- [Copying Data from a Table to Other Applications](#)
- [Filtering Information in the Management Console Tables](#)

You can add and remove attributes to a table, as described in [Changing Data Elements in a Management Console Table](#). You can change the sort order of information from ascending to descending on a table by clicking its column head.

Changing Data Elements in a Management Console Table

You can add and remove elements in a Management Console table. You can also resize the widths of the elements and the way they are sorted when viewing. This topic shows you:

- [To add and remove data elements in a Management Console table](#)
- [To reset properties and change sort order in a table](#)

- To add a data element from the pop-up menus

To add and remove data elements in a Management Console table

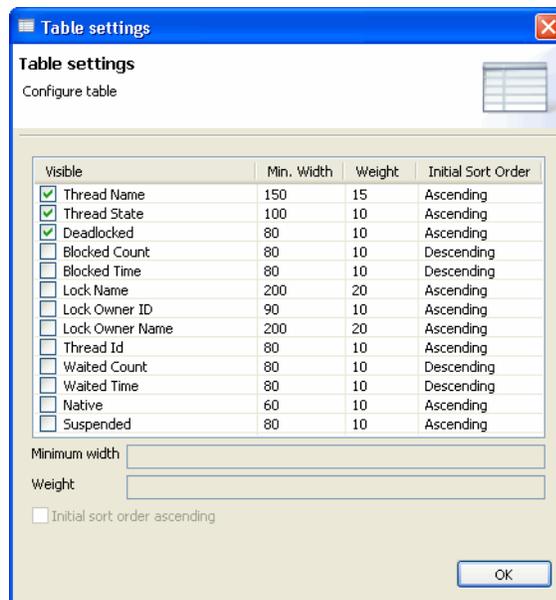
1. Click the **Table Settings** button (Figure 2-22).

Figure 2-22 Table settings button



The **Table settings** dialog box appears (Figure 2-23).

Figure 2-23 Table settings dialog box



2. Select or deselect the values you want to add or delete in the table by clicking the check box next to the value's name.

When you select a value, the **Minimum width** and **Weight** fields and the **Initial sort order** checkbox open. These fields allow you to reset properties for the select value (see [To reset properties and change sort order in a table](#)).

3. Click **OK**.

To reset properties and change sort order in a table

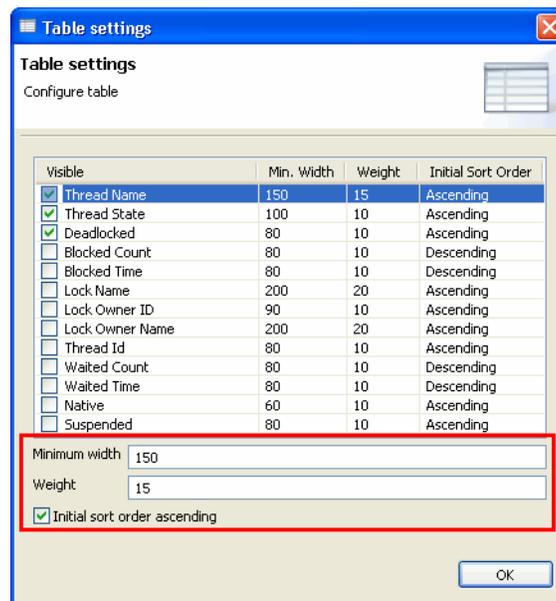
1. Click the **Table Settings** button.

The **Table settings** dialog box appears (Figure 2-23).

2. Select the property you want to change.

The **Minimum width** and **Weight** fields and the **Initial sort order ascending** fields become active (Figure 2-24).

Figure 2-24 Table settings dialog box



3. Do one or all of the following:
 - Enter a new **Minimum width** for the column. Be aware that setting this width too wide might cause other columns to truncate. On the other hand, you should anticipate how wide the data string might be (or what its maximum width potentially could be) and set the width to accommodate it.
 - Enter a new **Weight**. A column's weight determines what percentage of the total table width should be allocated to that column; for example, if the table has three columns with the weights 15, 15 and 30 the two first columns will each use 25% of the total table width and the third one will take 50% (this example assumes that no column is less than the minimum width). The purpose of the **Weight** field is to allow column

widths that adapt to the screen resolution if space is available. Be aware that increasing the weight of a column will make that column take up a larger part of the available screen space.

- Deselect the **Initial sort order ascending** if you do not want the table to be sorted on the selected value or select the **Initial sort order ascending** if you want the **Live Threads** table to be sorted on that value.

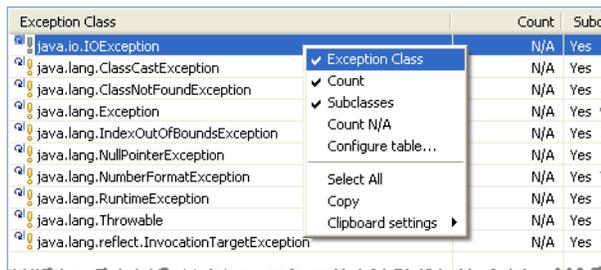
4. Click **OK**.

To add a data element from the pop-up menus

1. Place the pointer anywhere over the table and right-click the mouse.

The pop-up menu appears (Figure 2-25)

Figure 2-25 Live threads pop-up menu



2. Do one of the following:

- To add a data column, select it from the list.
- To remove a data column, deselect it from the list.

Note: You can only add or remove one value at a time. As soon as you select or deselect a value, the menu will close.

Changing Table Orientation

As you add more elements to a table or if you specify column widths that are large, you will need to expand the table footprint to accommodate wider or larger numbers of columns. If you add several data elements to a table, the labels for that table column and the data within, become truncated. To avoid truncated columns or scroll bars, you can reorient the table from vertical to horizontal. This topic shows you:

- [To change table orientation to a horizontal layout](#)
- [To change table orientation to a vertical layout](#)

To change table orientation to a horizontal layout

- Click the **Horizontal Layout** button ([Figure 2-26](#)).

Figure 2-26 Horizontal layout button



The table is reoriented horizontally.

To change table orientation to a vertical layout

- Click the **Vertical Layout** button ([Figure 2-26](#)).

Figure 2-27 Vertical layout button



The table is reoriented vertically.

Copying Data from a Table to Other Applications

You can copy data from the tables and paste it into an editor, such as a text editor or spreadsheet program. This feature is useful when you need to take a snapshot of data for later study or for problem resolution with a third party who doesn't have access to your Management Console. Before you copy data, you need to determine if you want to copy only the data that is visible in the table or if you want to copy all data that is associated with the event. This topic shows you:

- [To change clipboard settings](#)
- [To copy and paste data for a single table row](#)
- [To copy and paste data for all table rows](#)

To change clipboard settings

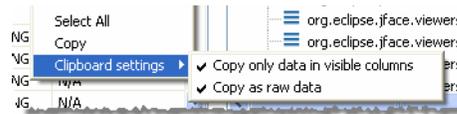
1. Right-click anywhere in the data table:

The data pop-up menu appears.

2. Click **Clipboard settings**.

The **Clipboard Settings** submenu appears (Figure 2-28).

Figure 2-28 Clipboard settings submenu



3. Select none, one, or both of the following options:
 - Selecting both options means that you copy the data as raw data and only the data columns that are visible will be copied.
 - Selecting only **Copy only data in visible columns** means that only the data that is displayed in the current table columns will be copied.
 - Selecting only **Copy as raw data** means that all data elements from the data entry will be copied as raw data, for example, an element that is displayed as *No* in the table, will get the value 0 (zero) when copied and pasted as raw data.
 - Selecting none of the options results in a copy of all data for the selected data element(s) in readable text.

The pop-up menu closes as soon as you have made your selection. You can now copy data as described in [To copy and paste data for a single table row](#) and [To copy and paste data for all table rows](#).

To copy and paste data for a single table row

1. Highlight the data row you want to copy and right-click your mouse.

The data pop-up menu appears (Figure 2-29).

Figure 2-29 Data pop-up menu

Thread Name	Thread State	Deadlocked
Main Thread	RUNN	
(Signal Handler)	RUNN	
(Code Generation Thread...)	RUNN	
(Code Optimization Threa...)	RUNN	
(GC Main Thread)	RUNN	
(VM Periodic Task)	RUNN	
(Attach Listener)	RUNN	
Finalizer	RUNN	
Reference Handler	RUNN	
(Sensor Event Thread)	RUNN	
Timer-0	WAIT:	
RMI TCP Accept-0	RUNN	
RMI TCP Accept-7091	RUNN	
Framework Event Dispatc...	WAIT:	
RMI ConnectionExpiratio...	TIMEC	
Start Level Event Dispatc...	WAIT:	
Worker-2	TIMEC	
Worker-0	TIMEC	
[RJMx] JDP Client	RUNNABLE	N/A
Local Descriptor Scanner	TIMED_WAITING	N/A

✓ Thread Name
✓ Thread State
✓ Deadlocked
Blocked Count
Blocked Time
Lock Name
Lock Owner ID
Lock Owner Name
Thread Id
Waited Count
Waited Time
Native
Suspended
Configure table...
Select All
Copy
Clipboard settings ▶

2. Select **Copy**.
3. You can now paste the information into a regular text editor or a spreadsheet ([Figure 2-30](#)).

Figure 2-30 Selected data copied to a spreadsheet (includes raw data)

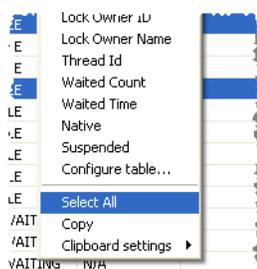
	A	B	C	D	E	F
1	Thread Name	Thread State	Thread Id	Waited Co	Native	Suspended
2	Main Thread	RUNNABLE	1	34,324	0	0
3						
4						
5						

Note the table's column headers are copied even when you copy data for a single data row.

To copy and paste data for all table rows

1. Place the pointer anywhere over the **Live Threads** table and right-click the mouse.
The data pop-up menu appears ([Figure 2-31](#)).

Figure 2-31 Live threads pop-up menu



2. Select **Select All**.

The pop-up menu closes and the entire table will be highlighted (Figure 2-32).

Figure 2-32 Entire table highlighted

Thread Name	Thread State	Deadlocked
Main Thread	RUNNABLE	N/A
(Signal Handler)	RUNNABLE	N/A
(Code Generation Thread...	RUNNABLE	N/A
(Code Optimization Threa...	RUNNABLE	N/A
(GC Main Thread)	RUNNABLE	N/A
(VM Periodic Task)	RUNNABLE	N/A
(Attach Listener)	RUNNABLE	N/A
Finalizer	RUNNABLE	N/A
Reference Handler	RUNNABLE	N/A
(Sensor Event Thread)	RUNNABLE	N/A
RMI TCP Accept-0	RUNNABLE	N/A
RMI TCP Accept-7091	RUNNABLE	N/A
[RJMx] JDP Client	RUNNABLE	N/A
RMI TCP Connection(100...	RUNNABLE	N/A
Thread Dump Poller	RUNNABLE	N/A
JMAPI event thread	RUNNABLE	N/A
AWT-Windows	RUNNABLE	N/A

3. Position the pointer over the table and right-click again.
4. Select **Copy**.

The pop-up menu closes and the data is copied to the clipboard. You can now paste it to a program such as a spreadsheet or text file (Figure 2-33). The clipboard setting for the example in Figure 2-33 has selected *Copy only data in visible columns* and *Copy as raw data*.

Using the Management Console

Figure 2-33 All live thread data copied to a spreadsheet

	A	B	C	D	E	F
1	Thread Name	Thread State	Thread Id	Waited Co	Native	Suspended
2	Main Thread	RUNNABLE	1	34,937	0	0
3	(Signal Handl	RUNNABLE	2	0	0	0
4	(Code Genera	RUNNABLE	3	0	0	0
5	(Code Optimi	RUNNABLE	4	0	0	0
6	(GC Main Thr	RUNNABLE	5	0	0	0
7	(VM Periodic	RUNNABLE	6	0	0	0
8	(Attach Lister	RUNNABLE	7	0	0	0
9	Finalizer	RUNNABLE	8	0	0	0
10	Reference Ha	RUNNABLE	9	0	0	0
11	(Sensor Even	RUNNABLE	10	0	0	0

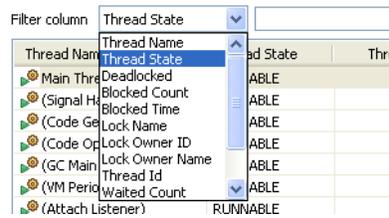
Filtering Information in the Management Console Tables

The **Filter Column** filters information in a table for a selected column by a user-specified expression.

To filter a column

1. Open the Filter column drop-down menu and select the column you want filtered, for example Thread State (Figure 2-34).

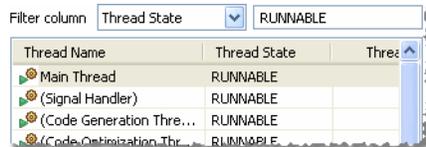
Figure 2-34 Filter column menu



The column name appears in the **Filter column** field.

2. In the adjacent text box, enter the string you want to filter for, for example, RUNNABLE (Figure 2-35).

Figure 2-35 Filtering on RUNNABLE



An asterisk will match arbitrary characters; for example:

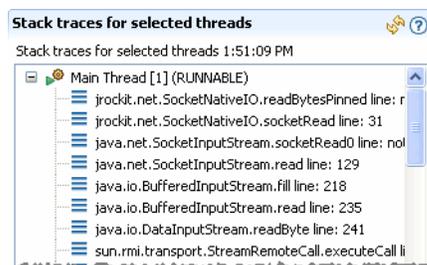
- If you want to filter for all threads beginning with RMI you would enter `RMI*` in the text field.
- If you want all threads that begin with RMI and end with Handler you would enter `RMI*Handler`.
- Entering only `*` will match any name of a thread.

The filter text entry field is case sensitive, i.e. if you are filtering for `<RUNNABLE>`, you need to enter it in upper case letters as done in the example in [Figure 2-35](#).

Lists

Lists ([Figure 2-36](#)) display selectable information that is usually compiled either by system action—such as the stacktrace list on the [Threads Tab](#)—or by the user—such as the trigger rules list on the [Triggers Tab](#).

Figure 2-36 List show thread stacktraces from the threads tab



Generally, items on lists are selectable, such as the **Trigger Rules** list on the [Triggers Tab](#) where you can select or deselect a rule; however, some lists are for viewing only, such as the System Properties list on the [Runtime Tab](#).

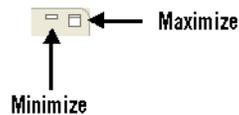
Maximizing and Minimizing a Tab

When you maximize the tab, it will expand over the JVM Browser. This is helpful if you need more space to display information on a horizontal graph. Minimizing the tab will close it completely and expand the JVM Browser to the full extent of the JRockit Mission Control Client window.

To maximize or minimize a tab

1. To maximize the tab, click the Maximize control (Figure 2-37).

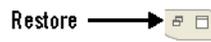
Figure 2-37 Maximize and minimize controls



The tab expands to the full extent of the JRockit Mission Control Client window and the Maximize control changes to the Restore control (Figure 2-38).

2. To restore the tab to its original state, click the Restore control (Figure 2-37).

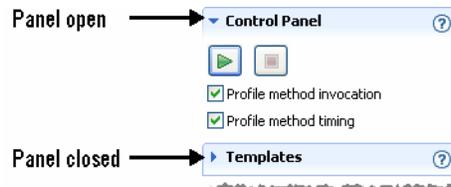
Figure 2-38 Restore control



Changing the Panel View

You can toggle the certain panels open and close by clicking the hide/display arrow at the top of the panel (Figure 2-39).

Figure 2-39 Hide/display arrow and panel closed



Adding and Removing an Attribute

An “attribute” represents a piece of information germane to the MBean’s management purpose, for example, a data item you can plot on the **Processor Usage** graph. This topics shows you how:

- To add an attribute
- To change the color of the attribute

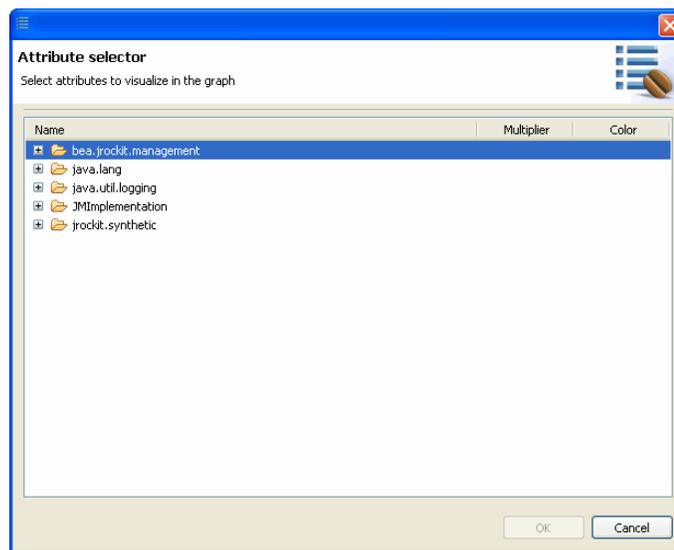
- To change the multiplier of the attribute
- To remove an attribute

To add an attribute

1. Select **Add**.

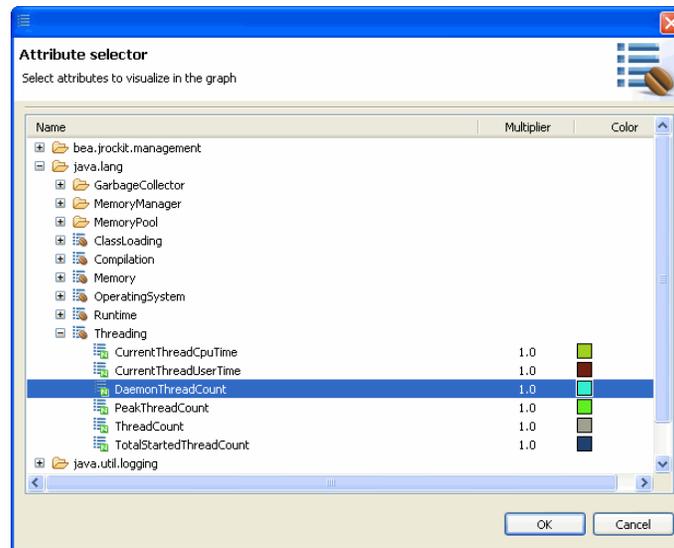
The Attribute Selector appears (Figure 2-40).

Figure 2-40 Attribute selector



2. Identify the Java package that contains the attribute you want to monitor and drill down by clicking on the necessary plus-signs; for example, if you want to plot the thread count, you would drill down as shown in Figure 2-41.

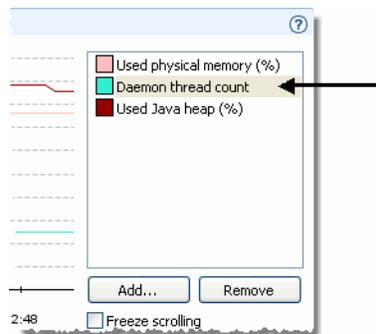
Figure 2-41 Drilling down to the preferred attribute



3. Click **OK**.

The **Attribute Selector** disappears and the selected attribute appears in the graph or table's legend (Figure 2-42) or on the list for which you selected it.

Figure 2-42 Legend with added attribute



To change the color of the attribute

1. Select the attribute you want to change. On a graph or table, you would select it from the legend; on a list, you would select it directly from the list (see Figure 2-43).

2. Right-click the legend and select **Edit color**.
3. Pick a new color in the **Color** window or define your own.
4. Click **OK**.

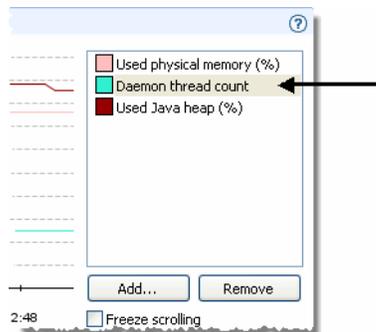
To change the multiplier of the attribute

1. Select the attribute you want to change the multiplier for (see [Figure 2-43](#)).
A multiplier is number that the graphs will use to multiply the real value. For example, CPU usage has a multiplier between 0 and 1 that are converted to a percentage in the graph. If the multiplier is 1 it equals 100%.
2. Right-click the legend and select **Edit multiplier**.
3. Enter a new value for the multiplier.
4. Click **OK**.

To remove an attribute

1. Select the attribute you want to delete. On a graph or table, you would select it from the legend; on a list, you would select it directly from the list (see [Figure 2-43](#)).

Figure 2-43 Legend with attribute selected



2. Click **Remove**.
The attribute disappears from the tab.

Using the Management Console