Dell OpenManage Server Administrator Version 7.0

Installation Guide

Notes and Cautions

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

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

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Introduction

This guide provides information on:

- Installing Dell OpenManage Server Administrator (OMSA) on managed systems.
- Installing and using the Remote Enablement feature.
- Managing remote systems using OpenManage Server Administrator Web Server.
- Configuring your system before and during a deployment or upgrade.

NOTE: If you are installing management station and managed system software on the same system, install identical software versions to avoid system conflicts.

Dell OpenManage Systems Management Software

Dell OpenManage systems management software is a suite of applications that enables you to manage your Dell systems with proactive monitoring, notification, and remote access.

Dell OpenManage systems management software comprises of three DVDs:

- *Dell Systems Management Tools and Documentation*
- *Dell OpenManage Server Update Utility*
- *Dell Management Console*

NOTE: For more information on these DVDs, see the *Dell OpenManage Management Station Software Installation Guide* at **support.dell.com/support/edocs/software/omswrels/index.htm**.

Server Administrator Components on a Managed System

The setup program provides the following options:

- Custom Setup
- Typical Setup

The custom setup option enables you to select the software components you want to install. Table 1-1 lists the various managed system software components that you can install during a custom installation. For more information, see "Custom Installation."

Table 1-1. Managed System Software Components

Component	What is installed	Deployment scenario	Systems on which to be installed
Server Administrator Web Server	Web-based systems management functionality that enables you to manage systems locally or remotely	Install only if you want to remotely monitor the managed system. You need not have physical access to the managed system.	Any system. For example, laptops, desktops, or Dell PowerEdge systems.
Server Instrumentation	Server Administrator CLI and Instrumentation Service	Install to use your system as the managed system. Installing Server Instrumentation and the Server Administrator Web Server installs Server Administrator. You can use Server Administrator to monitor, configure, and manage your system. **NOTE:** If you choose to install only Server Instrumentation (without selecting Remote Enablement), you must also install the Server Administrator Web Server.	Supported Dell PowerEdge systems. For a list of supported Dell PowerEdge systems, see the *Dell Systems Software Support Matrix* at **support.dell.com/support/edocs/software/omswrels**.

Table 1-1. Managed System Software Components *(continued)*

Component	What is installed	Deployment scenario	Systems on which to be installed
Storage Management	Server Administrator Storage Management	Install to implement hardware RAID solutions and configure the storage components attached to your system. For more information on Storage Management, see the *Dell OpenManage Server Administrator Storage Management User's Guide* in the **docs** directory or at **support.dell.com/support/edocs/software/omswrels**.	Only those systems on which you have installed Server Instrumentation or Remote Enablement.
Remote Enablement	Server Administrator CLI and Instrumentation Service and CIM Provider	Install to perform remote systems management tasks. You can install Remote Enablement on your system and install only the Server Administrator Web Server on another system (say, system X). You can then use system X to remotely monitor and manage your system. You can use system X to manage any number of systems on which Remote Enablement is installed.	Supported Dell PowerEdge systems. For a list of supported Dell PowerEdge systems, see the *Dell Systems Software Support Matrix* at **support.dell.com/support/edocs/software/omswrels**.

Table 1-1. Managed System Software Components *(continued)*

Component	What is installed	Deployment scenario	Systems on which to be installed
Remote Access Controller	Server Administrator CLI and Instrumentation Service and iDRAC or DRAC 5, or DRAC 4 (depending on the type of your Dell PowerEdge system)	Install to receive e-mail alerts for warnings or errors related to voltage, temperature, and fan speed. Remote Access Controller 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.	Only those systems on which you have installed Server Instrumentation or Remote Enablement.
Intel SNMP Agent	Intel Simple Network Management Protocol (SNMP) Agent	Install to enable Server Administrator to obtain information about Network Interface Cards (NICs).	Only on Dell PowerEdge systems on which Server Instrumentation is installed and which are running on Microsoft Windows operating system.
Broadcom SNMP Agent	Broadcom SNMP Agent	Install to enable Server Administrator to obtain information about NICs.	Only on Dell PowerEdge systems on which Server Instrumentation is installed and which are running on Microsoft Windows operating system.

Security Features

Dell OpenManage systems management software components provide the following security features:

- Authentication for users through hardware-stored user IDs and passwords, or by using the optional Microsoft Active Directory.
- Support for Network Information Services (NIS), Winbind, Kerberos, and Lightweight Directory Access Protocol (LDAP) authentication protocols for Linux operating systems.
- Role-based authority that allows specific privileges to be configured for each user.
- User ID and password configuration through the web-based interface or the command line interface (CLI), in most cases.
- SSL encryption (**Auto Negotiate** and **128-bit or higher**).

  NOTE: Telnet does not support SSL encryption.
- Session time-out configuration (in minutes) through the web-based interface.
- Port configuration to allow Dell OpenManage systems management software to connect to a remote device through firewalls.

  NOTE: For information about ports that the various Dell OpenManage systems management components use, see the User Guide for that component.

For information about the Security Management, see the *Dell OpenManage Server Administrator User's Guide* at **support.dell.com/manuals**.

Other Documents You Might Need

In addition to this guide, you can access the following guides available on the *Dell Systems Management Tools and Documentation* DVD or at **support.dell.com/manuals**. On the **Manuals** page, click **Software→ Systems Management**. Click the appropriate product link on the right-side to access the documents.

- *The Dell Unified Server Configurator User's Guide* provides information on using the Unified Server Configurator.
- The *Dell Management Console User's Guide* provides information about installing, configuring, and using Dell Management Console.

- The *Dell Systems Build and Update Utility User's Guide* provides information on using the Systems Build and Update Utility.
- The *Dell Systems Software Support Matrix* provides information about the various Dell systems, the operating systems supported by these systems, and the Dell OpenManage components that can be installed on these systems.
- The *Dell OpenManage Server Administrator User's Guide* describes the installation and use of Server Administrator.
- The *Dell OpenManage Server Administrator SNMP Reference Guide* documents the SNMP management information base (MIB).
- The *Dell OpenManage Server Administrator CIM Reference Guide* documents the Common Information Model (CIM) provider, which is an extension of the standard management object format (MOF) file. This guide explains the supported classes of management objects.
- The *Dell OpenManage Server Administrator Messages Reference Guide* lists the messages that are displayed on the Server Administrator home page Alert log, or on your operating system's event viewer. This guide explains the text, severity, and cause of each alert message that the Server Administrator displays.
- The *Dell OpenManage Server Administrator Command Line Interface Guide* documents the complete command line interface for Server Administrator, including an explanation of CLI commands to view system status, access logs, create reports, configure various component parameters, and set critical thresholds.
- The *Dell OpenManage IT Assistant User's Guide* has information about installing, configuring, and using the IT Assistant.
- 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 *Integrated Dell Remote Access Controller User's Guide* provides complete information about configuring and using an integrated Dell Remote Access Controller to remotely manage and monitor your system and its shared resources through a network.

- The *Dell Update Packages User's Guide* provides information about obtaining and using the Dell Update Packages for Windows and Linux as part of your system update strategy.
- The *Dell OpenManage Server Update Utility User's Guide* provides information on using the Dell OpenManage Server Update Utility.
- The software kit (DVD) contains readme files for applications found on the media.

NOTE: If the product does not perform as expected or you do not understand a procedure described in this guide, see **Getting Help** in your system's *Hardware Owner's Manual* .

Getting Technical Assistance

For customers in the United States, call 800-WWW-DELL (800-999-3355).

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

For information on technical support, visit **dell.com/contactus**.

Additionally, Dell Enterprise Training and Certification is available at **dell.com/training**.

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Preinstallation Setup

Ensure that you perform the following before installing Server Administrator:

- Read the installation instructions for your operating system.
- Read the "Installation Requirements" to ensure that your system meets or exceeds the minimum requirements.
- Read the applicable Dell OpenManage readme files and the *Dell Systems Software Support Matrix* located at **support.dell.com/support/edocs/software/omswrels**.
- Close all applications running on the system before installing Server Administrator applications.

  On Linux, ensure that all operating system RPM packages required by the Server Administrator RPMs are installed. If your system had VMware ESX factory-installed, Red Hat Enterprise Linux, or SUSE Linux Enterprise Server, see the "Dependent RPMs for Remote Enablement" section for information on any RPMs that you need to manually install prior to installing managed system software. Typically, you do not have to manually install any RPMs.

Prerequisite Checker

The **setup.exe** (located at **\SYSMGMT\srvadmin\windows**) starts the prerequisite checker program. The prerequisite checker program examines the prerequisites for software components without launching the actual installation. This program displays a status window that provides information about your system's hardware and software that may affect the installation and operation of software features.

NOTE: If you want to use supporting agents for the Simple Network Management Protocol (SNMP), you must install the operating system support for the SNMP standard before or after you install Server Administrator. For more information about installing SNMP, see the installation instructions for the operating system you are running on your system.

You can run the prerequisite checker silently by executing `runprereqchecks.exe /s` from the **SYSMGMT\srvadmin\windows\PreReqChecker** directory on the *Dell Systems Management Tools and Documentation* DVD.

After running the prerequisite checker, a HTML file (**omprereq.htm**) is created in the **%Temp%** directory. This file contains the results of the prerequisite check. The **Temp** directory is located at **X:\Documents and Settings***username***\Local Settings\Temp**. To find **%TEMP%**, go to a command line prompt and type `echo %TEMP%`.

The results are written under the following key for a managed system:

HKEY_LOCAL_MACHINE\Software\Dell Computer Corporation\OpenManage \PreReqChecks\MN

While running the prerequisite checker silently, the return code from **runprereqchecks.exe** is the number associated with the highest severity condition for all the software products. The return code numbers are the same as those used in the registry. Table 2-1 details the return codes.

Table 2-1. Return Codes While Running the Prerequisite Checker Silently

Return Code	Description
0	No condition, or conditions, is associated with the software.
1	An informational condition, or conditions, is associated with the software. It does not prevent a software product from being installed.
2	A warning condition, or conditions, is associated with the software. It is recommended that you resolve the conditions causing the warning before proceeding with the installation of the software. If you decide to continue, you can select and install the software using the custom installation.
3	An error condition, or conditions, is associated with the software. You must resolve the conditions causing the error before proceeding with the installation of the software. If you do not resolve the issues, the software is not installed.
-1	A Microsoft Windows Script Host (WSH) error. The prerequisite checker does not run.
-2	The operating system is not supported. The prerequisite checker does not run.

Table 2-1. Return Codes While Running the Prerequisite Checker Silently *(continued)*

Return Code	Description
-3	The user does not have **Administrator** privileges. The prerequisite checker does not run.
-4	Not an implemented return code.
-5	The prerequisite checker does not run. The user failed to change the working directory to **%TEMP%**.
-6	The destination directory does not exist. The prerequisite checker does not run.
-7	An internal error has occurred. The prerequisite checker does not run.
-8	The software is already running. The prerequisite checker does not run.
-9	The WSH is corrupted, is a wrong version, or is not installed. The prerequisite checker does not run.
-10	An error has occurred with the scripting environment. The prerequisite checker does not run.

NOTE: A negative return code (-1 through -10) indicates a failure in running the prerequisite checker tool. Probable causes for negative return codes include software policy restrictions, script restrictions, lack of folder permissions, and size constraints.

NOTE: If you encounter a return code of 2 or 3, it is recommended that you inspect the **omprereq.htm** file in the windows temporary folder **%TEMP%**. To find **%TEMP%**, run `echo %TEMP%`.

Common causes for a return value of 2 from the prerequisite checker:

- One of your storage controllers or drivers has outdated firmware or driver. See **firmwaredriverversions_*<lang>*.html** (where *<lang>* stands for language) or **firmwaredriverversions.txt** found in the **%TEMP%** folder. To find **%TEMP%**, run `echo %TEMP%`.
- RAC component software version 4 is not selected for a default install unless the device is detected on the system. The prerequisite checker generates a warning message in this case.
- Intel and Broadcom agents are selected for a default install only if the corresponding devices are detected on the system. If the corresponding devices are not found, prerequisite checker generates a warning message.

- Domain Name System (DNS) or Windows Internet Name Service (WINS) server running on your system can cause a warning condition for RAC software. See the relevant section in Server Administrator readme for more information.
- Do not install managed system and management station RAC components on the same system. Install only the managed system RAC components, as they offer the required functionality.

Common causes for a return code of 3 (failure) from the prerequisite checker:

- You are not logged in with built-in **Administrator** privileges.
- The MSI package is corrupt or one of the required XML files is corrupt.
- Error during copying from a DVD or network access problems while copying from a network share.
- Prerequisite checker detects that another MSI package installation is currently running or that a reboot is pending: **HKEY_LOCAL_MACHINE\\SOFTWARE\\Microsoft\Windows\Current Version\Installer\InProgress** indicates another MSI package installation is in progress. **HKEY_LOCAL_MACHINE\\SYSTEM\\CurrentControlSet\\Control\ \Session Manager\\PendingFileRenameOperations** indicates that a reboot is pending.
- Running the 64-bit version of Windows Server 2008 Core, since certain components are disabled from being installed.

Ensure that any error or warning is corrected before you proceed to install Dell OpenManage software components.

Each software has an associated value set after running the prerequisite check. Table 2-2 provides the list of feature IDs for each software feature. The feature ID is a 2 to 5 character designation.

NOTE: The software feature IDs mentioned in Table 2-2 are case-sensitive.

Table 2-2. Software Feature IDs for Managed Systems Software

Feature ID	Description
ALL	All features
BRCM	Broadcom Network Interface Card (NIC) Agent
INTEL	Intel NIC Agent

Table 2-2. Software Feature IDs for Managed Systems Software *(continued)*

Feature ID	Description
IWS	Dell OpenManage Server Administrator Web Server
OMSM	Server Administrator Storage Management Service
RAC4	Dell Remote Access Controller (DRAC 4)
RAC5	Dell Remote Access Controller (DRAC 5)
iDRAC	Integrated Dell Remote Access Controller
SA	Server Administrator
RmtMgmt	Remote Enablement

Installation Requirements

This section describes the general requirements of the Dell OpenManage Server Administrator and provides information on supported operating systems and web browsers.

NOTE: Prerequisites specific to an operating system are listed as part of the installation procedures.

Supported Operating Systems and Web Browsers

For information on supported operating systems and web browsers, see the *Dell Systems Software Support Matrix* located at **support.dell.com/support/edocs/software/omswrels**.

NOTE: Ensure that the web browser is configured to bypass the proxy server for local addresses.

Multilingual User Interface Support

The Dell OpenManage installer provides Multilingual User Interface (MUI) support available on the following operating systems:

- Windows Server 2008 (64-bit)
- Windows Server 2008 (64-bit) R2
- Windows Server 2008 (64-bit) R2 SP1

The MUI Pack is a set of language-specific resource files that can be added to the English version of a supported Windows operating system. Dell OpenManage 7.0 installer supports only six languages: English, German, Spanish, French, Simplified Chinese, and Japanese.

NOTE: When MUI is set to non-Unicode languages like Simplified Chinese, set the system locale to Simplified Chinese. This enables the prerequisite checker messages to be displayed. This is because any non-Unicode application runs only when the system locale (also called **Language for non-Unicode Programs** on XP) is set to match the application's language.

Viewing Localized Versions of the Web-Based Interface

To view the localized versions of the web interface on Windows, in the **Control Panel** select **Regional and Language Options**.

System Requirements

Dell OpenManage Server Administrator must be installed on each system to be managed. You can manage each system running Server Administrator locally or remotely through a supported web browser.

Managed System Requirements

- One of the supported operating system and web browser.
- Minimum of 2 GB of RAM.
- Minimum of 512 MB of free hard drive space.
- Administrator rights.
- TCP/IP connection on the managed system and the remote system to facilitate remote system management. For
- One of the supported systems management protocol standards. For more information, see "Supported Systems Management Protocol Standards".
- Monitor with a minimum screen resolution of 800 x 600. The recommended screen resolution is at least 1024 x 768.

- The Server Administrator Remote Access Controller service requires remote access controller (RAC) be installed on the managed system. See the relevant *Dell Remote Access Controller User's Guide* for complete software and hardware requirements.

  NOTE: The RAC software is installed as part of the **Typical Setup** installation option, provided the managed system meets all of the RAC installation prerequisites.

- The Server Administrator Storage Management Service requires Dell OpenManage Server Administrator be installed on the managed system. See the *Dell OpenManage Server Administrator Storage Management User's Guide* for complete software and hardware requirements.
- Microsoft Software Installer (MSI) version 3.1 or later.

  NOTE: Dell OpenManage software detects the MSI version on your system. If the version is lower than 3.1, the prerequisite checker prompts you to upgrade to MSI version 3.1. After upgrading the MSI to version 3.1, you may have to reboot the system to install other software applications such as Microsoft SQL Server.

Supported Systems Management Protocol Standards

A supported systems management protocol must be installed on the managed system before installing your management station or managed system software. On supported Windows and Linux operating systems, Dell OpenManage software supports: Common Information Model (CIM), Windows Management Instrumentation (WMI), and Simple Network Management Protocol (SNMP). You must install the SNMP package provided with the operating system. If SNMP is installed post OMSA installation, you need to restart OMSA services.

NOTE: For information about installing a supported systems management protocol standard on your managed system, see your operating system documentation.

Table 2-3 shows the availability of the systems management standards for each supported operating system.

Table 2-3. Availability of Systems Management Protocol by Operating Systems

Operating System	SNMP	CIM/WMI
Supported Microsoft Windows operating systems.	Available from the operating system installation media.	Always installed
Supported Red Hat Enterprise Linux operating systems.	Install the SNMP package provided with the operating system.	Available. Install the CIM packages provided on the *Dell Systems Management Tools and Documentation* DVD - **SFCB/SFCC/CMPI-Devel**
Supported SUSE Linux Enterprise Server operating systems.	Install the SNMP package provided with the operating system.	Available. Install the CIM packages provided on the *Dell Systems Management Tools and Documentation* DVD - **SFCB/SFCC/CMPI-Devel**

NOTE: It is recommended that you install the SFCB, SFCC, OpenWSMAN, and CMPI-Devel packages from the operating system media, if available.

Digital Certificates

All Server Administrator packages for Microsoft are digitally signed with a Dell certificate that helps guarantee the integrity of the installation packages. If these packages are repackaged, edited, or manipulated in other ways, the digital signature is invalidated. This manipulation results in an unsupported installation package and the prerequisite checker does not allow you to install the software.

Enabling Windows Installer Logging Service

Windows includes a registry-activated logging service to help diagnose Windows Installer issues. To enable this logging service during a silent install, open the registry editor and create the following path and keys:

```
HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows\Installer
Reg_SZ: Logging
Value: voicewarmup
```

The letters in the value field can be in any order. Each letter turns on a different logging mode. Each letter's actual function is as follows for MSI version 3.1:

v- Verbose output
o- Out-of-disk-space message
i- Status message
c- Initial UI parameter
e- All error message
w - Non-fatal warning
a- Startup of action
r- Action-specific record
m- Out-of-memory or fatal exit information
u- User request
p- Terminal property
+- Append to existing file
!- Flush each line to the log
"*"- Wildcard, log all information except for the v option. To include the v option, specify "/l*v".

Once activated, you can find the log files that are generated in your %TEMP% directory. Some log files generated in this directory are:

- **Managed System Installation**
  - **SysMgmt.log**
- **Management Station Installation**
  - **MgmtSt.log**

These log files are created by default if the prerequisite checker user interface (UI) is running.

Microsoft Active Directory

If you use Active Directory service software, you can configure it to control access to your network. Dell has modified the Active Directory database to support remote management authentication and authorization. Dell OpenManage Server Administrator (OMSA), IT Assistant (ITA), Integrated Dell Remote Access Controller (iDRAC), Dell Chassis Management Controller (CMC), and Dell Remote Access Controllers (RAC), can interface with Active Directory. Using Active Directory, you can add and control users and privileges from one central database. For more information, see "Using Microsoft Active Directory."

Configuring the SNMP Agent

Dell OpenManage software supports the SNMP systems management standard on all supported operating systems. The SNMP support may or may not be installed depending on your operating system and how the operating system was installed. An installed supported systems management protocol standard, such as SNMP, is required before installing Dell OpenManage software. For more information, see "Installation Requirements" and "Supported Systems Management Protocol Standards".

You can configure the SNMP agent to change the community name, enable set operations, and send traps to a management station. To configure your SNMP agent for proper interaction with management applications such as IT Assistant, perform the procedures described in the *Dell OpenManage Server Administrator User's Guide* at **support.dell.com/manuals**.

Secure Port Server and Security Setup

This section contains the following topics:

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

Setting User and Server Preferences

You can set user and secure port server preferences for Server Administrator and IT Assistant from the respective **Preferences** web page. Click **General Settings** and click either the **User** tab or **Web Server** tab.

NOTE: You must be logged in with administrator privileges to set or reset user or server preferences.

To set up your user preferences:

1. Click **Preferences** on the global navigation bar.

   The **Preferences** home page is displayed.

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**.

To set up your secure port server preferences:

1. Click **Preferences** on the global navigation bar.

   The **Preferences** home page is displayed.

2. Click **General Settings**, and the **Web Server** tab.
3. Set options as necessary in the **Server Preferences** window:
   - **Session Timeout** — Sets the time limit for a session to remain active. Select **Enable** to set a time-out if there is no user interaction for a specified time in minutes. After a session time-out the user must log in again to continue. Select **Disable** to disable the Server Administrator session time-out feature.
   - **HTTPS Port** — 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 may prevent other applications or browsers from accessing Server Administrator on the managed system.

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

  NOTE: A user with administrator privileges cannot use Server Administrator when logged into the system remotely.

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

- **Mail to** — Allows to set the default mail address for e-mail(s) from OMSA GUI.
- **SMTP Server name** and **DNS Suffix for SMTP Server** — Specifies your 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 organization in the appropriate fields.

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

- **Command Log Size** — Specifies the largest file size in MB for the command log file.
- **Support Link** — Specifies the web address for the business entity that provides support for your managed system.
- **Custom Delimiter** — 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 **,**.

4 Click **Apply Changes**.

X.509 Certificate Management

Web certificates are necessary to ensure that the identity and information exchanged with a remote system cannot be viewed or changed by others. To ensure system security, it is strongly recommended that you either generate a new X.509 certificate, reuse an existing X.509 certificate, or import a root certificate or certificate chain from a Certificate Authority (CA). Authorized CAs include Verisign, Entrust, and Thawte.

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

You can manage X.509 certificates for Server Administrator and IT Assistant from the respective **Preferences** page. Click **General Settings**, select the **Web Server** tab, and click **X.509 Certificate**.

Best Practices for X.509 Certificate Management

For the security of your system while using server administrator, ensure the following:

- **Unique host name** — All systems that have Server Administrator installed should have unique host names.
- **Change 'localhost' to unique** — All systems with host name set to **localhost** should be changed to a unique host name.

Remote Enablement Requirements

The Remote Enablement feature is currently supported on:

- Microsoft Windows
- Microsoft Hyper-V
- Hyper-V Server
- Red Hat Enterprise Linux
- SUSE Enterprise Linux
- VMware ESXi and ESX
- Citrix XenServer 6.0

To install the Remote Enablement feature, the following must be configured on your system:

- Windows Remote Management (WinRM)
- CA/Self-Signed Certificate
- WinRM HTTPS Listener Port
- Authorization for WinRM and Windows Management Instrumentation (WMI) Servers

Installing WinRM

On Windows Server 2008 R2 and Windows 7, WinRM 2.0 is installed by default. On Windows Server 2008, WinRM 1.1 is installed by default.

Certificate Authority — Signed/Self-Signed Certificate

You need a certificate signed by a CA or a self-signed certificate (generated using the SelfSSL tool) to install and configure the Remote Enablement feature on your system.

NOTE: It is recommended that you use a certificate signed by a CA.

Using a Certificate Signed by a CA

To use a certificate signed by a CA:

1. Request a valid CA signed certificate.
2. Create a HTTP listener with the CA signed certificate.

Requesting a Valid CA Signed Certificate

To request a valid CA signed certificate:

1. Click **Start**→ **Run**.
2. Type `mmc` and click **OK**.
3. Click **File**→ **Add/Remove Snap-in**.
4. Select **Certificates** and click Add.
5. In the **Certificates snap-in** dialog box, select **Computer account**, click **Next**.
6. Select **Local Computer** and click **Finish**.

7 Click **Close** and click **OK**.

8 On the **Console window**, expand **Certificates (Local Computer)** in the left navigation pane.

9 Right-click **Personal**, select **All tasks→ Request New Certificate**.

10 Click **Next**.

11 Select the appropriate certificate type, **Mostly (Computer)**, and click **Enroll**.

12 Click **Finish**.

Creating the HTTPS Listener With the Valid CA Signed Certificate

Run the installer and click the link on the prerequisite checker to create the HTTPS listener.

Using the SelfSSL Tool to Generate Self-Signed Certificates

To generate a self-signed certificate using the SelfSSL tool :

1 Create a certificate.

2 Add the certificate and take a thumbprint.

3 Create the WinRM HTTPS listener.

4 Configure the Envelope size for WinRM.

Creating a Certificate

1 Download the **IIS Resource Kit** from **microsoft.com/downloads/details.aspx?FamilyID=56fc92ee-a71a-4c73-b628-ade629c89499&displaylang**.

2 Run **iis60rkt.exe**.

3 Click **Next**.

4 Select **I Agree** in the **End-User License Agreement** screen and click **Next.**

5 Click **Next**.

6 In the **Select Type** screen, select **Custom** and click **Next**.

7 Click **Next**.

8 In the **Select Features** screen, select **SelfSSL 1.0** and click **Next**.

9 Click **Next**.

10 Click **Finish**.

The **SelfSSL** is installed.

11 Click **Start**→ **Programs**→ **IIS Resource**→ **SelfSSL**→ **SelfSSL**.

12 Type
`selfssl /T /N:CN=<computer_name or domain_name>`.

Adding a Certificate and Taking a Thumbprint

To add a certificate and tae a thumbprint:

NOTE: If Internet Information Service (IIS) is already installed on your system, then the value of `CertificateThumbprint` must be an empty string and you need not perform the steps in this section. For example:

```
winrm create winrm/config/Listener?Address=
*+Transport=HTTPS @{Hostname=
"<host_name>";CertificateThumbprint=""}
```

1 Click **Start**→ **Run**.

2 Type `mmc` and click **OK**.

3 Click **File**→ **Add/Remove Snap-in**.

4 Click **Add**.

5 Click **Certificates** and click **Add**.

6 In the Certificates snap-in dialog box, select **Computer account** option and click **Next**.

7 Select **Local Computer** and click **Finish**.

8 Click **Close**.

9 Click **OK**.

10 On the **Console** window, expand **Certificates (Local Computer)** in the left navigation pane.

11 Expand **Personal**.

12 Select **Certificates**.

13 In the right-hand pane, double-click the required certificate.

The **Certificate** screen is displayed.

14 Click **Details** tab.

15 Select **Thumbprint**.

16 Copy the thumbprint to the clipboard. You can use this parameter while creating the HTTPS listener.

17 Click **OK**.

Creating the WinRM HTTPS Listener

To enable the HTTPS listener on WinRM, type the following command:

```
winrm create winrm/config/Listener?Address=
*+Transport=HTTPS @{Hostname=
"<host_name>";CertificateThumbprint=
"6e132c546767bf16a8acf4fe0e713d5b2da43013"}
```

If you are using Windows Server 2008 Small Business Server, leave the value of `CertificateThumbprint` blank as follows:

```
winrm create winrm/config/Listener?Address=
*+Transport=HTTPS @{Hostname=
"<host_name>";CertificateThumbprint=""}
```

NOTE: Ensure that the values of the `Hostname` and `CertificateThumbprint` are correct.

The HTTP listener is enabled by default and listens at port 80.

Configuring User Authorization for WinRM and WMI Servers

To provide access rights to WinRM and WMI services, users must be explicitly added with the appropriate access levels.

NOTE: To configure user authorization
- For WinRM and WMI Servers, you must login with administrator privileges.
- For Windows Server 2008 operating systems, you must login with built-in administrator privileges

NOTE: The administrator is configured by default.

WinRM

To configure user authorization for WinRM servers:

1. Click **Start**→ **Run**.
2. Type `winrm configsddl` and click **OK**.

   If you are using WinRM 2.0, type `winrm configsddl default`.
3. Click **Add** and add the required users or groups (local/domain) to the list.
4. Provide the appropriate permission(s) to the respective users and click **OK**.

WMI

To configure user authorization for WMI servers:

1. Click **Start**→ **Run**.
2. Type `wmimgmt.msc` and click **OK**.

   The **Windows Management Infrastructure (WMI)** screen is displayed.
3. Right-click the **WMI Control (Local)** node in the left pane and click **Properties**.

   The **WMI Control (Local) Properties** screen appears.
4. Click **Security** and expand the **Root** node in the namespace tree.
5. Navigate to **Root**→ **DCIM**→ **sysman**.
6. Click **Security**.

   The **Security** screen appears.
7. Click **Add** to add the required users or groups (local/domain) to the list.
8. Provide the appropriate permission(s) to the respective users and click **OK**.
9. Click **OK**.
10. Close the **Windows Management Infrastructure (WMI)** screen.

Configuring the Windows Firewall for WinRM

To configure the Windows Firewall for WinRM:

1. Open the **Control Panel**.
2. Click **Windows Firewall**.
3. Click the **Exceptions** tab.
4. Select the **Windows Remote Management** check box. If you do not see the check box, click **Add Program** to add Windows Remote Management.

Configuring the Envelope Size for WinRM

To configure the envelope size for WinRM:

1. Open a command prompt.
2. Type `winrm g winrm/config`.
3. Check the value of the **MaxEnvelopeSizekb** attribute. If the value is less than **4608**, type the following command:

   ```
   winrm s winrm/config @{MaxEnvelopeSizekb="4608"}
   ```

4. Set the value of **MaxTimeoutms** to 3 minutes:

   ```
   winrm s winrm/config @{MaxTimeoutms ="180000"}
   ```

On WinRM version 2.0, enable the compatibility mode for WinRM version 2.0 to use port 443. WinRM version 2.0 uses port 5986 by default. To enable the compatibility mode, type the following command:

```
winrm s winrm/config/Service
@{EnableCompatibilityHttpsListener="true"}
```

Dependent RPMs for Remote Enablement

If you choose to install the Remote Enablement feature, you have to install certain dependent RPMs and configure these RPMs before installing the feature. Install the following RPMs:

- **libcmpiCppImpl0**
- **libwsman1**
- **openwsman-server**
- **sblim-sfcb**
- **sblim-sfcc**

The dependent RPMs are available on the *Dell Systems Management Tools and Documentation* DVD at **srvadmin\linux\RPMS\supportRPMS\opensource-components\<OS>\<arch>**.

NOTE: On supported SLES and Red Hat Enterprise Linux operating systems, it is recommended that you install the above RPMs from the operating system media, if available.

Installing Dependent RPMs

To install the dependent RPMs not available on the operating system media:

1. Ensure that Pegasus RPMs are uninstalled.
2. Check if the `openwsmand` and `sfcbd` binaries are already installed using make-install. You can check by running the commands:

   `openwsman`

   or

   `sfcbd`

   or

   You can check the existence of the above binaries in the **/usr/local/sbin** directory.
3. If the binaries are installed, uninstall these binaries.

4 Check for the required dependencies for the `openwsman` and `sfcbd` RPMs listed in Table 2-4.

Table 2-4. Required Dependencies

Packages	Red Hat Enterprise Server	SUSE Linux Enterprise Server
Openwsman	• OpenSSL • LibXML • Pkgconfig • CURL • Chkconfig • Initscript • SBLIM-SFCC	• LibOpenSSL • LibXML • Pkg-config • libCURL • aaa_base • aaa_base • SBLIM-SFCC
SBLIM SFCC	CURL	LibCURL
SBLIM SFCB	• zlib • CURL • PAM • OpenSSL • Chkconfig • Initscript	• zlib • LibCURL • PAM • LibOpenSSL • aaa_base • aaa_base

5 Install the dependent RPMs. You can install the RPMs:

- with a single command

```
rpm -ivh rpm1 rpm2 rpm3 rpm4 … rpmN
```

or

- individually

NOTE: If you are installing RPMs individually, follow the sequence below.

```
rpm -ivh sblim-sfcb-x.x.x.rpm
```

```
rpm -ivh sblim-sfcc-x.x.x.rpm
```

NOTE: Install the `libwsman` and `openwsman` client RPMs simultaneously as they have cyclic dependency.

```
rpm -ivh libwsman1-x.x.x.rpm openwsman-client-
x.x.x.rpm
```

```
rpm -ivh openwsman-server-x.x.x.rpm
```

Post-Installation Configuration for Remote Enablement

This section details the steps to configure the dependent RPMs if you have installed the Remote Enablement feature.

The post-installation configuration script is available at **/opt/dell/srvadmin/etc/** on the server file system.

After installing all the dependent RPMs and the Remote Enablement feature, execute the **autoconf_cim_component.sh** script.

Before executing the **autoconf_cim_component.sh** script, ensure that Dell OpenManage is installed. For information on installing Dell OpenManage, see "Installing Managed System Software on Supported Linux and VMware ESX."

Execute the following command to configure `sfbc` and `openwsman` as per the default configurations:

```
./ autoconf_cim_component.sh
```

NOTE: To configure **openwsman** on the managed node to run on a different port, use the **-p <port>** option with **autoconf_cim_component.sh**. This is optional and by default the **openwsman** is configured to run on port 443.

Creating Server Certificate for WSMAN

You can either create a new certificate for WSMAN or reuse an existing certificate.

Creating a New Certificate

You can create a new server certificate for WSMAN by executing the **owsmangencert.sh** script located at **/etc/openwsman**. This script is provided by the **openwsman** RPM. Follow the steps in the wizard to create the server certificate.

Reusing an Existing Certificate

If you have a self-signed or CA-signed certificate, you can use the same certificate for the `openwsman` server by updating the `ssl_cert_file` and `ssl_key_file` values, grouped under `[server]` tag, in **/etc/openwsman/openwsman.conf** with your existing certificate values.

Configuring CRL for the openwsman Client

You need to configure the Certificate Revocation List (CRL) used by Server Administrator Web Server. To do this:

1. Mention a valid CRL file in **/etc/openwsman/openwsman_client.conf**.
2. If left blank, the CRL check is ignored.

NOTE: CRL support is only present on SUSE Linux Enterprise Server version 11 and Red Hat Enterprise Linux Server version 5 update 5. For other operating systems, contact your operating system vendor to provide the required CURL library with CRL support.

Running sfcb and openwsman

NOTE: On Red Hat Enterprise Linux 6, replace sfcb with sblim-sfcb.

Run `sfcb` and `openwsman`:

- `/etc/init.d/sfcb start`
- `/etc/init.d/openwsmand start`

On Red Hat Enterprise Linux 6, for the **sblim-sfcb** and **openwsman** to start automatically after a reboot you need to change the run-levels using the `chkconfig` utility. For example, if you want to run `sblim-sfcb` in run-levels 3 and 5, use the following command:

```
#chkconfig sblim-sfcb on --level 35
```

NOTE: For more information on `chkconfig` and its usage, see the operating system documentation.

The managed system is configured and is ready to be used by the Server Administrator Web Server.

Winbind Configuration for openwsman and sfcb for Red Hat Enterprise Linux Operating Systems

Follow the instructions mentioned below to configure openwsman and sfcb on 32-bit OMI installation. In case of a 64-bit installation, replace **lib** with **lib64**.

1. Back up the following files:
   - **/etc/pam.d/openwsman**
   - **/etc/pam.d/sfcb**
   - **/etc/pam.d/system-auth**
2. Replace the content of **/etc/pam.d/openwsman** and **/etc/pam.d/sfcb** with:

   ```
   auth required pam_stack.so service=system-auth

   auth required /lib/security/pam_nologin.so

   account required pam_stack.so service=system-auth
   ```
3. Replace the content of **/etc/pam.d/system-auth** with:

   ```
   %PAM-1.0

   This file is auto-generated.

   User changes will be destroyed the next time
   authconfig is run.

   auth required /lib/security/$ISA/pam_env.so
   ```

```
auth sufficient /lib/security/$ISA/pam_unix.so
likeauth nullok

auth sufficient /lib/security/$ISA/pam_krb5.so
use_first_pass

auth sufficient /lib/security/$ISA/pam_winbind.so
use_first_pass

auth required /lib/security/$ISA/pam_deny.so

account required /lib/security/$ISA/pam_unix.so
broken_shadow

account sufficient
/lib/security/$ISA/pam_succeed_if.so uid 100 quiet

account [default=bad success=ok user_unknown=
ignore] /lib/security/$ISA/pam_krb5.so

account [default=bad success=ok user_unknown=
ignore] /lib/security/$ISA/pam_winbind.so

account required /lib/security/$ISA/pam_permit.so

password requisite
/lib/security/$ISA/pam_cracklib.so retry=3

password sufficient /lib/security/$ISA/pam_unix.so
nullok use_authtok md5 shadow

password sufficient /lib/security/$ISA/pam_krb5.so
use_authtok

password sufficient
/lib/security/$ISA/pam_winbind.so use_authtok
password required /lib/security/$ISA/pam_deny.so
session required /lib/security/$ISA/pam_limits.so
session required /lib/security/$ISA/pam_unix.so
session optional /lib/security/$ISA/pam_krb5.so
```

Winbind Configuration for openwsman and sfcb for SUSE Linux Enterprise Server Operating System

Follow the instructions mentioned below to configure openwsman and sfcb on 32-bit OMI installation. In case of a 64-bit installation, replace **lib** with **lib64**.

1. Back up the following files:
   - **/etc/pam.d/openwsman**
   - **/etc/pam.d/sfcb**
   - **/etc/pam.d/system-auth**
   - **/etc/pam.d/common-account**
2. Replace the content of **/etc/pam.d/openwsman/** and **/etc/pam.d/sfcb** with:

   ```
   %PAM-1.0

   auth include common-auth
   auth required /lib/security/pam_nologin.so
   account include common-account
   ```
3. Replace the content of **/etc/pam.d/common-auth** with:

   ```
   auth required pam_env.so
   auth sufficient pam_unix2.so debug
   auth sufficient pam_winbind.so use_first_pass
   debug
   ```
4. Replace the content of **/etc/pam.d/common-account** with:

   ```
   account sufficient pam_unix2.so
   account sufficient pam_winbind.so
   ```

Workaround for the Libssl Issue

If the required library needed by **openwsman** is present on your system, the **autoconf_cim_component.sh** script tries to resolve the **libssl.so** issue. However, if the library is not present, then the script reports the same. Check if the latest version of the **libssl** library is installed on your system and then create a soft link with **libssl.so**.

For example: On a 32-bit Dell OpenManage installation, if you have `libssl.so.0.9.8a` and `libssl.so.0.9.8b` in **/usr/lib**, then create soft link with the latest `libssl.so.0.9.8b`:

- `ln -sf /usr/lib/libssl.so.0.9.8b /usr/lib/libssl.so`
- `ldconfig`

On a 64-bit Dell OpenManage installation, if you have `libssl.so.0.9.8a` and `libssl.so.0.9.8b` in **/usr/lib**, then create soft link with the latest `libssl.so.0.9.8b`:

- `ln -sf /usr/lib64/libssl.so.0.9.8b /usr/lib64/libssl.so`
- `ldconfig`

3

Installing Managed System Software on Microsoft Windows Operating Systems

On Microsoft Windows, an autorun utility appears when you insert the *Dell Systems Management Tools and Documentation* DVD. This utility allows you to choose the systems management software you want to install on your system.

If the autorun program does not start automatically, use the setup program in the **SYSMGMT\srvadmin\windows** directory on the *Dell Systems Management Tools and Documentation* DVD. See the *Dell Systems Software Support Matrix* for a list of operating systems currently supported.

NOTE: Use the *Dell Systems Management Tools and Documentation DVD* to perform an unattended and scripted silent installation of the managed system software. You can also install and uninstall the features from the command line.

Deployment Scenarios for Server Administrator

You can install Dell OpenManage Server Administrator in the following ways:

- Install the Server Administrator Web Server on any system (Dell PowerEdge system, laptop, or desktop) and the Server Instrumentation on another supported Dell PowerEdge system.

  In this method, the Server Administrator Web Server performs the function of a central web server and you can use it to monitor a number of managed systems. Using this method reduces the Server Administrator footprint on the managed systems.

- Continue to install the Server Administrator Web Server and the Server Instrumentation on the same system.

Table 3-1 lists the deployment scenarios for installing and using Server Administrator and helps you make the right choice while selecting the various installation options:

Table 3-1. Deployment Scenarios

You want to	Select
Remotely manage and monitor your entire network of managed systems from your system (laptop, desktop, or server).	**Server Administrator Web Server**. You must then install Server Instrumentation on the managed systems.
Manage and monitor your current system.	**Server Administrator Web Server** and **Server Instrumentation**.
Manage and monitor your current system using some other remote system.	**Remote Enablement** For systems running on Microsoft Windows, **Remote Enablement** is under the **Server Instrumentation** option. You must then install the Server Administrator Web Server on the remote system.
View the status of local and remote storage attached to a managed system and obtain storage management information in an integrated graphical view.	**Storage Management**.
Remotely access an inoperable system, receive alert notifications when a system is down, and remotely restart a system.	**Remote Access Controller**.

NOTE: Install the Simple Network Management Protocol (SNMP) agent on your managed system using your operating system medium before installing the managed system software.

Installing Server Administrator

This section explains how to install the Server Administrator and other managed system software using two installation options:

- Using the setup program at **\SYSMGMT\srvadmin\windows** on the *Dell Systems Management Tools and Documentation* DVD.
- Using the unattended installation method through the Windows Installer Engine **msiexec.exe** (see Table 3-2).

NOTE: SNMP service is stopped and started during Systems Management installation and uninstallation. As a result, services like DSM IT Assistant Connection Service, DSM IT Assistant Network Monitor and other third party services, dependent on SNMP stop. IT Assistant services is started at the end of Systems Management installation or uninstallation. If the third party services are stopped, these services needs to be manually restarted.

NOTE: For Blade systems, you must install Server Administrator on each server module installed in the chassis.

NOTE: During installation of Server Administrator on supported Windows systems, if an **Out of Memory** error message is displayed, you must exit the installation and free up memory. Close other applications or perform any other task that frees up memory, before re-attempting Server Administrator installation.

The setup program invokes the prerequisite checker, which uses your system's Peripheral Component Interconnect (PCI) bus to search for installed hardware such as controller cards.

The Dell OpenManage installer features a **Typical Setup** option and a **Custom Setup** option for installing Server Administrator and other managed system software.

For information on the various components of Server Administrator available in Dell OpenManage and to help you choose the required components to install, see "Deployment Scenarios for Server Administrator."

Typical Installation

When you launch the Server Administrator installation from the prerequisite checker and select the **Typical Setup** option, the setup program installs the following managed system software features:

- Server Administrator Web Server
- Server Instrumentation

- Remote Access Controller
- Intel SNMP Agent
- Broadcom SNMP Agent

During a **Typical** installation, individual management station services that do not meet the specific hardware and software requirement for that service are not installed on the managed systems. For example, the Dell OpenManage Server Administrator Remote Access Controller service software module is not installed during a **Typical** installation unless the managed system has a remote access controller installed on it. You can, however, go to **Custom Setup** and select the **Remote Access Controller** software module for installation.

NOTE: The Remote Enablement feature is available only through the **Custom Setup** option.

NOTE: Server Administrator installation also installs some of the required Visual C++ runtime components on your system.

Custom Installation

The sections that follow describe how to install Server Administrator and other managed system software using the **Custom Setup** option.

NOTE: Management station and managed system services can be installed in the same or in different directories. You can select the directory for installation.

1. Log on with built-in administrator privileges to the system on which you want to install the system management software.
2. Close all open applications and disable any virus-scanning software.
3. Insert the *Dell Systems Management Tools and Documentation* DVD into your system's DVD drive. The autorun menu appears.

4 Select **Dell OpenManage Server Administrator** from the autorun menu and click **Install**.

If the autorun program does not start automatically, go to the **SYSMGMT\srvadmin\windows** directory on the DVD, and run the **setup.exe** file.

The **Dell OpenManage Server Administrator** prerequisite status screen appears and runs the prerequisite checks for the managed system. Any relevant informational, warning, or error messages are displayed. Resolve all error and warning situations, if any.

5 Click the **Install, Modify, Repair, or Remove Server Administrator** option.

The **Welcome to the Install Wizard for Dell OpenManage Server Administrator** screen appears.

6 Click **Next**.

The **Dell Software License Agreement** appears.

7 Click **I accept the terms in the license agreement** and **Next** if you agree.

The **Setup Type** dialog box appears.

8 Select **Custom** and click **Next**.

The **Custom Setup** dialog box appears.

See Table 4-1 and Table 4-2 to help you select the Server Administrator components for your system.

If you are installing Server Administrator on a non-Dell PowerEdge system, the installer displays only the **Server Administrator Web Server** option.

A selected feature has a hard drive icon depicted next to it. A deselected feature has a red **X** depicted next to it. By default, if the prerequisite checker finds a software feature with no supporting hardware, the checker deselects them.

To accept the default directory path to install managed system software, click **Next**. Otherwise, click **Change** and navigate to the directory where you want to install your managed system software, and click **OK**.

9 Click **Next** on the **Custom Setup** dialog box to accept the selected software features for installation.

The **Ready to Install the Program** dialog box is displayed.

NOTE: You can cancel the installation process by clicking **Cancel**. The installation rolls back the changes that you made. If you click **Cancel** after a certain point in the installation process, the installation may not roll back properly, leaving the system with an incomplete installation. For more information, see "System Recovery on Failed Installation."

10 Click **Install** to install the selected software features.

The **Installing Dell OpenManage Server Administrator** screen appears and provides the status and progress of the software features being installed. After the selected features are installed, the **Install Wizard Completed** dialog box appears.

11 Click **Finish** to exit the Server Administrator installation.

If you are prompted to reboot your system, select from the following reboot options to make the installed managed system software services available for use:

- **Yes, reboot my system now.**
- **No, I will reboot my system later.**

NOTE: If you have selected **Remote Enablement** during installation, an error message "A provider, WinTunnel, has been registered in the Windows Management Instrumentation namespace ROOT\dcim\sysman to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests." is logged in Windows Event Log. You can safely ignore this message and continue with installation.

Server Administrator Installation With Citrix Application Server

Citrix remaps all your hard drive letters when installed. For example, if you install Server Administrator on drive **C:** and then install Citrix, it may change your drive letter **C:** to **M:**. Server Administrator may not work properly because of the remapping.

In order to avoid this problem, select one of the following options:

Option 1:

1. Uninstall Server Administrator.
2. Install Citrix.
3. Reinstall Server Administrator.

Option 2:

After installing Citrix, type the following command:

```
msiexec.exe /fa SysMgmt.msi
```

Performing an Unattended Installation of Managed System Software

The Dell OpenManage installer features a **Typical Setup** option and a **Custom Setup** option for the unattended installation procedure.

Unattended installation enables you to simultaneously install Server Administrator on multiple systems. You can perform an unattended installation by creating a package that contains the necessary managed system software files. The unattended installation option also provides several features that enable you to configure, verify, and view information about unattended installations.

The unattended installation package is distributed to the remote systems using a software distribution tool from an independent software vendor (ISV). When the package is distributed, the installation script executes to install the software.

Creating and Distributing the Typical Unattended Installation Package

The **Typical Setup** unattended installation option uses the *Dell Systems Management Tools and Documentation* DVD as the unattended installation package. The `msiexec.exe /i SysMgmt.msi /qb` command accesses the DVD to accept the software license agreement and installs all the required Server Administrator features on selected remote systems. These features are installed on the remote systems based on the system's hardware configuration.

NOTE: After an unattended installation is complete, to use the command line interface (CLI) feature of Server Administrator, you must open a new console window and execute the CLI commands from there. Executing CLI commands from the same console window in which Server Administrator was installed does not work.

You can make the DVD image available to the remote system by either distributing the entire contents of the media, or by mapping a drive from the target system to the location of the DVD image.

Mapping a Drive to Act as the Typical Unattended Installation Package

1. Share an image of the *Dell Systems Management Tools and Documentation* DVD with each remote system on which you want to install Server Administrator.

   You can accomplish this task by directly sharing the DVD or by copying the entire DVD to a drive and sharing the copy.

2. Create a script that maps a drive from the remote systems to the shared drive described in step 1. This script should execute `msiexec.exe /i Mapped Drive\SYSMGMT\srvadmin\windows\SystemsManagement\SysMgmt.msi /qb` after the drive has been mapped.
3. Configure your ISV distribution software to distribute and execute the script created in step 2.
4. Distribute this script to the target systems by using your ISV software distribution tools.

   The script executes to install Server Administrator on each remote system.

5. Reboot each remote system to enable Server Administrator.

Distributing the Entire DVD as the Typical Unattended Installation Package

1. Distribute the entire image of the *Dell Systems Management Tools and Documentation* DVD to your target systems.
2. Configure your ISV distribution software to execute the `msiexec.exe /i DVD Drive\SYSMGMT\srvadmin\windows\SystemsManagement\SysMgmt.msi /qb` command from the DVD image.

   The program executes to install Server Administrator on each remote system.
3. Reboot each remote system to enable Server Administrator.

Creating and Distributing Custom Unattended Installation Packages

To create a custom unattended installation package, perform the following steps:

1. Copy the **SYSMGMT\srvadmin\windows** directory from the DVD to the system hard drive.
2. Create a batch script that executes the installation using the Windows Installer Engine (**msiexec.exe**).

   NOTE: For Customized Unattended Installation, each required feature must be included as a command line interface (CLI) parameter for it to be installed.

   An example is `msiexec.exe /i SysMgmt.msi ADDLOCAL=SA,IWS,BRCM /qb`. (For more information and available feature identifications, see "Customization Parameters").
3. Place the batch script in the **windows** directory on the system hard drive.

Distributing Custom Unattended Installation Packages

For distributing custom unattended installation packages:

NOTE: The **SysMgmt.msi** installation package for Server Administrator used in the **Custom Setup** unattended installation (For more information, see "Creating and Distributing Custom Unattended Installation Packages") is located in the **SYSMGMT\srvadmin\windows\SystemsManagement** directory in the DVD.

1. Configure your ISV distribution software to execute the batch script once your installation package has been distributed.
2. Use your ISV distribution software to distribute the custom unattended installation package to the remote systems.
   The batch script installs Server Administrator along with specified features on each remote system.
3. Reboot each remote system to enable Server Administrator.

Specifying Log File Locations

For managed system MSI installation, run the following command to perform an unattended installation while specifying the log file location:

```
msiexec.exe /i SysMgmt.msi /l*v
"C:\openmanage\logs\SysMgmt.log"
```

Unattended Installation Features

Unattended installation provides the following features:

- A set of optional command line settings to customize an unattended installation.
- Customization parameters to designate specific software features for installation.
- A prerequisite checker program that examines the dependency status of selected software features without having to perform an actual installation.

Optional Command Line Settings

Table 3-2 shows the optional settings available for the **msiexec.exe** MSI installer. Type the optional settings on the command line after **msiexec.exe** with a space between each setting.

NOTE: See **support.microsoft.com** for details about all the command line switches for the Windows Installer Tool.

Table 3-2. Command Line Settings for MSI Installer

Setting	Result
`/i <Package|Product Code>`	This command installs or configures a product. **`/i SysMgmt.msi`** – Installs the Server Administrator software.
`/i SysMgmt.msi /qn`	This command carries out a fresh installation of version 7.0.
`/x <Package|Product Code>`	This command uninstalls a product. **`/x SysMgmt.msi`** – Uninstalls the Server Administrator software.
`/q[n|b|r|f]`	This command sets the user interface (UI) level. **`/q`** or **`/qn`** – no UI. This option is used for silent and unattended installation. **`/qb`** – basic UI. This option is used for unattended but not silent installation. **`/qr`** – reduced UI. This option is used for unattended installation while displaying a modal dialog box showing install progress. **`/qf`** – full UI. This option is used for standard attended installation.

Table 3-2. Command Line Settings for MSI Installer *(continued)*

Setting	Result
/f[p|o|e|d|c|a|u|m|s|v]<Package|ProductCode>	This command repairs a product. **/fp** – This option reinstalls a product if a file is missing. **/fo** – This option reinstalls a product if a file is missing or if an older version of a file is installed. **/fe** – This option reinstalls a product if a file is missing or an equal or older version of a file is installed. **/fd** – This option reinstalls a product if a file is missing or a different version of a file is installed. **/fc** – This option reinstalls a product if a file is missing or the stored checksum value does not match the calculated value. **/fa** – This option forces all files to be reinstalled. **/fu** – This option rewrites all required user-specific registry entries. **/fm** – This option rewrites all required system-specific registry entries. **/fs** – This option overwrites all existing shortcuts. **/fv** – This option runs from the source and re-caches the local package. Do not use this reinstall option for the first installation of an application or feature.
INSTALLDIR=<path>	This command installs a product in a specific location. If you specify an install directory with this switch, it must be created manually prior to executing the CLI install commands or they fail without displaying an error message. **/i SysMgmt.msi INSTALLDIR=c:\OpenManage /qn** – installs a product to a specific location where **c:\OpenManage** is the install location.

For example, running `msiexec.exe /i SysMgmt.msi /qn` installs Server Administrator features on each remote system based on the system's hardware configuration. This installation is done silently and unattended.

Customization Parameters

REINSTALL and **REMOVE** customization CLI parameters provide a way to customize the exact software features to install, reinstall, or uninstall when running a silent or unattended installation. With the customization parameters, you can selectively install, reinstall, or uninstall software features for different systems using the same unattended installation package.
For example, you can choose to install Server Administrator, but not Remote Access Controller service on a specific group of servers, and choose to install Server Administrator, but not Storage Management Service, on another group of servers. You can also choose to uninstall one or multiple features on a specific group of servers.

NOTE: Type the REINSTALL, and REMOVE CLI parameters in upper case, as they are case-sensitive.

NOTE: The software feature IDs mentioned in Table 3-3 are case-sensitive.

Table 3-3. Software Feature IDs

Feature ID	Description
ALL	All features
BRCM	Broadcom NIC Agent
INTEL	Intel NIC Agent
IWS	Dell OpenManage Server Administrator Web Server
OMSM	Server Administrator Storage Management Service
RmtMgmt	Remote Enablement
RAC4	Remote Access Controller (DRAC 4)
RAC5	Remote Access Controller (DRAC 5)
iDRAC	Integrated Dell Remote Access Controller
SA	Server Administrator

NOTE: Only iDRAC6 is supported on *xx*1*x* systems.

You can include the **REINSTALL** customization parameter on the command line and assign the feature ID (IDs) of the software feature that you want to reinstall. For example,

```
msiexec.exe /i SysMgmt.msi REINSTALL=BRCM /qb
```

This command runs the installation for Dell OpenManage Systems Management and reinstalls only the Broadcom agent, in an unattended but not silent mode.

You can include the **REMOVE** customization parameter on the command line and assign the feature ID (IDs) of the software feature that you want to uninstall. For example,

```
msiexec.exe /i SysMgmt.msi REMOVE=BRCM /qb
```

This command runs the installation for Dell OpenManage Systems Management and uninstalls only the Broadcom agent, in an unattended but not silent mode.

You can also choose to install, reinstall, and uninstall features with one execution of the **msiexec.exe** program. For example,

```
msiexec.exe /i SysMgmt.msi REMOVE=BRCM /qb
```

This command runs the installation for managed system software, and uninstalls the Broadcom agent. This execution is in an unattended but not silent mode.

MSI Return Code

An application event log entry is recorded in the **SysMgmt.log** file. Table 3-4 shows some of the error codes returned by the **msiexec.exe** Windows Installer Engine.

Table 3-4. Windows Installer Return Codes

Error Code	Value	Description
ERROR_SUCCESS	0	The action is completed successfully.
ERROR_INVALID_PARAMETER	87	One of the parameters was invalid.

Table 3-4. Windows Installer Return Codes *(continued)*

Error Code	Value	Description
ERROR_INSTALL_USEREXIT	1602	The user canceled the installation.
ERROR_SUCCESS_REBOOT_REQUIRED	3010	A restart is required to complete the installation. This message is indicative of a successful installation.

NOTE: For more information on all the error codes returned by the **msiexec.exe** and **InstMsi.exe** Windows Installer functions, see **support.microsoft.com**.

Managed System Software Installation Using Third-Party Deployment Software

You can use third-party deployment software, such as Altiris Deployment Solution, to install managed systems software on supported Dell systems. To distribute and install Server Administrator using Altiris, start your Altiris application and import **OpenManage_Jobs.bin** located at **SYSMGMT\srvadmin\support\Altiris** on the *Dell Systems Management Tools and Documentation* DVD. Specify a job folder to import **OpenManage_Jobs.bin**. You might need to modify the **Run Script** and **Copy File** tasks to match your deployment environment. When complete, you can then schedule your job to run on the supported Dell systems that are managed from your Altiris Deployment Solution.

System Recovery on Failed Installation

The Microsoft Software Installer (MSI) provides the ability to return a system to its fully working condition after a failed installation. MSI does this by maintaining an undo operation for every standard action it performs during an install, upgrade, or uninstall. This operation includes restoration of deleted or overwritten files, registry keys, and other resources. Windows temporarily saves all files that it deletes or overwrites during the course of an installation or removal, so that they can be restored if necessary, which is a type of rollback. After a successful installation, Windows deletes all of the temporary backup files.

In addition to the rollback of MSI Standard Actions, the Dell OpenManage library also has the ability to undo commands listed in the INI file for each application if a rollback occurs. All files that are modified by the Dell OpenManage installation actions are restored to their original state if a rollback occurs.

When the MSI engine is going through the installation sequence, it ignores all actions that are scheduled as rollback actions. If a Custom Action, MSI Standard Action, or a Dell OpenManage installation action fails, then a rollback starts.

An installation cannot be rolled back once it is completed; transacted installation is only intended as a safety net that protects the system during an installation session. If you want to remove an installed application, you should uninstall that application.

NOTE: Driver installation and removal is not executed as part of the installation transaction and therefore cannot be rolled back if a fatal error occurs during execution.

NOTE: Installations, uninstallations, and upgrades that you cancel during installer cleanup, or after the installation transaction is completed, are not rolled back.

Failed Updates

MSI patches and updates provided by vendors must be applied to the original vendor MSI packages provided. If you intentionally or accidentally repackage an MSI package, or make changes to it directly, patches and updates may fail. MSI packages must not be repackaged; doing so changes the feature structure and Globally Unique Identifier (GUID), which break any provided patches or updates. When it is necessary to make any changes to a vendor-provided MSI package, use a **.mst** transform file.

NOTE: A GUID is 128-bit long, and the algorithm used to generate a GUID guarantees unique GUID. The product GUID uniquely identifies the application. In this case, the product GUID for Server Administrator is {DDA04AC3-F66B-47E0-B189-6008EB1D80A2}.

Upgrading Managed System Software

The Dell OpenManage installer provides an **Upgrade** option for upgrading Server Administrator and other managed system software.

The setup program runs the prerequisite checker, which uses your system's PCI bus to search for installed hardware, such as controller cards.

The setup program installs or upgrades all of the managed system software features that are appropriate for your particular system's hardware configuration.

NOTE: All user settings are preserved during upgrades.

The following procedures show how to upgrade Server Administrator and other managed system software.

Upgrading Guidelines

- You can upgrade to the latest version of Dell OpenManage Server Administrator from any of the previous three versions. For example, upgrade to Dell OpenManage Server Administrator 7.0 is supported only for Dell OpenManage Server Administrator versions 6.3 and later.
- To upgrade from versions earlier than 6.3, uninstall the existing Server Administrator and reinstall the latest Server Administrator.

  NOTE: Uninstalling Server Administrator deletes its user settings. Reinstall Server Administrator and apply the user settings.
- When upgrading an operating system to a major version, uninstall the existing OpenManage software and reinstall the latest OpenManage software. When upgrading only to an update level change (for example, Red Hat Enterprise Linux 5 Update 4 to Red Hat Enterprise Linux 5 Update 5), upgrade to the latest OpenManage software; all user settings are preserved.

  NOTE: Uninstalling OpenManage software deletes its user settings. Reinstall OpenManage software and apply the user settings.
- If you have installed Server Administrator Web Server version 7.0, ensure that you install Server Instrumentation version 7.0 on your managed system. Accessing an earlier version of Server Administrator using Server Administrator Web Server version 7.0 may display an error.

Upgrade

1. Insert the *Dell Systems Management Tools and Documentation* DVD into your system's DVD drive. The autorun menu appears.
2. Select **Dell OpenManage Server Administrator** and click **Install**.

   If the autorun program does not start automatically, go to the **SYSMGMT\srvadmin\windows** directory on the DVD, and run the **setup.exe** file.

   The **Dell OpenManage Server Administrator prerequisite** status screen appears and runs the prerequisite checks for the managed station. Any relevant informational, warning, or error messages are displayed. Resolve all error and warning situations, if any.
3. Click the **Install, Modify, Repair, or Remove Server Administrator** option. The **Welcome to the Install Wizard for Dell OpenManage Server Administrator** screen appears.
4. Click **Next**.

   The **Dell Software License Agreement** appears.
5. Click **I accept the terms in the license agreement** and **Next** if you agree.

   The **Setup Type** dialog box appears.
6. Continue the installation steps as mentioned in the custom installation section. Follow the procedure from "step 8" in "Custom Installation."

For an unattended upgrade, the `msiexec.exe /i SysMgmt.msi /qb` command accesses the DVD to accept the software license agreement and upgrades all the required Server Administrator features on selected remote systems. All major user settings are retained during an unattended upgrade.

Modify

If you want to add or remove Server Administrator components:

1. Navigate to the Windows **Control Panel**.
2. Click **Add/Remove Programs**.
3. Click **Dell OpenManage Server Administrator** and click **Change**.

   The **Welcome to the Install Wizard for Dell OpenManage Server Administrator** dialog box appears.

4 Click **Next**.

The **Program Maintenance** dialog box appears.

5 Select the **Modify** option and click **Next**.

The **Custom Setup** dialog box appears.

6 To select a specific managed system software application, click the drop-down arrow beside the listed feature and select either **This feature will be installed…** to install the feature, or **This feature will not be available** to ignore the feature.

A selected feature has a hard drive icon depicted next to it. A deselected feature has a red **X** next to it. By default, if the prerequisite checker finds a software feature with no supporting hardware, the checker deselects the feature.

7 Click **Next** to accept the selected software features for installation.

The **Ready to Modify the Program** dialog box appears.

8 Click **Install** to install the selected software features.

The **Installing Dell OpenManage Server Administrator** screen is displayed. Messages give the status and progress of the software features being installed.

When the selected features are installed, the **Install Wizard Completed** dialog box appears.

9 Click **Finish** to exit the Server Administrator installation.

If you are prompted to reboot your system, select from the following reboot options to make the managed system software services available for use:

- **Yes, reboot my system now.**
- **No, I will reboot my system later.**

NOTE: If you run the installer from another system and try to add a component using the **Modify** option, the installer may display an error. A corrupt source on the system on which you run the installer may have caused the error. You can verify this by checking the following registry entry: **HKLM\Software\Classes\Installer\Products\<GUID>\sourcelist\lastusedsource**. If the value of **lastusedsource** is a negative number, it means that the source is corrupt.

Repair

If you want to repair an installed Server Administrator component that may be damaged:

1. Navigate to the Windows **Control Panel**.
2. Click **Add/Remove Programs**.
3. Click **Dell Server Administrator** and click **Change**.

   The **Welcome to the Install Wizard for Dell OpenManage Server Administrator** dialog box appears.
4. Click **Next**.

   The **Program Maintenance** dialog box appears.
5. Select the **Repair** option and click **Next**.

   The **Ready to Repair the Program** dialog box appears.
6. Click **Install** to install the selected software features.

   The **Installing Dell OpenManage Server Administrator** screen appears and provides the status and progress of the software features being installed.

   When the selected features are installed, the **Install Wizard Completed** dialog box appears.
7. Click **Finish** to exit the Server Administrator installation.

   If you are prompted to reboot your system, select from the following reboot options:

   - **Yes, reboot my system now.**
   - **No, I will reboot my system later.**

Uninstalling Managed System Software

You can uninstall managed system software features by using the *Dell Systems Management Tools and Documentation* DVD, or your operating system. You can simultaneously perform unattended uninstallation on multiple systems.

Uninstalling Managed System Software Using Dell-Provided Media

1. Insert the *Dell Systems Management Tools and Documentation* DVD into your system's DVD drive.

   If the setup program does not start automatically, run the **setup.exe** in the **SYSMGMT\srvadmin\windows** directory on the DVD.

   The **Dell OpenManage Server Administrator prerequisite** status screen appears and runs the prerequisite checks for the managed system. Any relevant informational, warning, or error messages detected during checking are displayed. Resolve all error and warning situations, if any.

2. Click the **Install, Modify, Repair, or Remove Server Administrator** option.

   The **Welcome to the Install Wizard for Dell OpenManage Server Administrator** screen appears.

3. Click **Next**.

   The **Program Maintenance** dialog box appears.

   This dialog enables you to modify, repair, or remove the program.

4. Select the **Remove** option and click **Next**.

   The **Remove the Program** dialog box appears.

5. Click **Remove**.

   The **Uninstalling Dell OpenManage Server Administrator** screen appears and provides the status and progress of the software features being uninstalled.

   When the selected features are uninstalled, the **Install Wizard Completed** dialog box appears.

6. Click **Finish** to exit the Server Administrator uninstallation.

   If you are prompted to reboot your system, select from the following reboot options:

   - **Yes, reboot my system now.**
   - **No, I will reboot my system later.**

   All Server Administrator features are uninstalled.

Uninstalling Managed System Software Features Using the Operating System

1. Navigate to the Windows **Control Panel**.
2. Click **Add/Remove Programs**.
3. Click **Dell OpenManage Server Administrator** and click **Remove**.

   The **Add or Remove Programs** dialog box appears.
4. Click **Yes** to confirm uninstallation of Server Administrator.

   The **Dell OpenManage Server Administrator** screen appears and provides the status and progress of the software features being uninstalled.

   If you are prompted to reboot your system, select from the following reboot options:

   - **Yes, reboot my system now.**
   - **No, I will reboot my system later.**

   All Server Administrator features are uninstalled.

Unattended Uninstall Using the Product GUID

If you do not have the installation DVD or the MSI package available during an uninstallation, you can use the following command line to uninstall Dell OpenManage systems management software on managed systems or management stations running Windows operating system. For these cases, you can use the package GUIDs to uninstall the product.

For managed systems, use the following command:

```
msiexec.exe /x {DDA04AC3-F66B-47E0-B189-6008EB1D80A2}
```

Unattended Uninstallation of Managed System Software

The Dell OpenManage installer features an unattended uninstallation procedure. Unattended uninstallation enables you to simultaneously uninstall managed systems software from multiple systems. The unattended uninstallation package is distributed to the remote systems using a software distribution tool from an ISV. When the package is distributed, the uninstallation script executes to uninstall the software.

Distributing the Unattended Uninstallation Package

The *Dell Systems Management Tools and Documentation* DVD is pre-configured to act as the unattended uninstallation package. To distribute the package to one or more systems:

1. Configure your ISV distribution software to execute the `msiexec.exe /x DVD Drive\SYSMGMT\srvadmin\windows\SystemsManagement\SysMgmt.msi /qb` command, if you are using the DVD, after the unattended uninstallation package has been distributed.
2. Use your ISV distribution software to distribute the typical unattended uninstallation package to the remote systems.

   The program executes to uninstall managed systems software on each remote system.
3. Reboot each remote system to complete uninstallation.

Unattended Uninstall Command Line Settings

Table 3-2 shows the unattended uninstall command line settings available for unattended uninstallation. Type the optional settings on the command line after `msiexec.exe /x SysMgmt.msi` with a space between each setting.

For example, running `msiexec.exe /x SysMgmt.msi /qb` runs the unattended uninstallation, and displays the unattended uninstallation status while it is running.

Running `msiexec.exe /x SysMgmt.msi /qn` runs the unattended uninstallation, but silently (without displaying messages).

4

Installing Managed System Software on Supported Linux and VMware ESX

The Dell OpenManage installer supports both 32-bit and 64-bit architecture. The following table explains the operating system installation matrix for Dell OpenManage.

Table 4-1. Operating System Installation Matrix for Dell OpenManage

Operating System Architecture	OpenManage 32-bit Architecture	OpenManage 64-bit Architecture
Red Hat Enterprise Linux 5 32-bit	Install or Upgrade	Not supported
Red Hat Enterprise Linux 5 64-bit	Upgrade (Upgrade is supported from N-1, N-2, and N-3)	Install or Upgrade (Upgrade is supported from N-1 and N-2)
Red Hat Enterprise Linux 5.7 64-bit	Not supported	Install
Red Hat Enterprise Linux 6 64-bit	Not supported	Install
Red Hat Enterprise Linux 6.1 64-bit	Not supported	Install
SUSE Linux Enterprise Server (SLES) 10 64-bit	Upgrade (Upgrade is supported from N-1, N-2, and N-3)	Install or Upgrade (Upgrade is supported from N-1 and N-2)
SUSE Linux Enterprise Server (SLES) 11 64-bit	Upgrade (Upgrade is supported from N-1, N-2, and N-3)	Install or Upgrade (Upgrade is supported from N-1 and N-2)
SUSE Linux Enterprise Server (SLES) 11 SP 2 64-bit	Not supported	Install

Table 4-1. Operating System Installation Matrix for Dell OpenManage *(continued)*

Operating System Architecture	OpenManage 32-bit Architecture	OpenManage 64-bit Architecture
ESX 4.0 U3 64-bit	Install or Upgrade	Not supported
ESX 4.1 U2 64-bit	Install or Upgrade	Not supported
ESXi 4.0 U3 64-bit	Not supported	Install
ESXi 4.1 U2 64-bit	Not supported	Install
ESXi 5.0	Not supported	Install
ESXi 5.0 P1* 64-bit	Not supported	Install

* Patch Release ESXi500-201109001

NOTE: On a Dell OpenManage upgrade, it is recommended that you upgrade to the latest open source components available on the DVD.

NOTE: With scripted installation using **srvadmin-install.sh** or Yum repository-based installations, the **srvadmin-cm** RPM that provides 32-bit Inventory Collector does not get installed on a 64-bit operating system. Inventory Collector utility feeds software inventory data to management station applications like ITA. If required, **srvadmin-cm** package can be installed from appropriate subfolders under **SYSMGMT/srvadmin/linux/RPMS/supportRPMS/srvadmin** from the *Dell Systems Management Tools and Documentation* DVD. Since **srvadmin-cm** RPM requires 32-bit version of **zlib** and **compat-libstdc++** libraries, ensure that these libraries are installed on the system.

NOTE: If you are upgrading the operating system to a major version (example, SLES 10 to SLES 11), uninstall the existing version of Dell OpenManage and install the supported version.

NOTE: Before you migrate to a 64-bit version of Dell OpenManage software, ensure that you uninstall the 32-bit Dell OpenManage and other OpenSource components (**openwsman-server**, **openwsman-client**, **libwsman1**, **sblim-sfcb**, **sblim-sfcc**, **libcmpiCppImpl0**, **libsmbios2**, **smbios-utils-bin**) installed as part of the 32-bit Dell OpenManage.

The installation scripts and RPM packages specific to supported Linux and VMware ESX operating systems are provided to install and uninstall the Dell OpenManage Server Administrator and other managed system software components. These installation scripts and RPMs are located in the `SYSMGMT/srvadmin/linux/supportscripts` directory available in the *Dell Systems Management Tools and Documentation* DVD.

The install script **srvadmin-install.sh** allows silent or interactive installation. By including the **srvadmin-install.sh** script in your Linux scripts, you can install Server Administrator locally or across a network on single or multiple systems.

The second install method uses the Server Administrator RPM packages provided in the custom directories and the Linux **rpm** command. You can write Linux scripts that install Server Administrator locally or across a network on single or multiple systems.

Using a combination of the two install methods is not recommended and may require that you manually install the required Server Administrator RPM packages provided in the custom directories, using the Linux **rpm** command.

For information on supported platforms and supported operating systems, see the *Dell Systems Software Support Matrix* at **support.dell.com/support/edocs/software/omswrels**.

Software License Agreement

The software license for the Red Hat Enterprise Linux and SUSE Linux Enterprise Server version of the Dell OpenManage software is located on the *Dell Systems Management Tools and Documentation* DVD. Read the **license.txt** file. By installing or copying any of the files on the Dell-provided media, you are agreeing to the terms in this file. This file is also copied to the root of the software tree where you install the Dell OpenManage software.

Server Administrator Device Drivers

Server Administrator includes two device drivers for Linux: Systems Management Base Driver (**dcdbas**) and BIOS Update Driver (**dell_rbu**). Server Administrator uses these drivers to perform the systems management functions on supported Linux operating systems. Depending on the system, Server Administrator loads one or both of these drivers if required.

The device drivers for Linux have been released as open source under the GNU General Public License v2.0. They are available in Linux kernels from **kernel.org** starting with kernel 2.6.14.

If the Server Administrator drivers are available with the operating system, Server Administrator uses those versions of the drivers. If the Server Administrator drivers are not available with the operating system, Server Administrator uses its Dynamic Kernel Support (DKS) feature to build the drivers when needed.

Dynamic Kernel Support

Server Administrator includes DKS, a feature that Server Administrator uses to build its device drivers automatically for a running kernel if needed.

If you see the following message during Server Administrator Device Drivers startup, then Server Administrator has attempted to use the DKS feature, but was unable to use the feature because certain prerequisites were not met:

```
Building <driver> using DKS... [FAILED]
```

where `<driver>` is `dcdbas` or `dell_rbu`

NOTE: Server Administrator logs messages to the **/var/log/messages** log file.

To use DKS, identify which kernel is running on the managed system, and check the DKS prerequisites.

Determining the Running Kernel

1. Log in as `root`.
2. Type the following command at a console:

   ```
   uname -r
   ```

3. Press <Enter>.

The system displays a message identifying the running kernel.

Dynamic Kernel Support Prerequisites

For managed system software to use DKS, the following dependencies must be met before starting Server Administrator.

- The running kernel must have loadable module support enabled.
- The source for building kernel modules for the running kernel must be available from **/lib/modules/`uname –r`/build**. On systems running SUSE Linux Enterprise Server, the **kernel-source** RPM provides the necessary

kernel source. On systems running Red Hat Enterprise Linux, the **kernel-devel** RPMs provide the necessary kernel source for building kernel modules.

- The GNU **make** utility must be installed. The **make** RPM provides this utility.
- The GNU C compiler (**gcc**) must be installed. The **gcc** RPM provides this compiler.
- The GNU linker (ld) must be installed. The **binutils** RPM provides this linker.

When these prerequisites have been met, DKS automatically builds a device driver when needed during Server Administrator startup.

Using Dynamic Kernel Support After Server Administrator Installation

To enable Server Administrator to support a kernel that is not supported by a precompiled device driver and is loaded after Server Administrator has been installed, perform the following step: Ensure that the DKS prerequisites are met on the managed system and boot the new kernel on the system.

Server Administrator builds a device driver for the kernel running on the system the first time Server Administrator starts after the kernel is loaded. By default, Server Administrator starts during system startup.

Copying a Dynamically Built Device Driver to Systems Running the Same Kernel

When the Server Administrator dynamically builds a device driver for the running kernel, it installs the device driver in the **/lib/modules/*<kernel>*/kernel/drivers/firmware** directory, where ***<kernel>*** is the kernel name (returned by typing `uname -r`). If you have a system running the same kernel for which a device driver was built, you can copy the newly built device driver to the **/var/omsa/dks/*<kernel>*** directory on the other system for use by the Server Administrator. This allows the Server Administrator to use DKS on multiple systems without having to install the kernel source on every system.

For example, System A is running a kernel that is not supported by one of the Server Administrator precompiled device drivers. System B is running the same kernel. Perform the following steps to build a device driver on system A and copy the device driver to system B for use by Server Administrator:

1. Ensure that the DKS prerequisites are met on system A.
2. Start Server Administrator on system A.

   Server Administrator builds a device driver for the kernel running on system A during startup.
3. Type `uname -r` on system A to determine the name of the running kernel.
4. Copy any **dcdbas.*** or **dell_rbu.*** files in the **/lib/modules/*<kernel>*/kernel/drivers/firmware** directory on system A to the **/var/omsa/dks/*<kernel>*** directory on system B, where ***<kernel>*** is the kernel name returned by typing `uname -r` in step 3.

   NOTE: The **/lib/modules/*<kernel>*/kernel/drivers/firmware** directory may contain one or more of the following files: **dcdbas.*** or **dell_rbu.***

   NOTE: You may have to create the **/var/omsa/dks/*<kernel>*** directory on system B. For example, if the kernel name is 1.2.3-4smp, you can create the directory by typing: `mkdir -p /var/omsa/dks/1.2.3-4smp`.
5. Start Server Administrator on system B.

   Server Administrator detects that the device driver you copied to the **/var/omsa/dks/*<kernel>*** directory supports the running kernel and uses that device driver.

   NOTE: When you have uninstalled Server Administrator from system B, the **/var/omsa/dks/*<kernel>*/*.** files that you copied to system B are not removed. You must remove the files if they are no longer needed.

OpenIPMI Device Driver

The Server Instrumentation feature of Server Administrator requires the OpenIPMI device driver that provides IPMI-based information and functionality.

All supported Linux systems contain the required version of IPMI module in the default kernel itself. You do not have to install the IPMI RPM. For more information on supported systems, see the *Dell Systems Software Support Matrix* available at **support.dell.com/support/edocs/software/omswrels**.

Degradation of Functionality When the Server Administrator Instrumentation Service is Started

After Server Administrator is installed, the Server Administrator Instrumentation Service performs a run-time check of the OpenIPMI device driver whenever it is started. The Server Administrator Instrumentation Service is started whenever you run either the **srvadmin-services.sh start** or **srvadmin-services.sh restart** commands, or when you restart the system (during which the Server Administrator Instrumentation Service is started).

Server Administrator installation blocks the installation of Server Administrator packages if an appropriate version of the OpenIPMI device driver is not currently installed on the system. However, it is still possible, though not typical, that you can uninstall or replace a sufficient version of the OpenIPMI device driver after Server Administrator has been installed. Server Administrator cannot prevent this.

To account for a user uninstalling or replacing a sufficient version of the OpenIPMI device driver after Server Administrator has been installed, the Server Administrator Instrumentation Service checks the OpenIPMI device driver version whenever it is started. If a sufficient version of the OpenIPMI device driver is not found, the Server Administrator Instrumentation Service degrades itself so that it does not provide any of the IPMI-based information or functionality. Primarily, this means that it does not provide any probe data (for example, fans, temperatures, and voltage probe data).

Installing Managed System Software

This section explains how to install managed system software using the following installation options:

- Using the **srvadmin-install.sh** shell script

NOTE: If you have downloaded the managed system software installer (available as a **.tar.gz** file) from **support.dell.com**, the **srvadmin-install.sh** shell script is present as **setup.sh** in the root directory.

- Using the RPM command

For information on the various components of Server Administrator available in Dell OpenManage version 7.0 and to help you choose the required components to install, see "Deployment Scenarios for Server Administrator."

Prerequisites for Installing Managed System Software

- You must be logged in as `root`.
- The running kernel must have loadable module support enabled.
- The **/opt** directory must have at least 250 MB of free space, and the **/tmp**, **/etc**, and **/var** directories must each have at least 20 MB of free space.
- The **ucd-snmp** or **net-snmp** package that is provided with the operating system must be installed if you use SNMP to manage your server. If you want to use supporting agents for the **ucd-snmp** or **net-snmp** agent, you must install the operating system support for the SNMP standard before you install Server Administrator. For more information about installing SNMP, see the installation instructions for the operating system you are running on your system.

  NOTE: When installing RPM packages, to avoid warnings concerning the RPM–GPG key, import the key with a command similar to the following:

  ```
  rpm --import <OM DVD mountpoint>/SYSMGMT/srvadmin/
  linux/RPM-GPG-KEY
  ```

- In case of Red Hat Enterprise Linux 6, install the wsman and sblim packages from the operating system DVD. To install these packages:
  - **a** In the **Package selection** screen, select **Basic Server**.
  - **b** Select **Customize now** and click **Next**.
  - **c** Select the **System Management** group.

d From the sub-category, select the **Web-based Enterprise Management→ Optional Packages** option. The default selected packages are:

- openwsman-client
- sblim-sfcb
- sblim-wbemcli
- wsmancli

Deselect the **sblim-wbemcli** package from the above list.

e Select the **openwsman-server** and click **Next**.

f After the operating system installation, install the following package from the operating system DVD or using the Yum utility:

- libcmpiCppImpl0

- Install all the prerequisite RPMs required for successful installation.

  If your system had VMware ESX (version 4.0 or 4.1) factory-installed, Red Hat Enterprise Linux (versions 5.x and 6.0), or SUSE Linux Enterprise Server (version 10 and 11), see the "Dependent RPMs for Remote Enablement" section for information on any RPMs that you need to manually install prior to installing managed system software. Typically, you may not need to manually install any RPMs.

Installing Managed System Software Using Dell-Provided Media

The Dell OpenManage installer uses RPMs to install each component. The media (DVD) is divided into subdirectories to enable easy custom installation.

NOTE: On the Red Hat Enterprise Linux 5.x operating system, DVDs are auto-mounted with the **-noexec** mount option. This option does not allow you to run any executable from the DVD. Manually mount the DVD and then run executables.

To review the software before you install it, follow this procedure:

1. Load the *Dell Systems Management Tools and Documentation* DVD into your system's DVD drive.
2. Mount the DVD, if required.
3. When you have mounted the DVD, navigate to:
   `<OM DVD mount point>/SYSMGMT/srvadmin/linux/`

   The installation script and RPM folder are available under the Linux directory.

Express Install

Use the provided shell script to perform the express installation on supported Linux and VMware ESX operating systems.

NOTE: On the Red Hat Enterprise Linux 5.x operating system, DVDs are auto-mounted with the **-noexec** mount option. This option does not allow you to run any executable from the DVD. Manually mount the DVD and then run executables.

1. Log in as `root` to the system running the supported operating system where you want to install the managed system components.
2. Insert the *Dell Systems Management Tools and Documentation* DVD into the DVD drive.
3. Mount the DVD, if required.
4. Navigate to *<OM DVD mount point>*/**SYSMGMT/srvadmin/linux/supportscripts** directory. Run the **srvadmin-install.sh** shell script as follows, which performs an express installation.

   ```
   sh srvadmin-install.sh --express
   ```

   or

   ```
   sh srvadmin-install.sh -x
   ```

The setup program installs the following managed system software features:

- Server Administrator Web Server
- Server Instrumentation
- Storage Management
- Remote Access Controller

Remote enablement is not installed and Server Administrator services do not start automatically.

NOTE: The 32-bit srvadmin-cm RPM is not installed when OpenManage is installed on a 64-bit operating system.
If required, the srvadmin-cm package can be installed from the appropriate subfolders under **SYSMGMT/srvadmin/linux/RPMS/supportRPMS/srvadmin** from the *Dell Systems Management Tools and Documentation* DVD. Inventory Collector utility carried as part of srvadmin-cm rpm feeds software inventory data to Dell Management Station applications like ITA.

5 Start the Server Administrator services after the installation using the **srvadmin-services.sh** script by using the **sh srvadmin-services start** command.

Component-Specific Install Using RPM Commands

The RPMs specific to a particular OpenManage component are grouped together. To facilitate an RPM-based installation, install the RPMs from the following directories:

- SYSMGMT/srvadmin/linux/custom/<*OS*>/Remote-Enablement/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/SA-WebServer/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/Server-Instrumentation/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/add-RAC4/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/add-RAC5/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/add-StorageManagement/<*arch*>
- SYSMGMT/srvadmin/linux/custom/<*OS*>/add-iDRAC/<*arch*>

Where <OS> is the supported operating system and <*arch*> is 32-bit (i386) or 64-bit (x86_64).

NOTE: In case of SUSE Linux Enterprise Server version 10 and 11:
32-bit Dell OpenManage rpm packages are provided for upgrade from the previous 32-bit installs only.
If you do not have an existing installation, then you cannot install a 32-bit version of the software. You must install operating system specific rpms from the 64-bit directory.

For example, if you are running Red Hat Enterprise Linux version 5, you can customize the installation by adding the RPMs from the following directories:

SYSMGMT/srvadmin/linux/custom/RHEL5/add-StorageManagement/<*arch*>	Storage Management component packages
SYSMGMT/srvadmin/linux/custom/RHEL5/SAWebServer/<*arch*>	Server Administrator Web Server component packages
SYSMGMT/srvadmin/linux/custom/RHEL5/Server-Instrumentation/<*arch*>	Server Instrumentation packages

The DVD provides RPMs that enable repository-based installation using clients such as Yum, Zypper, and Rug. There are RPMs that install the entire set or you can select individual RPMs to install specific components. The RPMs are available at:

`SYSMGMT/srvadmin/linux/RPMS/supportRPMS/metaRPMS`

NOTE: For a comprehensive list of RPMs and their description, see the "Dell OpenManage Linux Installer Packages."

The following list of RPMs enables the installation of a particular RPM set.

Table 4-2. Meta RPMs

Meta RPMs	Details
srvadmin-all	Installs all the components.
srvadmin-base	Installs the Server Instrumentation component. This component has to be installed before installing any of the other specific components.
srvadmin-idrac	Installs the iDRAC component.
srvadmin-rac4	Installs the DRAC 4 component.

Table 4-2. Meta RPMs *(continued)*

Meta RPMs	Details
srvadmin-rac5	Installs the DRAC 5 component.
srvadmin-standardAgent	Installs the Remote Enablement component.
srvadmin-storageservices	Installs the storage services component.
srvadmin-webserver	Installs the web server component.

The following is an example of custom RPMs-based installation of Server Administrator, including the installation of the Remote Enablement feature and the Storage Management Service components.

NOTE: On the Red Hat Enterprise Linux 5.x operating system, DVDs are auto-mounted with the **-noexec** mount option. This option does not allow you to run any executable from the DVD. You have to manually mount the DVD and then run executables.

1. Log in as `root` to the system running the supported operating system where you want to install the managed system components.
2. Insert the *Dell Systems Management Tools and Documentation* DVD into the DVD drive.
3. Navigate to the operating system specific directory corresponding to your system.
4. Type the following command:

   ```
   rpm –ivh Server-Instrumentation/<arch>/*.rpm
   add-StorageManagement/<arch>/*.rpm
   RemoteEnablement/<arch>/*.rpm
   ```

   Server Administrator services do not start automatically.

   NOTE: Ensure that you install Server Instrumentation or Remote Enablement before installing Remote Access Controller or Storage Management.

   NOTE: If you choose to install the Remote Enablement feature, ensure that you install the dependent RPMs before installing this feature. For more information on installing dependent RPMs, see "Dependent RPMs for Remote Enablement."

5 Start the Server Administrator services after the installation by using the command:

```
sh srvadmin-services start
```

NOTE: You can install Server Administrator on any system that meets operating system dependencies. However, after installation, certain Server Administrator services may not be started on unsupported systems.

NOTE: When Dell OpenManage Server Administrator is installed on a system, dependency issues related to RPMs may occur. To resolve these issues, install the missing RPMs from **SYSMGMT/srvadmin/linux/RPMS/supportRPMS/opensource-components**. If the RPMs are not available in this directory, install these RPMs from the operating system media. If not available on the media, search for these RPMs on the Internet.

Using the Shell Script to Perform the Custom Installation

You can run the Server Administrator Custom Install script in an interactive mode.

The basic usage of the script is:

```
srvadmin-install.sh [OPTION]...
```

Server Administrator Custom Installation Utility

This utility runs in interactive mode if you do not specify any options, and runs silently if you provide one or more options.

The options are:

[**-x|--express**] — Installs all components (including RAC, if available) any other options passed are ignored.

[**-d|--dellagent**] — Installs Server Instrumentation components.

[**-c|--cimagent**] — Installs Remote Enablement components.

[**-s|--storage**] — Installs Storage Management, including Server Instrumentation.

[**-r|--rac**] — Installs applicable RAC components, including Server Instrumentation.

[**-w|--web**] — Installs Server Administrator Web Server.

[**-u|--update**] — Updates applicable Server Administrator components.

[**-h|--help**] — Displays the help text.

Options that can be used along with the options above:

[**-p|--preserve**] — Preserves the screen without clearing off.

NOTE: If you do not use the **[-p | --preserve]** option during the installation, the history information on the screen gets cleared off.

[**-a|--autostart**] — Starts the installed services after components have been installed.

Using the Shell Script to Perform the Installation in Interactive Mode

This installation procedure uses the `srvadmin-install.sh` to prompt you for the installation of specific components.

1. Log in as `root` to the system running the supported operating system where you want to install the managed system components.
2. Insert the *Dell Systems Management Tools and Documentation* DVD into the DVD drive.
3. Mount the DVD, if required.
4. Navigate to *<OM DVD mount point>*/**SYSMGMT/srvadmin/linux/supportscripts**.
5. Execute the script with the `sh srvadmin-install.sh` command and accept the terms of the end-user license agreement.

   Executing the command displays a list of component options. If any of the components are already installed, then those components are listed separately with a check mark next to them. The Server Administrator installation options are displayed.
6. Press <*c*> to copy, <*i*> to install, <*r*> to reset and start over, or <*q*> to quit. If you press <*c*>, you are prompted to enter the absolute destination path.

   When the installation is complete, the script has an option for starting the services.
7. Press <*y*> to start the services or <Enter> to exit.

Using the Install Script To Run in the Silent Mode

Perform the following steps for a silent installation using the `srvadmin-install.sh` shell script:

1. Log on as `root` to the system running the supported operating system where you want to install the managed system components.
2. Insert the *Dell Systems Management Tools and Documentation* DVD into the DVD drive.
3. Mount the DVD, if required.
4. Navigate to *<OM DVD mount point>*/**SYSMGMT/srvadmin/linux/supportscripts**.
5. To install the Storage Management Service components, type the following command:

   `sh srvadmin-install.sh --storage` (long options)
   or
   `sh srvadmin-install.sh -s` (short options)

   NOTE: Long options can be combined with short options, and vice-versa.

   Server Administrator services do not start automatically.
6. Start Server Administrator services after the installation by typing the command:

   `sh srvadmin-services start`

NOTE: After installing Server Administrator, log out and then log in again to access the Server Administrator Command Line Interface (CLI).

Determining the OpenManage Server Administrator Architecture

Use the following command to identify if the already installed OpenManage Server Administrator is of 32-bit or 64-bit architecture:

```
rpm -q --queryformat "%{NAME} - %{ARCH}\n"  `rpm -qa |
grep srvadmin`
```

The system displays a message identifying the architecture where, i386 refers to 32-bit and x86_64 refers to 64-bit.

Managed System Software Installation Using Third-Party Deployment Software

You can use third-party deployment software, such as Altiris Deployment Solution, to install managed system software on supported Dell servers. To distribute and install managed system software using Altiris, start your Altiris application and import **OpenManage_Jobs.bin** located at **SYSMGMT\srvadmin\support\Altiris** on the *Dell Systems Management Tools and Documentation* DVD. Specify a job folder to import **OpenManage_Jobs.bin**. You might need to modify the **Run Script** and **Copy File** tasks to match your deployment environment. Once complete, you can then schedule your job to run on the supported Dell systems that are managed from within your Altiris Deployment Solution.

Uninstalling Managed System Software

To uninstall Managed System Software, you must be logged in as `root`.

Uninstalling Managed System Software Using the Uninstall Script

An uninstallation script is installed when you install Server Administrator. You can execute the script by typing `srvadmin-uninstall.sh` and then pressing <Enter>.

Uninstalling Managed System Software Using the RPM Command

The individual components of Dell OpenManage can be uninstalled without uninstalling all of Dell OpenManage. Following are examples:

To uninstall only the Server Administrator Web Server, use this command:

```
rpm -e `rpm -qa | grep srvadmin-iws`
```

During an uninstallation, files in which user settings are made are preserved with the **.rpmsave** file extension. Log files are also preserved after the uninstallation.

5

Installing Managed System Software On Microsoft Windows Server 2008 Core and Microsoft Hyper-V Server

The Server Core installation option of the Microsoft Windows Server 2008 and Hyper-V Server operating system provides a minimal environment for running specific server roles that reduce the maintenance and management requirements and the attack surface for those server roles. A Windows Server 2008 Core or Hyper-V Server installation installs only a subset of the binaries that are required by the supported server roles. For example, the Explorer shell is not installed as part of a Windows Server 2008 Core or Hyper-V Server installation. Instead, the default user interface for a Windows Server 2008 Core or Hyper-V Server installation is the command prompt.

NOTE: Windows Server 2008 Core or Hyper-V Server operating system does not support a graphical user interface (GUI) based installation of Dell OpenManage software components. You need to install OpenManage software in the Command Line Interface (CLI) mode on Server Core. For more information on Server Core, see **microsoft.com.**

NOTE: On Windows 7, to install the systems management software successfully, you must log in using an account which belongs to the **Administrators Group** and must execute the **setup.exe** using the option **Run as administrator** from the right-click menu.

NOTE: You have to log in as a built-in administrator to install the systems management software on Windows Server 2008 and Windows Vista. For more information about the built-in Administrator account, see the Windows Server 2008 Help.

Running Prerequisite Checker In CLI Mode

You must run the prerequisite checker in the CLI mode as Windows Server 2008 and Hyper-V Server does not support the GUI mode. For more information, see "Prerequisite Checker."

Installing Managed System Software in CLI Mode

Launch the MSI file from the command prompt using the command `msiexec /i SysMgmt.msi` The MSI file **SysMgmt.msi** is located at **SYSMGMT\srvadmin\windows\SystemsManagement** on the *Dell Systems Management Tools and Documentation* DVD.

To install the localized version of the managed system software, type `msiexec /I SysMgmt.msi TRANSFORMS=<languauge_transform>.mst` in the command prompt. Replace **<***language_transform***>.mst** with the appropriate language file:

- **1031.mst** (German)
- **1034.mst** (Spanish)
- **1036.mst** (French)
- **1041.mst** (Japanese)
- **2052.mst** (Simplified Chinese)

NOTE: For more information on optional command line settings for the MSI installer, see "Command Line Settings for MSI Installer."

Uninstalling Systems Management Software

To uninstall managed system software, type `msiexec /x sysmgmt.msi` in the command prompt.

6

Installing Dell OpenManage Software on VMware ESXi

VMware ESXi is factory-installed on some Dell systems. For a list of these systems, see the latest *Dell Systems Software Support Matrix* at **support.dell.com/support/edocs/software/omswrels**. You can use Server Administrator Web Server version 7.0 to access VMware ESXi 4.0 U3, VMware ESXi 4.1 U2, VMware ESXi 5.0, and VMware ESXi 5.0 P1 systems.

Dell OpenManage Server Administrator is available as a **.zip** file for installing on systems running VMware ESXi. The **zip** file, **OM-SrvAdmin-Dell-Web-7.0.0-<*bldno*>.VIB-ESX<*version*>i_<*bld-revno*>.zip**, where <*version*> is the supported ESXi version, is available for download at **support.dell.com**.

Download VMware vSphere Command Line Interface (vSphere CLI) from **vmware.com** and install on your Microsoft Windows or Linux system. Alternately, you can import VMware vSphere Management Assistant (vMA) to your ESXi host.

Using the vSphere CLI

To install Dell OpenManage software on VMware ESXi using the vSphere CLI:

1. Copy and unzip the **OM-SrvAdmin-Dell-Web-7.0.0-<*bldno*>.VIB-ESX<*version*>i_<*bld-revno*>.zip** file to a directory on your system. For ESXi 5.0 and ESXi 5.0 P1, copy the file to the `/var/log/vmware` folder on the ESXi 5.0 or ESXi 5.0 P1 server.
2. Shut down all guest operating systems on the ESXi host and put the ESXi host in maintenance mode.
3. If you are using vSphere CLI on Windows, navigate to the directory where you have installed the vSphere CLI utilities.

   If you are using vSphere CLI on Linux, you can execute the command from any directory.

4 Execute the following command:

For VMware ESXi4.0/ESXi 4.1:

```
vihostupdate.pl --server <IP address of ESXi host>
-i -b <path to Dell OpenManage file>
```

For VMware ESXi 5.0/ESXi5.0 P1

```
esxcli --server <IP Address of ESXi 5.0 host>
software vib install -d /var/log/vmware/<Dell
OpenManage file>
```

NOTE: The **.pl** extension is not required if you are using vSphere CLI on Linux.

5 Enter the root username and password of the ESXi host when prompted.

The command output displays a successful or a failed update. In case of a failed update, see "Troubleshooting."

6 Restart the ESXi host system.

Using the VMware vSphere Management Assistant (vMA)

The vMA allows administrators and developers to run scripts and agents to manage ESX/ESXi systems. For more information on vMA, see **vmware.com/support/developer/vima/**.

1 Log on to vMA as an administrator and provide the password when prompted.

2 Copy and unzip the **OM-SrvAdmin-Dell-Web-7.0.0-<*bldno*>.VIB-ESX<*version*>i_<*bld-revno*>.zip** file to a directory on the vMA.

3 Shut down all guest operating systems on the ESXi host and put the ESXi host in maintenance mode.

4 In vMA, execute the following command:

For VMware ESXi4.0/ESXi 4.1:

```
vihostupdate --server <IP address of ESXi Host> -i
-b <path to Dell OpenManage file>
```

For VMware ESXi 5.0/ESXi 5.0 P1

```
esxcli --server <IP Address of ESXi 5.0 host>
software vib install -d /var/log/vmware/<Dell
OpenManage file>
```

5 Enter the root username and password of the ESXi host when prompted.

The command output displays a successful or a failed update. In case of a failed update, see "Troubleshooting."

6 Restart the ESXi host system.

When you run the command, the following components are installed on your system:

- Server Administrator Instrumentation Service
- Remote Enablement
- Server Administrator Storage Management
- Remote Access Controller

You must install the Server Administrator Web Server separately on a management station. For information on installing the Server Administrator Web Server, see "Installing Managed System Software on Microsoft Windows Operating Systems" and "Installing Managed System Software on Supported Linux and VMware ESX."

After installing Server Administrator, you have to enable Server Administrator Services. For information on enabling these services, see "Enabling Server Administrator Services on the Managed System."

Enabling Server Administrator Services on the Managed System

The Server Administrator Web Server communicates with the VMware ESXi system through the Server Administrator Common Interface Model (CIM) provider. The Server Administrator CIM provider is an Original equipment manufacturer (OEM) provider on the VMware ESXi system. CIM OEM providers are disabled by default on VMware ESXi 4.0 and ESXi 4.1. You must enable the CIM OEM providers on the VMware ESXi system before accessing it using Server Administrator Web Server.

NOTE: In ESXi 4.1 U2, ESXi 5.0 and ESXi 5.0 P1 Dell OpenManage CIM OEM provider is enabled by default.

Enabling CIM OEM Providers Using vSphere Client (for VMware ESXi4.0/ESXi 4.1)

To enable CIM OEM providers using VMware vSphere Client, you must have the vSphere Client tool installed. You can download and install the tool from **https://<IP_address of ESXi host>** where *<ip_address>* is the IP address of the VMware ESXi system.

To enable CIM OEM providers on the VMware ESXi system using vSphere Client:

1. Log on to the VMware ESXi host system using vSphere Client.
2. Click the **Configuration** tab.
3. Under the **Software** section on the left side, click **Advanced Settings**.
4. In the **Advanced Settings** dialog box, click **UserVars** on the left pane.
5. Change the value of the **CIMOEMProvidersEnabled** (for ESXi 4.0) or **CIMoemProviderEnabled** (for ESXi 4.1) field to **1**.
6. Click **OK**.
7. For the changes to take effect without restarting the system, use the **Restart Management Agents** option in the Direct Console User Interface (DCUI) on the local console of the VMware ESXi system.

   NOTE: This option is available under **Troubleshooting Options** in ESXi 4.1.

   If the changes are not effective and you cannot connect to the VMware ESXi host using Server Administrator, restart the VMware ESXi host system.

Enabling CIM OEM Providers Using vSphere CLI (for VMware ESXi 4.0/ESXi 4.1)

1. If you are using vSphere CLI on Windows, navigate to the directory where you have installed the vSphere CLI utilities. On Linux, proceed to step 2.
2. Execute the following command:

   ```
   vicfg-advcfg.pl --server <ip_address of ESXi host>
   --username <user_name> --password <password> --set
   1 UserVars.CIMOEMProvidersEnabled
   ```

   NOTE: For ESXi 4.0, use CIMOEMProvidersEnabled and for ESXi 4.1, use CIMoemProviderEnabled.
   The **.pl** extension is not required if you are using vSphere CLI on Linux.
3. For the changes to take effect without restarting the system, use the **Restart Management Agents** option in the DCUI on the local console of the VMware ESXi system.

   NOTE: This option is available under **Troubleshooting Options** in ESXi 4.1.

   If the changes are not effective and you cannot connect to the VMware ESXi host using Server Administrator, restart the VMware ESXi host system.

Enabling CIM OEM Providers Using vMA (for VMware ESXi 4.0/ESXi 4.1)

1. Log in to the vMA as an administrator and provide the password when prompted.
2. Execute the following command:

   ```
   vicfg-advcfg --server <ip_address of ESXi host> --
   username <user_name> --password <password> --set 1
   UserVars.CIMOEMProvidersEnabled
   ```

   NOTE: For ESXi 4.0, use CIMOEMProvidersEnabled and for ESXi 4.1, use CIMoemProviderEnabled.
3. For the changes to take effect without restarting the system, use the **Restart Management Agents** option in the DCUI on the local console of the VMware ESXi system.

   If the changes are not effective and you cannot connect to the VMware ESXi host using Server Administrator, restart the VMware ESXi host system.

Uninstalling the Existing OpenManage VIB

The following command can be used to uninstall the existing OpenManage VIB:

```
vihostupdate.pl --server <IP Address> -r -B
Dell_OpenManage_ESXi_OM640
```

Reboot the system after uninstalling.

Configuring the SNMP Agent on Systems Running VMware ESXi

Server Administrator generates Simple Network Management Protocol (SNMP) traps in response to changes in the status of sensors and other monitored parameters. You must configure one or more trap destinations on the system running Server Administrator to send SNMP traps to a management station.

Server Administrator supports SNMP traps on VMware ESXi but does not support SNMP Get and Set operations because VMware ESXi does not provide the required SNMP support. You can use the VMware vSphere CLI to configure VMware ESXi to send SNMP traps to a management application such as IT Assistant.

NOTE: For more information about using the VMware vSphere CLI, see the VMware support site at **vmware.com/support**.

Configuring Your System to Send Traps to a Management Station Using the vSphere CLI

Server Administrator generates SNMP traps in response to changes in the status of sensors and other monitored parameters. One or more trap destinations must be configured on the system running Server Administrator to send SNMP traps to a management station.

Configure your ESXi system running Server Administrator to send traps to a management station:

1. Install the VMware vSphere CLI.
2. Open a command prompt on the system in which the vSphere CLI is installed.

3 Navigate to the directory in which the vSphere CLI is installed. The default location on Linux is **/usr/bin** and on Windows is **C:\Program Files\VMware\VMware vSphere CLI\bin**.

4 Configure the SNMP setting using the following command:

```
vicfg-snmp.pl --server <server> --username
<username> --password <password> -c <community> -t
<hostname>@162/<community>
```

where <*server*> is the hostname or IP address of the ESXi system, <*username*> is a user on the ESXi system, <*password*> is the password of the ESXi user, <*community*> is the SNMP community name and <*hostname*> is the hostname or IP address of the management station.

NOTE: If you do not specify a user name and password, you are prompted to specify the same.

5 Enable SNMP using the following command:

```
vicfg-snmp.pl --server <server> --username
<username> --password <password> -E
```

6 View the SNMP configuration using the following command:

```
vicfg-snmp.pl --server <server> --username
<username> --password <password> -s
```

7 Test the SNMP configuration using the following command:

```
vicfg-snmp.pl --server <server> --username
<username> --password <password> -T
```

NOTE: The **.pl** extension is not required if you are using vSphere CLI on Linux or using vMA.

The SNMP trap configuration takes effect immediately without restarting any services.

Troubleshooting

- When attempting to use the `vihostupdate` command, the following error may be displayed:

  `unpacking c:\OM-SrvAdmin-Dell-Web-7.0.0-<bldno>.VIB-ESX<version>i_<bld-revno>.zip`

  `metadata.zip.sig does not exist`

  `signature mismatch : metadata.zip`

  `Unable to unpack update package.`

  This error is displayed if you are using an older version of the Remote CLI. To resolve this issue, download and install the latest vSphere version of the CLI.

- When attempting to use the `vihostupdate` command, the following error may be displayed:

  `Unable to create, write or read a file as expected.I/O Error (28) on file : [Errno 28] No space left on device.`

  See the VMware KB article 1012640 at **kb.vmware.com** to fix this error.

7

Installing Dell OpenManage Software on Citrix XenServer

The Dell OpenManage Server Administrator is installed on Citrix XenServer using the Dell OpenManage Supplemental Pack. The OpenManage Supplemental Pack for Citrix XenServer 6.0 can be installed in two ways:

- During the installation of XenServer
  - **a** Start the installation of XenServer as usual and follow the instructions on the screen.
  - **b** One of the early questions during the installation process of XenServer is if you want to install any Supplemental Packs; click **Yes** and continue with the installation process.
  - **c** After the base XenServer image is installed (5-10 minutes depending on the speed of your system), you are prompted to insert your Supplemental Pack CD. Eject the XenServer installation CD from the optical drive, insert the Dell OpenManage Supplemental Pack CD and click **OK**. The message '`OpenManage Supplemental Pack was found`' is displayed. To confirm installation, click **Use** and click **OK**.

NOTE: If you have more than one Supplemental Pack, (either the Linux Supplemental Pack from Citrix or other third-party applications) you can install them in any order, although it is recommended that you install the Dell OpenManage Supplemental Pack last.

  - **d** After completing the Dell OpenManage Supplemental Pack installation (2-5 minutes, depending on the speed of your system), you are prompted to install other Supplemental Packs. If you do not want to install other supplemental packs, click **Skip** and press <Enter>. The XenServer is installed successfully.

NOTE: When installing RPM packages, to avoid warnings concerning the RPM–GPG key, import the key with a command similar to the following:

```
rpm --import<OM DVD mountpoint>/
SYSMGMT/srvadmin/linux/RPM-GPG-KEY
```

- On a running system

  a Burn the Supplemental Pack ISO file to a CD/DVD or download the ISO file to your server.

  If you are downloading the ISO file, mount it on a temporary directory as follows:

  ```
  $ mount -o loop <openmanange-supplemental-pack-filename>.iso /mnt
  ```

  If you burned the ISO file to a CD/DVD, insert it in the optical drive and run:

  ```
  $ mount /dev/cdrom /mnt
  ```

  b Install the supplemental pack:

  ```
  $ cd /mnt
  ```

  ```
  $ ./install.sh
  ```

  OR

  ```
  $ xe-install-supplemental-pack <openmanange-supplemental-pack-filename>.iso
  ```

  NOTE: If a previous version of OpenManage is already installed on the system, then the command to upgrade it to version 7.0 is `./install.sh`.

  After the installation or upgrade of OpenManage, execute the following post-installation configuration script of Remote Enablement feature

  ```
  $ cd  /opt/dell/srvadmin/etc
  ```

  ```
  $ ./autoconf_cim_component.sh  -p  5986
  ```

  c When the installation is complete, unmount the ISO file or CD:

  ```
  $ cd ..
  ```

  ```
  $ umount /mnt
  ```

CAUTION: Removal of the Dell OpenManage Supplemental Pack or any Dell OpenManage RPMs is not supported by Dell or Citrix and it is not recommended. Manual removal of any RPM leaves the system in an inconsistent state which could make any potential issue debugging effort difficult or impossible. A future Supplemental Pack release supports removal of the Dell OpenManage Supplemental Pack.

If the XenServer image is upgraded to a newer XenServer update or release, the Dell OpenManage Supplemental Pack must be reinstalled since the new XenServer image is placed on a different partition from the original. In this case, follow the same installation instructions as before. However, any Dell OpenManage configuration settings saved on your server is lost.

For more information on using Dell OpenManage with Citrix XenServer Dell Edition, see the *Citrix XenServer Dell Edition Solution Guide* at **support.dell.com/support/edocs/software/Citrix/**.

NOTE: If you are connecting to a XenServer 6.0 managed node using server administrator web server, use port 5986 in the format Hostname:Port Number, or IP address:Port Number.

Post Installation Tasks

After the installation or upgrade of OpenManage:

1. Execute the post installation configuration scripts of Remote Enablement feature:

   ```
   $ cd /opt/dell/srvadmin/etc

   $ ./autoconf_cim_component.sh -p 5986
   ```

2. Restart openwsman and sfcb services:

   ```
   $   /etc/init.d/openwsmand restart

   $   /etc/init.d/sfcb restart
   ```

3. Open the port 5986:

   ```
   $  iptables -I RH-Firewall-1-INPUT -p
   tcp --destination-port 5986 -j ACCEPT
   ```

4. Start the Server Administrator services:

   ```
   $ sh srvadmin-services start
   ```

8

Using Microsoft Active Directory

Controlling Access to Your Network

If you use Active Directory service software, you can configure it to control access to your network. Dell has modified the Active Directory database to support remote management authentication and authorization. Dell OpenManage IT Assistant and Dell OpenManage Server Administrator, as well as Integrated Dell Remote Access Controllers (iDRAC), Dell Remote Access Controllers (DRAC), can now interface with Active Directory. With this tool, you can add and control users and privileges from one central database.

Active Directory Schema Extensions

The Active Directory data exists in a distributed database of **Attributes** and **Classes**. An example of a Active Directory **Class** is the **User** class. Some example **Attributes** of the user class might be the user's first name, last name, phone number, and so on. Every **Attribute** or **Class** that is added to an existing Active Directory schema must be defined with a unique ID. To maintain unique IDs throughout the industry, Microsoft maintains a database of Active Directory Object Identifiers (OIDs).

The Active Directory schema defines the rules for what data can be included in the database. To extend the schema in Active Directory, install the latest Dell received unique OIDs, unique name extensions, and unique linked attribute IDs for the new attributes and classes in the directory service from the *Dell Systems Management Tools and Documentation* DVD.

Dell extension is: dell

Dell base OID is: 1.2.840.113556.1.8000.1280

Dell LinkID range is:12070 to 12079

Overview of the Active Directory Schema Extensions

Dell created classes, or groups of objects, that can be configured by the user to meet their unique needs. New classes in the schema include an Association, a Product, and a Privilege class. An association object links the user or group to a given set of privileges and to systems (Product Objects) in your network. This model gives an administrator control over the different combinations of user, privilege, and system or RAC device on the network, without adding complexity.

Active Directory Object Overview

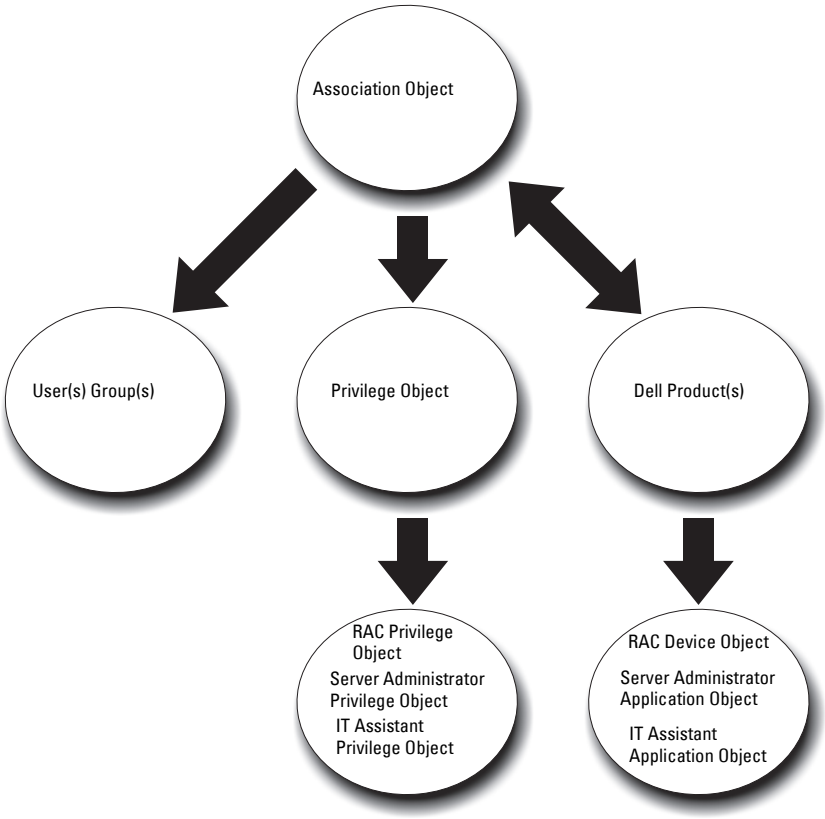
For each of the systems that you want to integrate with Active Directory for authentication and authorization, there must be at least one Association Object and one Product Object. The Product Object represents the system. The Association Object links it with users and privileges. You can create as many Association Objects as you need.

Each Association Object can be linked to as many users, groups of users, and Product Objects as required. The users and Product Objects can be from any domain. However, each Association Object may only link to one Privilege Object. This behavior allows an administrator to control users and their rights on specific systems.

The Product Object links the system to Active Directory for authentication and authorization queries. When a system is added to the network, the administrator must configure the system and its product object with its Active Directory name so that users can perform authentication and authorization with Active Directory. The administrator must also add the system to at least one Association Object for users to authenticate.

Figure 8-1 illustrates that the Association Object provide the connection that is needed for all of the authentication and authorization.

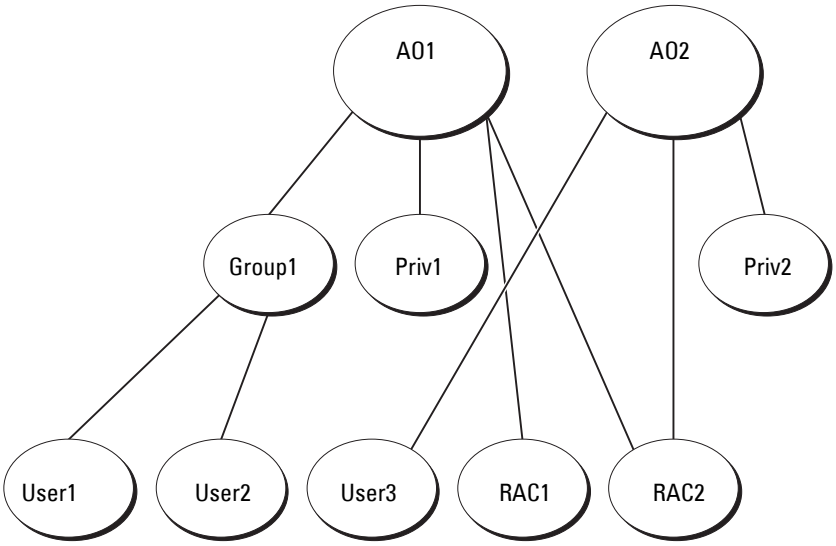
Figure 8-1. Typical Setup for Active Directory Objects



In addition, you can set up Active Directory objects in a single domain or in multiple domains. Setting up objects in a single domain does not vary, whether you are setting up RAC, Server Administrator, or IT Assistant objects. When multiple domains are involved, however, there are some differences.

Figure 8-2 shows the set up of the Active Directory objects in a single domain. In this scenario, you have two DRAC 4 cards (RAC1 and RAC2) and three existing Active Directory users (User1, User2, and User3). You want to give User1 and User2 administrator privilege on both DRAC 4 cards and give User3 login privilege on the RAC2 card.

Figure 8-2. Setting Up RAC Active Directory Objects in a Single Domain



To set up the objects in a single domain scenario, perform the following tasks:

1. Create two Association Objects.
2. Create two RAC Product Objects, RAC1 and RAC2, to represent the two DRAC 4 cards.
3. Create two Privilege Objects, Priv1 and Priv2, in which Priv1 has all privileges (administrator) and Priv2 has login privileges.

4 Group User1 and User2 into Group1.

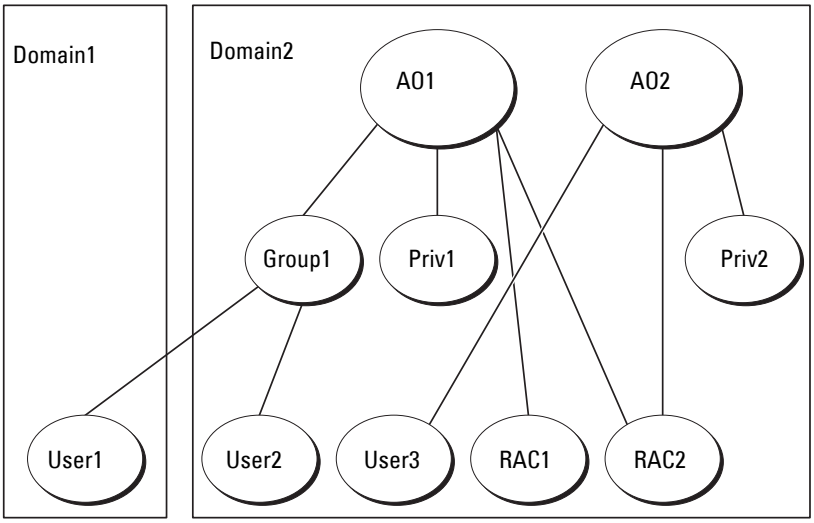
5 Add Group1 as Member in Association Object 1 (AO1), Priv1 as Privilege Object in AO1, and both RAC1 and RAC2 as RAC Products in AO1.

6 Add User3 as Member in Association Object 2 (AO2), Priv2 as Privilege Object in AO2, and RAC2 as RAC Product in AO2.

For more information, see "Adding Users and Privileges to Active Directory".

Figure 8-3 shows the setup of the Active Directory objects in multiple domains for RAC. In this scenario, you have two DRAC 4 cards (RAC1 and RAC2) and three existing Active Directory users (User1, User2, and User3). User1 is in Domain1, but User2 and User3 are in Domain2. You want to give User1 and User2 Administrator privileges on both the RAC1 and RAC2 card and give User3 Login privilege on the RAC2 card.

Figure 8-3. Setting Up RAC Active Directory Objects in Multiple Domains

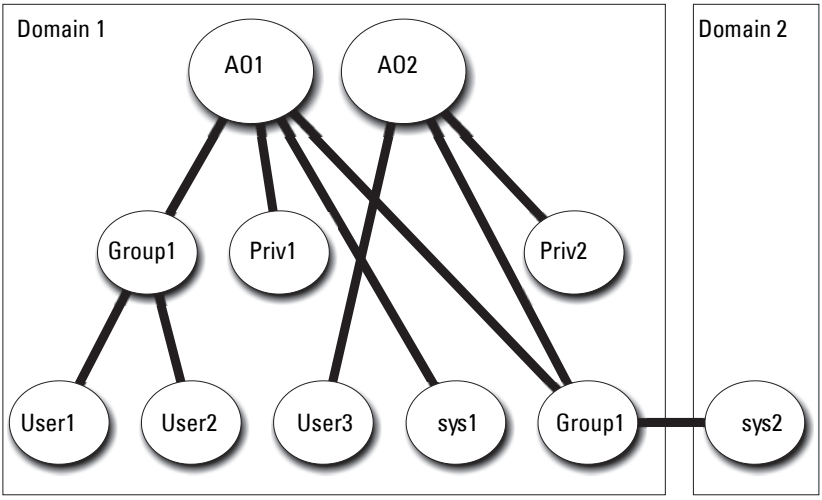


To set up the objects for this multiple domain scenario, perform the following tasks:

1. Ensure that the domain forest function is in Native mode.
2. Create two Association Objects, AO1 (of Universal scope) and AO2, in any domain. Figure 8-3 shows the objects in Domain2.
3. Create two RAC Device Objects, RAC1 and RAC2, to represent the two remote systems.
4. Create two Privilege Objects, Priv1 and Priv2, in which Priv1 has all privileges (Administrator) and Priv2 has Login privileges.
5. Group User1 and User2 into Group1. The group scope of Group1 must be Universal.
6. Add Group1 as Member in Association Object 1 (AO1), Priv1 as Privilege Object in AO1, and both RAC1 and RAC2 as Products in AO1.
7. Add User3 as Member in Association Object 2 (AO2), Priv2 as Privilege Object in AO2, and RAC2 as a Product in AO2.

For Server Administrator or IT Assistant, the users in a single Association can be in separate domains and need not be in a Universal group. The following is a very similar example to show how Server Administrator or IT Assistant systems in separate domains affect the setup of directory objects. Instead of RAC devices, you will have two systems running Server Administrator (Server Administrator Products sys1 and sys2). sys1 and sys2 are in different domains. You can use any existing Users or Groups that you have in Active Directory. Figure 8-4 shows how to set up the Server Administrator Active Directory objects for this example.

Figure 8-4. Setting up Server Administrator Active Directory Objects in Multiple Domains



To set up the objects for this multiple domain scenario, perform the following tasks:

1. Ensure that the domain forest function is in Native mode.
2. Create two Association Objects, AO1 and AO2, in any domain. The figure shows the objects in Domain1.
3. Create two Server Administrator Products, sys1 and sys2, to represent the two systems. sys1 is in Domain1 and sys2 is in Domain2.
4. Create two Privilege Objects, Priv1 and Priv2, in which Priv1 has all privileges (Administrator) and Priv2 has Login privileges.
5. Group sys2 into Group1. The group scope of Group1 must be **Universal**.

6 Add User1 and User2 as Members in Association Object 1 (AO1), Priv1 as Privilege Objects in AO1, and both sys1 and Group1 as Products in AO1.

7 Add User3 as a Member in Association Object 2 (AO2), Priv2 as a Privilege object in AO2, and Group1 as a Product in AO2.

Note that neither of the Association objects needs to be of Universal scope in this case.

Configuring Active Directory to Access Your Systems

Before you can use Active Directory to access your systems, you must configure both the Active Directory software and the systems.

1 Extend the Active Directory schema (For more information, see "Extending the Active Directory Schema.")

2 Extend the Active Directory Users and Computers Snap-in (For more information, see "Installing the Dell Extension to the Active Directory Users and Computers Snap-In.")

3 Add system users and their privileges to Active Directory (For more information, see "Adding Users and Privileges to Active Directory.")

4 For RAC systems, enable SSL on each of your domain controllers.

5 Configure the system's Active Directory properties using either the Web-based interface or the CLI (For more information, see "Configuring Your Systems or Devices.")

Configuring the Active Directory Product Name

To configure the Active Directory product name:

1 Locate the **omsaoem.ini** file in your installation directory.

2 Edit the file to add the line `adproductname=text`, where `text` is the name of the product object that you created in Active Directory.
For example, the **omsaoem.ini** file contains the following syntax if the Active Directory product name is configured to `omsaApp`.

```
productname=Server Administrator

startmenu=Dell OpenManage Applications

autdbid=omsa

accessmask=3
```

```
adsupport=true

adproductname=omsaApp
```

3 Restart the **Dell Systems Management Server Administrator (DSM SA) Connection Service** after saving the **omsaoem.ini** file.

Extending the Active Directory Schema

The schema extensions for RAC, Server Administrator, and IT Assistant are available. You only need to extend the schema for software or hardware that you are using. Each extension must be applied individually to receive the benefit of its software-specific settings. Extending your Active Directory schema adds schema classes and attributes, example privileges and association objects, and a Dell organizational unit to the schema.

NOTE: Before you extend the schema, you must have *Schema Admin* privileges on the Schema Master Flexible Single Master Operation (FSMO) Role Owner of the domain forest.

You can extend your schema using two different methods. You can use the Dell Schema Extender utility, or you can use the Lightweight Directory Interchange Format (LDIF) script file.

NOTE: The Dell organizational unit is not added if you use the LDIF script file.

The LDIF script files and the Dell Schema Extender utility are located in the following directories on your *Dell Systems Management Tools and Documentation* DVD:

- **<DVD drive>:\SYSMGMT\ManagementStation\support\OMActiveDirectory_Tools\<installation type>\LDIF Files**
- **<DVD drive>:\SYSMGMT\ManagementStation\support\OMActiveDirectory_ Tools\<installation type>\Schema Extender**

Table 8-1 lists the folder names and <*installation type*>.

Table 8-1. Folder Names and Installation Types

Folder Name	Installation Type
ITA7	IT Assistant version 8.9
OMSA	Dell OpenManage Server Administrator
Remote_Management	RAC 5, CMC, and iDRAC on *xx*0*x* Blade systems
Remote_Management_Advanced	iDRAC on *xx*1*x* systems **NOTE:** Only iDRAC6 is supported on *xx*1*x* systems.

To use the LDIF files, see the instructions in the readme that is in the LDIF files directory. To use the Dell Schema Extender to extend the Active Directory Schema, perform the steps in "Using the Dell Schema Extender."

You can copy and run the Schema Extender or LDIF files from any location.

Using the Dell Schema Extender

To use the Dell Schema Extender perform the following tasks:

CAUTION: The Dell Schema Extender uses the SchemaExtenderOem.ini file. To ensure that the Dell Schema Extender utility functions properly, do not modify the name or the contents of this file.

1. Click **Next** on the Welcome screen.
2. Read the warning and click **Next**.
3. Select **Use Current Log In Credentials** or enter a user name and password with schema administrator rights.
4. Click **Next** to run the Dell Schema Extender.
5. Click **Finish**.

   To verify the schema extension, use the Active Directory Schema Snap-in in the Microsoft Management Console (MMC) to verify the existence of the following classes (listed in Table 8-2, Table 8-5, Table 8-7, Table 8-8, Table 8-9, and Table 8-10) and attributes (listed in Table 8-11 and Table 8-12). See your Microsoft documentation for more information on enabling and using the Active Directory Schema Snap-in.

For more information on class definitions for DRAC, see the *Dell Remote Access Controller 4 User's Guide* and *Dell Remote Access Controller 5 User's Guide*.

For more information on class definitions for iDRAC, see the *Integrated Dell Remote Access Controller User's Guide*.

Table 8-2. Class Definitions for Classes Added to the Active Directory Schema

Class Name	Assigned Object Identification Number (OID)	Class Type
dellAssociationObject	1.2.840.113556.1.8000.1280.1.1.1.2	Structural Class
dellPrivileges	1.2.840.113556.1.8000.1280.1.1.1.4	Structural Class
dellProduct	1.2.840.113556.1.8000.1280.1.1.1.5	Structural Class
dellOmsa2AuxClass	1.2.840.113556.1.8000.1280.1.2.1.1	Auxiliary Class
dellOmsaApplication	1.2.840.113556.1.8000.1280.1.2.1.2	Structural Class
dellIta7AuxClass	1.2.840.113556.1.8000.1280.1.3.1.1	Auxiliary Class
dellItaApplication	1.2.840.113556.1.8000.1280.1.3.1.2	Structural Class

Table 8-3. dellAssociationObject Class

OID	1.2.840.113556.1.8000.1280.1.1.1.2
Description	This class represents the Dell Association Object. The Association Object provides the connection between the users and the devices or products.
Class Type	Structural Class
SuperClasses	Group
Attributes	dellProductMembers dellPrivilegeMember

Table 8-4. dellPrivileges Class

OID	1.2.840.113556.1.8000.1280.1.1.1.4
Description	This class is used as a container Class for the Dell Privileges (Authorization Rights).
Class Type	Structural Class
SuperClasses	User

Table 8-4. dellPrivileges Class *(continued)*

OID	1.2.840.113556.1.8000.1280.1.1.1.4
Attributes	dellRAC4Privileges dellRAC3Privileges dellOmsaAuxClass dellItaAuxClass

Table 8-5. dellProduct Class

OID	1.2.840.113556.1.8000.1280.1.1.1.5
Description	This is the main class from which all Dell products are derived.
Class Type	Structural Class
SuperClasses	Computer
Attributes	dellAssociationMembers

Table 8-6. dellOmsa2AuxClass Class

OID	1.2.840.113556.1.8000.1280.1.2.1.1
Description	This class is used to define the privileges (Authorization Rights) for Server Administrator.
Class Type	Auxiliary Class
SuperClasses	None
Attributes	dellOmsaIsReadOnlyUser dellOmsaIsReadWriteUser dellOmsaIsAdminUser

Table 8-7. dellOmsaApplication Class

OID	1.2.840.113556.1.8000.1280.1.2.1.2
Description	This class represents the Server Administrator application. Server Administrator must be configured as dellOmsaApplication in Active Directory. This configuration enables the Server Administrator application to send LDAP queries to Active Directory.

Table 8-7. dellOmsaApplication Class *(continued)*

OID	1.2.840.113556.1.8000.1280.1.2.1.2
Class Type	Structural Class
SuperClasses	dellProduct
Attributes	dellAssociationMembers

Table 8-8. dellIta7AuxClass Class

OID	1.2.840.113556.1.8000.1280.1.3.1.1
Description	This class is used to define the privileges (Authorization Rights) for IT Assistant.
Class Type	Auxiliary Class
SuperClasses	None
Attributes	dellItaIsReadOnlyUser dellItaIsReadWriteUser dellItaIsAdminUser

Table 8-9. dellItaApplication Class

OID	1.2.840.113556.1.8000.1280.1.3.1.2
Description	This class represents the IT Assistant application. IT Assistant must be configured as dellItaApplication in Active Directory. This configuration enables IT Assistant to send LDAP queries to Active Directory.
Class Type	Structural Class
SuperClasses	dellProduct
Attributes	dellAssociationMembers

Table 8-10. General Attributes Added to the Active Directory Schema

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellPrivilegeMember List of dellPrivilege Objects that belong to this Attribute.	1.2.840.113556.1.8000.1280.1.1.2.1 Distinguished Name (LDAPTYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE
dellProductMembers List of dellRacDevices Objects that belong to this role. This attribute is the forward link to the dellAssociationMembers backward link. Link ID: 12070	1.2.840.113556.1.8000.1280.1.1.2.2 Distinguished Name (LDAPTYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE
dellAssociationMembers List of dellAssociationObjectMembers that belong to this Product. This attribute is the backward link to the dellProductMembers Linked attribute. Link ID: 12071	1.2.840.113556.1.8000.1280.1.1.2.14 Distinguished Name (LDAPTYPE_DN 1.3.6.1.4.1.1466.115.121.1.12)	FALSE

Table 8-11. Server Administrator-Specific Attributes Added to the Active Directory Schema

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellOMSAIsReadOnlyUser TRUE if the User has Read-Only rights in Server Administrator	1.2.840.113556.1.8000.1280.1.2.2.1 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellOMSAIsReadWriteUser TRUE if the User has Read-Write rights in Server Administrator	1.2.840.113556.1.8000.1280.1.2.2.2 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE

Table 8-11. Server Administrator-Specific Attributes Added to the Active Directory Schema *(continued)*

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellOMSAIsAdminUser	1.2.840.113556.1.8000.1280.1.2.2.3	TRUE
TRUE if the User has Administrator rights in Server Administrator	Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	

Table 8-12. IT Assistant-Specific Attributes Added to the Active Directory Schema

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellItaIsReadWriteUser	1.2.840.113556.1.8000.1280.1.3.2.1	TRUE
TRUE if the User has Read-Write rights in IT Assistant	Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	
dellItaIsAdminUser	1.2.840.113556.1.8000.1280.1.3.2.2	TRUE
TRUE if the User has Administrator rights in IT Assistant	Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	
dellItaIsReadOnlyUser	1.2.840.113556.1.8000.1280.1.3.2.3	TRUE
TRUE if the User has Read-Only rights in IT Assistant	Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	

Active Directory Users and Computers Snap-In

When you extend the schema in Active Directory, you must also extend the Active Directory Users and Computers snap-in so that the administrator can manage Products, Users and User Groups, Associations, and Privileges. You only need to extend the snap-in once, even if you have added more than one schema extension. You must install the snap-in on each system that you intend to use for managing these objects.

Installing the Dell Extension to the Active Directory Users and Computers Snap-In

When you are installing your systems management software using the *Dell Systems Management Tools and Documentation* DVD, you can install the Snap-in by selecting the **Active Directory Snap-in** option.

For 64-bit Windows operating systems, the Snap-in installer is located under `<DVD drive>:\SYSMGMT\ManagementStation\support\OMActiveDirectory_SnapIn64`.

NOTE: You must install the Administrator Pack on each management station that is managing the new Active Directory objects. For more information on installing the Administrator Pack, see "Opening the Active Directory Users and Computers Snap-In." If you do not install the Administrator Pack, you cannot view the new object in the container.

NOTE: For more information about the Active Directory Users and Computers snap-in, see your Microsoft documentation.

Opening the Active Directory Users and Computers Snap-In

To open the Active Directory Users and Computers snap-in, perform the following steps:

1. If you are on the domain controller, click **Start**→ **Admin Tools**→ **Active Directory Users and Computers**. If you are not on the domain controller, you must have the appropriate Microsoft administrator pack installed on your local system. To install this administrator pack, click **Start**→ **Run**, type `MMC`, and press **<Enter>**.

   The Microsoft Management Console (MMC) window appears.
2. Click **File** in the **Console 1** window.
3. Click **Add/Remove Snap-in**.
4. Click **Add**.
5. Select the **Active Directory Users and Computers** snap-in and click **Add**.
6. Click **Close** and click **OK**.

Adding Users and Privileges to Active Directory

The Dell-extended Active Directory Users and Computers snap-in allows you to add DRAC, Server Administrator, and IT Assistant users and privileges by creating RAC, Association, and Privilege objects. To add an object, perform the steps in the applicable subsection.

Creating a Product Object

To create a Product Object:

NOTE: Server Administrator and IT Assistant users must use Universal-type Product Groups to span domains with their product objects.

NOTE: When adding Universal-type Product Groups from separate domains, you have to create an Association object with Universal scope. The default Association objects created by the Dell Schema Extender utility are domain Local Groups and do not work with Universal-type Product Groups from other domains.

1. In the **Console Root** (MMC) window, right-click a container.
2. Select **New**.
3. Select a RAC, Server Administrator, or IT Assistant object, depending on what you have installed.

   The **New Object** window appears.
4. Type in a name for the new object. This name must match the **Active Directory product name** as discussed in "Configuring Active Directory Using CLI on Systems Running Server Administrator."
5. Select the appropriate **Product Object**.
6. Click **OK**.

Creating a Privilege Object

Privilege Objects must be created in the same domain as the Association Object to which they are associated.

1. In the **Console Root** (MMC) window, right-click a container.
2. Select **New**.
3. Select a RAC, Server Administrator, or IT Assistant object, depending on what you have installed.

   The **New Object** window is displayed.

4 Type in a name for the new object.

5 Select the appropriate **Privilege Object**.

6 Click **OK**.

7 Right-click the privilege object that you created and select **Properties**.

8 Click the appropriate **Privileges** tab and select the privileges that you want the user to have (For more information, see Table 8-2 and Table 8-8).

Creating an Association Object

The Association Object is derived from a Group and must contain a group Type. The Association Scope specifies the Security Group Type for the Association Object. When you create an Association Object, you must choose the Association Scope that applies to the type of objects you intend to add. Selecting **Universal**, for example, means that Association Objects are only available when the Active Directory Domain is functioning in Native Mode or above.

1 In the **Console Root** (MMC) window, right-click a container.

2 Select **New**.

3 Select a RAC, Server Administrator, or IT Assistant object, depending on what you have installed.

The **New Object** window appears.

4 Type in a name for the new object.

5 Select **Association Object**.

6 Select the scope for the **Association Object**.

7 Click **OK**.

Adding Objects to an Association Object

By using the **Association Object Properties** window, you can associate users or user groups, privilege objects, systems, RAC devices, and system or device groups.

NOTE: RAC users must use Universal Groups to span domains with their users or RAC objects.

You can add groups of Users and Products. You can create Dell-related groups in the same way that you created other groups.

To add Users or User Groups:

1. Right-click the **Association Object** and select **Properties**.
2. Select the **Users** tab and click **Add**.
3. Type the User or User Group name or browse to select and click **OK**.

Click the **Privilege Object** tab to add the privilege object to the association that defines the user's or user group's privileges when authenticating to a system.

NOTE: You can add only one Privilege Object to an Association Object.

To add a privilege:

1. Select the **Privileges Object** tab and click **Add**.
2. Type the Privilege Object name or browse and click **OK**.

Click the **Products** tab to add one or more systems or devices to the association. The associated objects specify the products connected to the network that are available for the defined users or user groups.

NOTE: You can add multiple systems or RAC devices to an Association Object.

To add Products:

1. Select the **Products** tab and click **Add.**
2. Type the system, device, or group name and click **OK**.
3. In the **Properties** window, click **Apply** and then **OK**.

Configuring Your Systems or Devices

For instructions on configuring your Server Administrator or IT Assistant systems using CLI commands, see "Configuring Active Directory Using CLI on Systems Running Server Administrator." For DRAC users, see the *Dell Remote Access Controller 4 User's Guide* or *Dell Remote Access Controller 5 User's Guide*. For iDRAC users, see the *Integrated Dell Remote Access Controller User's Guide*.

NOTE: The systems on which Server Administrator and/or IT Assistant are installed must be a part of the Active Directory domain and should also have computer accounts on the domain.

Configuring Active Directory Using CLI on Systems Running Server Administrator

You can use the **omconfig preferences dirservice** command to configure the Active Directory service. The ***product*oem.ini** file is modified to reflect these changes. If the **adproductname** is not present in the ***product*oem.ini** file, a default name is assigned.

The default value is ***system name-software-product name***, where ***system name*** is the name of the system running Server Administrator, and ***software-product name*** refers to the name of the software product defined in **omprv32.ini** (that is, ***computerName*-omsa**).

NOTE: This command is applicable only on Windows.

NOTE: Restart the Server Administrator service after you have configured Active Directory.

Table 8-13 shows the valid parameters for the command.

Table 8-13. Active Directory Service Configuration Parameters

name=value pair	Description
prodname=<text>	Specifies the software product to which you want to apply the Active Directory configuration changes. *Prodname* refers to the name of the product defined in **omprv32.ini**. For Server Administrator, it is *omsa*.
enable=<true | false>	**true:** Enables Active Directory service authentication support. **false:** Disables Active Directory service authentication support.
adprodname=<text>	Specifies the name of the product as defined in the Active Directory service. This name links the product with the Active Directory privilege data for user authentication.

9

Frequently Asked Questions

General

How do I install Dell OpenManage Server Administrator with only the CLI features?

By choosing not to install the Server Administrator Web Server, you get CLI features only.

What ports do Dell OpenManage applications use?

The default port used by Server Administrator is 1311. The default ports used by Dell OpenManage IT Assistant are 2607 (for the connection service) and 2606 (for the network monitoring service). These ports are configurable. For port information of a particular component, see the User Guide of that respective component.

When I run virtual media on the DRAC controller over a Wide Area Network (WAN) with low bandwidth and latency, launching Dell OpenManage Install directly on the virtual media failed, what do I do?

Copy the web install package (available on **support.dell.com**) to your local system and then launch Dell OpenManage Install.

Do I need to uninstall the Adaptec Fast Console application installed on the system before installing the Server Administrator Storage Management Service?

Yes, if you already have Adaptec Fast Console installed on your system, you must uninstall this application before installing the Server Administrator Storage Management Service.

Microsoft Windows

How do I fix a faulty installation of Server Administrator?

You can fix a faulty installation by forcing a reinstall and then performing an uninstall of Server Administrator. To force a reinstall:

1. Find out the version of Server Administrator that was previously installed.
2. Download the installation package for that version from **support.dell.com**.
3. Locate **SysMgmt.msi** from the **SYSMGMT\srvadmin\windows\SystemsManagement** directory and enter the following command at the command prompt to force a reinstall.

   ```
   msiexec /i SysMgmt.msi REINSTALL=ALL
   REINSTALLMODE=vomus
   ```

4. Select **Custom Setup** and choose all the features that were originally installed. If you are not sure which features were installed, select all of them and perform the installation.

   NOTE: If you installed Server Administrator in a non-default directory, make sure to change it in **Custom Setup** as well.

   Once the application is installed, you can uninstall it from **Add/Remove Programs**.

What do I do when the creation of WinRM listener fails with the error message `The CertificateThumbprint property must be empty when the SSL configuration will be shared with another service?`

This error occurs when the Internet Information Server (IIS) is already installed and configured for HTTPS communication. Details about coexistence of IIS and WinRM is available at: **technet.microsoft.com/en-us/library/cc782312.aspx**.

In this case, use the following command to create a HTTPS Listener with the **CertificateThumbprint** empty:

```
winrm create winrm/config/Listener?Address=
*+Transport=HTTPS @{Hostname=
"<host_name>";CertificateThumbprint=""}
```

What are the firewall-related configuration that needs to be done for WinRM?

With firewall turned ON, WinRM must be added to the firewall exclusion list to allow TCP port 443 for HTTPS traffic.

When launching the Dell OpenManage Install, an error message may display, stating a failure to load a specific library, a denial of access, or an initialization error. An example of installation failure during Dell OpenManage Install is "failed to load OMIL32.DLL." What do I do?

This is most likely due to insufficient Component Object Model (COM) permissions on the system. See the following article to remedy this situation: **support.installshield.com/kb/view.asp?articleid=Q104986**

The Dell OpenManage Install may also fail if a previous installation of Dell OpenManage systems management software or some other software product was unsuccessful. Delete the following temporary windows installer registry, if present:

`HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\InProgress`

I get a misleading warning or error message during Dell OpenManage installation.

If you have insufficient disk space on your Windows system drive, you may encounter misleading warning or error messages when you run Dell OpenManage Install. Additionally, windows installer requires space to temporarily extract the installer package to the `%TEMP%` folder. Ensure that you have sufficient disk space (100 MB or more) on your system drive prior to running Dell OpenManage Install.

I am getting an error message "`An older version of Server Administrator software is detected on this system. You must uninstall all previous versions of Server Administrator applications before installing this version`" while launching Dell OpenManage Install?

If you see this error when trying to launch Dell OpenManage Install, it is recommended that you run the **OMClean.exe** program, under the **SYSMGMT\srvadmin\support\OMClean** directory, to remove an older version of Server Administrator on your system.

Do I need to uninstall previous versions of Server Administrator before installing Citrix Metaframe?

Yes. Uninstall previous versions of Server Administrator before installing Citrix Metaframe (all versions). As errors may exist in the registry after the Citrix Metaframe installation, you must reinstall Server Administrator.

When I run Dell OpenManage Install, I see unreadable characters on the Prerequisite check information screen.

When you run Dell OpenManage Install in English, German, French, or Spanish and get unreadable characters on the **Prerequisite Check Information** screen, ensure that your browser encoding has the default character set. Resetting your browser encoding to use the default character set resolves the problem.

I have installed Server Administrator and Dell Online Diagnostics in the same directory and Dell Online Diagnostics fails to work, what do I do?

If you have installed Server Administrator and Online Diagnostics in the same directory, Online Diagnostics may fail to work. On uninstalling Server Administrator, you may also lose all Online Diagnostics files. To avoid this problem, install Server Administrator and Online Diagnostics in different directories. In general it is recommended not to install more than one application in the same directory.

I have installed Server Administrator using remote Server Administrator deploy on Windows Server 2008, I do not see Server Administrator icon on the desktop?

On an initial Server Administrator install using remote Server Administrator deploy (OMSA push) on a server running Windows Server 2008, the Server Administrator icon is not visible until the desktop is refreshed manually by pressing the <*F5*> key.

I see a warning message while uninstalling Server Administrator on Windows Server 2008 as the installer tries to remove the shortcut?

While uninstalling Server Administrator on Windows Server 2008, you might see a warning message as the installer tries to remove the shortcut. Click **OK** to continue the uninstallation.

Where can I find the MSI log files?

By default, the MSI log files are stored in the path defined by the **%TEMP%** environment variable.

I downloaded the Server Administrator files for Windows from the Dell Support website and copied it to my own media. When I tried to launch the SysMgmt.msi file, it failed. What is wrong?

MSI requires all installers to specify the **MEDIAPACKAGEPATH** property if the MSI file does not reside on the root of the DVD.

This property is set to **SYSMGMT\srvadmin\windows\SystemsManagement** for the managed system software MSI package. If you want to make your own DVD you must ensure that the DVD layout stays the same. The **SysMgmt.msi** file must be located in the **SYSMGMT \srvadmin\windows\SystemsManagement**. For more detailed information, go to **msdn.microsoft.com** and search for: `MEDIAPACKAGEPATH Property`.

Does Dell OpenManage Install support Windows Advertised installation?

No. Dell OpenManage Install does not support Windows Advertised installation - the process of automatically distributing a program to client computers for installation, through the Windows group policies.

How do I check the disk space availability during custom installation?

In the **Custom Setup** screen, you must click an active feature to view your hard drive space availability or to change the installation directory. For example, if Feature A is selected for installation (active) and Feature B is not active, the **Change** and **Space** buttons are disabled if you click Feature B. Click Feature A to view the space availability or to change the installation directory.

What do I do when I see the current version is already installed message is displayed?

If you upgrade from version "X" to version "Y" using MSP and then try to use the version "Y" DVD (full install), the prerequisite checker on the version "Y" DVD informs you that the current version is already installed. If you proceed, the installation does not run in "Maintenance" mode and you do not get the option to "Modify," "Repair," or "Remove." Proceeding with the installation removes the MSP and creates a cache of the MSI file present in the version "Y" package. When you run it a second time, the installer runs in "Maintenance" mode.

What is the best way to use the prerequisite checker information?

The prerequisite checker is available for Windows. See the readme file at **SYSMGMT\srvadmin\windows\PreReqChecker\readme.txt** on the *Dell Systems Management Tools and Documentation* DVD, for detailed information about using the prerequisite checker.

In the Prerequisite Checker screen, I get the message "`An error occurred while attempting to execute a Visual Basic Script. Please confirm that Visual Basic files are installed correctly`." What can I do to resolve this problem?

This error occurs when the prerequisite checker calls the Dell OpenManage script, **vbstest.vbs** (a Visual Basic script), to verify the installation environment, and the script fails.

The possible causes are:

- Incorrect Internet Explorer Security Settings.

  Ensure that **Tools→ Internet Options→ Security→ Custom level→ Scripting→ Active scripting** is set to **Enable.**

  Ensure that **Tools→ Internet Options→ Security→ Custom level→ Scripting→ Scripting of Java applets** is set to **Enable**.

- Windows Scripting Host (WSH) has disabled the running of VBS scripts. WSH is installed during operating system installation, by default. On Windows 2003, WSH can be configured to prevent the running of scripts with a **.VBS** extension.

  a Right-click **My Computer** on your desktop and click **Open→ Tools→ Folder Options→ File Types**.

  b Look for the **VBS** file extension and ensure that **File Types** is set to **VBScript Script File**.

  c If not, click **Change** and choose **Microsoft Windows Based Script Host** as the application that gets invoked to run the script.

- WSH is the wrong version, corrupted, or not installed. WSH is installed during operating system installation, by default. Download WSH from **msdn.microsoft.com.**

Is the time shown during installation or uninstallation by Windows Installer Services accurate?

No. During installation or uninstallation, the Windows Installer Service may display the time remaining for the current task to complete. This is only an approximation by the Windows Installer Engine based on varying factors.

Can I launch my installation without running the prerequisite checker? How do I do that?

Yes, you can. For example, you can run the MSI of the managed system software, directly from **SYSMGMT\srvadmin\Windows\SystemsManagement**. In general, it is not a good idea to bypass the prerequisite checker as there could be important information that you would not know otherwise.

How do I know what version of systems management software is installed on the system?

Navigate to the Windows **Control Panel** and double-click **Add/Remove Programs** and select **Dell OpenManage Server Administrator**. Select the link for **support information**.

Do I need to reboot the system after upgrading the Dell OpenManage?

Upgrade may require a reboot if the files to be upgraded are in use. This is a typical Windows installer behavior. It is recommended that you reboot the system when prompted.

Where can I see the Server Administrator features that are currently installed on my system?

Navigate to the Windows **Control Panel** and double-click **Add/Remove Programs** to view the Server Administrator features that are currently installed.

What are the names of all the Dell OpenManage features under Windows?

The following table lists the names of all Dell OpenManage features and their corresponding names in Windows.

Table 9-1. Dell OpenManage Features — Windows

Feature	Name in Windows
Managed System Services	
Server Administrator Instrumentation Service	DSM SA Data Manager DSM SA Event Manager
Server Administrator	DSM SA Connection Service DSM SA Shared Services
Server Administrator Storage Management Service	Mr2kserv
Remote Access Controller Console (DRAC 4)	Remote Access Controller 4 (DRAC 4)

Red Hat Enterprise Linux or SUSE Linux Enterprise Server

After installing Server Administrator, I cannot log in.

Log out and then log in again to access the Server Administrator Command Line Interface (CLI).

I see the following message when I try to install Server Administrator on a guest Linux operating system: ./srvadmin-install.sh: line 2295 : [: ==: unary operator expected.

When installing Dell OpenManage components on a guest Linux operating system, the warning message may be displayed. However, the installation continues and completes without any loss of functionality.

I manually installed my Red Hat Enterprise Linux 4 64-bit operating system and can see RPM dependencies while installing Server Administrator. Where can I find these dependent RPM files?

For Red Hat Enterprise Linux, the dependent RPM files are on the Red Hat Enterprise Linux installation media. All other RPMs are available in the **/SYSMGMT/srvadmin/linux/RPMS/supportRPMS\opensource-components** directory.

To install or update all the dependent RPM files execute the following command:

```
rpm –ivh /SYSMGMT/srvadmin/linux/RPMS/
supportRPMS/opensource-components
```

You can then continue with the Server Administrator installation.

I have performed a non-default install of the Linux operating system using the Linux operating system media, I see missing RPM file dependencies while installing Server Administrator?

Server Administrator is a 32-bit application. When installed on a system running a 64-bit version of Red Hat Enterprise Linux operating system, the Server Administrator remains a 32-bit application, while the device drivers installed by Server Administrator are 64-bit. If you attempt to install Server

Administrator on Red Hat Enterprise Linux (versions 5 and version 6) for Intel EM64T, ensure that you install the applicable 32-bit versions of the missing RPM file dependencies. The 32-bit RPM versions always have **i386** in the file name extension. You may also experience failed shared object files (files with **so** in the file name extension) dependencies. In this case, you can determine which RPM is needed to install the shared object, by using the RPM `--whatprovides` switch. For example:

```
rpm -q --whatprovides libpam.so.0
```

An RPM name such as **pam-0.75-64** could be returned, so obtain and install the **pam-0.75-64.i386.rpm**. When Server Administrator is installed on a system running a 64-bit version of Linux operating system, ensure that the **compat-libstdc++-<version>.i386.rpm** RPM package is installed. You need to resolve the dependencies manually by installing the missing RPM files from your Linux operating system media.

NOTE: If you are using later versions of supported Linux operating systems and the RPM files available in the directory `SYSMGMT/srvadmin/linux/RPMS/supportRPMS` on the DVD are incompatible, use the latest RPMs from your operating system media.

Where can I find the source packages for Open Source RPMs?

Source packages for Open Source RPMs are available on an orderable DVD image.

What do I do when management station RAC utility installation fails due to missing RPM file?

During the installation of the management station RAC utility (`mgmtst-racadm` RPM under `/SYSMGMT/ManagementStation/linux/rac` directory on the *Dell Systems Management Tools and Documentation* DVD), the installation may fail due to missing RPM file dependencies on **libstdc++.so** libraries. Install the **compat-libstdc++** RPM provided in the same directory to resolve the dependency and retry the installation.

When using the `rpm -e 'rpm -qa | grep srvadmin'` command to remove Dell OpenManage systems management software, some RPM utility versions may schedule an uninstallation in an incorrect order, which results in users encountering misleading warning or error messages. What is the solution?

The solution is to use the Dell OpenManage uninstall script, `srvadmin-uninstall.sh`, provided on the DVD.

What do I do when I am asked to authenticate using the root user account?

Dell Systems Build and Update Utility adds a script to the root user's **.bash_profile** file that prompts for the installation of Dell OpenManage systems management software. This script may interfere with remote client applications that authenticate using the root user account on the system, but do not have a means to handle user prompts. To remedy this limitation, edit the **.bash_profile** file and comment the line: `[ ${SHLVL}....`

During uninstallation, `error: %preun(srvadmin-NAME-X.Y.Z-N.i386) scriptlet failed, exit status 1` error message is displayed.

There may be problems uninstalling Server Administrator after an unsuccessful upgrade during a manual RPM upgrade. The following error message is displayed:

```
error: %preun(srvadmin-NAME-X.Y.Z-N.i386) scriptlet
failed, exit status 1
```

In this case, `NAME` is a feature name, for example `omacore`. `X.Y.Z-N` is the version and build number of the feature. Some possible solutions to rectify this problem:

1. Attempt to uninstall again. For example, use the following command:

   ```
   rpm -e srvadmin-NAME-X.Y.Z-N.i386
   ```

2. Delete the `upgrade.relocation=bad` line if present in the `/etc/omreg.cfg` file and attempt to uninstall again.

Why am I getting a warning concerning the RPM package key during installation?

The RPM files are signed with a digital signature. To avoid this warning, you should mount the media or package, and import the key using a command such as the following:

```
rpm --import
/mnt/dvdrom/SYSMGMT/srvadmin/linux/RPM-GPG-KEY
```

What are the names of all the Dell OpenManage features under Red Hat Enterprise Linux or SUSE Linux Enterprise Server?

The following table lists the names of all Dell OpenManage features and their corresponding init script names under Red Hat Enterprise Linux and SUSE Linux Enterprise Server operating systems.

Table 9-2. Dell OpenManage Features — VMware ESX, Red Hat Enterprise Linux, and SUSE Linux Enterprise Server

Feature	Name in VMware ESX, Red Hat Enterprise Linux, and SUSE Linux Enterprise Server
Managed System Services Feature	Feature init Script Name
DSM SA Device Drivers	instsvcdrv
DSM SA Data Engine Service	dataeng
DSM SA Shared Service	dsm_om_shrsvc
DSM SA Connection Service	dsm_om_connsvc
DSM SM LSI Manager	mptctl
Integrated Dell Remote Access Controller (iDRAC)	None
Remote Access Controller (DRAC 4)	racsvc
Remote Access Controller (DRAC 5)	None

What do the directories under srvadmin/linux/custom/<*operating system*> contain?

The following table lists the names of the directories in the **SYSMGMT/srvadmin/linux/custom/<*operating system*>** directory.

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory

Name of RPM	Description	Other Server Administrator RPMs required
Server-Instrumentation — This is the core code for Server Administrator. It provides motherboard alerts and contains the CLI that allows to monitor and control Server Administrator, for example, `omconfig`, `omdiag`, and `omreport`. All peripheral packages, except the standalone DRAC support, require all or most of the RPMs in this directory to be installed. **NOTE:** You may need to install IPMI drivers for proper functionality.		
srvadmin-cm	Server Administrator Inventory Collector — Systems management change management inventory collector.	srvadmin-omilcore, srvadmin-deng, and srvadmin-omacore
srvadmin-deng	Server Administrator Data Engine — Systems management provides a data management framework for systems management software.	srvadmin-omilcore
srvadmin-hapi	Server Administrator Hardware Application Programming Interface — This systems management package provides the device drivers and libraries needed by systems management software to access information about the hardware on supported systems.	srvadmin-omilcore

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
srvadmin-isvc	Server Administrator Instrumentation Service — Server Administrator provides a suite of systems management information for keeping supported systems on your network healthy. Server Administrator Instrumentation Service provides fault management information, prefailure information, and asset and inventory information to management applications. The Instrumentation Service monitors the health of the system and provides rapid access to detailed fault and performance information about the hardware on supported systems. The Instrumentation Service requires installation of systems management device drivers.	srvadmin-omilcore, srvadmin-deng, and srvadmin-hapi
srvadmin-omacore	Server Administrator — Systems management managed mode core and CLI.	srvadmin-omilcore and srvadmin-deng
srvadmin-omhip	Server Administrator Instrumentation Service Integration Layer — Provides Instrumentation CLI.	srvadmin-omilcore, srvadmin-deng, srvadmin-hapi, srvadmin-isvc, and srvadmin-omacore
srvadmin-omilcore	Server Administrator Install Core — This is the core install package that provides the tools necessary for the rest of the Systems management install packages. All Server Administrator RPMs require this RPM.	
srvadmin-syscheck	Package that checks the level of Dell OpenManage support.	srvadmin-omilcore

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
add-iDRAC — Software for remote management of third generation Remote Access Controllers. For example, iDRAC.		
srvadmin-idrac-components	Integrated Dell Remote Access Card Data Populator Remote Access Controller components.	srvadmin-omilcore, srvadmin-deng, srvadmin-hapi, and srvadmin-racser
srvadmin-idracadm	iDRAC Command Interface — The command line user interface to the Integrated Dell Remote Access Controller.	srvadmin-omilcore
srvadmin-idracdrsc	iDRAC Integration Layer — Integrated Dell Remote Access CLI and Web Plug-in to Server Administrator.	srvadmin-omilcore, srvadmin-deng, srvadmin-rac4 components, and srvadmin-omacore
add-RAC4 — Software for remote management of fourth generation Remote Access Controllers. For example, DRAC 4.		
srvadmin-rac4-components	Remote Access Card Data Populator — Remote Access Controller components.	srvadmin-omilcore, srvadmin-deng, srvadmin-hapi, and srvadmin-racsvc
srvadmin-racadm4	RAC Command Interface — The command line user interface to the Remote Access Controller (RAC).	srvadmin-omilcore
srvadmin-racdrsc4	DRAC 4 Integration Layer — Remote Access CLI and Web Plugin to Server Administrator.	srvadmin-omilcore, srvadmin-deng, srvadmin-rac4 components, and srvadmin-omacore

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
srvadmin-racsvc	Remote Access Card Managed Node — Remote Access Controller (RAC) services supporting the central administration of server clusters and the remote administration of distributed resources.	srvadmin-omilcore
add-RAC5 — Software for remote management of fifth generation Remote Access Controllers. For example, DRAC 5.		
srvadmin-rac5-components	Remote Access Card Data Populator, DRAC 5 and Remote Access Controller components, DRAC 5.	srvadmin-omilcore, srvadmin-deng, and srvadmin-hapi
srvadmin-racadm5	RAC Command Interface — The command line user interface to the Remote Access Controller (RAC).	srvadmin-omilcore and srvadmin-hapi
srvadmin-racdrsc5	DRAC 5 Integration Layer — Remote Access CLI and Web Plug-in to Server Administrator.	srvadmin-omilcore, srvadmin-deng, srvadmin-omacore, and srvadmin-rac5 components
add-StorageManagement — Storage Management RAID configuration utility and storage alert software.		
srvadmin-storage	Storage Management — Provides Systems Management Storage Services.	srvadmin-omilcore, srvadmin-deng, srvadmin-omacore, and srvadmin-odf

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
SA-WebServer — Provides web access to manage the server.		
srvadmin-hapi	Server Administrator Hardware Application Programming Interface — This systems management package provides the device drivers and libraries needed by systems management software to access information about the hardware on supported systems.	srvadmin-omilcore
srvadmin-iws	Secure Port Server — Systems Management Managed Node Web Server package.	srvadmin-omilcore, srvadmin-deng, srvadmin-omacore, and srvadmin-jre
srvadmin-jre	Server Administrator Sun Java Runtime Environment — Systems management managed node Java runtime.	srvadmin-omilcore, srvadmin-deng, and srvadmin-omacore
srvadmin-omauth	Provides the authentication files.	srvadmin-omilcore
srvadmin-omcommon	Provides the common framework required by Server Administrator.	srvdamin-omilcore
srvadmin-omilcore	Server Administrator Web Server Install Core — This is the core install package. All Server Administrator Web Server RPMs require this RPM.	
srvadmin-wsmanclient	Operating system specific WSMan client package.	srvadmin-omcommon and srvadmin-omauth

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
Remote-Enablement — Manage and monitor your current system using some other remote system.		
srvadmin-cm	Server Administrator Inventory Collector — Systems management change management inventory collector.	srvadmin-omilcore, srvadmin-deng, and srvadmin-omacore.
srvadmin-deng	Server Administrator Data Engine — Systems management provides a data management framework for systems management software.	srvadmin-omilcore
srvadmin-hapi	Server Administrator Hardware Application Programming Interface — This systems management package provides the device drivers and libraries needed by systems management software to access information about the hardware on supported systems.	srvadmin-omilcore
srvadmin-isvc	Server Administrator Instrumentation Service — Server Administrator provides a suite of systems management information for keeping supported systems on your network healthy. Server Administrator Instrumentation Service provides fault management information, prefailure information, and asset and inventory information to management applications. The Instrumentation Service monitors the health of the system and provides rapid access to detailed fault and performance information about the hardware on supported systems. The Instrumentation Service requires installation of systems management device drivers.	srvadmin-omilcore, srvadmin-deng, and srvadmin-hapi
srvadmin-omacore	Server Administrator — Systems management managed mode core and CLI.	srvadmin-omilcore and srvadmin-deng
srvadmin-omcommon	Provides Common Framework required by Server Administrator.	srvadmin-omilcore

Table 9-3. Names of the Directories Under the srvadmin/linux/custom/<*operating system*> Directory *(continued)*

Name of RPM	Description	Other Server Administrator RPMs required
srvadmin-omhip	Server Administrator Instrumentation Service Integration Layer — Provides Instrumentation CLI.	srvadmin-omilcore, srvadmin-deng, srvadmin-hapi, srvadmin-isvc, and srvadmin-omacore
srvadmin-omilcore	Server Administrator Install Core — This is the core install package that provides the tools necessary for the rest of the Systems management install packages. All Server Administrator RPMs require this RPM.	
srvadmin-ssa	Enables management of the system from a remote system on which Server Administrator Web Server is installed, using WS-Man interfaces.	srvadmin-omacore, srvadmin-omhip, and srvadmin-isvc.
srvadmin-syscheck	Package that checks the level of Dell OpenManage support.	srvadmin-omilcore

What are the additional components that can be installed on a system that already has Server Administrator installed?

There are a few additional components that can be installed on a system that already has Server Administrator installed. For example, you can install Online Diagnostics on a system that has previously been installed with managed system software. On such a system, while uninstalling Server Administrator, only those RPM packages that are not required by any of the newly installed components are uninstalled. In the above example,

Online Diagnostics requires packages such as - **srvadmin-omilcore-X.Y.Z-N** and **srvadmin-hapi-X.Y.Z-N**. These packages are not uninstalled during an uninstallation of Server Administrator.

In this case, if you try to install Server Administrator later by running the `sh srvadmin-install.sh` command, the following message is displayed:

```
Server Administrator version X.Y.Z is currently
installed.
Installed components are:
```

- `srvadmin-omilcore-X.Y.Z-N`
- `srvadmin-hapi-X.Y.Z-N`

Do you want to upgrade Server Administrator to X.Y.Z? Press (y for yes | <Enter> to exit):

On pressing **<y>**, only those Server Administrator packages (in the above example), **srvadmin-omilcore-X.Y.Z-N** and **srvadmin-hapi-X.Y.Z-N** residing on the system are upgraded.

If you have to install other Dell OpenManage components as well, the following command has to be run once again:

```
sh srvadmin-install.sh
```

What happens if I install the RPM package on an unsupported system or on an unsupported operating system?

If you try to install the RPM packages on an unsupported system or an unsupported operating system, you may see unpredictable behavior during the install, uninstall, or during use of the RPM package. Most of the RPM packages have been written and tested for Dell PowerEdge systems and the Linux versions listed in the readme.

What daemons run on Red Hat Enterprise Linux and SUSE Linux Enterprise Server operating systems after Server Administrator is started?

The daemons that run on Red Hat Enterprise Linux and SUSE Linux Enterprise Server operating systems depend on what is installed and what is enabled to run. The following table displays the daemons that typically run for a full install:

Table 9-4. Daemons that Run on Red Hat Enterprise Linux and SUSE Linux Enterprise Server Once Server Administrator is Started

Daemon Name	Name in Red Hat Enterprise Linux and SUSE Linux Enterprise Server
For RPMs in the srvadmin-base directory	
dsm_sa_datamgr32d	DSM SA Data Manager — Server Administrator data manager daemon started by DSM SA Data Engine service.
dsm_sa_eventmgr32d	DSM SA Event Manager — Server Administrator event and logging daemon started by DSM SA Data Engine service.
dsm_sa_snmp32d	DSM SA SNMP daemon — Server Administrator SNMP daemon started by DSM SA Data Engine service.
dsm_om_shrsvc32d	DSM SA Shared Services — Server Administrator core daemon.
For RPMs in the SA-WebServer directory	
dsm_om_connsvc32d	DSM SA Connection Services — Server Administrator Web server daemon.
For systems that support DRAC 4: add-RAC4	
racsvc	DRAC 4 Administrator daemon.

What kernel modules are loaded when Server Administrator is started?

This is dependent on the type of systems instrumentation. The following table displays the kernel modules loaded when Server Administrator is started.

Table 9-5. Kernel Modules Loaded When Server Administrator Services are Started

Driver Name	Description
For a system with IPMI	
dell_rbu	Dell BIOS Update Driver
ipmi_devintf	IPMI device driver
ipmi_msghandler	IPMI device driver
ipmi_si	IPMI device driver — For systems running Red Hat Enterprise Linux (version 5) or SUSE Linux Enterprise Server (version 10)
For a TVM system	
dcdbas	Dell Systems Management Base Driver
dell_rbu	Dell BIOS Update Driver
For an ESM system	
dcdbas	Dell Systems Management Base Driver
dell_rbu	Dell BIOS Update Driver
For support of Server Administrator Storage Systems	
mptctl	Device driver for LSI RAID

A

Dell OpenManage Linux Installer Packages

This appendix lists the Dell OpenManage Linux installer packages.

Table A-1. Meta RPMs

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-realssd	Meta package for installing management libraries for PCIeSS Devices	All meta RPMs	Peripheral Component Interconnect Express Solid State (PCIeSS) Devices management	N	N	N	Y
srvadmin-all	Meta package for installing all Server Administrator features	All meta RPMs	Complete Server Administrator features	Y	Y	Y	Y
srvadmin-base	Meta package for installing the Server Agent	srvadmin-omacore, srvadmin-smcommon, srvadmin-cm	Server Instrumentation, SNMP monitoring, and Server Administrator CLI	Y	Y	Y	Y
srvadmin-standardAgent	Meta package for installing the Standard Server Agent	srvadmin-itunnelprovider, srvadmin-cm, srvadmin-smcommon	Enabling remote management using Server Administrator Web Server	Y	Y	Y	Y

Table A-1. Meta RPMs *(continued)*

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-webserver	Meta package for installing the Server Administrator Web Server feature	srvadmin-iws, srvadmin-smcommon, srvadmin-smweb	Server Administrator Web Server for local and remote node management	Y	Y	Y	Y
srvadmin-storageservices	Meta package for installing the Server Administrator Storage Services feature	srvadmin-storage, srvadmin-smcommon, srvadmin-cm, srvadmin-megalib (only for 32-bit install), srvadmin-fsa (Removed in 6.3), srvadmin-storelib, srvadmin-storage-populator*, srvadmin-sysfsutils *obsolete in OM6.4	Storage Management using Server Administrator GUI/CLI	Y	Y	Y	Y

Table A-1. Meta RPMs *(continued)*

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-rac4	Meta RPM for RAC4 components	srvadmin-omilcore, srvadmin-racadm4, srvadmin-racdrsc4, srvadmin-racsvc, srvadmin-rac4-populator*, srvadmin-rac-components*, srvadmin-racdrsc* * 6.3 packages	RAC 4 management using Server Administrator GUI/CLI, RAC4 tools	Y	Y	Y	Y
srvadmin-rac5	Meta RPM for RAC5 components	srvadmin-omilcore, srvadmin-racdrsc5, srvadmin-racadm5, srvadmin-racdrsc*, srvadmin-rac-components * 6.3 packages	RAC 5 management using Server Administrator GUI/CLI, RAC5 tools	Y	Y	Y	Y

Table A-1. Meta RPMs *(continued)*

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-idrac	Meta RPM for iDRAC components	srvadmin-omilcore, srvadmin-idracdrsc, srvadmin-idracadm, srvadmin-racdrsc*, srvadmin-rac-components*, srvadmin-argtable2* * 6.3 packages	iDRAC management using Server Administrator GUI/CLI, iDRAC tools	Y	Y	Y	Y

Table A-2. Server Instrumentation and SNMP monitoring

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-omilcore	Core Install package that provides tools for the systems management install packages	smbios-utils-bin, libsmbios	Installing and functioning of Server Administrator	Y	Y	Y	Y
srvadmin-syscheck	Package that checks system ID and validates Dell OpenManage support	NA	NA	N	N	N	N
srvadmin-deng	Data Engine stores and manages objects for systems management	srvadmin-omilcore	Server Instrumentation and SNMP monitoring	Y	Y	Y	Y

Table A-2. Server Instrumentation and SNMP monitoring *(continued)*

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin -hapi	Provides low-level hardware interface for systems management	None	Server Instrumentation	Y	Y	Y	Y
srvadmin -isvc	Provides systems management interface to local and remote systems management	srvadmin-omilcore, srvadmin-deng, srvadmin-hapi	Server Instrumentation and SNMP monitoring	Y	Y	Y	Y
srvadmin -ipmi	-	-	-	N	N	N	N
libsmbios	Provides SMBIOS library to get standard BIOS tables	None	Installation and software updates using ITA	Y	Y	Y	Y
smbios-utils-bin	Provides SMBIOS Utility to get system information	None	Installation	Y	Y	Y	Y

Table A-3. Packages needed for local management that are used by GUI and CLI components

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-omcommon	Common framework or libraries for GUI/CLI	srvadmin-omilcore	Server Administrator GUI/CLI	Y	Y	Y	Y
srvadmin-omacore	Provides plugins that act as interfaces between back end and GUI/CLI. Also provides OM CLI tools.	srvadmin-omilcore, srvadmin-deng, srvadmin-omcommon, srvadmin-xmlsup, libsmbios	Server Administrator GUI/CLI and infrastructure for software updates using ITA	Y	Y	Y	Y
srvadmin-omhip	Provides data accessor for instrumentation	NA	Server Administrator GUI/CLI	N	N	N	N
srvadmin-xmlsup	XML support library	srvadmin-libxslt (VMware ESX only), libxslt (provided by operating system vendors on other Linux distributions)	Server Administrator GUI/CLI	Y	Y	Y	Y
srvadmin-libxslt	XSLT support library * Applicable on VMware ESX only	None	Server Administrator GUI/CLI	Y	Y	Y	Y

Table A-3. Packages needed for local management that are used by GUI and CLI components *(continued)*

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-cm **NOTE:** On a scripted install, srvadmin-cm is installed on 32bit operating systems only. If required on a 64bit operating system, manually install the same.	Change Management inventory collector. Feeds software inventory data to management station applications like ITA	srvadmin-omacore	Software inventory & updates using ITA	Y	Y	Y	Y

Table A-4. Server Administrator Web Server (GUI) for Local and Remote Management

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-jre	Provides JAVA Runtime for web server	srvadmin-omilcore	Server Administrator GUI	Y	Y	Y	Y[a]
srvadmin-iws	Server Administrator Web server and GUI package	srvadmin-omilcore, srvadmin-omcommon, srvadmin-jre, openwsman-client, libwsman1	Server Administrator GUI	Y	Y	Y	Y[a]

Table A-4. Server Administrator Web Server (GUI) for Local and Remote Management

RPM	Description	Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-omauth	Provides authentication files for GUI	NA	Server Administrator GUI	N	N	N	N
openwsman-client	Openwsman client libraries	None	Server Administrator GUI to manage remote nodes using WSMAN	Y	Y	Y[a]	Y
libwsman1	Openwsman libraries used by client and server components	None	Openwsman support library	Y	Y	Y[b]	Y

a. Not applicable for OM 7.0 supplemental pack for Citrix Xen 6.0.
b. Should be installed from the OS media for RHEL6 and SLES11.

Table A-5. Server Administrator Remote Enablement (Standard Agent)

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-wsmanclient	WSMAN Client package that enables management of a remote system	NA	NA	N	N	N	N
srvadmin-ssa	Enables management of the system from a remote system on which Server Administrator Web Server is installed, using WS-Man interfaces.	NA	NA	N	N	N	N

Table A-5. Server Administrator Remote Enablement (Standard Agent) ***(continued)***

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-itunnelprovider	The Dell OpenManage Small Footprint CIM Broker (SFCB) provider that enables remote management of the server	sblim-sfcb >= 1.3.7, sblim-sfcc >= 2.2.1, openwsman-client >= 2.2.3.9, openwsman-server >= 2.2.3.9, libwsman1 >= 2.2.3.9, libcmpiCppImpl0 >= 2.0.0	Enabling remote management of server	Y	Y	Y	Y
libwsman1	Openwsman libraries used by client and server components	None	Openwsman support library	Y	Y	Y	Y
openwsman-server	Openwsman server and service libraries *N/A on VMware ESX	None	Enabling remote management of server	Y	Y	Y[a]	Y
sblim-sfcb	Small Footprint CIM Broker (sfcb) - CIM server conforming to the CIM Operations over HTTP protocol. *N/A on VMware ESX	None	Enabling remote management of server	Y	Y	Y[a]	Y

Table A-5. Server Administrator Remote Enablement (Standard Agent) *(continued)*

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
sblim-sfcc	Small Footprint Common Information Model (CIM) Client Library (sfcc) Runtime Libraries *N/A on VmWare ESX	None	Enabling remote management of server	Y	Y	Y[a]	Y
libcmpiCppImpl0	Provides helper library to implement Common Manageability Programming Interface (CMPI) C++ plugins into SFCB *N/A on VmWare ESX	None	Enabling remote management of server	Y	Y	Y	Y
mod_wsman	An Apache module that implements WSMAN interface	NA	NA	N	N	N	N

a. Should be installed from the OS media for RHEL6 and SLES11.

Table A-6. Storage Instrumentation, SNMP Monitoring, GUI and CLI Plugins

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-storage	Core interface library for storage management	srvadmin-omilcore, srvadmin-deng, srvadmin-isvc, srvadmin-omcommon, srvadmin-xmlsup	Storage instrumentation , SNMP monitoring and CLI (for storage management)	Y	Y	Y	Y
srvadmin-storage-populator	Low-level libraries to discover and monitor storage	srvadmin-omilcore, srvadmin-deng, srvadmin-isvc, srvadmin-storage	Storage instrumentation	Y	O[a]	N	N
srvadmin-storelib	LSI utility libraries for storage management	srvadmin-storelib-sysfs	Storage instrumentation	Y	Y	Y	Y
srvadmin-storelib-libpci	PCI utilities for Kernel. Used by storelib libraries	None	Storage instrumentation	O	N	N	N
srvadmin-storelib-sysfs	Provides library for interfacing with the kernel's sys filesystem. Used by LSI storelib libraries *N/A for VMware ESX	None	Storage instrumentation	Y	Y	Y	Y

Table A-6. Storage Instrumentation, SNMP Monitoring, GUI and CLI Plugins

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-sysfsutils	Provide utilities for interfacing with sysfs file system. Used by OpenManage storage management libraries	None	Storage instrumentation	Y	Y	Y	Y
srvadmin-megalib	LSI utility libraries for storage management of PERC 4 controllers. *N/A for 64-bit OMSA installation, and VMware ESX.	None	Storage instrumentation of PERC 4 controllers	Y	Y	Y	Y
sradmin-fsa	Adaptec utility library for managing Adaptec Controllers	None	Storage instrumentation	O	N	N	N
srvadmin-smcommon	Common framework or libraries for GUI/CLI (for storage management)	None	Storage management using Server Administrator GUI/CLI	Y	Y	Y	Y
srvadmin-smweb	GUI plugins for storage management	srvadmin-omcommon	Storage management using Server Administrator GUI	Y	Y	Y	Y[b]

a. Obsolete - merged with srvadmin-storage

b. Not applicable for OM 7.0 supplemental pack for Citrix Xen 6.0.

Table A-7. RAC Instrumentation, SNMP Monitoring, GUI and CLI Plugins

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-racsvc	RAC services to manage DRAC 4	srvadmin-omilcore	DRAC 4 instrumentation	Y	Y	Y	Y
srvadmin-rac4-components	RAC data populator for DRAC 4	srvadmin-omilcore, srvadmin-hapi, srvadmin-deng, srvadmin-racsvc	DRAC 4 instrumentation and SNMP monitoring	O[a]	N	N	N
srvadmin-racadm4	Provides CLI tools for DRAC 4 administration	srvadmin-omilcore	RAC CLI tools for DRAC 4	Y	Y	Y	Y
srvadmin-racdrsc4	RAC CLI and web plugin to Server Administrator for DRAC 4	srvadmin-omilcore, srvadmin-deng, srvadmin-omcommon, srvadmin-omacore, srvadmin-rac4-components	DRAC 4 management using Server Administrator GUI/CLI	O[b]	N	N	N
srvadmin-rac5-components	RAC Data populator for DRAC 5	srvadmin-omilcore, srvadmin-hapi, srvadmin-deng	DRAC 5 instrumentation and SNMP monitoring	O[c]	N	N	N
srvadmin-racadm5	Provides CLI tools for DRAC 5 administration	srvadmin-omilcore, srvadmin-hapi	RAC CLI tools for DRAC 5	Y	Y	Y	Y

Table A-7. RAC Instrumentation, SNMP Monitoring, GUI and CLI Plugins *(continued)*

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-racdrsc5	RAC CLI and web plugin to Server Administrator for DRAC 5	srvadmin-omilcore, srvadmin-deng, srvadmin-omcommon, srvadmin-omacore, srvadmin-rac5-components	DRAC 5 management using Server Administrator GUI/CLI	O[d]	N	N	N
srvadmin-idrac-components	RAC data populator for iDRAC	srvadmin-omilcore, srvadmin-hapi, srvadmin-deng	iDRAC instrumentation and SNMP monitoring	O[e]	N	N	N
srvadmin-idracadm	Provides CLI tools for iDRAC administration	srvadmin-omilcore, srvadmin-hapi	RAC CLI tools for iDRAC	Y	Y	Y	Y
srvadmin-idracdrsc	RAC CLI and web plugin to Server Administrator for iDRAC	srvadmin-omilcore, srvadmin-deng, srvadmin-omcommon, srvadmin-omacore, srvadmin-idrac-components	iDRAC management using Server Administrator GUI/CLI	O[f]	N	N	N
srvadmin-racdrsc	RAC CLI and Web Plugin to Server Administrator for RAC 4, 5 and iDRAC	srvadmin-deng, srvadmin-omcommon	RAC management using Server Administrator GUI/CLI	Y	Y	Y	Y
srvadmin-rac-components	RAC SNMP components for RAC 4, 5 and iDRAC	srvadmin-deng	RAC instrumentation and SNMP monitoring	Y	Y	Y	Y

Table A-7. RAC Instrumentation, SNMP Monitoring, GUI and CLI Plugins *(continued)*

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-rac4-populator-	RAC Data populator for DRAC 4	srvadmin-hapi, srvadmin-deng, srvadmin-racadm4	DRAC 4 instrumentation	Y	Y	Y	Y
srvadmin-argtable2	Library for parsing GNU style command line argument. Used by RAC 5 and iDRAC packages	srvadmin-racadm5, srvadmin-idracadm5	RAC CLI tools for RAC 5 and iDRAC management	Y	Y	Y	Y
srvadmin-idrac-ivmcli	Provides CLI tools that provide virtual media features from the management station to the iDRAC in the remote modular system	None	RAC CLI tools for virtual media feature	Y	Y	Y	Y
srvadmin-idrac-vmcli	Provides CLI tools that provide virtual media features from the management station to the iDRAC in the remote Rack and Tower system	None	RAC CLI tools for virtual media feature	Y	Y	Y	Y

a. Obsolete - merged into srvadmin-rac-components
b. Obsolete - merged into srvadmin-racdrsc
c. Obsolete - merged into srvadmin-rac-components
d. Obsolete - merged into srvadmin-racdrsc
e. Obsolete - merged into srvadmin-rac-components
f. Obsolete - merged into srvadmin-racdrsc

Table A-8. Enable Software inventory and updates using IT Assistant

RPM	Description	OM Dependant packages	Required for	OpenManage			
				6.3	6.4	6.5	7.0
srvadmin-cm	Change management inventory collector. Feeds software inventory data to management station applications like ITA	srvadmin-omacore	Software inventory and updates using ITA	Y	Y	Y	Y

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