

Getting Started with Health

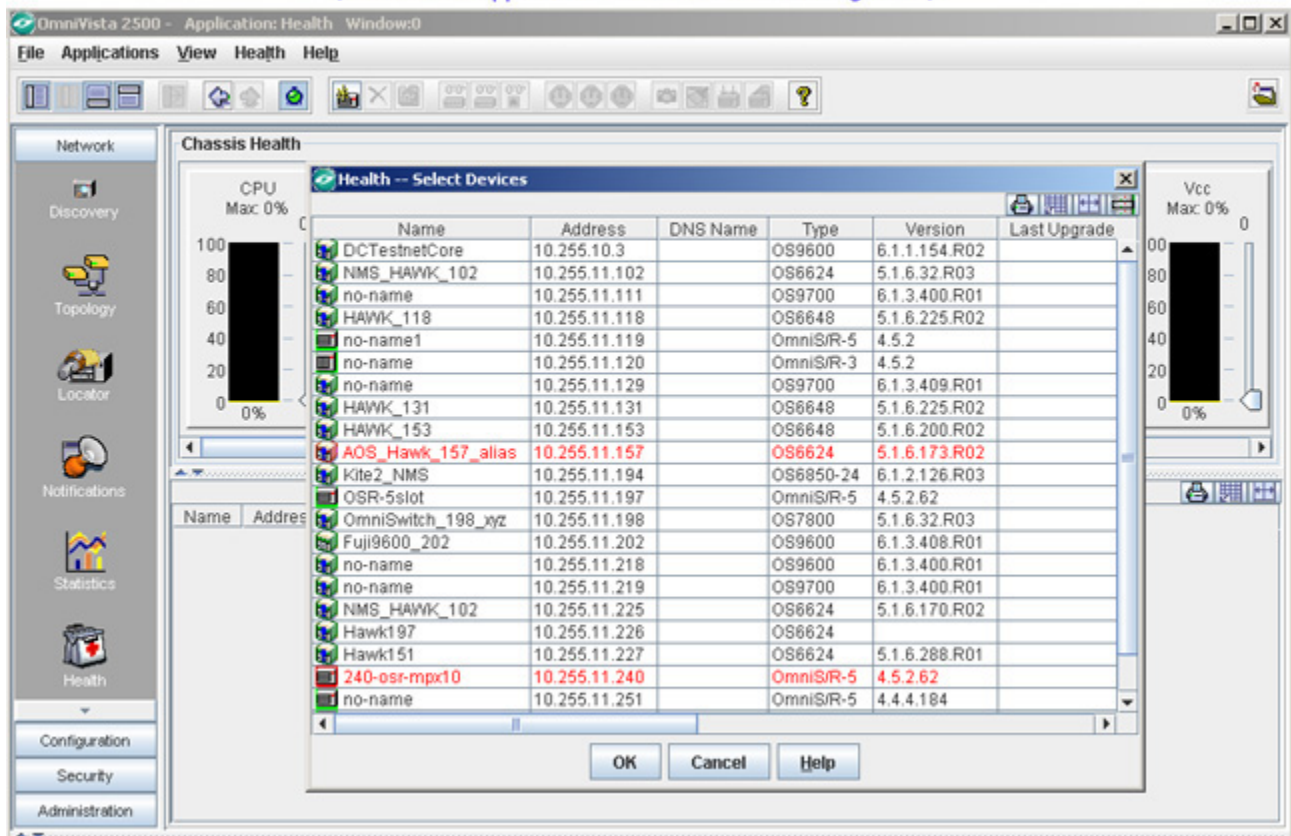
Use the Health Application to monitor the operational health of switches and to track problems that may develop in your network. You can perform any of the following tasks:

- Monitor the health of a switch, a module, or a port
- Set health thresholds, which determine when traps are sent
- Set the health polling interval and temperature display
- Set the switch's health sampling interval.

Switch software requirement. The Health application requires that a switch be running XOS Version 3.4.0 or higher, or any version of AOS. To view Vcc, Vp, or Temperature utilization, an XOS switch must be running Version 4.0 or higher.

To launch the Health Application click on **Performance**, then click on **Health**. The first thing you will see is the **Select Devices** Window, from which you can select the devices you want to monitor.

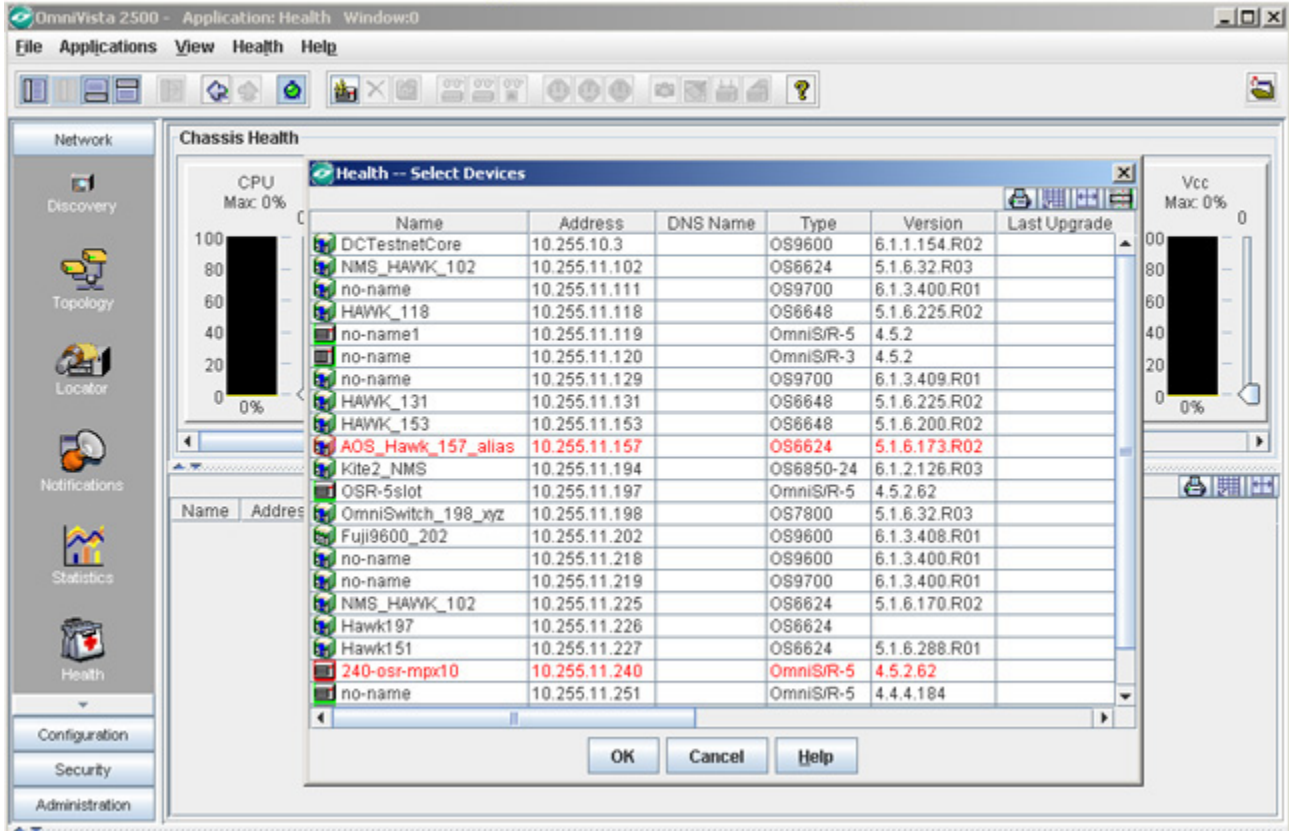
The Select Devices Window
(The Health Application Window is in the Background)



Select Devices Window

The Select Devices Window shows a list of all switches found during the discovery process that have a software version that is supported by the Health application. The Health Application supports both AOS and XOS switches, but does not support any XOS earlier than Version 3.4.0.

The Select Devices Window
(The Health Application Window is in the Background)

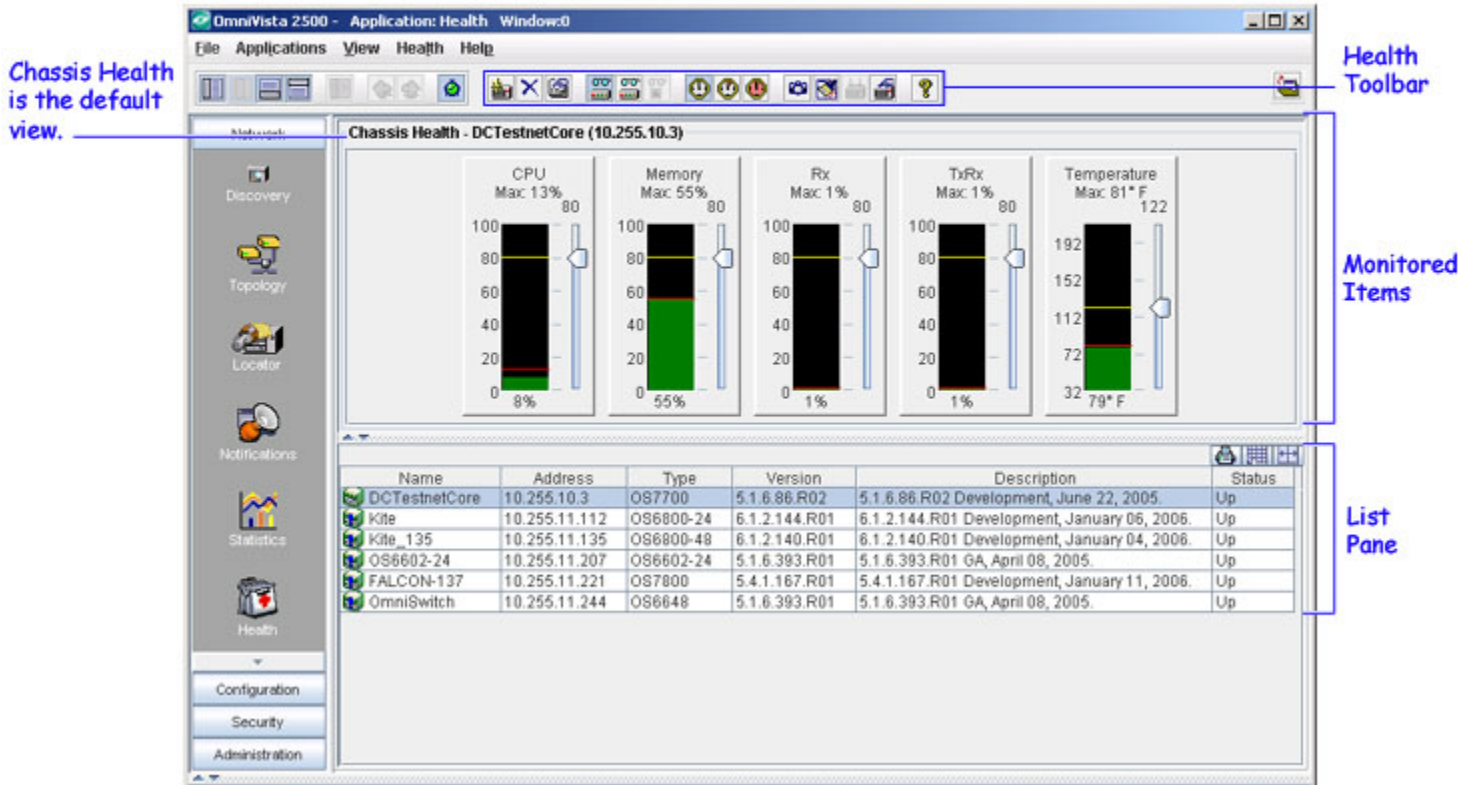


From the **Select Devices** Window, select the device(s) whose health you wish to monitor, then click **OK**. To add more devices later on, re-open the window by clicking the Add Devices button on the toolbar. Once you have selected some devices, you are ready to start using the Health Application

The Health Window

By default, the Health Window opens with Chassis Health displayed. Note the different areas of the Health Window.

The Health Application Window
(with Chassis Health Displayed)



The **Monitored Items** section shows the items monitored for the current device (e.g., 10.255.11.100). Notice that a vertical scale is used to indicate utilization and threshold values. To learn how to read the scale, see “Reading the Health Scale” on page 4.

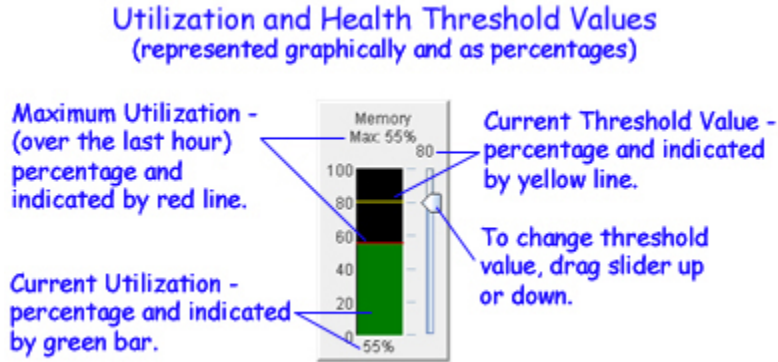
The above example shows the device-level items monitored on a 7700 device (CPU, Memory, Rx, TxRx, and Temperature). The items displayed vary depending on the switch model and switch operating software. By clicking on the applicable icon in the Health Toolbar, you can also view monitored items at the Module and Port level.

The **List Pane** shows a list of all the devices for which you can view health information. When viewing Chassis Health, the List Pane shows a list of the switches you selected from the Select Devices Window. When viewing Module Health or Port Health, the List Pane shows a list of modules or a list of ports, respectively. To view health information for a different device, click on its row in the List Pane. The currently displayed utilization data will be replaced with health information for the new device.

Use the **Health Toolbar** or the **Health Menu** to access other Health application functions, such as adding a switch to the List Pane, viewing module or port health, polling the switch for the most current data, etc. Note that any function available from the Health Toolbar is also accessible through the Health Menu.

Reading the Health Scale

Each monitored item has its own vertical health scale. In the example below, the monitored item is the switch's CPU. Utilization and health threshold values are represented graphically (by their position on the scale and by a colored line or colored bar) and also as percentage values.



Current Threshold Value

The threshold value can be set by moving the threshold slider up or down. A yellow line indicates its position on the scale. Its exact numeric value appears above the slider. (For details on setting the threshold value, see "Setting Health Thresholds" on page 15).

Current Utilization

Current utilization is represented by a green bar, and its exact numeric value is shown at the bottom of the scale. Current utilization is always expressed as an "average" over an interval of time. The switch's default health utilization sampling interval is 5 seconds. To change this value, see "Setting the Switch Health Sampling Interval" on page 14.

By default, the health scale displays utilization based on **Current Average**. Current Average is the percent of utilization for the last sample period. If the sample period is configured for 5 seconds, then the Current Average is the percent of utilization during the last 5 seconds. You can also view **Last Minute Average** or **Last Hour Average**. Last Minute Average is the average of all utilization samples taken during the last sixty seconds. Last Hour Average is the average of all the samples taken during the last sixty minutes.

When a monitored item's current utilization percentage exceeds its health threshold percentage, the switch will send a trap to any station configured to receive traps. (To learn how to configure traps, see Configuring Traps help.)

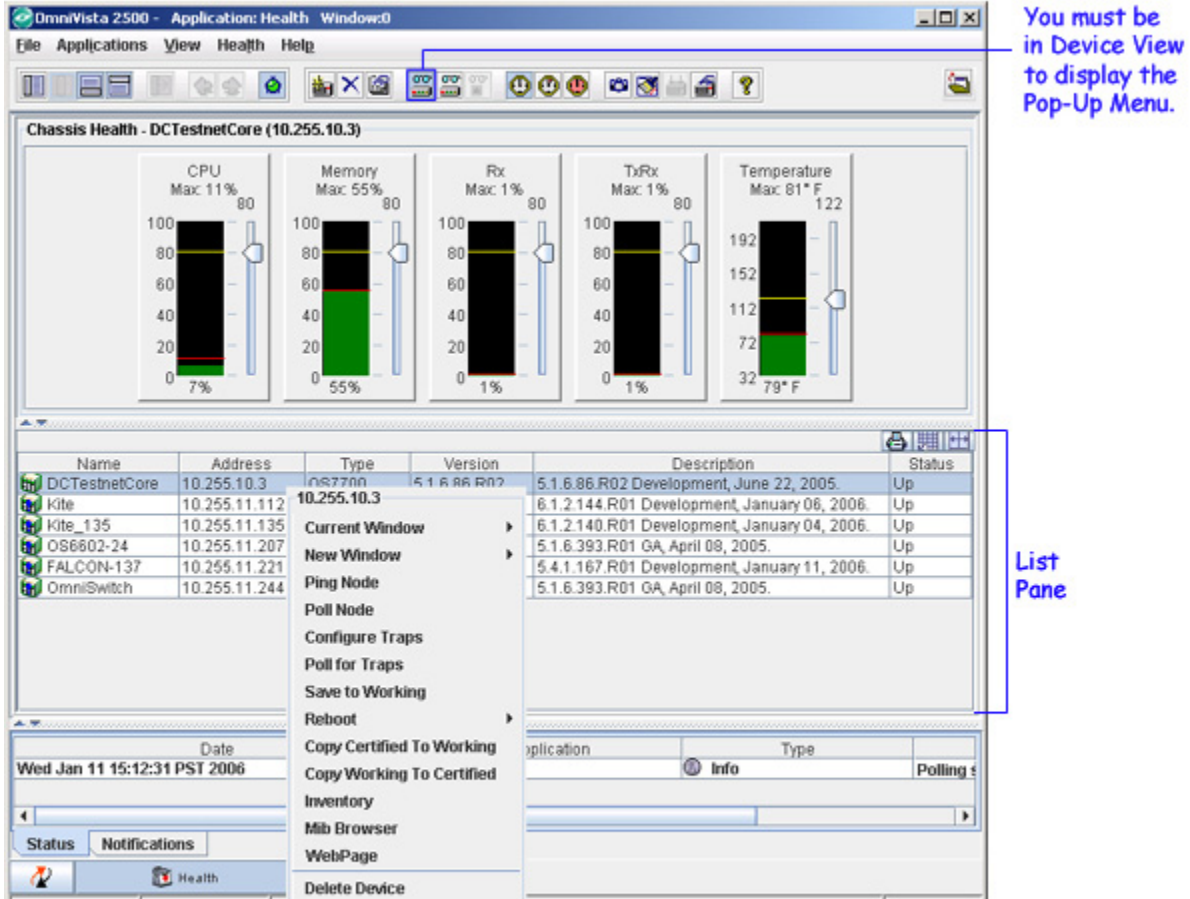
Maximum Utilization

Maximum utilization is represented by a red line, and its exact numeric value is displayed at the top of the scale. Maximum utilization is the "peak" or highest value attained during the last sixty minutes.

Using the Pop-Up Menu

To display the Pop-Up Menu, make sure you are in "Device View". The Pop-Up Menu cannot be displayed from "Module View" or "Port View." From the List Pane, right-click on a switch. The switch's IP address is displayed at the top of the menu.

Displaying the Pop-Up Menu



To bring up the Pop-Up Menu for a particular switch, right-click on its row in the List Pane (e.g., 10.255.11.100). The switch IP address appears at the top of the menu.

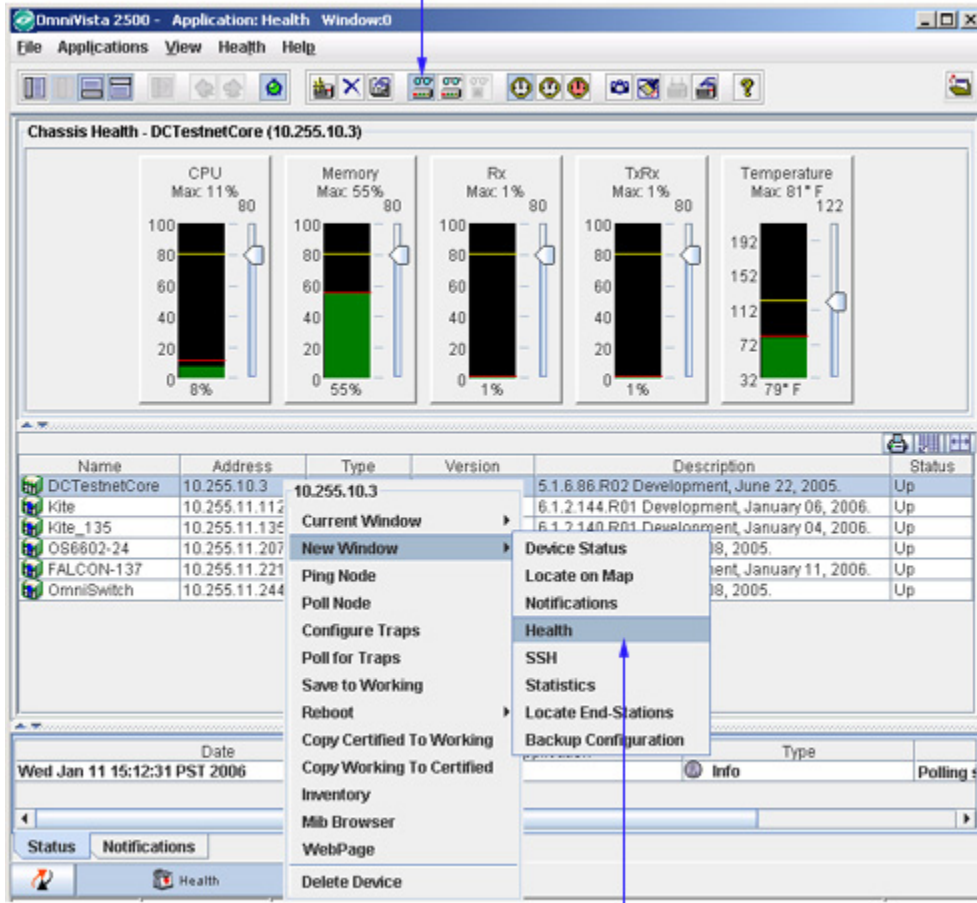
The Pop-Up Menu displayed above is for an AOS switch. Not all of the options on the menu are available for XOS switches. See the Topology Application Help for a description of each option on the Pop-Up Menu.

Monitoring More Than One Device

The Health Window can monitor only one device at a time. To monitor more than one device, open a separate health window for each device you want to monitor.

To open a new health window, first make sure you are in "Device View" (you cannot open a new window from Module View or Ports View). Point to a switch in the List Pane, right-click to bring up the pop-up menu, then select **New Window > Health**.

1. Make sure View Devices is selected.

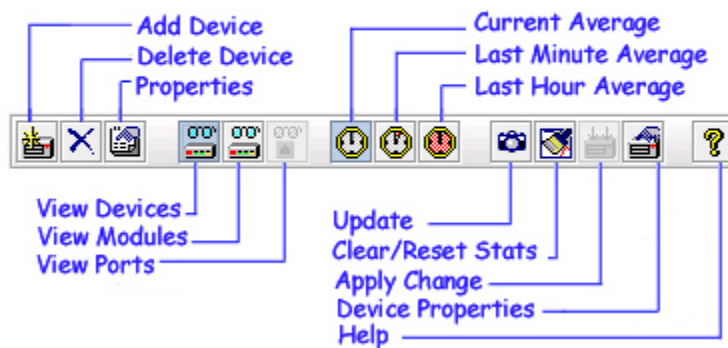


2. Right-click on switch row and select New Window > Health.











The Health Toolbar





Use the Health Toolbar to access the various Health Application functions. For a detailed description of each toolbar icon, see the table below.

The Health Toolbar



Health Toolbar Table

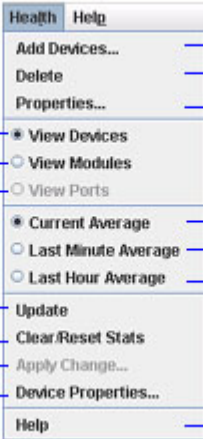
	Add Devices	Opens the Select Devices Window, which lists all of the devices that can be monitored using the Health Application. Select one or more devices, then click OK .
	Delete Device	Deletes the device(s) currently highlighted in the List Pane. This button only applies to switches. You cannot delete modules or ports.
	Properties	Opens the Health General Properties Window, from which you can configure the Health Application polling interval and temperature display.
	View Devices	Displays health information for the switch as a whole. Monitored items will vary, depending on the type of switch selected. At a minimum, items include CPU, Memory, Rx, and TxRx.
	View Modules	Displays health information for a module in the switch. Monitored items will vary, depending on the type of module selected.
	View Ports	Displays health information for a port on a module. Monitored items will vary, depending on the type of module selected. To enable the View Ports button, you must first select View Modules to select the module on which the port is located.
	Current Average	Shows the current utilization for the latest sample period. The default switch sample period is 5 seconds. This value can be changed through the Device Properties Window.
	Last Minute Average	Shows the average utilization for the last sixty seconds.
	Last Hour Average	Shows the average utilization for the last sixty minutes.
	Update	Retrieves the current data from the device. Use this option when you want to obtain the latest health information immediately, rather than waiting for the next polling period.

	Clear/Reset Stats	Clears the display, then resets statistics on the currently selected switch by removing existing historical data.
	Apply Change	Saves the new threshold values on the device. You must click this button for the changes to take effect.
	Device Properties	Opens the Device Properties Window, from which you can configure the switch's health utilization sampling interval.
	Help	Displays Help for the Health Application.

The Health Menu

Any function available on the Health Toolbar is also available on the Health Menu.

The Health Menu



The Health Menu is shown with the following items and their functions:

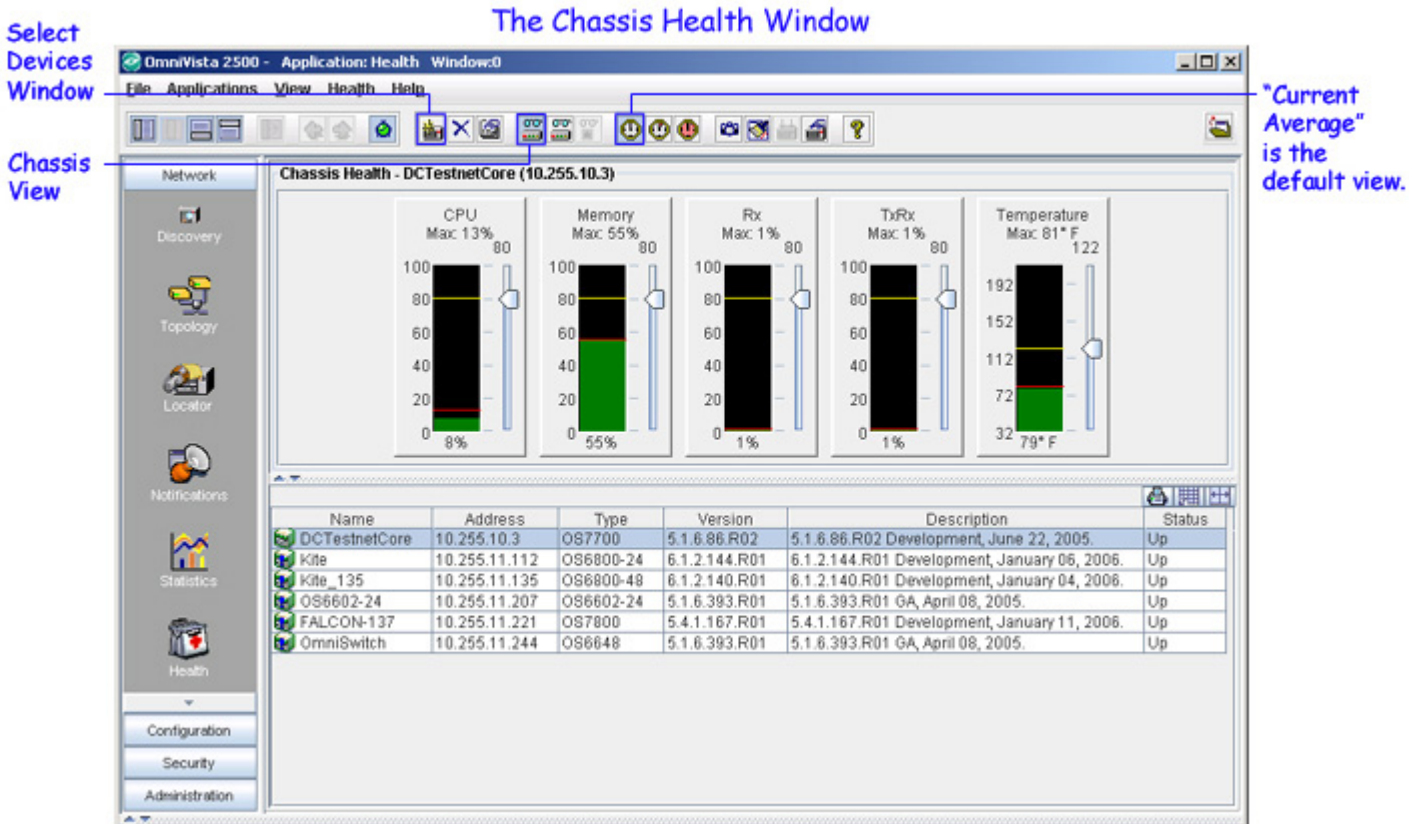
- Add Devices...** — Opens the Select Devices Window
- Delete** — Deletes device(s) highlighted in the List Pane
- Properties...** — Displays the Health General Properties Dialog
- View Devices** (selected) — Displays Chassis Health
- View Modules** — Displays Module Health
- View Ports** — Displays Port Health
- Current Average** (selected) — Shows avg utilization for the current interval
- Last Minute Average** — Shows avg utilization for the last 60 seconds
- Last Hour Average** — Shows avg utilization for the last 60 minutes
- Update** — Gets the current data from the switch
- Clear/Reset Stats** — Clears the display, then resets stats
- Apply Change...** — Submits changes to the switch
- Device Properties...** — Displays the Health Device Properties Window
- Help** — Displays Help for the Health application

For details about each of the menu items, see the Health Toolbar Table above.

View Switch Health

Follow the steps below to monitor the health of a switch.

1. Make sure you are in "Chassis View."
2. Select the switch from the List Pane. If the switch is not listed, open the Select Devices Window, and add the switch(s) to the List Pane.
3. By default the Health Window opens in Chassis View, with utilization values displayed as "Current Average." If Chassis View is not already displayed, click on View Devices. Utilization can also be displayed as "Last Minute Average" or "Last Hour Average."



4. To view health for a different switch, select its row in the List Pane.

Note: The monitored items displayed vary depending on the switch model and switch operating software. By clicking on the applicable icon in the Health Toolbar, you can also view monitored items at the Module and Port level.

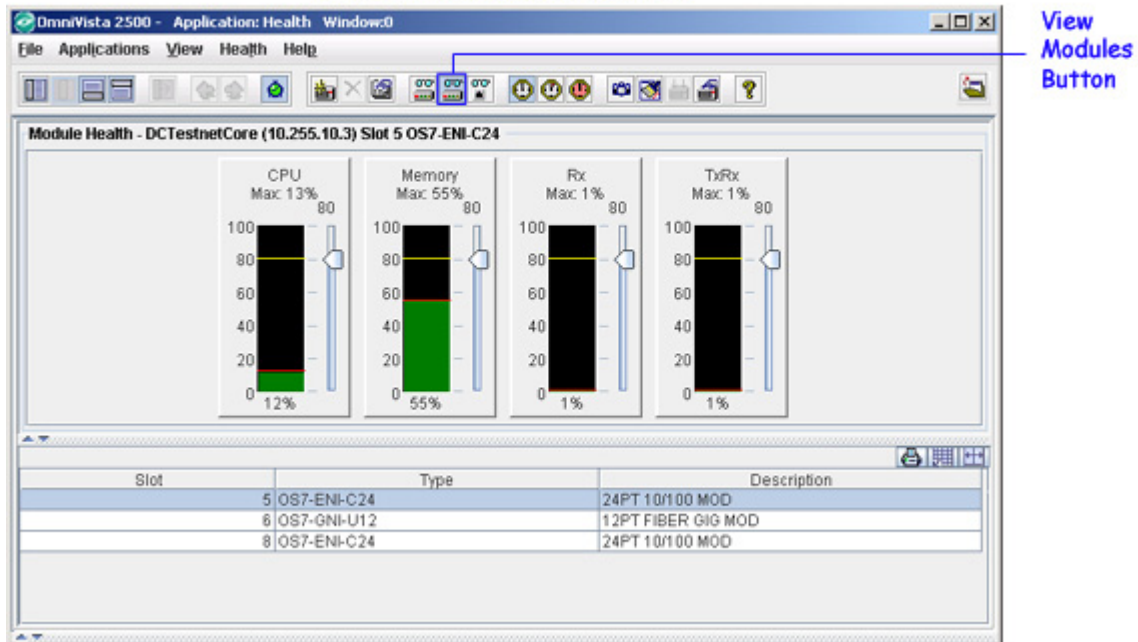
For a definition of each of the monitored items, see “Monitored Items” on page 12. To learn how to read the health scale, see “Reading the Health Scale” on page 4.

View Module Health

Follow the steps below to monitor the health of a switch module.

1. From the Chassis Health window, select the switch that contains the module you want to monitor.
2. Click on the **View Modules** button on the Health Toolbar. The Module Health window displays.

The Module Health Window



3. If the module you want to view is not already selected, click on its row in the List Pane. If you recently inserted a module and its information is not displayed in the List Pane, return to "Device View," right-click to bring up the pop-up menu, then click on **Poll Node**. When you return to "Module View," check the Status Panel and wait for the message "Equipment successfully polled." At that point, you should then be able to see the health data for the new module.

For a definition of each of the monitored items, see "Monitored Items" on page 12. To learn how to read the health scale, see "Reading the Health Scale" on page 4.

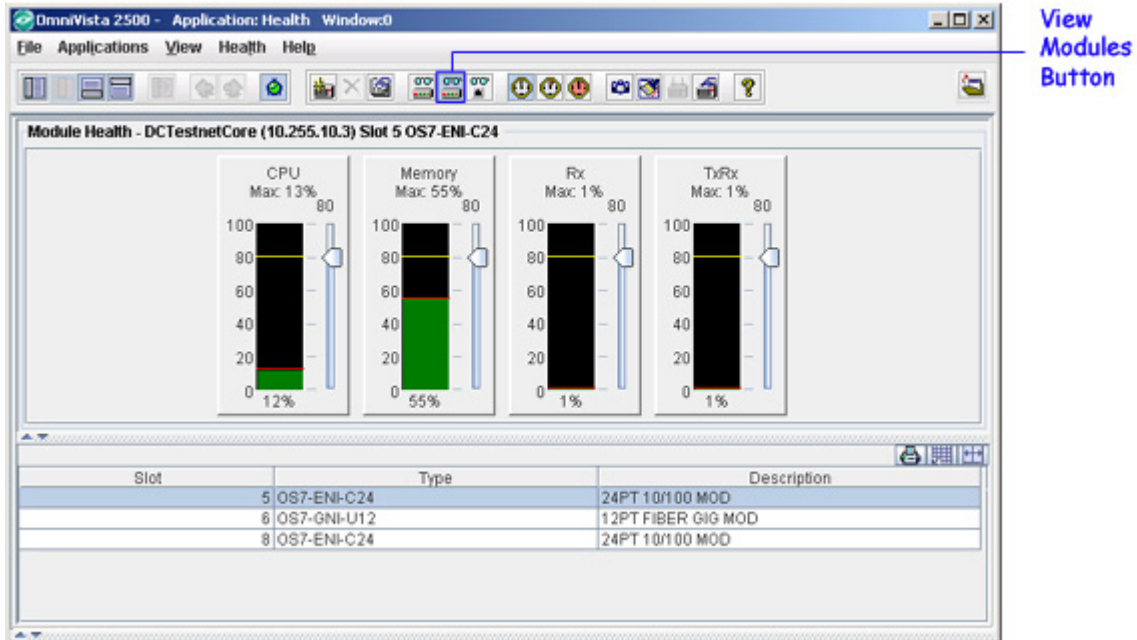
Note: The monitored items displayed vary depending on the switch model and switch operating software.

View Port Health

Follow the steps below to monitor the health of a port.

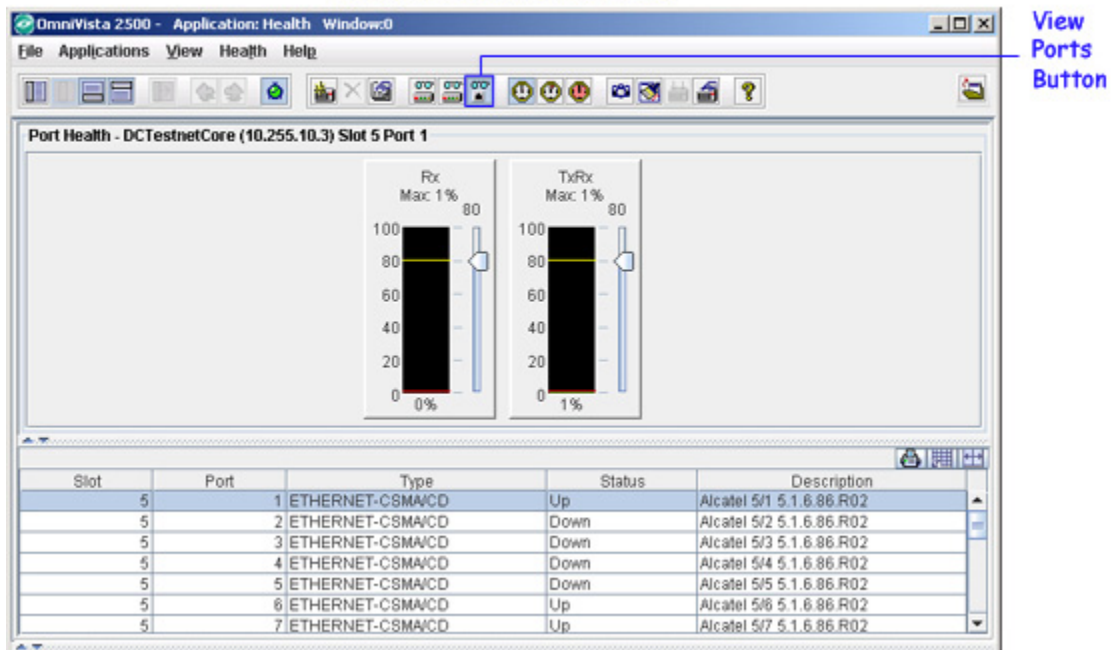
1. From the Chassis Health window, select the switch that contains the port you want to monitor.
2. Click on the **View Modules** button on the Health Toolbar. The Module Health window displays.

The Module Health Window



3. Select the module that contains the port you want to monitor (e.g., OS7-GNI-U2).
4. Click on the **View Ports** button on the Health Toolbar. The Port Health Window displays.

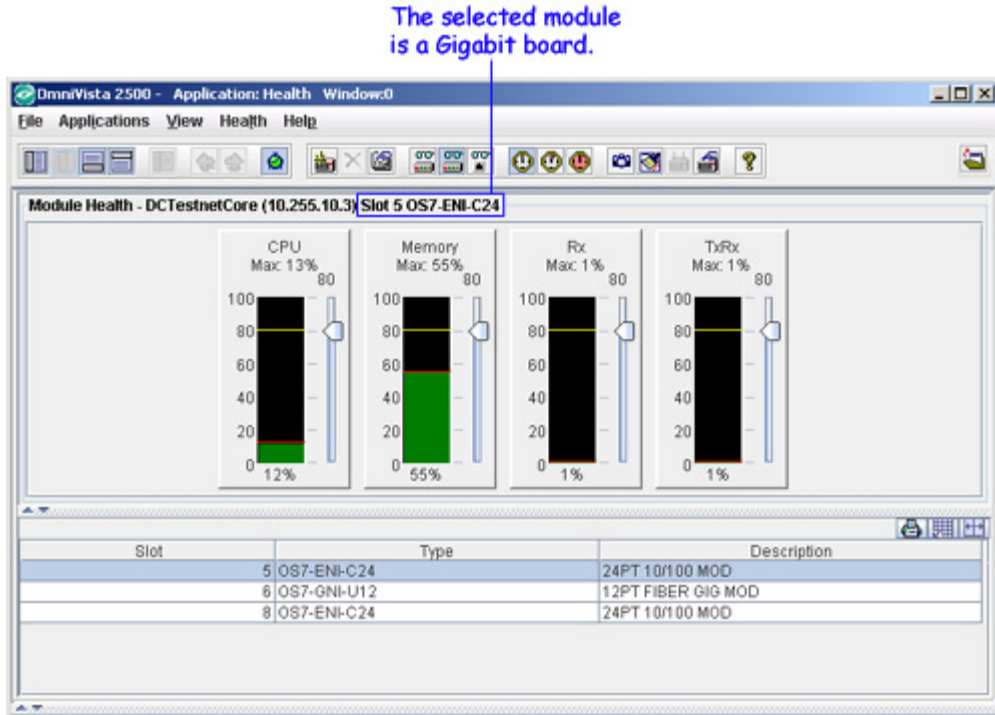
The Port Health Window



5. If the port you want to view is not already selected, click on its row in the List Pane. If you recently changed the port connection, Port View will not display the port's correct Status (Up/Down) until you do a poll. Go back to Device View, right-click to bring up the pop-up menu, then select **Poll Node**. When you return to Port View, check the Status Panel and wait for

the message "Equipment successfully polled." At that point the correct data should then be displayed.

Note that certain displayed health scales may not be relevant for the currently selected device. For example, ATM modules contain a health scale for Vcc. However, Vcc only pertains to ATM modules and this particular example is for an Ethernet module (OS7-GNI-U2).



For a definition of each of the monitored items, see “Monitored Items” on page 12. To learn how to read the health scale, see “Reading the Health Scale” on page 4.

Note: The monitored items displayed vary depending on the switch model and switch operating software.

Monitored Items

The following table shows the items monitored for a device, a module, or a port. Note that the monitored items displayed vary depending on the switch model and switch operating software. For example, 6200 Devices only monitor and display CPU Utilization and Temperature information.

Monitored Item	Monitored Items
Device	CPU, Memory, CAM, Backplane, Rx, Tx/Rx, Vcc, Vp, Temperature
Module	CAM, Backplane, Rx, Tx/Rx, Vcc
Port	Backplane, Rx, Tx/Rx, Vcc

Not every device displays all monitored items. For example, AOS switches only display information for CPU, Memory, Rx, Tx/Rx, and Temperature. Monitored items are defined below.

Monitored Items	Definition
CPU	The switch's central processing unit capacity.
Memory	The switch's main memory.
CAM	Content-Addressable Memory used for MAC address tables. This value will be zero if routing is not enabled.
Backplane	Device backplane capacity.
Rx	Receive capacity, calculated as Total Octets Received divided by Device Capacity.
Tx/Rx	Total transmit and receive capacity, calculated as Total Octets Received plus Total Octets Transmitted, divided by Device Capacity.
Vcc	ATM virtual channel capacity. This parameter only displays for switches running XOS greater than 4.0.
VP	Virtual port utilization, calculated as number of virtual ports in use divided by the total number of virtual ports available for the switch. This parameter only displays for switches running XOS 4.0 or greater.
Temperature	Current temperature of the device, in degrees Celsius or Fahrenheit. The default is Fahrenheit. This parameter only displays for switches running XOS 4.0 or greater.

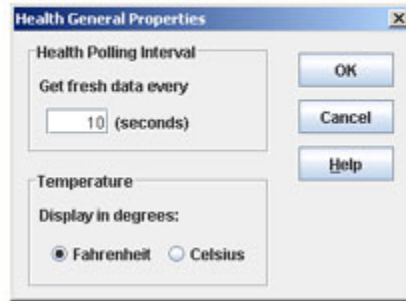
Setting the Health Polling Interval and Temperature Display

Use the Health General Properties window to:

- Modify the health polling interval.
- Specify the unit of measurement for the device temperature.

To access this window, click on the **Device Properties** button in the Health Application Toolbar.

The Health General Properties Window



Health Polling Interval

The Health Polling Interval determines how often the Health Application retrieves new data from a switch. The health polling interval range is 1 to 1000 seconds. The default is 10 seconds. When set to 0, polling is disabled; however, if you click on a different switch, the polling interval will return to its default value.

To change the polling interval, edit the "seconds" field, then click **OK**. Keep in mind that increased polling (that is, a lower polling interval value) means increased traffic, which could affect overall network performance.

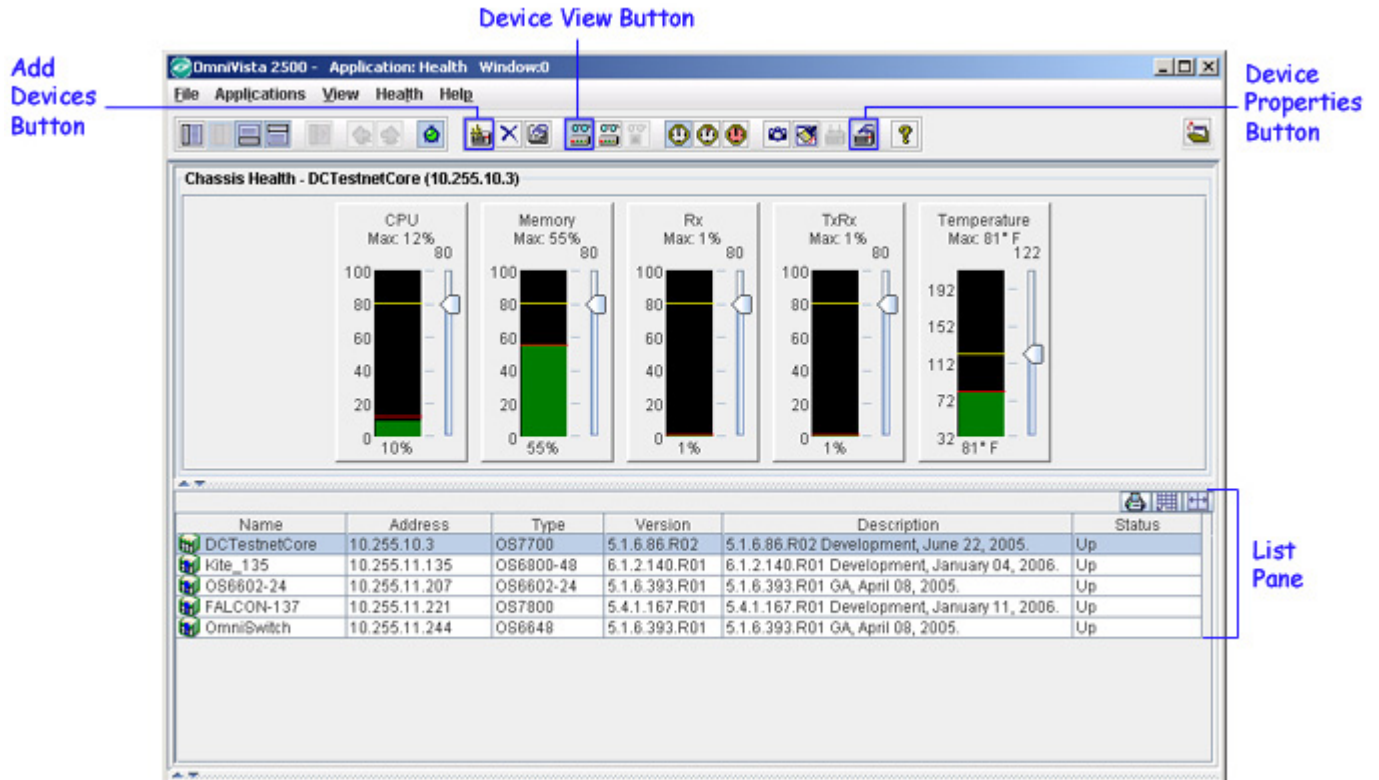
Temperature

Temperature can be displayed in degrees Fahrenheit or Celsius. The default is Fahrenheit. Make your selection, then click **OK**.

Setting the Switch Health Sampling Interval

Use the Device Properties Window to set a switch's health sampling interval. You can set the interval for a single switch or for multiple switches.

1. If necessary, click on the **Device View** button on the Health Application Toolbar.
2. From the List Pane, select the device(s) you want to configure. If necessary, click on the **Add Devices** button on the Health Application Toolbar to add additional devices to the List Pane.
3. Click on the **Device Properties** button on the Health Application Toolbar.



4. The default health sampling interval is 5 seconds. To modify the interval, edit the "Interval" field, then click **OK**.

The Device Properties Window



Note: If you select more than one switch, the "Apply to All Selected Devices" box will be checked. Edit the "Interval" field and click **OK**. The sampling interval will be updated for all of the selected switches.

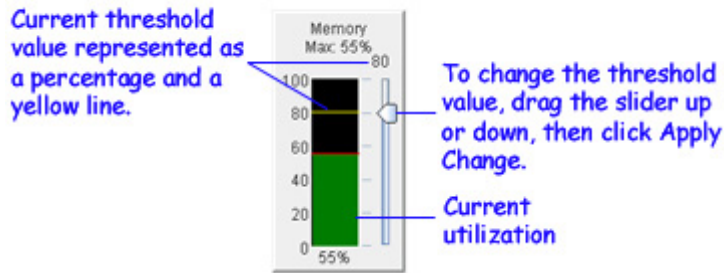
Setting Health Thresholds

Use the threshold slider to set the value you want as the health threshold. If a switch has been configured to send health traps, a trap will be sent whenever a monitored item's current utilization exceeds its health threshold. (To learn how to configure traps, see the "Configure Traps" help.)

Note: The threshold trap feature is not available on 6200 Series switches.

In the example below, the switch's CPU threshold is set to 80%.

Setting the Health Threshold



Note that you can set health threshold values from Device View, Module View, or Port View. Because the same MIB variables are used, it makes no difference which view you choose to set the threshold from. The new values will be visible through each of the views.

After you set the threshold, be sure to click the **Apply Change** button on the Health Application Toolbar. For more information, see “Apply Changes” below.

Apply Changes

Use the **Apply Change** button on the Health Application Toolbar to apply changes made to health thresholds. The Apply Changes Window will vary in its appearance, depending on whether you are applying changes to a single device or to multiple devices.

Applying Changes to a Single Device

Follow the steps below to change threshold value(s) on a single device.

1. From the List Pane, select a device whose threshold values you want to change.
2. Use the slider to change one or more of the threshold values.

Applying New Threshold Values to a Single Device

3. Click the Apply Changes Button.

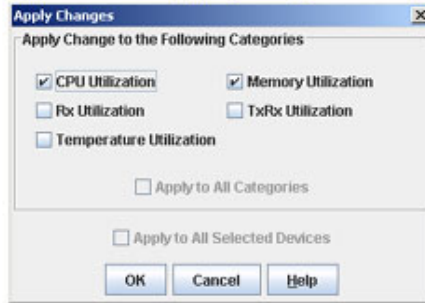
2. Use slider(s) to change threshold(s).

1. Select a device from the List Pane.

Name	Address	Type	Version	Description	Status
DCTestnetCore	10.255.10.3	OS7700	5.1.6.86.R02	5.1.6.86.R02 Development, June 22, 2005	Up
Kite	10.255.11.112	OS6800-24	6.1.2.144.R01	6.1.2.144.R01 Development, January 06, 2006	Up
Kite_135	10.255.11.135	OS6800-48	6.1.2.140.R01	6.1.2.140.R01 Development, January 04, 2006	Up
OS6602-24	10.255.11.207	OS6602-24	5.1.6.393.R01	5.1.6.393.R01 GA, April 08, 2005	Up
FALCON-137	10.255.11.221	OS7800	5.4.1.167.R01	5.4.1.167.R01 Development, January 11, 2006	Up
OmniSwitch	10.255.11.244	OS6648	5.1.6.393.R01	5.1.6.393.R01 GA, April 08, 2005	Up

3. Click the **Apply Changes** button on the Health Application Toolbar. The Apply Changes Window displays.

The Apply Changes Window
(as it appears when applying changes to a single device)



4. Click **OK**. A checkmark appears next to each monitored item whose threshold value you changed. If you prefer not to submit changes for a particular monitored item at this time, uncheck its checkbox, then click **OK**. Any items you unchecked will return to their previous settings.

Note that **Apply to All Categories** and **Apply to All Selected Devices** are grayed out. These options are only relevant when applying changes to multiple devices. See below.

Applying Changes to Multiple Devices

You can take the threshold values for a single device and apply those values to multiple devices.

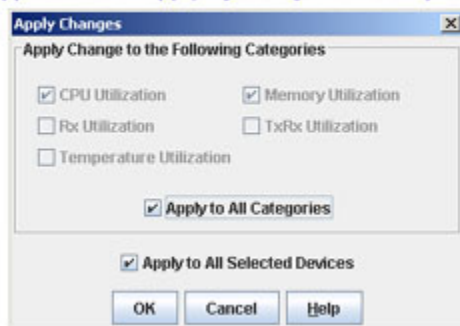
1. From the List Pane, select a device whose threshold values you want to apply to other devices.
2. Modify the threshold values, or use them as is.
3. From the List Pane, now select a group of switches to which you want to apply the threshold values of the single switch. In the example below, the threshold values for Switch 10.255.11.100 will be applied to the group of switches highlighted in the List Pane.

Applying Threshold Values from a Single Device to Multiple Devices

Name	Address	Type	Version	Description	Status
DCTestnetCore	10.255.10.3	OS7700	5.1.6.86.R02	5.1.6.86.R02 Development, June 22, 2005.	Up
Kite	10.255.11.112	OS8800-24	6.1.2.144.R01	6.1.2.144.R01 Development, January 06, 2006.	Up
Kite_135	10.255.11.135	OS8800-48	6.1.2.140.R01	6.1.2.140.R01 Development, January 04, 2006.	Up
OS8602-24	10.255.11.207	OS8602-24	5.1.6.393.R01	5.1.6.393.R01 GA, April 08, 2005.	Up
FALCON-137	10.255.11.221	OS7900	5.4.1.167.R01	5.4.1.167.R01 Development, January 11, 2006.	Up
OmniSwitch	10.255.11.244	OS8648	5.1.6.393.R01	5.1.6.393.R01 GA, April 08, 2005.	Up

4. Click the **Apply Change** button on the Health Application Toolbar. The Apply Changes Window displays.

The Apply Changes Window
(as it appears when applying changes to multiple devices)



Notice that the Apply Changes Window for multiple devices is slightly different than the Apply Changes Window for a single device. In the Apply Changes Window for multiple devices, each of the monitored items is grayed out, and **Apply to All Categories** and **Apply to All Selected Devices** options are enabled.

If you do not want to apply all of the threshold values, uncheck **Apply to All Categories**, and select the ones that you do want to apply.

If you do not want to apply the threshold values to all of the devices selected in the List Pane, uncheck **Apply to All Selected Devices**. Changes will then only be applied to the switch whose threshold values are currently displayed, namely, Switch 10.255.11.100.

5. When you are ready to submit the information to the switch, click **OK**.

After you return to the Health Window, the new threshold values will be displayed. If you unchecked any of the monitored item boxes, you will see that the original threshold values (the values that existed before you adjusted the threshold sliders) have now been restored.