Remote OS Deployment

Using Dell OpenManage Server Assistant 8 and DRAC 4

Administrators can take advantage of the Dell™ Remote Access Controller 4 (DRAC 4) and Dell OpenManage™ Server Assistant when deploying operating systems remotely on eighth-generation Dell servers. This article provides a step-by-step approach to remotely deploying and configuring a Microsoft® Windows® or Red Hat® Enterprise Linux® operating system on eighth-generation Dell PowerEdge™ servers equipped with the DRAC 4.

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Effectively managing Dell PowerEdge servers is critical to helping ensure the maximum value of an IT infrastructure. Dell OpenManage provides open, flexible systems management tools that can integrate and help standardize and automate server management processes. Dell OpenManage tools can help lower overall management costs by increasing the server-to-administrator ratio through centralized management of distributed systems and remote access to Dell PowerEdge servers at virtually any time. For organizations of every size, Dell OpenManage helps provide a comprehensive set of tools to deploy, monitor, and manage system updates and changes.

Dell OpenManage Server Assistant (DSA) 8.x is an application in the Dell OpenManage suite that facilitates installations for Microsoft Windows, Red Hat Enterprise Linux, and Novell® NetWare® operating systems on Dell PowerEdge and Dell PowerEdge SC servers.1 This application provides basic operating system (OS) installation features, and helps ensure that Dell-tested device drivers are installed for all supported peripherals. It also helps enterprise IT organizations carry out RAID setup and configuration, network adapter teaming, OS replication, and other customizable installation options.

The Dell Remote Access Controller 4 (DRAC 4) offers remote management capabilities for eighth-generation Dell servers such as the PowerEdge 1850, PowerEdge 2800, and PowerEdge 2850. The DRAC 4 also offers support for console redirection (continuous video) and virtual media through its remote management features. Console redirection can be used to access the system console remotely when the system is in either graphical or text mode. By using virtual media, the administrator can use the CD drive or floppy drive of any system on the network as if it were a local drive on the server.

Hardware requirements and setup for remote deployment using DSA

Carrying out remote deployment of an OS on a managed server with DSA requires an eighth-generation Dell PowerEdge server equipped with a DRAC 4. Administrators also need a management station, which could be any system on the network that has network access to the

1For more information about DSA 8.x, see “Using Dell OpenManage Server Assistant 8.x to Optimize Installation of Dell PowerEdge Servers” by Michael E. Brown, Niroop Gorichhak, Nathan Martell, and Gong Wang in Dell Power Solutions, June 2004.
managed server. The DRAC 4 must be connected to the network, and the administrator must have login privileges to access and log in to the DRAC 4.

On a bare-metal server, there are several ways to configure the network settings for the DRAC 4. These settings should be configured once, when the server is first provisioned.\(^2\) If the OS is being redeployed on a previously configured system, administrators can skip the steps discussed in the next two sections.

**Setting up network connectivity using option ROM**

To use option ROM to configure the DRAC 4 network settings, administrators should perform the following steps:

1. Reboot the system. During the power-on self-test (POST) press Ctrl + D within five seconds of the time the DRAC 4 banner is displayed.
2. When the Setup screen appears, make changes in the network settings—such as enabling or disabling Dynamic Host Configuration Protocol (DHCP)—and edit the static IP address, subnet mask, gateway, Domain Name System (DNS), and Ethernet configuration options. Be sure that the DRAC 4 network interface card (NIC) setting is enabled.
3. Press R to save the changes and reboot the DRAC 4.

Using option ROM requires administrators to perform the configuration task locally. Dell provides a mechanism known as console redirection to remotely configure the DRAC 4 as explained in the next section.

**Setting up network connectivity using BIOS serial console redirection**

Many organizations use special-purpose serial concentrators to provide remote access to their server systems. These concentrators generally take input from a serial port and make this port available over the network using a Telnet connection, a Web interface, or a secure protocol such as Secure Shell (SSH). The Dell PowerEdge server BIOS has a feature that allows administrators to connect the serial port to one of these concentrator devices and to access BIOS functionality through the serial port. Administrators can use this feature to remotely set up network connectivity for the DRAC 4 by performing the following steps:

1. Connect the serial port of the server to the serial concentrator and power up the system.
2. Access the serial concentrator according to the manufacturer’s directions on how to access that particular model.
3. Configure the DRAC 4 network settings as described in the previous section.


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**Configuration of the DRAC 4**

After the network settings have been configured on the DRAC 4, administrators must configure DRAC 4 console redirection and virtual media support. Only after these steps have been accomplished can administrators launch DSA to complete the remote OS installation. These steps must be performed each time administrators want to connect to the server.

**Configuring the DRAC 4 console redirection feature**

The DRAC 4 console redirection feature allows administrators to manage a system remotely in either graphical or text mode. Using the console redirection feature, the remote system can be operated by using the keyboard, video, and mouse on the local management station to control the corresponding devices on a remote system.

To use the console redirection feature, all browsers must have the supported Java Virtual Machine (JVM) plug-in (version 1.4.2 or later) installed. If using a Microsoft Windows OS–based management station, administrators should clear and disable the Java cache from the Java plug-in control panel.

To open a console redirection session, administrators should perform the following steps:

1. Connect and log in to the DRAC 4 Web-based interface in a Web browser on the management station by typing the IP address of the DRAC 4 in the browser address bar.
2. After logging in to the interface, click “Console” in the left pane to open the Console Redirection page (see Figure 1). The number of available console redirection sessions for the remote system will appear on the Console Redirection page.
The DRAC 4 supports a maximum of two concurrent console redirection sessions.

3. Open a new console by clicking “Open Console” at the bottom of the Console Redirection page.

4. Click “Yes” to accept the remote access controller (RAC) Web security certificate.

Configuring the DRAC 4 virtual media feature
The DRAC 4 virtual media feature allows CD or floppy disk drives to be used on the management station as if they were connected directly to the managed server. Using this feature, administrators can remotely install new operating systems, install applications, or update drivers from virtual CD or virtual floppy disk drives.

On a Microsoft Windows management station, Microsoft Internet Explorer must be used as the browser for the virtual media feature. Browser security must be set to the medium or low setting to enable the browser to download and install signed Microsoft ActiveX® controls. Administrator rights are required to install the ActiveX control plug-in for the browser. On Red Hat Enterprise Linux management stations, write permission is required to install the plug-in for the Mozilla and Netscape browsers.

Figure 2 shows the Virtual Media page of the DRAC 4 Web-based interface. The following steps can be used to set up the virtual media feature from the management station:

1. Connect and log in to the DRAC 4 from a Web browser on the management station. To use the virtual media feature to connect or disconnect virtual media, log in to the DRAC 4 as a user with Access Virtual Media permission.

2. After logging in to the interface, click “Media” in the left pane to open the Virtual Media page (see Figure 2). A prompt to install the virtual media plug-in will display if the virtual media feature is being run for the first time at the management station.

3. View the current status in the Attribute field. If the associated Value field displays “Connected,” deselect the relevant radio buttons to disconnect the virtual floppy disk image, virtual floppy disk drive, or virtual CD drive before reconnecting to the desired drives.

4. Select a physical CD or floppy disk drive to virtualize, and click “Connect” at the bottom of the Virtual Media page. The virtual floppy disk can be connected to a maximum of one available 1.44-inch virtual floppy disk image, 1.44-inch virtual floppy disk drive, or Universal Serial Bus (USB) key. The virtual CD can be connected to exactly one local CD drive.

5. After clicking “Connect,” access any selected drives on the managed server’s console as though they were physical drives on that server.

Remote deployment of an operating system
Once the virtual media and console redirection features are properly configured for the DRAC 4 on an eighth-generation Dell PowerEdge server, administrators can launch and optimize the OS installation using the Dell OpenManage Server Assistant CD. DSA helps to streamline OS installation and reduce the attended time needed to install supported operating systems on a server. Each Dell PowerEdge server is sold with a copy of the Dell OpenManage Server Assistant CD that will operate on that server. If attempting to use DSA on additional PowerEdge servers, carefully check the CD label for the list of supported servers.

The following steps start the installation of an OS through the DRAC 4 using the Dell OpenManage Server Assistant CD. Note: The list of operating systems supported for installation on an individual server is based on the model of the server. Operating systems that can be installed using virtual media include Microsoft Windows 2000 Server with Service Pack 4 (SP4), Microsoft Windows Server™ 2003, Red Hat Enterprise Linux 3, and Red Hat Enterprise Linux 2.1. Installation of Novell NetWare operating systems through virtual media is not supported on eighth-generation Dell PowerEdge servers.

1. Follow the steps in the “Configuring the DRAC 4 virtual media feature” section in this article to connect the local physical CD drive to a virtual CD drive.

2. Insert a supported version of the Dell OpenManage Server Assistant CD into the virtualized CD drive at the management station.

3. As described in the “Configuring the DRAC 4 console redirection feature” section in this article, open a console redirection session to monitor and perform the OS installation process.
4. The DRAC 4 allows administrators to remotely perform several power management actions on the managed server. To start the installation process, after the console redirection session has been started, navigate back to the Server Control page of the DRAC 4 Web-based interface to reboot the system.

5. At the console redirection window, press F2 during the POST of the managed server to enter the BIOS setup.

6. Navigate down to the Boot Sequence menu. In this menu, make sure the virtual CD drive is enabled and edit the virtual drive to be the first drive in the boot sequence using the keys indicated on the screen. Most servers use the + key and the – key to move menu entries up and down (see Figure 3).

7. Save the changes and exit. The server will reboot upon exit.

8. Follow the on-screen instructions to complete the OS installation with DSA. The DSA application will request the CD for the OS being installed (see Figure 4). DSA copies this CD to the hard drive. After the copy process completes, the managed server reboots into the OS unattended installation mode.

Remote OS deployment to enhance administrator productivity

Starting with eighth-generation Dell servers, such as the PowerEdge 1850, PowerEdge 2800, and PowerEdge 2850, administrators can take advantage of the DRAC 4 and Dell OpenManage Server Assistant to deploy operating systems remotely. When deploying an OS remotely, administrators can use DSA features as effectively as they would on a local system. This approach can prove extremely useful for provisioning eighth-generation Dell PowerEdge servers in distributed data centers or other remote locations. Remote OS deployment can save time by enabling administrators to deploy operating systems without traveling to remote locations, and can also help distributed enterprises keep IT staffing requirements to a minimum.

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FOR MORE INFORMATION

Serial console setup:
www1.us.dell.com/content/topics/global.aspx/power/en/ps1q03_stanton?c=us&l=en&s=corp