

Dell™ OpenManage™  
Server Administrator Version 6.0.3  
**User's Guide**

# Notes and Cautions



**NOTE:** A NOTE indicates important information that helps you make better use of your computer.



**CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

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# Introduction

## Server Administrator for VMware ESXi 3.5

This release of Dell™ OpenManage™ Server Administrator provides support for VMware® ESXi 3.5 systems. The benefits of this operating system using Server Administrator are:

- Comprehensive I-to-I systems management solution from an integrated, web browser-based graphical user interface (GUI)
- The next generation hypervisor, VMware® ESXi 3.5 has a compact architecture, and is designed for integration directly into virtualization-optimized system hardware
- Rapid installation, configuration, and deployment
- System administrators can easily manage systems remotely on the entire network.



**NOTE:** This release supports only VMware ESXi 3.5 Update 4.



**NOTE:** Some Server Administrator features are not available with VMware ESXi 3.5 systems. See 'Unsupported Features in OpenManage Server Administrator' for a list of features that are not available in this release.



**NOTE:** For the purposes of Server Administrator, a system can be a stand-alone system, a system with attached network storage units in separate chassis, or a modular system consisting of one or more server modules in a modular enclosure.

Server Administrator provides information about:

- Systems that are operating properly and systems that have problems
- Systems that require remote recovery operations



**NOTE:** For remote recovery, a Dell™ Remote Access Controller must be installed.

# Integrated Features

Server Administrator provides easy-to-use management and administration of remote systems through a comprehensive set of integrated management services. Server Administrator is the sole installation on the system being managed and is accessible remotely from the Server Administrator home page. Remotely monitored systems may be accessed by dial-in, LAN, or wireless connections. Server Administrator ensures the security of its management connections through role-based access control (RBAC), authentication, and industry-standard secure socket layer (SSL) encryption.

## Installation

The Server Administrator version 6.0.3 is available on the Dell Support site at [support.dell.com](http://support.dell.com) as a .zip file that you can download to your system. You will need to download the latest version of Server Administrator (this is a Windows installable) and the VMware ESXi 3.5 ISO image. The Server Administrator Instrumentation, Remote Access, and Storage Management Services are part of the VMware ESXi 3.5 ISO image. See *Dell OpenManage Server Administrator Installation Guide for VMware ESXi 3.5* for details on installing Server Administrator.



**NOTE:** The Server Administrator Instrumentation, Remote Access, and Storage Management Services are disabled by default on the VMware ESXi 3.5 system. Ensure that the Server Administrator services are enabled on the VMware ESXi 3.5 system before the system can be managed by Server Administrator.



**NOTE:** Installation is supported only on limited Operating Systems. See the *Dell™ OpenManage™ Server Administrator Installation Guide for VMware® ESXi 3.5*.



**NOTE:** If you have a modular system, you must install Dell Instrumentation on each server module that is installed in the chassis.

## Browser Support

Installation of Server Administrator is supported only on limited browsers. See the *Dell OpenManage Server Administrator Installation Guide for VMware ESXi 3.5* for details on browser support.

## **Server Administrator Home Page**

The Server Administrator home page provides easy-to-set up and easy-to-use Web browser-based system management tasks from the managed system or from a remote host through a LAN, dial-up service, or wireless network. When the Dell Systems Management Server Administrator Connection Service (DSM SA Connection Service) is installed and configured on the managed system, you can perform remote management functions from any system that has a supported Web browser and connection. Additionally, the Server Administrator home page provides extensive, context-sensitive online help.

## **Instrumentation Service**

The Instrumentation Service provides rapid access to detailed fault and performance information gathered by industry-standard systems management agents and allows remote administration of monitored systems, including shutdown, startup, and security.

## **Remote Access Controller**

The Remote Access Controller provides a complete, remote system management solution for systems equipped with a Dell Remote Access Controller (DRAC) solution. The Remote Access Controller provides remote access to an inoperable system, allowing you to get the system up and running as quickly as possible. The Remote Access Controller also provides alert notification when a system is down and allows you to remotely restart a system. Additionally, the Remote Access Controller logs the probable cause of system crashes and saves the most recent crash screen.

## **Storage Management Service**

The Storage Management Service provides storage management information in an integrated graphical view.

The Storage Management Service of Server Administrator:

- enables you to view the status of remote storage attached to a monitored system
- supports SAS. SCSI and Fibre Channel are not supported

- allows you to perform controller and enclosure functions for all supported RAID and non-RAID controllers and enclosures from a single graphical interface without the use of the controller BIOS utilities
- protects your data by configuring data redundancy, assigning hot spares, or rebuilding failed drives
- provides features for configuring storage

For more information on the Storage Management Service, see the Storage Management online help and the *Dell OpenManage Server Administrator Storage Management User's Guide*.

## Logs

Server Administrator displays logs of commands issued to or by the system, monitored hardware events, and system alerts. You can view logs on the home page, print or save them as reports, and send them by e-mail to a designated service contact.

## Other Documents You Might Need

Besides this *User's Guide*, you can find the following guides on the Dell Support website at [support.dell.com](http://support.dell.com):

- The *Dell OpenManage Server Administrator Installation Guide for VMware ESXi 3.5* provides complete information on installation procedures and step-by-step instructions for installing, upgrading, and uninstalling Server Administrator for each supported operating system. It also lists the supported systems and browsers.
- The *Dell OpenManage Server Administrator Messages Reference Guide* lists the event messages that are displayed in the Server Administrator Alert log and in the operating system's system log on the managed node. This guide describes the event ID, text, severity, and cause of each event message that Server Administrator issues.
- The *Dell OpenManage Server Administrator Storage Management User's Guide* is a comprehensive reference guide for configuring and managing remote storage attached to a system.
- The *Dell Remote Access Controller 5 User's Guide* provides complete information about installing and configuring a DRAC 5 controller and using DRAC 5 to remotely access an inoperable system.

- The *Dell Integrated Remote Access Controller User's Guide* provides detailed information on configuring and using the iDRAC.
- The *Dell OpenManage Baseboard Management Controller Utilities User Guide* provides additional information about using Server Administrator to configure and manage your system's BMC.
- The *Dell Chassis Management Controller User's Guide* provides detailed information on installing, configuring and using CMC.
- The *Dell Online Diagnostics User's Guide* provides complete information on installing and using Online Diagnostics on your system.
- The *Dell Update Packages User's Guide* provides information about obtaining and using Dell Update Packages as part of your system update strategy.
- The *Dell OpenManage Server Update Utility User's Guide* provides information about obtaining and using the Server Update Utility (SUU) to update your Dell systems or to view the updates available for any systems listed in the Repository.

## Obtaining Technical Assistance

If at any time you do not understand a procedure described in this guide or if your product does not perform as expected, help tools are available to assist you. For more information about these help tools, see "Getting Help" in your system's *Hardware Owner's Manual*.

Additionally, Dell Enterprise Training and Certification is available; see [www.dell.com/training](http://www.dell.com/training) for more information. This service may not be offered in all locations.



## What's New for Version 6.0.3

The 6.0.3 release of Dell™ OpenManage™ Server Administrator supports the VMware® ESXi 3.5 virtualization operating system. This release provides OpenManage Server Administrator support for VMware® ESXi 3.5 - based managed systems.

With the introduction of VMware® ESXi 3.5 you can deploy Server Administrator on a single system, and still perform remote 1-to-1 systems management.

You can now seamlessly manage and monitor several systems at a time. The remote management capability offers a new foundation for virtual infrastructure.

For information about the VMware® ESXi 3.5 virtualization software, see the VMware support site at [www.vmware.com/support/](http://www.vmware.com/support/).

### Release Highlights

- **Ease of use:** This virtualization operating system (ESXi 3.5 Update 4 HDD and ESXi 3.5 Update 4 Flash) comes pre-installed (factory installed) on select Dell Systems. The Server Administrator Instrumentation, Remote Access and Storage Management Services are included with the virtualization operating system in a disabled state. You can easily launch Server Administrator on any supported Windows system, using the simple graphical user interface for installation. For a list of supported systems, see the *Dell™ OpenManage™ Server Administrator Installation Guide for VMware® ESXi 3.5*.
- **Centralized Server Administrator Web Server:** With this virtualized environment, you can now remotely manage several systems simultaneously. This translates to savings in CPU, memory, and disk requirements.
- **Separation of Server Administrator Web Server:** With the separation of the Server Administrator Web Server from the managed node, you can now log in separately, only to manage the Server Administrator Web Server.

## Feature Highlights

- Support for new *xxIx* systems.
- Support for the following system components:
  - Configuring reporting of additional attributes on front panel LCD (like system name, MAC address and IP address)
  - Reporting presence of iDRAC6 Enterprise and the size of storage, if present
  - Reporting of new PCI devices that are part of *xxIx* systems
  - Display of the CPU turbo mode
  - Display of new memory types (DDR3 Registered, DDR3 Unregistered)
  - Display of new slot types (PCIe Gen1/2)
  - Enabling/disabling Non-Uniform Memory Architecture (NUMA) during deployment
  - Enabling Network Controller-Sideband Interface support on each of the LOMs on an individual basis for all LOMs
  - Reporting memory operating modes (optimizer, mirror, advanced ECC)
  - Configuring AC Power Recovery delay
  - Configuring the COM port for serial connection for applicable platforms starting *xxIx* systems
  - Display of physical NIC attributes and transmit/receive statistics

- Enhanced power monitoring support:
  - Reporting of power consumption values in BTU (British Thermal Unit), as well as Watt.
  - Support for Peak power headroom and instantaneous headroom
  - Support for user-definable power budget cap
  - Support for reporting of maximum potential power consumption and minimum potential power consumption
  - Support for reporting input power rating of power supply
  - Support for events alerting capability for peak power consumption
  - Support for power profiles options - Power economy and performance modes
- Inclusion of Internet Protocol version 6:
  - This release supports IPv6, in addition to IPv4.



**NOTE:** For the supported operating systems list, see the Dell OpenManage Server Administrator Installation Guide for VMware ESXi 3.5.



# Setup and Administration

## Security Management

Server Administrator provides security through role-based access control (RBAC), authentication, and encryption.

### Role-Based Access Control

RBAC manages security by determining the operations that can be executed by persons in particular roles. Each user is assigned one or more roles, and each role is assigned one or more user privileges that are permitted to users in that role. With RBAC, security administration corresponds closely to an organization's structure.

### User Privileges

Server Administrator grants different access rights based on the user's assigned group privileges. The four user levels are: User, Power User, Administrator, and Elevated Administrator.

- *Users* can view most information.
- *Power Users* can set warning threshold values and configure which alert actions are to be taken when a warning or failure event occurs.
- *Administrators* can configure and perform shutdown actions, configure Auto Recovery actions in case a system has a non-responsive operating system, and clear hardware, event, and command logs. *Administrators* can also configure the system to send e-mails.

Server Administrator grants read-only access to users logged in with *User* privileges, read and write access to users logged in with *Power User* privileges, and read, write, and administrator access to users logged in with *Administrator* privileges. See Table 3-1.

**Table 3-1. User Privileges**

User Privileges	Access Type	
	View	Manage
User	Yes	No
Power User	Yes	Yes
Administrator	Yes	Yes

***Privilege Levels to Access Server Administrator Services***

Table 3-2 summarizes which user levels have privileges to access and manage Server Administrator services.

**Table 3-2. Server Administrator User Privilege Levels**

Service	User Privilege Level Required	
	View	Manage
Instrumentation	U, P, A	P, A
Remote Access	U, P, A	A
Storage Management	U, P, A	A
Web Server	A	A

Table 3-3 defines the user privilege level abbreviations used in Table 3-2.

**Table 3-3. Legend for Server Administrator User Privilege Levels**

U	User
P	Power User
A	Administrator

**Authentication**

The Server Administrator authentication scheme ensures that the correct access types are assigned to the correct user privileges. This authentication scheme ensures that all Server Administrator functions are properly authenticated.

## Microsoft Windows Authentication

For supported Microsoft® Windows® operating systems, Server Administrator authentication uses Integrated Windows Authentication (formerly called NTLM) to authenticate. This authentication system allows Server Administrator security to be incorporated in an overall security scheme for your network.



**NOTE:** Microsoft integrated authentication is supported only when managing the Server Administrator Web server.

## Encryption

Server Administrator is accessed over a secure HTTPS connection using secure socket layer (SSL) technology to ensure and protect the identity of the system being managed. Java™ Secure Socket Extension (JSSE) is used by supported Microsoft Windows operating systems to protect the user credentials and other sensitive data that is transmitted over the socket connection when a user accesses the Server Administrator home page.

## Assigning User Privileges

To ensure critical system component security, assign user privileges to all Dell™ OpenManage™ software users before installing Dell OpenManage software. New users can log into Dell OpenManage software using their operating system user privileges.



**CAUTION:** To protect access to your critical system components, assign a password to every user account that can access Dell OpenManage software. Users without an assigned password cannot log into Dell OpenManage software on a system running Windows Server 2003 due to the operating system design.



**CAUTION:** Disable guest accounts for supported Windows operating systems to protect access to your critical system components. Consider renaming the accounts so that remote scripts cannot enable the accounts using the name.



**NOTE:** For instructions on assigning user privileges for each supported operating system, see your operating system documentation.



**NOTE:** Add new users to the operating system if you want to add users to OpenManage software. You do not have to create new users from within the OpenManage software.

## Adding Users to a Domain on Windows Operating Systems



**NOTE:** You must have Microsoft Active Directory® installed on your system to perform the following procedures. See "Microsoft Active Directory" for more information about using Active Directory.

- 1 Navigate to **Control Panel**→**Administrative Tools**→**Active Directory Users and Computers**.
- 2 In the console tree, right-click **Users** or right-click the container in which you want to add the new user, and then point to **New**→**User**.
- 3 Type the appropriate user name information in the dialog box, and then click **Next**.
- 4 Click **Next**, and then click **Finish**.
- 5 Double-click the icon representing the user that you just created.
- 6 Click the **Member of** tab.
- 7 Click **Add**.
- 8 Select the appropriate group and click **Add**.
- 9 Click **OK**, and then click **OK** again.

New users can log into Dell OpenManage software with the user privileges for their assigned group and domain.

## Creating Users



**NOTE:** For information about creating users and user groups, see your operating system documentation.

## Disabling Guest and Anonymous Accounts in Supported Windows Operating Systems



**NOTE:** You must be logged in with Administrator privileges to perform this procedure.

- 1 Open the **Computer Management** window.
- 2 In the console tree, expand **Local Users and Groups** and click **Users**.
- 3 Click the **Guest** or **IUSR\_ *system name*** user account.
- 4 Click **Action** and point to **Properties**.
- 5 Select **Account is disabled** and click **OK**.

A red circle with an X appears over the user name. The account is disabled.

# Using Server Administrator

## Starting Your Server Administrator Session

To start a Server Administrator session, click the Dell™ OpenManage™ Server Administrator icon on your desktop.

The **Server Administrator Log in** screen displays. The default port for Dell™ OpenManage™ Server Administrator is 1311. You can change the port, if required. See "Dell Systems Management Server Administration Connection Service and Security Setup" for instructions on setting up your system preferences.

## Logging In and Out

OpenManage Server Administrator now has two login screens because of the separation of the Server Administrator Web server from the managed system. One is for managing a remote system, and the other to manage the Server Administrator Web server.

### Managing a Remote System

To log in to Server Administrator to manage a remote system:

#### Method 1

- 1 Click on the Dell™ OpenManage™ Server Administrator icon on your desktop.
- 2 Type your preassigned **Hostname/IP Address**, **Username** and **Password** of the VMware® ESXi 3.5 system in the appropriate fields on the Remote Management **Log in** window. If required, you can also enter the machine name or its Fully Qualified Domain Name (FQDN) in the **Hostname/IP Address** field.
- 3 Select the **Ignore Certificate Warnings** check box, if you are using an Intranet connection.

## Method 2

Open your Web browser and type one of the following in the address field and press <Enter>:

```
https://hostname:1311
```

where `hostname` is the assigned name for the managed node system and 1311 is the default port number

or

```
https://IP address:1311
```

where `IP address` is the IP address for the managed system and 1311 is the default port number

You should type `https://` (and not `http://`) in the address field to receive a valid response in your browser.



**NOTE:** You must have preassigned user rights to log in to Server Administrator. See "Setup and Administration" for instructions on setting up new users.

## Using the Ignore Certificate Option

The login screen has an "Ignore certificate warnings check box".



**CAUTION:** You should use the "Ignore certificate warnings" option with discretion. It is highly recommended that you use it only in trusted Intranet environments.

To ensure system security, Dell strongly recommends that you import a root certificate or certificate chain from a Certification Authority (CA). See the VMware documentation for details.



**NOTE:** If the certificate authority on the managed system is valid and if the Server Administrator web server still reports an untrusted certificate error, you can still make the managed system's CA as trusted by using the `certutil.exe`. Refer to your operating system documentation for details on accessing this `.exe`. On supported Windows operating systems, you can also use the certificates snap in option to import certificates.

## Managing Server Administrator Web Server

To manage the OpenManage Server Administrator Web server:

- 1 Click on the **Dell OpenManage Server Administrator** icon on your desktop. The remote login page is displayed.
- 2 Click on the **Manage Web Server Link**, located at the top right corner of the screen.
- 3 Enter the **User Name, Password and Domain name** (If you are accessing Server Administrator from a defined domain) and click **OK**.



**NOTE:** The **Application** drop-down menu will appear as a non-selectable field for systems that can only access one Dell OpenManage Server Administrator component. The drop-down menu is only functional when two or more Dell OpenManage Server Administrator components are available on the managed system.

Select the **Active Directory Login** check box to log in using Microsoft® Active Directory®.

Due to the separation of the Server Administrator Web server from the managed system, the following options will display only when you log in to the Server Administrator Web server, using the Manage Web Server link:

- Web Server Preferences
- Session Management
- Web Server shutdown
- X.509 Certificate Management

These options will not be displayed when you log in to a remote system. For more information on accessing these features, refer to 'Server Administrator Services.'

To end your Server Administrator session, click **Log Out** on the "global navigation bar." The **Log Out** button is located in the upper-right corner of each Server Administrator home page.



**NOTE:** When you launch Server Administrator using Internet Explorer® version 7.0, an intermediate warning page may appear displaying the problem with security certificate. To ensure system security, it is strongly recommended that you generate a new X.509 certificate, reuse an existing X.509 certificate, or import a root certificate or certificate chain from a Certification Authority (CA). To avoid encountering such warning messages about the certificate, the certificate used must be from a trusted CA. For more information on X.509 Certificate Management, see "X.509 Certificate Management."

## Single Sign-On

Server Administrator does not support login by default from the desktop icon. For local machine access, you must have an account on the machine with the appropriate privileges (Administrator). Other users are authenticated against the Microsoft Active Directory.

 **NOTE:** Single Sign-On is available only for Server Administrator Web server management.

However, you can launch Server Administrator using Single Sign-On authentication against Microsoft Active Directory. The following parameters must also be passed in:

```
authType=ntlm&application=[plugin name]
```

Where *plugin name* = *omsa*

For example:

```
https://localhost:1311/?authType=ntlm&application=omsa
```

To launch Server Administrator using Single Sign-On authentication against the local machine user accounts, the following parameters must also be passed in:

```
authType=ntlm&application=[plugin name]&locallogin=true
```

Where *plugin name* = *omsa*

For example:

```
https://localhost:1311/?authType=ntlm&application=omsa&locallogin=true
```

 **NOTE:** See the Knowledge Base article at <http://support.microsoft.com/default.aspx?scid=kb;en-us;Q258063> for more information on Single Sign-On.

## Security Settings for Microsoft Windows Server 2003

You must configure the security settings for your browser to log in to Server Administrator from a remote management system that is running a supported Microsoft Windows Server® 2003 operating system.

The security settings for your browser might prevent the execution of client-side scripts that are used by Server Administrator. To enable the use of client-side scripting, perform the following steps on the remote management system.



**NOTE:** If you have not configured your browser to enable the use of client-side scripting, you might receive a blank screen when logging in to Server Administrator. In this case, an error message will appear instructing you to configure your browser settings.

### Internet Explorer

- 1 Start your browser.
- 2 Click **Tools**→**Internet Options**→**Security**.
- 3 Click the **Trusted Sites** icon.
- 4 Click **Sites**.
- 5 Copy the Web address used to access the remote managed system from the browser's address bar and paste it onto the **Add this Web Site to the Zone** field.
- 6 Click **Custom Level**.  
For Windows 2003:
  - Under **Miscellaneous**, select the **Allow Meta Refresh** radio button.
  - Under **Active Scripting**, select the **Enable** radio button.
  - Under **Active Scripting**, select the **Allow scripting of Internet Explorer web browser controls** radio button.
- 7 Click **OK** to save the new settings.
- 8 Close the browser.
- 9 Log in to Server Administrator.

To allow Single Sign-On for Server Administrator without prompts for user credentials, perform the following steps:

- 1 Start your browser.
- 2 Click **Tools**→**Internet Options**→**Security**.
- 3 Click the **Trusted Sites** icon.
- 4 Click **Sites**.
- 5 Copy the Web address used to access the remote managed system from the browser's address bar and paste it onto the **Add this Web Site to the Zone** field.
- 6 Click **Custom Level**.
- 7 Under **User Authentication**, select the **Automatic Logon with current username and password** radio button.
- 8 Click **OK** to save the new settings.
- 9 Close the browser.
- 10 Log in to Server Administrator.

### **Mozilla**

- 1 Start your browser.
- 2 Click **Edit**→**Preferences**.
- 3 Click **Advanced**→**Scripts and Plugins**.
- 4 Ensure that the **Navigator** check box is selected under **Enable JavaScript for**.
- 5 Click **OK** to save the new settings.
- 6 Close the browser.
- 7 Log in to Server Administrator.

## **The Server Administrator Home Page**



**NOTE:** Do not use your Web browser toolbar buttons (such as **Back** and **Refresh**) while using Server Administrator. Use only the Server Administrator navigation tools.

With only a few exceptions, the Server Administrator home page has three main areas:

- The global navigation bar provides links to general services.
- The system tree displays all visible system objects based on the user's access privileges.
- The action window displays the available management actions for the selected system tree object based on the user's access privileges. The action window contains three functional areas:
  - The action tabs display the primary actions or categories of actions that are available for the selected object based on the user's access privileges.
  - The action tabs are divided into subcategories of all available secondary options for the action tabs based on the user's access privileges.
  - The data area displays information for the selected system tree object, action tab, and subcategory based on the user's access privileges.

Additionally, when logged in to the Server Administrator home page, the system model, the assigned name of the system, and the current user's user name and user privileges are displayed in the top-right corner of the window.

Table 4-1 lists the GUI field names and the applicable system, when Server Administrator is installed on the system.

**Table 4-1. System Availability for the Following GUI Field Names**

<b>GUI Field Name</b>	<b>Applicable System</b>
Modular Enclosure	Modular System
Server module	Modular System
Main System	Modular System
System	Non-Modular System
Main system Chassis	Non-Modular System
BMC	Dell PowerEdge x8xx and x9xx Systems
iDRAC	Dell xx0x Systems

Figure 4-1 shows a sample Server Administrator home page layout for a user logged in with administrator privileges on a non-modular system.

**Figure 4-1. Sample Server Administrator Home Page — Non-Modular System**



Figure 4-2 shows a sample Server Administrator home page layout for a user logged in with administrator privileges on a modular system.

**Figure 4-2. Sample Server Administrator Home Page — Modular System**



Clicking an object in the system tree opens a corresponding action window for that object. You can navigate in the action window by clicking action tabs to select major categories and clicking the action tab subcategories to access more detailed information or more focused actions. The information displayed in the data area of the action window can range from system logs to status indicators to system probe gauges. Underlined items in the data area of the action window indicate a further level of functionality. Clicking an underlined item creates a new data area in the action window that contains a greater level of detail. For example, clicking **Main System Chassis/Main System** under the **Health** subcategory of the **Properties** action tab lists the health status of all the components contained in the Main System Chassis/Main System object that are monitored for health status.



**NOTE:** Administrator or Power User privileges are required to view most of the system tree objects, system components, action tabs, and data area features that are configurable. Additionally, only users logged in with Administrator privileges can access critical system features such as the shutdown functionality included under the **Shutdown** tab.

## Global Navigation Bar

The global navigation bar and its links are available to all user levels in the program.

- Clicking **Preferences** opens the **Preferences** home page. See "Using the Preferences Home Page."
- Clicking **Support** connects you to the Dell Support website.
- Clicking **Help** opens the context-sensitive online help window. See "Using the Online Help."
- Clicking **About** displays Server Administrator version and copyright information.
- Clicking **Log Out** ends your current Server Administrator program session.

## System Tree

The system tree appears on the left side of the Server Administrator home page and lists the components of your system that are viewable. The system components are categorized by component type. When you expand the main object known as **Modular Enclosure**→**System/Server Module**, the major categories of system/server module components that may appear are **Main System Chassis/Main System**, **Software**, and **Storage**.

To expand a branch of the tree, click the plus sign () to the left of an object, or double-click the object. A minus sign () indicates an expanded entry that cannot be expanded further.

## Action Window

When you click an item on the system tree, details about the component or object appear in the data area of the action window. Clicking an action tab displays all available user options as a list of subcategories.

Clicking an object on the system/server module tree opens that component's action window, displaying the available action tabs. The data area defaults to a preselected subcategory of the first action tab for the selected object. The preselected subcategory is usually the first option. For example, clicking the **Main System Chassis/Main System** object opens an action window in which the **Properties** action tab and **Health** subcategory are displayed in the window's data area.

## Data Area

The data area is located below the action tabs on the right side of the home page. The data area is where you perform tasks or view details about system components. The content of the window depends on the system tree object and action tab that are currently selected. For example, when you select **BIOS** from the system tree, the **Properties** tab is selected by default and the version information for the system BIOS appears in the data area. The data area of the action window contains many common features, including status indicators, task buttons, underlined items, and gauge indicators.

### *System/Server Module Component Status Indicators*

The icons that appear next to component names show the status of that component (as of the latest page refresh).

**Table 4-2. System/Server Module Component Status Indicators**

	A green check mark indicates that a component is healthy (normal).
	A yellow triangle containing an exclamation point indicates that a component has a warning (noncritical) condition. A warning condition occurs when a probe or other monitoring tool detects a reading for a component that falls within certain minimum and maximum values. A warning condition requires prompt attention.
	A red X indicates that a component has a failure (critical) condition. A critical condition occurs when a probe or other monitoring tool detects a reading for a component that falls within certain minimum and maximum values. A critical condition requires immediate attention.
	A blank space indicates that a component's health status is unknown.

### **Task Buttons**

Most windows opened from the Server Administrator home page contain at least four task buttons: **Print**, **Export**, **Email**, and **Refresh**. Other task buttons are included on specific Server Administrator windows. Log windows, for example, also contain **Save As** and **Clear Log** task buttons. For specific information about individual task buttons, click **Help** on any Server Administrator home page window to view detailed information about the specific window you are viewing.

- Clicking **Print** prints a copy of the open window to your default printer.
- Clicking **Export** generates a text file that lists the values for each data field on the open window. The export file is saved to a location you specify. See "Setting User and System Preferences" for instructions on customizing the delimiter separating the data field values.
- Clicking **Email** creates an e-mail message addressed to your designated e-mail recipient. See "Setting User and System Preferences" for instructions on setting up your e-mail server and default e-mail recipient.
- Clicking **Refresh** reloads the system component status information in the action window data area.

- Clicking **Save As** saves an HTML file of the action window in a **.zip** file.
- Clicking **Clear Log** erases all events from the log displayed in the action window data area.

 **NOTE:** The **Export**, **Email**, **Save As**, and **Clear Log** buttons are only visible for users logged in with Power User or Administrator privileges.

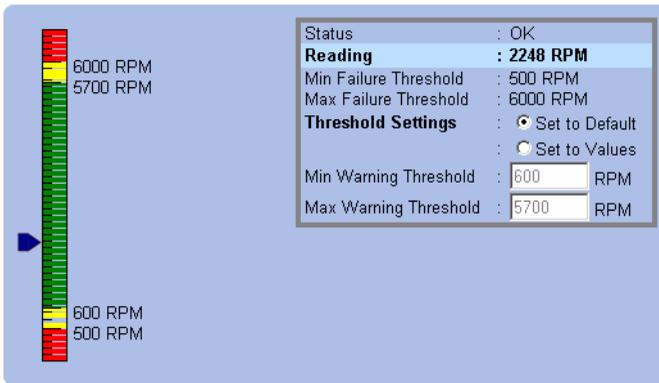
### ***Underlined Items***

Clicking an underlined item in the action window data area displays additional details about that item.

### ***Gauge Indicators***

Temperature probes, fan probes, and voltage probes are each represented by a gauge indicator. For example, Figure 4-3 shows readings from a system's CPU fan probe.

**Figure 4-3. Gauge Indicator**



## Using the Online Help

Context-sensitive online help is available for every window of the Server Administrator home page. Clicking **Help** on the global navigation bar opens an independent help window that contains detailed information about the specific window you are viewing. The online help is designed to help guide you through the specific actions required to perform all aspects of the Server Administrator services. Online help is available for all windows you can view, based on the software and hardware groups that Server Administrator discovers on your system and your user privilege level.

## Using the Preferences Home Page

The left-hand pane of the **Preferences** home page (where the system tree is displayed on the Server Administrator home page) displays all available configuration options in the system tree window.

See Table 4-3 for available Preferences home page configuration options.

**Table 4-3. Preferences Home Page Configuration Options**

	.....	General Settings
	.....	Server Administrator

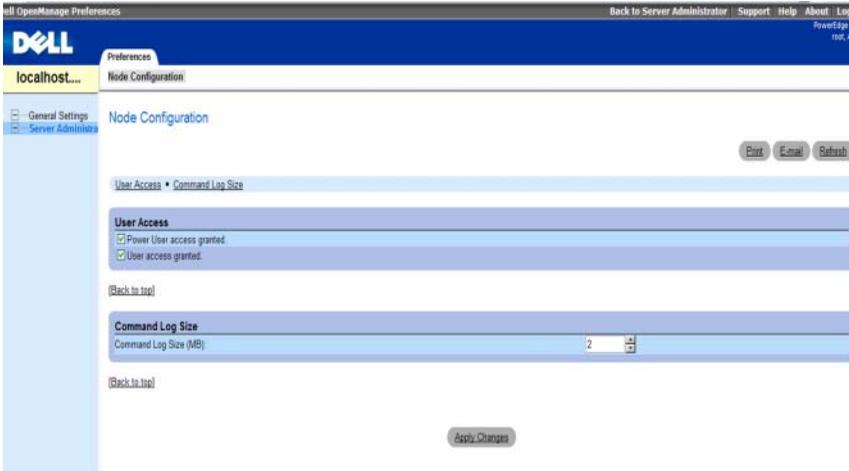
You can view the Preferences tab after you log in to manage a remote system. This tab is also available when you log in to manage the Server Administrator Web server.

Like the Server Administrator home page, the **Preferences** home page has three main areas:

- The global navigation bar provides links to general services.
  - Clicking **Back to Server Administrator** returns you to the Server Administrator home page.
- The left-hand pane of the **Preferences** home page (where the system tree is displayed on the Server Administrator home page) displays the preference categories for the managed system or the Server Administrator Web server.
- The action window displays the available settings and preferences for the managed system or the Server Administrator Web Server.

Figure 5-4 shows a typical **Preferences** home page layout.

**Figure 4-4. Sample Preferences Home Page**



## Managed System Preferences

When you log in to a remote system, the **Preferences** home page defaults to the **Node Configuration** window under the **Preferences** tab.

Click the **Server Administrator** object to enable or disable access to users with User or Power User privileges. Depending on the user's group privileges, the **Server Administrator** object action window can have the **Preferences** tab.

Under the **Preferences** tab, you can:

- Enable or disable access to users with User or Power User privileges.
- Configure the Command Log Size.

## Server Administrator Web Server Preferences

When you log in to manage the Server Administrator Web server, the **Preferences** home page defaults to the **User Preferences** window under the **Preferences** tab.

## **Dell Systems Management Server Administration Connection Service and Security Setup**

You can set user and system preferences and manage X.509 certificates when you are logged in to the Server Administrator Web server. See "Managing Server Administrator Web Server" for details. Once you log in to manage the Server Administrator Web server, you can perform the following:

- Setting User and System Preferences
- X.509 Certificate Management

### ***Setting User and System Preferences***

You set user and secure port system preferences from the **Preferences** home page.



**NOTE:** You must be logged in with Administrator privileges to set or reset user or system preferences.

Log in to the Server Administrator Web server. Perform the following steps to set up your user preferences:

- 1** Click **Preferences** on the global navigation bar.  
The **Preferences** home page appears.
- 2** Click **General Settings**.
- 3** To add a preselected e-mail recipient, type the e-mail address of your designated service contact in the **Mail To:** field, and click **Apply Changes**.



**NOTE:** Clicking **Email** in any window sends an e-mail message with an attached HTML file of the window to the designated e-mail address.

- 4** To change the home page appearance, select an alternative value in the **skin** or **scheme** fields and click **Apply Changes**.

Perform the following steps to set up your secure port system preferences:

- 1** Log in to the Server Administrator Web server. Click **Preferences** on the global navigation bar.  
The **Preferences** home page appears.
- 2** Click **General Settings**, and the **Web Server** tab.

**3** In the **Server Preferences** window, set options as necessary.

- The **Session Timeout** feature can set a limit on the amount of time that a Server Administrator session can remain active. Select the **Enable** radio button to allow Server Administrator to time out if there is no user interaction for a specified number of minutes. Users whose session times out must log in again to continue. Select the **Disable** radio button to disable the Server Administrator session timeout feature.
- The **HTTPS Port** field specifies the secure port for Server Administrator. The default secure port for Server Administrator is 1311.



**NOTE:** Changing the port number to an invalid or in-use port number might prevent other applications or browsers from accessing Server Administrator on the managed system. See the *Dell OpenManage Installation and Security User's Guide* for the list of default ports.

- The **IP Address to Bind to** field specifies the IP address(es) for the managed system that Server Administrator binds to when starting a session. Select the **All** radio button to bind to all IP addresses applicable for your system. Select the **Specific** radio button to bind to a specific IP address.



**NOTE:** Changing the **IP Address to Bind to** value to a value other than **All** may prevent other applications or browsers from accessing Server Administrator on the managed system.

- The **SMTP Server name** and **DNS Suffix for SMTP Server** fields specify your company or organization's Simple Mail Transfer Protocol (SMTP) and domain name server (DNS) suffix. To enable Server Administrator to send e-mails, you must type the IP address and DNS suffix for the SMTP Server for your company or organization in the appropriate fields.



**NOTE:** For security reasons, your company or organization might not allow e-mails to be sent through the SMTP server to outside accounts.

- The **Support Link** field specifies the URL for the business entity that provides support for your managed system.

- The **Custom Delimiter** field specifies the character used to separate the data fields in the files created using the **Export** button. The ; character is the default delimiter. Other options are !, @, #, \$, %, ^, \*, ~, ?, :, |, and ,.
- The **SSL Encryption** field specifies the encryption levels for the secured HTTPS sessions. The available encryption levels include **Auto Negotiate** and **128-bit or higher**.
  - **Auto Negotiate:** To allow connection from browser with any encryption strength. The browser auto negotiates with the Server Administrator web server and uses the highest available encryption level for the session. Legacy browsers with weaker encryption can connect to the Server Administrator.
  - **128-bit or higher:** To allow connections from browsers with 128-bit or higher encryption strength. One of the following cipher suites will be applicable based upon the browser for any established sessions:

SSL\_RSA\_WITH\_RC4\_128\_SHA  
 SSL\_RSA\_WITH\_RC4\_128\_MD5  
 SSL\_DHE\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA  
 TLS\_DHE\_RSA\_WITH\_AES\_128\_CBC\_SHA  
 SSL\_RSA\_WITH\_3DES\_EDE\_CBC\_SHA  
 TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA  
 TLS\_DHE\_DSS\_WITH\_AES\_128\_CBC\_SHA  
 SSL\_DHE\_DSS\_WITH\_3DES\_EDE\_CBC\_SHA

 **NOTE:** **128-bit or higher** option does not allow connections from browsers with lower SSL encryption strength, such as 40 bit, 56 bit.

 **NOTE:** Restart the Server Administrator web server for the changes to take effect.

 **NOTE:** If the encryption level is set to **128-bit or higher**, you can access or modify the Server Administrator settings using a browser with the same or higher encryption levels.

- 4 When you finish setting options in the **Server Preferences** window, click **Apply Changes**.

## ***X.509 Certificate Management***

Web certificates are necessary to ensure the identity of a remote system and ensure that information exchanged with the remote system cannot be viewed or changed by others. To ensure system security, it is strongly recommended that:

- You generate a new X.509 certificate, reuse an existing X.509 certificate, or import a root certificate or certificate chain from a Certification Authority (CA).
- All systems that have Server Administrator installed have unique host names.



**NOTE:** You must be logged in with Administrator privileges to perform certificate management.

To manage X.509 certificates through the Preferences home page, log in to the Server Administrator Web server, click **General Settings**, click the **Web Server** tab, and click **X.509 Certificate**.

You can use this option to:

- **Generate a new X.509 certificate** - Use this option to create a certificate for access to Server Administrator.
- **Reuse an existing X.509 certificate** - This option selects an existing certificate that your company has title to, and uses this certificate to control access to Server Administrator.
- **Import a root certificate** - This option allows you to import the root certificate, as well as the certificate response (in PKCS#7 format), received from the trusted certificate authority.
- **Import certificate chain from a CA** - This option allows you to import the certificate response (in PKCS#7 format) from the trusted certificate authority. Some of the reliable certificate authorities are Verisign, Thawte, and Entrust.

## **Controlling Server Administrator**

Server Administrator Web Server automatically starts each time you reboot the managed system. To manually start, stop, or restart Server Administrator Web Server, use the following instructions.



**NOTE:** To control Server Administrator Web Server, you must be logged in with administrator privileges.

## **Starting Server Administrator Web Server**

### **Supported Microsoft Windows Operating Systems**

To start Server Administrator Web Server on systems running a supported Microsoft Windows operating system, perform the following steps:

- 1** Open the Services window.
- 2** Right-click the **Dell Systems Management Server Administration (DSM SA) Connection Service** icon.
- 3** Click **Start**.

## **Stopping Server Administrator Web Server**

### **Supported Microsoft Windows Operating Systems**

To stop Server Administrator Web Server, perform the following steps:

- 1** Open the Services window.
- 2** Right-click the **DSM SA Connection Service** icon.
- 3** Click **Stop**.

## **Restarting Server Administrator Web Server**

### **Supported Microsoft Windows Operating Systems**

To restart Server Administrator Web Server, perform the following steps:

- 1** Open the Services window.
- 2** Right-click the **DSM SA Connection Service** icon.
- 3** Click **Restart**.



# Server Administrator Services

## Overview

The Server Administrator Instrumentation Service monitors the health of a system and provides rapid access to detailed fault and performance information gathered by industry standard systems management agents. The reporting and viewing features allow retrieval of overall health status for each chassis that comprises your system. At the subsystem level, you can view information about the voltages, temperatures, fan rpm, and memory function at key points in the system. A detailed account of every relevant cost of ownership (COO) detail about your system can be seen in the summary view. Version information for BIOS, firmware, operating system, and all installed systems management software is easy to retrieve.

Additionally, system administrators can use the Instrumentation Service to perform the following essential tasks:

- Specify minimum and maximum values for certain critical components. The values, called thresholds, determine the range in which a warning event for that component occurs (minimum and maximum failure values are specified by the system manufacturer).
- Specify how the system responds when a warning or failure event occurs. Users can configure the actions that a system takes in response to notifications of warning and failure events. Alternatively, users who have around-the-clock monitoring can specify that no action is to be taken and rely on human judgment to select the best action in response to an event.
- Populate all of the user-specifiable values for the system, such as the name of the system, the phone number of the system's primary user, the depreciation method, whether the system is leased or owned, and so on.

## Managing Your System

The Server Administrator home page defaults to the **System** object of the system tree view. The default for the **System** object opens the **Health** components under the **Properties** tab.



**NOTE:** For detailed information on every window of Server Administrator, see the context-sensitive online help.



**NOTE:** Administrator or Power User privileges are required to view many of the system tree objects, system components, action tabs, and data area features that are configurable. Additionally, only users logged in with Administrator privileges can access critical system features such as the shutdown functionality included under the **Shutdown** tab.

## Managing System/Server Module Tree Objects

The Server Administrator system/server module tree displays all visible system objects based on the software and hardware groups that Server Administrator discovers on the managed system and on the user's access privileges. The system components are categorized by component type. When you expand the main object—"Modular Enclosure"—"System/Server Module"—the major categories of system components that may appear are, "Main System Chassis/Main System," "Software," and "Storage."

If Storage Management Service is installed, depending on the controller and storage attached to the system, the Storage tree object will expand to display various objects.

For detailed information on the Storage Management Service component, see the *Dell OpenManage Server Administrator Storage Management User's Guide*.

# Server Administrator Home Page System Tree Objects

## Unsupported Features in OpenManage Server Administrator

Due to the limitations of the VMware ESXi version 3.5 operating system, some features available with earlier versions of OpenManage Server Administrator are not available in this release. These are:

- Alert Management - Alert Actions
- Alert Management - SNMP Traps
- BIOS Setup - Boot Sequence (Only on *xx1x* systems for this release)
- BIOS Setup - Trusted Platform Module (TPM) Security
- Network Interface - MAC Address
- Network Interface - Internet Protocol (IP) Address
- Network Interface - Operational status
- Network Interface - Maximum Transfer Unit size
- Network Interface - DMA
- Network Interface - Administrative status
- Preferences - SNMP Configuration
- Remote Shutdown - Power Cycle System with Shutdown OS First
- Power Management - Profiles
- Processors - Capabilities - Demand Based Switching(DBS) (Only on *xx1x* systems for this release)

## Modular Enclosure



**NOTE:** For the purposes of Server Administrator, "modular enclosure" refers to a system that may contain one or more modular systems that appear as a separate Server Module in the system tree. Like a stand-alone Server Module, a Modular Enclosure contains all of the essential components of a system. The only difference is that there are slots for at least two Server Modules within a larger container, and each of them is as complete a system as a Server Module.

To view the modular system's Chassis information and Chassis Management Controller (CMC) information, click the **Modular Enclosure** object.

## Properties

### Subtabs: Information

Under the **Properties** tab, you can:

- View the chassis information for the modular system being monitored.
- View detailed Chassis Management Controller (CMC) information for the modular system being monitored.

### Accessing and Using Chassis Management Controller

To link to the Chassis Management Controller **Log in** window from the Server Administrator home page, click the **Modular Enclosure** object, click the **CMC Information** tab, and then click **Launch the CMC Web Interface**. The **CMC Log in** window appears. After connecting to the CMC you can monitor and manage your modular enclosure.

### System/Server Module

The **System/Server Module** object contains three main system component groups: "Main System Chassis/Main System," "Software," and "Storage." The Server Administrator home page defaults to the **System** object of the system tree view. Most administrative functions can be managed from the **System/Server Module** object action window. The **System/Server Module** object action window has the following tabs, depending on the user's group privileges: **Properties**, **Shutdown**, **Logs**, **Alert Management**, and **Session Management**.

The **Session Management** tab can be viewed once you log in to manage the Server Administrator Web server. See "Managing Server Administrator Web Server" for details on logging in.

## Properties

### Subtabs: Health | Summary | Asset Information | Auto Recovery

Under the **Properties** tab, you can:

- View the current health alert status for hardware and software components in the **Main System Chassis/Main System** object and the **Storage** object.
- View detailed summary information for all components in the system being monitored.

- View and configure asset information for the system being monitored.
- View and set the Automatic System Recovery (OS watchdog timer) actions for the system being monitored.

 **NOTE:** Automatic System Recovery options may not be available because the operating system watchdog timer is enabled in BIOS. To configure the auto recovery options, the operating system watchdog timer must be disabled.

 **NOTE:** Automatic System Recovery actions may not execute exactly per the time-out period ( $n$  seconds) when the watchdog identifies a system that has stopped responding. The action execution time ranges from  $n-h+1$  to  $n+1$  seconds, where  $n$  is the time-out period and  $h$  is the heart beat interval. The value of the heart beat interval is 7 seconds when  $n \leq 30$  and 15 seconds when  $n > 30$ .

 **NOTE:** The functionality of the watchdog timer feature cannot be guaranteed when an uncorrectable memory event occurs in the system DRAM Bank\_1. If an uncorrectable memory event occurs in this location, the BIOS code resident in this space may become corrupted. Because the watchdog feature uses a call to BIOS to effect the shutdown or reboot behavior, the feature may not work properly. If this occurs, you must manually reboot the system.

## Shutdown

Subtabs: Remote Shutdown | Thermal Shutdown | Web Server Shutdown

The Web Server Shutdown tab can be accessed only when you are logged in to the Server Administrator Web Server. See "Managing Server Administrator Web Server" for details.

Under the **Shutdown** tab, you can:

- Configure the operating system shutdown and remote shutdown options.
- Set the thermal shutdown severity level to shut down your system in the event that a temperature sensor returns a warning or failure value.

 **NOTE:** A thermal shutdown occurs only when the temperature reported by the sensor goes above the temperature threshold. A thermal shutdown does not occur when the temperature reported by the sensor goes below the temperature threshold.

- Shut down the DSM SA Connection Service (Web server).

 **NOTE:** The DSM SA Connection Service starts automatically after a reboot, so you must shut down the DSM SA Connection Service every time a system starts up.

## Logs

### Subtabs: Hardware | Alert | Command

Under the **Logs** tab, you can:

- View the Embedded System Management (ESM) log or the System Event Log (SEL) for a list of all events related to your system's hardware components. The status indicator icon next to the log name will change from normal status () to noncritical status() when the log file reaches 80 percent capacity. On Dell™ PowerEdge™ x8xx, x9xx and xx1x systems, the status indicator icon next to the log name will change to critical status () when the log file reaches 100 percent capacity.



**NOTE:** Dell recommends that you clear the hardware log when it reaches 80 percent capacity. If the log is allowed to reach 100 percent capacity, the latest events are discarded from the log.

- View the Alert log for a list of all events generated by the Server Administrator Instrumentation Service and Storage Management Service in response to changes in the status of sensors and other monitored parameters.



**NOTE:** See the *Server Administrator Messages Reference Guide* for a complete explanation of each alert event ID's corresponding description, severity level, and cause.

- View the Command log for a list of each command executed from the **Server Administrator** home page.



**NOTE:** See "Server Administrator Logs" for complete instructions on viewing, printing, saving, and e-mailing logs.

## Alert Management

### Subtabs: Platform Events

Under the **Alert Management** tab, you can:

- View current alert actions settings and set the alert actions that you want to be performed in the event that a system component sensor returns a warning or failure value.

## Session Management

The Session Management tab can be accessed only when you are logged in to the Server Administrator Web Server. See 'Managing Server Administrator Web Server' for details.

### Subtabs: Session

Under the **Session Management** tab, you can:

- View session information for current users that have logged in to Server Administrator.
- Terminate user sessions.



**NOTE:** Only users with administrative privileges can view the Session Management page and terminate session(s) of logged-in users.

## Main System Chassis/Main System

Click the **Main System Chassis/Main System** object to manage your system's essential hardware and software components.

The available components are:

- AC Switch
- Batteries
- BIOS
- Fans
- Firmware
- Hardware Performance
- Intrusion
- Memory
- Network
- Ports
- Power Management
- Power Supplies
- Processors
- Remote Access

- Slots
- Temperatures
- Voltages



**NOTE:** **AC Switch** is supported on limited systems, **Batteries** is supported only on Dell PowerEdge *x9xx* and Dell *xx0x* systems, **Hardware Performance** is supported only on Dell *xx0x* systems, **Power Management** is supported on limited Dell *xx0x* systems, while **Power Supplies** is not available on Dell PowerEdge *1900* systems.

The system/server module may contain one main system chassis or several chassis. The main system chassis/main system contains the essential components of a system. The **Main System Chassis/Main System** object action window has the following tab: **Properties**.

### Properties

**Subtabs:** **Health** | **Information** | **System Components (FRU)** | **Front Panel**

Under the **Properties** tab, you can:

- View the health or status of hardware components and sensors. Each listed component has a "System/Server Module Component Status Indicators" icon next to its name. A green check mark () indicates that a component is healthy (normal). A yellow triangle containing an exclamation point () indicates that a component has a warning (noncritical) condition and requires prompt attention. A red X () indicates a component has a failure (critical) condition and requires immediate attention. A blank space () indicates that a component's health status is unknown. The available monitored components include:
  - AC Switch
  - Batteries
  - Fans
  - Hardware Log
  - Intrusion
  - Memory
  - Power Management
  - Power Supplies
  - Processors

- Temperatures
- Voltages
- View information about the main system chassis attributes.
- View detailed information about the field-replaceable units (FRUs) installed in your system (under the **System Components (FRU)** subtab.)
- Enable or disable the managed system's front panel buttons, namely Power button and Non-Masking Interrupt (NMI) button (if present on the system).

### ***AC Switch***

Click the **AC Switch** object to display key features of your system's AC failover switch. The **AC Switch** object action window can have the following tab, depending on the user's group privileges: **Properties**.

#### **Properties**

##### **Subtab: Information**

Under the **Properties** tab, you can view AC switch redundancy information and view information about the AC power lines.

### ***Batteries***

Click the **Batteries** object to view information about your system's installed batteries. Batteries maintain the time and date when your system is turned off. The battery saves the system's BIOS setup configuration, which allows the system to reboot efficiently. The **Batteries** object action window can have the following tabs, depending on the user's group privileges.

#### **Properties**

##### **Subtab: Information**

Under the **Properties** tab, you can view the current readings and status of your system's batteries.

### ***BIOS***

Click the **BIOS** object to manage key features of your system's BIOS. Your system's BIOS contains programs stored on a flash memory chip set that control communications between the microprocessor and peripheral devices, such as the keyboard and the video adapter, and other miscellaneous functions,

such as system messages. The **BIOS** object action window can have the following tabs, depending on the user's group privileges: **Properties** and **Setup**.

## Properties

### Subtab: Information

Under the **Properties** tab, you can view BIOS information.

## Setup

### Subtab: BIOS

Under the **Setup** tab, you can set the state for each BIOS setup object.



**NOTE:** Setting the boot sequence to **Device List** on the **Setup** tab results in the following boot sequence: diskette, IDE CD drive, hard drive, option ROMs (if the devices are available).

You can modify the state of many BIOS setup features including but not limited to the Serial Port, Network Interface Controller cards, Boot Sequence, User Accessible USB Ports, CPU Virtualization Technology, CPU HyperThreading, AC Power Recovery Mode, Embedded SATA Controller, Console Redirection, and Console Redirection Failsafe Baud Rate. You can also configure internal USB device, Trusted Platform Module (TPM) settings, optical drive controller settings, automatic system recovery (ASR) Watchdog Timer, embedded hypervisor and additional LAN network ports on motherboard information.

Depending upon your specific system configuration, additional setup items may be displayed. However, some BIOS setup options may be shown on the F2 BIOS Setup screen that are not accessible in Server Administrator.



**NOTE:** The NIC configuration information within the Server Administrator **BIOS** setup may be inaccurate for embedded NICs. Using the **BIOS** setup screen to enable or disable NICs might produce unexpected results. It is recommended that you perform all configurations for embedded NICs through the actual **System Setup** screen that is available by pressing <F2> while a system is booting.



**NOTE:** The BIOS Setup tab for your system only displays the BIOS features that are supported on your system.

## ***Fans***

Click the **Fans** object to manage your system fans. Server Administrator monitors the status of each system fan by measuring fan rpms. Fan probes report rpms to the Server Administrator Instrumentation Service. When you select **Fans** from the device tree, details appear in the data area in the right-hand pane of the Server Administrator home page. The **Fans** object action window can have the following tabs, depending on the user's group privileges.

### **Properties**

**Subtabs:** Fan Probes | Fan Control

Under the **Properties** tab, you can:

- View the current readings for your system's fan probes and configure minimum and maximum values for fan probe warning threshold.
  -  **NOTE:** Some fan probe fields differ according to the type of firmware your system has: BMC or ESM. Some threshold values are not editable on BMC-based systems.
- Select fan control options.

## ***Firmware***

Click the **Firmware** object to manage your system firmware. Firmware consists of programs or data that have been written to ROM. Firmware can boot and operate a device. Each controller contains firmware that helps provide the controller's functionality. The **Firmware** object action window can have the following tab, depending on the user's group privileges: **Properties**.

### **Properties**

**Subtab:** Information

Under the **Properties** tab, you can view your system's firmware information.

## ***Hardware Performance***

Click the **Hardware Performance** object to view the status and cause for the system's performance degradation. The **Hardware Performance** object action window can have the following tab, depending on the user's group privileges:

## Properties.

Table 5-1 lists the possible values for status and cause of a probe:

**Table 5-1. Possible Values for Status and Cause of a Probe**

<b>Status Values</b>	<b>Cause Values</b>
Degraded	User Configuration Insufficient Power Capacity Unknown Reason
Normal	[N/A]

## Properties

### Subtab: Information

Under the **Properties** tab, you can view the details of system's performance degradation.

### ***Intrusion***

Click the **Intrusion** object to manage your system's chassis intrusion status. Server Administrator monitors chassis intrusion status as a security measure to prevent unauthorized access to your system's critical components. Chassis intrusion indicates that someone is opening or has opened the cover to the system's chassis. The **Intrusion** object action window can have the **Properties** tab depending on the user's group privileges.

## Properties

### Subtab: Intrusion

Under the **Properties** tab, you can view the chassis intrusion status.

### ***Memory***

Click the **Memory** object to manage your system's memory devices. Server Administrator monitors the memory device status for each memory module present in the monitored system. Memory device prefailure sensors monitor memory modules by counting the number of ECC memory corrections. Server Administrator also monitors memory redundancy information if your system supports this feature. The **Memory** object action window can have the **Properties** tab depending on the user's group privileges.

## Properties

### Subtab: Memory

Under the **Properties** tab, you can view memory attributes, memory device details, and memory device status.



**NOTE:** If a system with spare bank memory enabled enters a redundancy lost state, it may not be apparent which memory module is the cause. If you cannot determine which DIMM to replace, see the *switch to spare memory bank detected* log entry in the ESM system log to find which memory module failed.

## **Network**

Click the **Network** object to manage your system's NICs. Server Administrator monitors the status of each NIC present in your system to ensure continuous remote connection. The **Network** object action window can have the **Properties** tab, depending on the user's group privileges.

## Properties

### Subtab: Information

Under the **Properties** tab, you can view information about the NICs installed on your system.



**NOTE:** In the 'IPv6 Addresses' section, Server Administrator will display only two addresses, in addition to the link-local address.

## **Ports**

Click the **Ports** object to manage your system's external ports. Server Administrator monitors the status of each external port present in your system. The **Ports** object action window can have the following tab, depending on the user's group privileges: **Properties**.

## Properties

### Subtab: Information

Under the **Properties** tab, you can view information about your system's internal and external ports.

## ***Power Management***

### **Monitoring**

#### **Subtabs: Consumption | Statistics**

Under the Consumption tab you can view and manage your system's Power Consumption information in Watts and BTU/hr.

**BTU/hr=Watt X 3.413** (Value rounded off to the nearest whole number)

Server Administrator monitors power consumption status, amperage, and tracks power statistic details.

You can also view the System Instantaneous Headroom and System Peak Headroom. The values are displayed in both Watts and BTU/hr (British Thermal Unit). Power thresholds can be set in Watts and BTU/hr.

The Statistics tab allows you to view and reset your system's Power tracking statistics like energy consumption, system peak power, and system peak amperage.

### **Management**

#### **Subtab: Budget**

The Budget tab allows you to view the Power Inventory attributes like System Idle Power and System Maximum Potential Power in Watts and BTU/hr. You can also use the Power Budget option to Enable Power Cap and set the Power Cap for your system.

Certain Power Management features may be available only on systems enabled with the Power Management Bus (PMBus).

## ***Power Supplies***

Click the Power Supplies object to manage your system's power supplies. Server Administrator monitors power supply status, including redundancy, to ensure that each power supply present in your system is functioning properly. The Power Supplies object action window can have the following tabs, depending on the user's group privileges.

## Properties

### Subtab: Elements

Under the **Properties** tab, you can:

- View information about your power supply redundancy attributes.
- Check the status of individual power supply elements, including the Rated Input Wattage and Maximum Output Wattage. The Rated Input Wattage attribute will be displayed only on PMBus systems starting *xx1x*.

### ***Processors***

Click the **Processors** object to manage your system's microprocessor(s). A processor is the primary computational chip inside a system that controls the interpretation and execution of arithmetic and logic functions. The **Processors** object action window can have the **Properties** tabs depending on the user's group privileges.

## Properties

### Subtab: Information

Under the **Properties** tab, you can view information about your system's microprocessor(s) and access detailed capabilities and cache information.

### ***Remote Access***

Click the **Remote Access** object to manage the Baseboard Management Controller (BMC) or Integrated Dell Remote Access Controller (iDRAC) features and Remote Access Controller features.

Selecting Remote Access tab allows you to manage the BMC/iDRAC features such as, general information on the BMC/iDRAC. You can also manage the configuration of the BMC/iDRAC on a local area network (LAN), serial port for the BMC/iDRAC, terminal mode settings for the serial port, BMC/iDRAC on a serial over LAN connection, and BMC/iDRAC users.



**NOTE:** BMC is supported in Dell PowerEdge *x8xx* and *x9xx* systems and iDRAC is supported in Dell *xx0x* and *xx1x* systems only.



**NOTE:** If an application other than Server Administrator is used to configure the BMC/iDRAC while Server Administrator is running, the BMC/iDRAC configuration data displayed by Server Administrator may become asynchronous with the BMC/iDRAC. It is recommended that Server Administrator be used to configure the BMC/iDRAC while Server Administrator is running.

DRAC allows you to access your system's remote system management capabilities. The Server Administrator DRAC provides remote access to inoperable systems, alert notification when a system is down, and the ability to restart a system.

The **Remote Access** object action window can have the following tabs, depending on the user's group privileges: **Properties**, **Configuration**, and **Users**.

## Properties

### Subtab: Information

Under the **Properties** tab, you can view general information on the remote access device. You can also view the attributes of the IPv4 and IPv6 addresses.

Click **Reset to Defaults** to reset all the attributes to their system default values.

## Configuration

### Subtabs: LAN | Serial Port | Serial Over LAN | Additional Configuration

Under the **Configuration** tab when BMC/iDRAC is configured, you can configure the BMC/iDRAC on a LAN, serial port for BMC/iDRAC, and BMC/iDRAC on a serial over LAN connection.

Under the **Configuration** tab, when DRAC is configured, you can:

- Configure network properties



**NOTE:** The **Enable NIC**, **NIC Selection**, and **Encryption Key** fields display only on Dell PowerEdge x9xx systems.

Under the Additional Configuration tab you will be able to either enable or disable IPv4/IPv6 properties.



**NOTE:** Enabling/disabling IPv4/IPv6 is possible only in a dual stack environment (where both the IPv4 and IPv6 stacks are loaded).

## Users

### Subtab: Users

Under the **Users** tab, you can modify the remote access user configuration. You can add, configure, and view information about Remote Access Controller users.



**NOTE:** On the Dell PowerEdge x9xx systems:

- Ten user IDs are displayed. If a DRAC card is installed, sixteen user IDs are displayed.
- Serial Over LAN Payload column is displayed.

### ***Slots***

Click the **Slots** object to manage the connectors or sockets on your system board that accept printed circuit boards, such as expansion cards. The **Slots** object action window has the **Properties** tab.

### Properties

#### Subtab: Information

Under the **Properties** tab, you can view information about each slot and installed adapter.

### ***Temperatures***

Click the **Temperatures** object to manage your system temperature in order to prevent thermal damage to your system's internal components. Server Administrator monitors the temperature in a variety of locations in your system's chassis to ensure that temperatures inside the chassis do not become too high. The **Temperatures** object action window displays the **Properties** tab, depending on the user's group privileges.

## Properties

### Subtab: Temperature Probes

Under the **Properties** tab, you can view the current readings and status for your system's temperature probes and configure minimum and maximum values for temperature probe warning threshold.



**NOTE:** Some temperature probe fields differ according to the type of firmware your system has: BMC or ESM. Some threshold values are not editable on BMC-based systems. When assigning probe threshold values, Server Administrator sometimes rounds the minimum or maximum values you enter to the closest assignable value.



**NOTE:** Users can set minimum and maximum temperature probe threshold values for an external chassis to whole numbers only. If users attempt to set either the minimum or maximum temperature probe threshold value to a number that contains a decimal, only the whole number before the decimal place is saved as the threshold setting.

## *Voltages*

Click the **Voltages** object to manage voltage levels in your system. Server Administrator monitors voltages across critical components in various chassis locations in the monitored system. The **Voltages** object action window can have the **Properties** tabs depending on the user's group privileges.

## Properties

### Subtab: Voltage Probes

Under the **Properties** tab, you can view the current readings and status for your system's voltage probes and configure minimum and maximum values for voltage probe warning threshold.



**NOTE:** Some voltage probe fields differ according to the type of firmware your system has: BMC or ESM. Some threshold values are not editable on BMC-based systems.

## ***Software***

Click the **Software** object to view detailed version information about the managed system's essential software components, such as the operating system and the systems management software. The **Software** object action window has the following tab, depending on the user's group privileges: **Properties**.

### **Properties**

#### **Subtab: Summary**

Under the **Properties** tab, you can view a summary of the monitored system's operating system and system management software.

## ***Operating System***

Click the **Operating System** object to view basic information about your operating system. The **Operating System** object action window has the following tab, depending on the user's group privileges: **Properties**.

### **Properties**

#### **Subtab: Information**

Under the **Properties** tab, you can view basic information about your operating system.

## ***Storage***

Server Administrator provides the Storage Management Service:

The Storage Management Service provides features for configuring storage devices. In most cases, the Storage Management Service is installed using Typical Setup.

When the Storage Management Service is installed, click the **Storage** object to view the status and settings for various attached array storage devices, system disks, and so on.

In the case of Storage Management Service, the **Storage** object action window has the following tab, depending on the user's group privileges: **Properties**.

### **Properties**

#### **Subtab: Health**

Under the **Properties** tab, you can view the health or status of attached storage components and sensors such as array subsystems and operating system disks.



# Working With Remote Access Controller



**NOTE:** Baseboard Management Controller (BMC) is supported on Dell™ PowerEdge™ x8xx and x9xx systems and the Integrated Dell Remote Access Controller (iDRAC) is supported on Dell xx0x and xx1x systems.

## Overview

This chapter provides information on accessing and using the remote access features of BMC/iDRAC and DRAC.

The Dell systems baseboard management controller (BMC)/Integrated Dell Remote Access Controller (iDRAC) monitors the system for critical events by communicating with various sensors on the system board and sends alerts and log events when certain parameters exceed their preset thresholds. The BMC/iDRAC supports the industry-standard Intelligent Platform Management Interface (IPMI) specification, enabling you to configure, monitor, and recover systems remotely.

The DRAC is a systems management hardware and software solution designed to provide remote management capabilities, crashed system recovery, and power control functions for Dell systems.

By communicating with the system's baseboard management controller (BMC)/ Integrated Dell Remote Access Card (iDRAC), the DRAC can be configured to send you e-mail alerts for warnings or errors related to voltages, temperatures, and fan speeds. The DRAC also logs event data and the most recent crash screen (available only on systems running Microsoft® Windows® operating system) to help you diagnose the probable cause of a system crash.

The Remote Access Controller provides remote access to an inoperable system, allowing you to get the system up and running as quickly as possible. The Remote Access Controller also provides alert notification when a system is down and allows you to remotely restart a system. Additionally, the Remote Access Controller logs the probable cause of system crashes and saves the most recent crash screen.

You can log in to the Remote Access Controller through the Server Administrator home page or by directly accessing the controller's IP address using a supported browser.

When using the Remote Access Controller, you can click **Help** on the global navigation bar for more detailed information about the specific window you are viewing. Remote Access Controller help is available for all windows accessible to the user based on user privilege level and the specific hardware and software groups that Server Administrator discovers on the managed system.

-  **NOTE:** See the Dell Remote Access Controller 4 User's Guide for more information on using DRAC 4 or Dell Remote Access Controller 5 User's Guide for more information on using DRAC 5.
-  **NOTE:** See the Dell OpenManage™ Baseboard Management Controller Utilities User's Guide for more information about the BMC.
-  **NOTE:** See the Integrated Dell Remote Access Controller User's Guide for detailed information on configuring and using the iDRAC.

Table 6-1 lists the GUI field names and the applicable system, when Server Administrator is installed on the system.

**Table 6-1. System Availability for the Following GUI Field Names**

GUI Field Name	Applicable System
Modular Enclosure	Modular System
Server module	Modular System
Main System	Modular System
System	Non-Modular System
Main system Chassis	Non-Modular System

See the *Dell™ OpenManage™ Server Administrator Installation Guide* for VMware® ESXi 3.5 for more information on the systems support for remote access devices.

Server Administrator allows remote, in-band access to event logs, power control, and sensor status information and provides the ability to configure the BMC/iDRAC. You can manage BMC/iDRAC and DRAC through the Server Administrator graphical user interface by clicking the **Remote Access** object, which is a subcomponent of the **Main System Chassis/Main System** group. You can perform the following tasks:

- View basic information
- Configure the remote access device on a LAN connection

- Configure the remote access device on a serial over LAN connection
- Configure the remote access device on a serial port connection
- Configure Additional remote access device properties
- Configure users on the remote access device
- Set platform event filter alerts

You can view BMC/iDRAC or DRAC information based on which hardware is providing the remote access capabilities for the system.

In addition, the Server Administrator Instrumentation Service allows you to manage the Platform Event Filters (PEF) parameters and alert destinations.



**NOTE:** You can view BMC data on Dell PowerEdge x8xx and x9xx systems only.

## Viewing Basic Information

You can view basic information about the BMC/iDRAC, IPv4 Address, and DRAC. You can also reset the BMC settings to their default values. To do this:



**NOTE:** You must be logged in with Administrator privileges to reset the BMC settings.

Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.

The **Remote Access** page displays the following base information of the system's BMC:

### Remote Access Device

- Device type
- IPMI Version
- System GUID
- Number of Possible Active Sessions
- Number of Current Active Sessions
- LAN Enabled
- SOL Enabled
- MAC Address

## IPv4 Address

- IP Address Source
- IP Address
- IP Subnet
- IP Gateway

## IPv6 Address

- IP Address Source
- IPv6 Address 1
- Default Gateway
- IPv6 Address 2
- Link Local Address
- DNS Address Source
- Preferred DNS Server
- Alternate DNS Server



**NOTE:** You will be able to view IPv4 and IPv6 address details only if you enable the IPv4 and IPv6 address properties under **Additional Configuration** in the **Remote Access** tab.

# Configuring the Remote Access Device to use a LAN Connection



**NOTE:** The **LAN** configuration fields are displayed as read-only if they are configured as *disabled* for inband users.

You can configure the remote access device for communication over a LAN connection. To do this:

- 1 Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.
- 2 Click the **Configuration** tab.

### 3 Click LAN.

The **LAN Configuration** window appears.

 **NOTE:** BMC/iDRAC management traffic will not function properly if the LAN on motherboard (LOM) is teamed with any network adapter add-in-cards.

### 4 Configure the following NIC configuration details:

- Enable NIC (This option is available on Dell PowerEdge x9xx systems and when DRAC is installed. Select this option for NIC teaming. In Dell PowerEdge x9xx systems, you can team NICs for added redundancy.)

 **NOTE:** Your DRAC contains an integrated 10BASE-T/100BASE-T Ethernet NIC and supports TCP/IP. The NIC has a default address of 192.168.20.1 and a default gateway of 192.168.20.1.

 **NOTE:** If your DRAC is configured to the same IP address as another NIC on the same network, an IP address conflict occurs. The DRAC stops responding to network commands until the IP address is changed on the DRAC. The DRAC must be reset even if the IP address conflict is resolved by changing the IP address of the other NIC.

 **NOTE:** Changing the IP address of the DRAC causes the DRAC to reset. If SNMP polls the DRAC before it initializes, a temperature warning is logged because the correct temperature is not transmitted until the DRAC is initialized.

- NIC Selection

 **NOTE:** **NIC Selection** cannot be configured on modular systems.

- Enable IPMI Over LAN
- IP Address Source
- IP Address
- Subnet Mask
- Gateway Address
- Channel Privilege Level Limit
- New Encryption Key (This option is available on Dell PowerEdge x9xx systems.)

5 Configure the following optional VLAN configuration details:

 **NOTE:** VLAN configuration is not applicable for systems with iDRAC.

- Enable VLAN ID
- VLAN ID
- Priority

6 Configure the following IPv4 Properties:

- IP Address Source
- IP Address
- Subnet Mask
- Gateway Address

7 Configure the following IPv6 Properties:

- IP Address Source
- IP Address
- Prefix Length
- Default Gateway
- DNS Address Source
- Preferred DNS Server
- Alternate DNS Server

 **NOTE:** You will be able to configure the IPv4 and IPv6 address details only if you enable the IPv4 and IPv6 properties under **Additional Configuration**.

8 Click **Apply Changes**.

# Configuring the Remote Access Device to use a Serial Port Connection

You can configure the BMC for communication over a serial port connection. To do this:

- 1 Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.
- 2 Click the **Configuration** tab.
- 3 Click **Serial Port**.

The **Serial Port Configuration** window appears.

- 4 Configure the following details:
  - Connection Mode Setting
  - Baud Rate
  - Flow Control
  - Channel Privilege Level Limit

- 5 Click **Apply Changes**.

- 6 Click **Terminal Mode Settings**.

In the **Terminal Mode Settings** window, you can configure terminal mode settings for the serial port.

Terminal mode is used for Intelligent Platform Interface Management (IPMI) messaging over the serial port using printable ASCII characters. Terminal mode also supports a limited number of text commands to support legacy, text-based environments. This environment is designed so that a simple terminal or terminal emulator can be used.

- 7 Specify the following customizations to increase compatibility with existing terminals:
  - Line Editing
  - Delete Control
  - Echo Control
  - Handshaking Control

- New Line Sequence
  - Input New Line Sequence
- 8** Click **Apply Changes**.
  - 9** Click **Back To Serial Port Configuration Window** to go to back to the Serial Port Configuration window.

## Configuring the Remote Access Device to use a Serial Over LAN Connection

You can configure the BMC/iDRAC for communication over a serial over LAN (SOL) connection. To do this:

- 1** Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.

- 2** Click the **Configuration** tab.

- 3** Click **Serial Over LAN**.

The **Serial Over LAN Configuration** window appears.

- 4** Configure the following details:

- Enable Serial Over LAN
- Baud Rate
- Minimum Privilege Required

- 5** Click **Apply Changes**.

- 6** Click **Advanced Settings** to further configure BMC.

- 7** In the **Serial Over LAN Configuration Advanced Settings** window, you may configure the following information:

- Character Accumulate Interval
- Character Send Threshold

- 8** Click **Apply Changes**.

- 9** Click **Go Back to Serial Over LAN Configuration** to return to the **Serial Over LAN Configuration** window.

## Additional Configuration for iDRAC

You can configure the IPv4 and IPv6 properties using the Additional Configuration tab. To do this:

- 1 Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.
- 2 Click the **Configuration** tab.
- 3 Click **Additional Configuration**.
- 4 Configure the IPv4 and IPv6 properties as **Enabled** or **Disabled**.
- 5 Click **Apply Changes**.

## Configuring Remote Access Device Users

Remote access device users can be configured using the **Remote Access** page. To access this page:

- 1 Click the **Modular Enclosure**→**System/Server Module**→**Main System Chassis/Main System**→**Remote Access** object.

- 2 Click the **Users** tab.

The **Remote Access Users** window displays information about users that can be configured as BMC/iDRAC users.

- 3 Click **User ID** to configure a new or existing BMC/iDRAC user.

The **Remote Access User Configuration** window allows you to configure a specific BMC/iDRAC user.

- 4 Specify the following general information:
  - Select **Enable User** to enable the user.
  - Enter the name for the user in the **User Name** field.
  - Select the **Change Password** check box.
  - Enter a new password in the **New Password** field.
  - Re-enter the new password in the **Confirm New Password** field.

- 5 Specify the following user privileges:
  - Select the maximum LAN user privilege level limit.
  - Select the maximum serial port user privilege granted.
  - On Dell PowerEdge x9xx systems, select Enable Serial Over LAN to enable Serial Over LAN.
- 6 Specify the following iDRAC user privileges.
- 7 Click **Apply Changes** to save changes.
- 8 Click **Back to Remote Access User Window** to go back to the **Remote Access Users** window.



**NOTE:** Six additional user entries are configurable when DRAC is installed. This results in a total of 16 users. The same username and password rules apply to BMC/iDRAC and RAC users. When DRAC/iDRAC6 is installed, all the 16 users entries are allocated to DRAC.

## Setting Platform Event Filter Alerts

You can use the Server Administrator Instrumentation Service to configure the most relevant BMC features, such as Platform Event Filter (PEF) parameters and alert destinations. To do this:

- 1 Click the **System** object.
- 2 Click the **Alert Management** tab.
- 3 Click **Platform Events**.

The **Platform Events** window allows you to take individual action on specific platform events. You can select those events for which you want to take shutdown actions and generate alerts for selected actions. You can also send alerts to specific IP address destinations of your choice.



**NOTE:** You must be logged in with Administrator privileges to configure the BMC Platform Event Filter Alerts.



**NOTE:** The **Enable Platform Event Filters Alerts** setting disables or enables platform event filter alert generation. It is independent of the individual platform event alert settings.

 **NOTE:** System Power Probe Warning and System Power Probe Failure are not supported on Dell systems without PMBus support although Server Administrator allows you to configure them.

 **NOTE:** On Dell PowerEdge 1900 systems, the PS/VRM/D2D Warning, PS/VRM/D2D Failure, and Power Supply Absent Platform Event Filters are not supported even though Server Administrator allows you to configure these Event Filters.

- 4 Choose the platform event for which you want to take shutdown actions or generate alerts for selected actions and click **Set Platform Events**.

The **Set Platform Events** window allows you to specify the actions to be taken if the system is to be shut down in response to a platform event.

- 5 Select one of the following actions:

- **None**  
Takes no action when the operating system is hung or has crashed.
- **Reboot System**  
Shuts down the operating system and initiates system startup, performing BIOS checks and reloading the operating system.
- **Power Cycle System**  
Turns the electrical power to the system off, pauses, turns the power on, and reboots the system. Power cycling is useful when you want to reinitialize system components such as hard drives.
- **Power Off System**  
Turns off the electrical power to the system.
- **Power Reduction**  
Throttles the CPU.

 **CAUTION:** If you select a Platform Event shutdown action other than **None** or **Power Reduction**, your system will shut down forcefully when the specified event occurs. This shutdown is initiated by firmware and is done without first shutting down the operating system or any running applications.

- 6 Select the **Generate Alert** check box for the alerts to be sent.

 **NOTE:** To generate an alert, you must select both **Generate Alert** and the **Enable Platform Events Alerts** settings.

- 7 Click **Apply Changes**.
- 8 Click **Go Back to Platform Events Page** to go back to the **Platform Event Filters** window.

## Setting Platform Event Alert Destinations

You can also use the **Platform Event Filters** window to select a destination where an alert for a platform event is to be sent. Depending on the number of destinations that are displayed, you can configure a separate IP address for each destination address. A platform event alert will be sent to each destination IP address that you configure.

- 1 Click **Configure Destinations** in the **Platform Event Filters** window.  
The **Configure Destinations** window displays a number of destinations.
- 2 Click the number of the destination you want to configure.  
 **NOTE:** The number of destinations that you can configure on a given system may vary.
- 3 Select the **Enable Destination** check-box.
- 4 Click **Destination Number** to enter an individual IP address for that destination. This IP address is the IP address to which the platform event alert will be sent.
- 5 Enter a value in the **Community String** field to act as a password to authenticate messages sent between a management station and a managed system. The community string (also called the community name) is sent in every packet between the management station and a managed system.
- 6 Click **Apply Changes**.
- 7 Click **Go Back to Platform Events Page** to go back to the **Platform Event Filters** window.

# Server Administrator Logs

## Overview

Server Administrator allows you to view and manage hardware, alert, and command logs. All users can access logs and print reports from the Server Administrator home page. Users must be logged in with Administrator privileges to clear logs or must be logged in with Administrator or Power User privileges to e-mail logs to their designated service contact.

When viewing Server Administrator logs, you can click **Help** on the global navigation bar for more detailed information about the specific window you are viewing. Server Administrator log help is available for all windows accessible to the user based on user privilege level and the specific hardware and software groups that Server Administrator discovers on the managed system.

## Integrated Features

Clicking a column heading sorts by the column or changes the sort direction of the column. Additionally, each log window contains several task buttons that can be used for managing and supporting your system.

### Log Window Task Buttons

- Click **Print** to print a copy of the log to your default printer.
- Click **Export** to save a text file containing the log data (with the values of each data field separated by a customizable delimiter) to a destination you specify.
- Click **Email** to create an e-mail message that includes the log content as an attachment.
- Click **Clear Log** to erase all events from the log.
- Click **Save As** to save the log content in a .zip file.
- Click **Refresh** to reload the log content in the action window data area.

See "Task Buttons" for additional information about using the task buttons.

# Server Administrator Logs

Server Administrator provides the following logs:

- "Hardware Log"
- "Alert Log"
- "Command Log"

## Hardware Log

Use the hardware log to look for potential problems with your system's hardware components. On Dell PowerEdge™ x8xx, x9xx, and xx1x systems, the hardware log status indicator will change to critical status () when the log file reaches 100 percent capacity. There are two available hardware logs, depending on your system: the Embedded System Management (ESM) log and the System Event Log (SEL). The ESM log and SEL are each a set of embedded instructions that can send hardware status messages to systems management software. Each component listed in the logs has a status indicator icon next to its name. A green check mark () indicates that a component is healthy (normal). A yellow triangle containing an exclamation point () indicates that a component has a warning (noncritical) condition and requires prompt attention. A red X () indicates that a component has a failure (critical) condition and requires immediate attention. A blank space ( ) indicates that a component's health status is unknown.

To access the hardware log, click **System**, click the **Logs** tab, and click **Hardware**.

Information displayed in the ESM and SEL logs includes:

- The severity level of the event
- The date and time that the event was captured
- A description of the event

## Maintaining the Hardware Log

The status indicator icon next to the log name on the Server Administrator homepage will change from normal status () to noncritical status () when the log file reaches 80 percent capacity. Be sure to clear the hardware log when it reaches 80 percent capacity. If the log is allowed to reach 100 percent capacity, the latest events are discarded from the log.

## Alert Log



**NOTE:** If the Alert log displays invalid XML data (for example, when the XML data generated for the selection is not well formed), click **Clear Log** and then redisplay the log information.

Use the Alert log to monitor various system events. The Server Administrator generates events in response to changes in the status of sensors and other monitored parameters. Each status change event recorded in the Alert log consists of a unique identifier called the event ID for a specific event source category and an event message that describes the event. The event ID and message uniquely describe the severity and cause of the event and provide other relevant information such as the location of the event and the monitored component's previous state.

To access the Alert log, click **System**, click the **Logs** tab, and click **Alert**.

Information displayed in the Alert log includes:

- The severity level of the event
- The event ID
- The date and time that the event was captured
- The category of the event
- A description of the event



**NOTE:** The log history may be required for future troubleshooting and diagnostic purposes. Therefore, it is recommended that you save the log files.

See the *Server Administrator Messages Reference Guide* for detailed information about alert messages.

## Command Log



**NOTE:** If the Command log displays invalid XML data (for example, when XML data generated for the selection is not well formed), click **Clear Log** and then redisplay the log information.

Use the Command log to monitor all of the commands issued by Server Administrator users. The Command log tracks logins, logouts, systems management software initialization, and shutdowns initiated by systems management software, and records the last time the log was cleared. The size of the command log file can be specified as per your requirement.

To access the Command log, click **System**, click the **Logs** tab, and click **Command**.

Information displayed in the Command log includes:

- The date and time that the command was invoked
- The user that is currently logged in to the Server Administrator home page
- A description of the command and its related values



**NOTE:** The log history may be required for future troubleshooting and diagnostic purposes. Therefore, it is recommended that you save the log files.

# Setting Alert Actions

## BMC/iDRAC Platform Events Filter Alert Messages

All possible Platform Event Filter (PEF) messages along with a description of each event is listed in Table 8-1.

**Table 8-1. PEF Alert Events**

<b>Event</b>	<b>Description</b>
Fan Probe Failure	The fan is running too slow or not at all.
Voltage Probe Failure	The voltage is too low for proper operation.
Discrete Voltage Probe Failure	The voltage is too low for proper operation.
Temperature Probe Warning	The temperature is approaching excessively high or low limits.
Temperature Probe Failure	The temperature is either too high or too low for proper operation.
Chassis Intrusion Detected	The system chassis has been opened.
Redundancy (PS or Fan) Degraded	Redundancy for the fans and/or power supplies has been reduced.
Redundancy (PS or Fan) Lost	No redundancy remains for the system's fans and/or power supplies.
Processor Warning	A processor is running at less than peak performance or speed.
Processor Failure	A processor has failed.
PPS/VRM/DCtoDC Warning	The power supply, voltage regulator module, or DC to DC converter is pending a failure condition.
Power Supply/VRM/D2D Failure	The power supply, voltage regulator module, or DC to DC converter has failed.

**Table 8-1. PEF Alert Events (continued)**

Event	Description
Hardware log is full or emptied	Either an empty or a full hardware log requires administrator attention.
Automatic System Recovery	The system is hung or is not responding and is taking an action configured by Automatic System Recovery.
System Power Probe Warning	The power consumption is approaching the failure threshold.
System Power Probe Failure	The power consumption has crossed the highest acceptable limit and has resulted in a failure.

## Understanding Service Names

The service executable and display names of the following services have changed:

**Table 8-2. Service Names**

Purpose	Service Name	Previous Release (prior to 5.0)	Current Release
Web Server			
	Display Name	Secure Port Server	DSM SA Connection Service
	Executable Name	Omaws[32 64]	dsm_om_connsvc[32 64] dsm_om_connsvc
Scheduling or Notification			
	Display Name	OM Common Services	DSM SA Shared Services
	Executable Name	Omsad[32 64]	dsm_om_shrsvc[32 64] dsm_om_shrsvc

# Troubleshooting

## Login Failure Scenarios

You may not be able to login to the Managed System if:

- you enter an invalid/incorrect IP address.
- you enter incorrect credentials (user name and password).
- the Managed System is not powered on.
- the Managed System is not reachable due to an invalid IP address or a DNS error.
- the Managed System has an untrusted certificate and you do not select the "Ignore Certificate Warning" in the login page.
- Server Administrator services are not enabled on the VMware ESXi 3.5 system. See the *Dell OpenManage Server Administrator Installation Guide for VMware ESXi 3.5* for information on how to enable Server Administrator Services on the VMware ESXi 3.5 system.
- the small footprint CIM broker daemon (SFCBD) service on the VMware ESXi 3.5 system is not running.
- the Web Server Management Service on the managed system is not running.

# Fixing a Faulty Server Administrator Installation on Supported Windows Operating Systems

To fix a faulty installation of Dell™ OpenManage™ Server Administrator:

- 1 Go to **Add/remove programs**, click on **Dell OpenManage Server Administrator** and select the **Repair** option.

Or

- 1 Download the required version of Server Administrator from the support site.

Run the installation package (double click the MSI). This installs the package in a maintenance mode. Choose the **Repair** option in the **Program Maintenance** screen.

## OpenManage Server Administrator Services

This table lists the services used by OMSA to provide systems management information and the impact of these services failing.

Tables A-1 and A-2 list the services used by Server Administrator to provide systems management information and the impact of these services failing.

**Table A-1. Server Administrator Web Server Service**

Service Name	Description	Impact of failure	Recovery Mechanism	Severity
Windows: DSM SA Connection Service (This service is installed with the Server Administrator Web server.)	Provides remote/local access to OMSA from any system with a supported Web browser and network connection.	Provides remote/local access to OMSA from any system with a supported Web browser and network connection.	Restart Service	Critical

**Table A-2. Managed system services**

<b>Service Name</b>	<b>Description</b>	<b>Impact of failure</b>	<b>Recovery Mechanism</b>	<b>Severity</b>
DSM SA Data Manager (dsm_sa_datamgr32d) (This service runs on the Managed system.)	Monitors the system, provides quicker access to detailed fault and performance information and allows remote administration of monitored systems, including shutdown, startup, and security.	Users will not be able to configure/view the hardware level details on GUI if these services are not running.	Restart Management Agents	Critical
DSM SA Event Manager (dsm_sa_eventmgr32d) (This service runs on the Managed system.)	Provides operating system and file event logging service for systems management and is also used by event log analyzers.	If this service is stopped, event logging features will not function properly.	Restart Management Agents	Warning



# Frequently Asked Questions

This section lists the frequently asked questions about OpenManage™ Server Administrator:



**NOTE:** These questions are not specific to this release of Server Administrator.

- 1** What is the minimum permission level a user would need to install OMSA?

You need to have a minimum permission level of **Administrator** to install OMSA. Power Users and Users do not have permissions to install OMSA.

- 2** Is there an upgrade path required to install OMSA?

For systems that have version 4.3, an upgrade path is not required. For systems that have a version older than 4.3, you need to first upgrade to version 4.3, and then again upgrade to a 5.x version (x indicates the version of OMSA you want to upgrade to).

- 3** How do I determine what is the latest version of OMSA available for my system?

Log on to: [support.dell.com](http://support.dell.com) → **Product Support** → **Manuals** → **Software** → **Systems Management** → **Dell OpenManage Server Administrator**

The latest documentation version reflects the version of OpenManage Server Administrator available for you.

- 4** How do I know what version of OMSA is running on my system?

Ans: After logging in to Server Administrator, navigate to **Properties** → **Summary**. You can find the version of Server Administrator installed on your system in the **Systems Management** column.

- 5** Are there other ports users can use apart from 1311?

Ans: Yes, you can set your preferred https port. Navigate to **Preferences** → **General Settings** → **Web Server** → **HTTPS Port**

Instead of **Use default**, click on the **Use** radio button to set your preferred port.

Note that changing the port number to an invalid or in-use port number might prevent other applications or browsers from accessing Server Administrator on the managed system. See the *Dell OpenManage Installation and Security User's Guide* for the list of default ports.

**6 Can I install OMSA on Fedora, College Linux, Mint, Ubuntu, Sabayon or PCLinux?**

Ans: No, Server Administrator does not support any of these Operating Systems.

**7 Can OMSA send e-mails when there is a problem?**

Ans: No, Server Administrator is not designed to send e-mails when there is a problem.

**8 Is SNMP Required for ITA Discovery, inventory and software updates on PowerEdge™ systems? Can CIM be used by itself for discovery, inventory, and updates or is SNMP required?**

*ITA communicating with Linux systems:*

SNMP is required on the Linux system for discovery, status polling and inventory.

Dell software updates are done through an SSH session and secure FTP and root level permissions/credentials are required for this discrete action and asked for when the action is setup or requested. Credentials from the discovery range are not assumed.

*ITA communicating with Windows systems:*

For servers (systems running Windows Server operating systems), the system may be configured with either or both of SNMP and CIM for discovery by ITA. Inventory requires CIM.

Software updates, as in Linux, are not related to discovery and polling and the protocols used.

Using administrator level credentials asked for at the time the update is scheduled or performed, an administrative (drive) share is established to a drive on the target system, and file(s) copying from somewhere (possibly another network share) is done to the target system. WMI functions are then invoked to execute the software update.

For clients/workstations, OMSA is not installed, so CIM discovery is used when the target is running the OpenManage Client Instrumentation.

For many other devices such as network printers, the standard is still SNMP to communicate with (primarily discover) the device.

Devices such as EMC storage have proprietary protocols. Some information about this environment can be gathered from looking at the ports used tables in the OpenManage documentation.

**9 Are there any plans for SNMP v3 support?**

No, there are no plans for SNMP v3 support in this release.

**10 Will an Underscore character in the domain name cause Server Admin login issues?**

Yes, an underscore character in the domain name is invalid. All other special characters (except the hyphen) are invalid too. You should use only case-insensitive alphabets and numerals.



# Glossary

The following list defines or identifies technical terms, abbreviations, and acronyms used in your system documents.

## **authentication**

The Server Administrator remote access controller has two methods of authenticating user access:

RAC authentication and local operating system authentication. RAC authentication is always enabled. Administrators can set up specific user accounts and passwords that allow access to the RAC.

Operating systems also require administrators to define different levels of users and user accounts; each user level has different privileges. Local operating system authentication on the RAC is an option for administrators who do not want to define one set of privileges for users in the operating system and a separate set of users and accounts for the RAC. If you enable local operating system authentication for the RAC, you enable any user with Administrator status on the operating system to log in to the RAC.

## **baud rate**

A measurement of data transmission speed. For example, modems are designed to transmit data at one or more specified baud rate(s) through the COM (serial) port of a system.

## **BMC**

Abbreviation for baseboard management controller, which is a controller that provides the intelligence in the IPMI structure.

## **BTU**

Abbreviation for British thermal unit.

## **CA**

Abbreviation for certification authority.

## **capability**

Refers to the actions that an object can perform, or actions that can be taken on a managed object. For example, if a card is hot-pluggable, it is capable of being replaced while the system power is on.

**CHAP**

Acronym for Challenge-Handshake Authentication Protocol, an authentication scheme used by PPP servers to validate the identity of the originator of the connection upon connection or any time later.

**CIM**

Acronym for Common Information Model, which is a model for describing management information from the DMTF. CIM is implementation independent, allowing different management applications to collect the required data from a variety of sources. CIM includes schemas for systems, networks, applications and devices, and new schemas will be added. It provides mapping techniques for interchange of CIM data with MIB data from SNMP agents.

**CMC**

Acronym for Chassis Management Controller.

**controller**

A chip that controls the transfer of data between the microprocessor and memory or between the microprocessor and a peripheral device such as a disk drive or the keyboard.

**control panel**

The part of the system that contains indicators and controls, such as the power switch, hard drive access indicator, and power indicator.

**cooling unit**

Sets of fans or other cooling devices in a system chassis.

**DBPM**

Abbreviation for Demand Based Power Management.

**DHCP**

Abbreviation for Dynamic Host Configuration Protocol, a protocol that provides a means to dynamically allocate IP addresses to computers on a LAN.

**DIMM**

Acronym for dual in-line memory module. A small circuit board containing DRAM chips that connects to the system board.

**DMTF**

Abbreviation for Distributed Management Task Force, a consortium of companies representing hardware and software providers that develops and maintains standards for systems management of IT environments in enterprises and the Internet.

**DRAC 4**

Acronym for Dell™ Remote Access Controller 4.

**DRAC 5**

Acronym for Dell Remote Access Controller 5.

**DRAM**

Acronym for dynamic random-access memory. A system's RAM is usually made up entirely of DRAM chips. Because DRAM chips cannot store an electrical charge indefinitely, your system continually refreshes each DRAM chip in the system.

**DSM SA Connection Service**

Acronym for Dell Systems Management Server Administration. An application that makes Web pages available for viewing by Web browsers using the HTTPS protocol. See "Web server".

**ECC**

Abbreviation for error checking and correction.

**Embedded Hypervisor**

See *Internal USB*

**EMC**

Abbreviation for electromagnetic compatibility.

**EMI**

Abbreviation for electromagnetic interference.

**EMM**

Abbreviation for expanded memory manager. A utility that uses extended memory to emulate expanded memory on systems with an Intel386™ or higher microprocessor.

**ERA**

Abbreviation for embedded remote access.

**ERA/MC**

Abbreviation for embedded remote access modular computer. See modular system.

**ERA/O**

Abbreviation for embedded remote access option.

**ESM**

Abbreviation for embedded systems management.

**Fibre Channel**

A data transfer interface technology that allows for high-speed I/O and networking functionality in a single connectivity technology. The Fibre Channel Standard supports several topologies, including Fibre Channel Point-to-Point, Fibre Channel Fabric (generic switching topology), and Fibre Channel Arbitrated Loop (FC\_AL).

**firmware**

Software (programs or data) that has been written onto read-only memory (ROM). Firmware can boot and operate a device. Each controller contains firmware which helps provide the controller's functionality.

**flash bios**

A BIOS that is stored in flash memory rather than in ROM. A flash BIOS chip can be updated in place, whereas a ROM BIOS must be replaced with a newer chip.

**flash memory**

A type of EEPROM chip that can be reprogrammed from a utility on diskette while still installed in a system; most EEPROM chips can only be rewritten with special programming equipment.

**FRU**

Abbreviation for field replaceable unit.

**heat sink**

A metal plate with metal pegs or ribs that help dissipate heat. Most microprocessors include a heat sink.

**hot plug**

The ability to remove and replace a redundant part while the system is still running. Also called a "hot spare."

**HPFS**

Abbreviation for the High Performance File System option in the Windows NT operating systems.

**HTTP**

Abbreviation for Hypertext Transfer Protocol. HTTP is the client-server TCP/IP protocol used on the World Wide Web for the exchange of HTML documents.

**HTTPS**

Abbreviation for HyperText Transmission Protocol, Secure. HTTPS is a variant of HTTP used by Web browsers for handling secure transactions. HTTPS is a unique protocol that is simply SSL underneath HTTP. You need to use "https://" for HTTP URLs with SSL, whereas you continue to use "http://" for HTTP URLs without SSL.

**iDRAC**

Acronym for Integrated Dell Remote Access Controller.

**iDRAC6 Express**

This is an optional storage card. Its presence will be reported under the slot page.

**iDRAC6 Enterprise**

This is an optional card that contains an SD card for advanced features and a dedicated network communication to iDRAC.

**Instantaneous Headroom**

This is the theoretical maximum power drawn by the power supply minus the instantaneous power drawn.

**Internal USB**

Internal USB flash drive and device is an additional storage. Internal USB enhances the virtualization capabilities.

**IP address**

Abbreviation for Internet Protocol address. See TCP/IP.

**IPMI**

Abbreviation for Intelligent Platform Management Interface, which is an industry standard for management of peripherals used in enterprise computers based on Intel architecture. The key characteristic of IPMI is that inventory, monitoring, logging, and recovery control functions are available independent of the main processors, BIOS, and operating system.

**IPv6**

Internet Protocol version 6.

**IRQ**

Abbreviation for interrupt request. A signal that data is about to be sent to or received by a peripheral device travels by an IRQ line to the microprocessor. Each peripheral connection must be assigned an IRQ number. For example, the first serial port in your system (COM1) is assigned to IRQ4 by default. Two devices can share the same IRQ assignment, but you cannot operate both devices simultaneously.

**iSCSI**

Acronym for Internet SCSI. An IP based storage networking standard for linking data storage facilities. By carrying SCSI commands over IP networks, iSCSI is used to facilitate data transfers over intranets and to manage storage over long distances.

**JSSE**

Abbreviation for Java™ Secure Socket Extension.

**Kerberos**

A network authentication protocol. It is designed to provide strong authentication for client/server applications by using secret-key cryptography.

**LDAP**

Acronym for lightweight directory access protocol. A networking protocol for querying and modifying directory services running over TCP/IP.

**LPT $n$** 

The device names for the first through third parallel printer ports on your system are LPT1, LPT2, and LPT3.

**LRA**

Abbreviation for local response agent.

**managed system**

A managed system is any system that is monitored and managed using Server Administrator. Systems running Server Administrator can be managed locally or remotely through a supported Web browser. See remote management system.

**memory module**

A small circuit board containing DRAM chips that connects to the system board.

**MIB**

Acronym for management information base. The MIB is used to send detailed status/commands from or to an SNMP managed device.

**microprocessor**

The primary computational chip inside the system that controls the interpretation and execution of arithmetic and logic functions. Software written for one microprocessor must usually be revised to run on another microprocessor. CPU is a synonym for microprocessor.

**modular system**

A system that can include multiple server modules. Each server module functions as an individual system. To function as a system, a server module is inserted into a chassis which includes power supplies, fans, a system management module, and at least one network switch module. The power supplies, fans, system management module, and network switch module are shared resources of the server modules in the chassis. See server module.

**MOF**

Acronym for managed object format, which is an ASCII file that contains the formal definition of a CIM schema.

**name**

The name of an object or variable is the exact string that identifies it in an SNMP Management Information Base (MIB) file or in a CIM Management Object File (MOF).

**NIC**

Acronym for network interface controller.

**NTFS**

Abbreviation for the Windows NT File System option in the Windows NT operating system. NTFS is an advanced file system designed for use specifically within the Windows NT operating system. It supports file system recovery, extremely large storage media, and long file names. It also supports object-oriented applications by treating all files as objects with user-defined and system-defined attributes. See also FAT and FAT32.

**NTLM**

Abbreviation for Windows NT LAN Manager. NTLM is the security protocol for the Windows NT operating system.

**NUMA**

Non-Uniform Memory Architecture.

**OID**

Abbreviation for object identifier. An implementation-specific integer or pointer that uniquely identifies an object.

**PAM**

Acronym for Pluggable Authentication Modules. PAM allows system administrators to set an authentication policy without having to recompile authentication programs.

**parameter**

A value or option that you specify to a program. A parameter is sometimes called a switch or an argument.

**Peak Headroom**

The theoretical maximum power drawn by a power supply minus the peak power drawn.

**PERC**

Acronym for PowerEdge Expandable RAID controller.

**peripheral device**

An internal or external device—such as a printer, a disk drive, or a keyboard—connected to a system.

**PKCS #7**

Abbreviation for Public Key Cryptography Standard #7. PKCS #7 is an RSA Data Security, Inc., standard for encapsulating signed data such as a certificate chain.

**PMBus**

Power Management Bus

**power supply**

An electrical system that converts AC current from the wall outlet into the DC currents required by the system circuitry. The power supply in a personal computer typically generates multiple voltages.

**ppm**

Abbreviation for pages per minute.

**PPP**

Abbreviation for Point-to-Point Protocol.

**provider**

A provider is an extension of a CIM schema that communicates with managed objects and accesses data and event notifications from a variety of sources. Providers forward this information to the CIM Object Manager for integration and interpretation.

**PS**

Abbreviation for power supply.

**RAC**

Acronym for remote access controller.

**RAID**

Acronym for redundant array of independent disks.

**RBAC**

Abbreviation for role-based access control.

**remote management system**

A remote management system is any system that accesses the Server Administrator home page on a managed system from a remote location using a supported Web browser. See managed system.

**ROM**

Acronym for read-only memory. Your system contains some programs essential to its operation in ROM code. Unlike RAM, a ROM chip retains its contents even after you turn off your system. Examples of code in ROM include the program that initiates your system's boot routine and the POST.

**RPM**

Abbreviation for Red Hat® Package Manager.

**SAS**

Acronym for Secure Authentication Services or Serial-attached SCSI. When referring to security protocols or authentication, SAS is Secure Authentication Services. When referring to computer peripheral devices that employ a serial (one bit at a time) means of digital data transfer over thin cables, SAS is Serial-attached SCSI.

**SCSI**

Acronym for small computer system interface. An I/O bus interface with faster data transmission rates than standard ports. You can connect up to seven devices (15 for some newer SCSI types) to one SCSI interface.

**SEL**

Acronym for system event log.

**serial port**

An I/O port used most often to connect a modem to your system. You can usually identify a serial port on your system by its 9-pin connector.

**settings**

Settings are conditions of a manageable object help to determine what happens when a certain value is detected in a component. For example, a user can set the upper critical threshold of a temperature probe to 75 degrees Celsius. If the probe reaches that temperature, the setting results in an alert being sent to the management system so that user intervention can be taken. Some settings, when reached, can trigger a system shutdown or other response that can prevent damage to the system.

**server module**

A modular system component that functions as an individual system. To function as a system, a server module is inserted into a chassis which includes power supplies, fans, a system management module, and at least one network switch module. The power supplies, fans, system management module, and network switch module are shared resources of the server modules in the chassis. See modular system.

**SMART**

Acronym for Self-Monitoring Analysis and Reporting Technology. A technology that allows hard drives to report errors and failures to the system BIOS, which then displays an error message on the screen. To take advantage of this technology, you must have a SMART-compliant hard drive and the proper support in the system BIOS.

**SMTP**

Abbreviation for Simple Mail Transfer Protocol.

**SNMP**

Abbreviation for Simple Network Management Protocol. SNMP, a popular network control and monitoring protocol, is part of the original TCP/IP protocol suite. SNMP provides the format in which vital information about different network devices, such as network servers or routers, can be sent to a management application.

**SSL**

Abbreviation for secure socket layer.

**state**

Refers to the condition of an object that can have more than one condition. For example, an object may be in the "not ready" state.

**status**

Refers to the health or functioning of an object. For example, a temperature probe can have the status normal if the probe is measuring acceptable temperatures. When the probe begins reading temperatures that exceed limits set by the user, it reports a critical status.

**switch**

On a system board, switches control various circuits or functions in your computer system. These switches are known as DIP switches; they are normally packaged in groups of two or more switches in a plastic case. Two common DIP switches are used on system boards: slide switches and rocker switches. The names of the switches are based on how the settings (on and off) of the switches are changed.

**syntax**

The rules that dictate how you must type a command or instruction so that the system understands it. A variable's syntax indicates its data type.

**system board**

As the main circuit board, the system board usually contains most of your system's integral components, such as the following:

- Microprocessor
- RAM
- Controllers for standard peripheral devices, such as the keyboard
- Various ROM chips

Frequently used synonyms for system board are motherboard and logic board.

**system memory**

System memory is a synonym for RAM.

**System Setup program**

A BIOS-based program that allows you to configure your system's hardware and customize the system's operation by setting such features as password protection and energy management. Some options in the System Setup program require that you reboot the system (or the system may reboot automatically) in order to make a hardware configuration change. Because the System Setup program is stored in NVRAM, any settings remain in effect until you change them again.

**table**

In SNMP MIBs, a table is a two dimensional array that describes the variables that make up a managed object.

**TCP/IP**

Abbreviation for Transmission Control Protocol/Internet Protocol. A system for transferring information over a computer network containing dissimilar systems, such as systems running Windows and UNIX.

**TFTP**

Abbreviation for Trivial File Transfer Protocol. TFTP is a version of the TCP/IP FTP protocol that has no directory or password capability.

**threshold values**

Systems are normally equipped with various sensors that monitor temperature, voltage, current, and fan speed. The sensor's threshold values specify the ranges (min and max values) for determining whether the sensor is operating under normal, noncritical, critical or fatal conditions. Server Administrator-supported threshold values are

- UpperThresholdFatal
- UpperThresholdCritical
- UpperThresholdNoncritical
- Normal
- LowerThresholdNoncritical
- LowerThresholdCritical
- LowerThresholdFatal

**time-out**

A specified period of system inactivity that must occur before an energy conservation feature is activated.

**TPM**

Acronym for Trusted Platform Module

**UART**

Acronym for universal asynchronous receiver transmitter, the electronic circuit that makes up the serial port.

**URL**

Abbreviation for Uniform Resource Locator (formerly Universal Resource Locator).

**USB**

Abbreviation for Universal Serial Bus. A USB connector provides a single connection point for multiple USB-compliant devices, such as mice, keyboards, printers, and computer speakers. USB devices can also be connected and disconnected while the system is running.

**utility**

A program used to manage system resources—memory, disk drives, or printers, for example.

**utility partition**

A bootable partition on the hard drive that provides utilities and diagnostics for your hardware and software. When activated, the partition boots and provides an executable environment for the partition's utilities.

**UUID**

Abbreviation for Universal Unique Identification.

**variable**

A component of a managed object. A temperature probe, for example, has a variable to describe its capabilities, its health or status, and certain indexes that you can use to help you in locating the right temperature probe.

**VRM**

Abbreviation for voltage regulator module.

**Web server**

An application that makes Web pages available for viewing by Web browsers using the HTTP protocol.

**WH**

Abbreviation for watt-hour(s).

**WMI**

Acronym for Windows Management Instrumentation. WMI provides CIM Object Manager services.

**X.509 Certificate**

An X.509 certificate binds a public encryption key to the identity or other attribute of its principal. Principals can be people, application code (such as a signed applet) or any other uniquely identified entity (such as a DSM SA Connection Service or Web server).

**Xen**

Xen is a virtual machine monitor for x86 systems.

**XMM**

Abbreviation for extended memory manager, a utility that allows application programs and operating systems to use extended memory in accordance with the XMS.

**XMS**

Abbreviation for eXtended Memory Specification.

**X Window System**

The graphical user interface used on Linux<sup>®</sup> based distributions.

**ZIF**

Acronym for zero insertion force. Some systems use ZIF sockets and connectors to allow devices such as the microprocessor chip to be installed or removed with no stress applied to the device.

**ZIP**

A 3.5-inch removable disk drive from Iomega. Originally, it provided 100-MB removable cartridges. The drive is bundled with software that can catalog the disks and lock the files for security. A 250-MB version of the Zip drive also reads and writes the 100-MB Zip cartridges.



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