

Integrated Dell™ Remote Access
Controller 6 (iDRAC6) Enterprise
for Blade Servers
Version 2.0
User 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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iDRAC6 Enterprise Overview

The Integrated Dell™ Remote Access Controller (iDRAC6) is a systems management hardware and software solution that provides remote management capabilities, crashed system recovery, and power control functions for Dell PowerEdge™ systems.

iDRAC6 uses an integrated System-on-Chip microprocessor for the remote monitor/control system, and co-exists on the system board with the managed PowerEdge server. The server operating system is concerned with executing applications; iDRAC6 is concerned with monitoring and managing the server's environment and state outside of the operating system.

You can configure iDRAC6 to send you an e-mail or Simple Network Management Protocol (SNMP) trap alert for warnings or errors. To help you diagnose the probable cause of a system crash, iDRAC6 can log event data and capture an image of the screen when it detects that the system has crashed.

Managed servers are installed in a Dell M1000e system enclosure (chassis) with modular power supplies, cooling fans, and a chassis management controller (CMC). The CMC monitors and manages all components installed in the chassis. A redundant CMC can be added to provide hot failover if the primary CMC fails. The chassis provides access to iDRAC6 devices through its LCD display, local console connections, and its Web interface.

All network connections to iDRAC6 are through the CMC network interface (CMC RJ45 connection port labelled "Gb"). The CMC routes traffic to the iDRAC6 devices on its servers through a private, internal network. This private management network is outside of the server's data path and outside of the operating system's control—that is, *out-of-band*. The managed servers' *inband* network interfaces are accessed through I/O modules (IOMs) installed in the chassis.

The iDRAC6 network interface is disabled by default. It must be configured before iDRAC6 is accessible. After iDRAC6 is enabled and configured on the network, it can be accessed at its assigned IP address with the iDRAC6 Web interface, telnet or SSH, and supported network management protocols, such as Intelligent Platform Management Interface (IPMI).

iDRAC6 Management Features


iDRAC6 provides the following management features:

- Dynamic Domain Name System (DDNS) registration
- Remote system management and monitoring using a Web interface, the local RACADM command line interface via console redirection, and the SM-CLP command line over a telnet/SSH connection
- Support for Microsoft Active Directory® authentication — Centralizes iDRAC6 user IDs and passwords in Active Directory using the standard schema or an extended schema
- Console Redirection — Provides remote system keyboard, video, and mouse functions
- Virtual Media — Enables a managed server to access a local media drive on the management station or ISO CD/DVD images on a network share
- Monitoring — Provides access to system information and status of components
- Access to system logs — Provides access to the system event log, the iDRAC6 log, and the last crash screen of the crashed or unresponsive system that is independent of the operating system state
- Dell OpenManage™ software integration — Enables you to launch the iDRAC6 Web interface from Dell OpenManage Server Administrator or IT Assistant
- Boot capture — Provides up to three boot capture screens for later debugging
- iDRAC6 alert — Alerts you to potential managed node issues through an e-mail message or SNMP trap
- Remote power management — Provides remote power management functions, such as shutdown and reset, from a management console

- Single Sign-On from CMC Web interface — Once you log into CMC, you can access any iDRAC6 in the chassis without having to log in again
- One-To-Many Firmware Update — Enables automated update of more than one iDRAC6 without operator intervention
- Intelligent Platform Management Interface (IPMI) support
- Secure Sockets Layer (SSL) encryption — Provides secure remote system management through the Web interface
- Password-level security management — Prevents unauthorized access to a remote system
- Role-based authority — Provides assignable permissions for different systems management tasks

iDRAC6 Security Features

iDRAC6 provides the following security features:

- User authentication through Microsoft Active Directory (optional) or hardware-stored user IDs and passwords
 - Role-based authority, which enables an administrator to configure specific privileges for each user
 - User ID and password configuration through the Web interface, SM-CLP, and local RACADM
 - SM-CLP and Web interfaces, which support 128-bit and 40-bit encryption (for countries where 128 bit is not acceptable), using the SSL 3.0 standard
 - Session time-out configuration (in seconds) through the Web interface or SM-CLP
 - Configurable IP ports (where applicable)
-  **NOTE:** Telnet does not support SSL encryption.
- Secure Shell (SSH), which uses an encrypted transport layer for higher security
 - Login failure limits per IP address, with login blocking from the IP address when the limit is exceeded
 - Limited IP address range for clients connecting to iDRAC6

iDRAC6 Firmware Improvements

In addition, important improvements have been made to the code:

- Major improvements in Active Directory lookup performance
- Improved responsiveness of TCP-IP networking stack
- Improved health status interface between iDRAC6 and CMC
- Security improvements using multiple third-party analysis tools

Supported Platforms

iDRAC6 supports the following PowerEdge systems in the Dell PowerEdge M1000e system enclosure:

- PowerEdge M610
- PowerEdge M710

See the iDRAC6 Readme file located on the Dell Support website at support.dell.com/manuals for the latest supported platforms.

Supported Operating Systems

Table 1-1 lists the operating systems that support iDRAC6.

See the *Dell Systems Software Support Matrix* located on the Dell Support website at support.dell.com/manuals for the latest information.

Table 1-1. Supported Operating Systems

Operating System Family	Operating System
Microsoft® Windows®	Microsoft Windows Server® 2003 R2 Standard and Enterprise (32-bit x86) Editions with SP2
	Microsoft Windows Server 2003 Web, Standard and Enterprise (32-bit x86) Editions with SP2
	Microsoft Windows Server 2003 Standard and Enterprise (x64) Editions with SP2
	Microsoft Windows Storage Server 2003 R2 Express, Workgroup, Standard, and Enterprise x64 Editions
	Microsoft Windows Server 2008 Web, Standard, and Enterprise (32-bit x86) Editions
	Microsoft Windows Server 2008 Web, Standard, Enterprise and Datacenter (x64) Editions
	MS HyperV 2008
	NOTE: When installing Windows Server 2003 with Service Pack 1, be aware of changes to DCOM security settings. For more information, see article 903220 from the Microsoft Support website at support.microsoft.com/kb/903220 .
Red Hat® Enterprise Linux®	Enterprise Linux WS, ES, and AS (version 4) (x86 and x86_64)
	Enterprise Linux 5 (x86 and x86_64)
SUSE® Linux	Enterprise Server 10 (Gold) (x86_64)
VMware	ESX 3.5 U4

Supported Web Browsers

Table 1-2 lists the Web browsers that are supported as iDRAC6 clients.

See the iDRAC6 Readme file and the *Dell Systems Software Support Matrix* located on the Dell Support website at support.dell.com/manuals for the latest information.



NOTE: Due to serious security flaws, support for SSL 2.0 has been discontinued. For your browser to work properly, you must enable SSL 3.0.

Table 1-2. Supported Web Browsers

Operating System	Supported Web Browser
Windows	Internet Explorer® 6.0 with Service Pack 2 (SP2) for Windows XP and Windows 2003 R2 SP2 only Internet Explorer 7.0 for Windows Vista®, Windows XP, Windows 2003 R2 SP2, and Windows Server 2008 only Mozilla Firefox 2.0/3.0 for Windows (Java vKVM/vMedia console only)
Linux	Mozilla Firefox 2.0/3.0 on Red Hat Enterprise Linux 4 and 5 (32-bit or 64-bit) and SUSE Linux Enterprise Server 10 (32-bit or 64-bit)

Supported Remote Access Connections

Table 1-3 lists the connection features.

Table 1-3. Supported Remote Access Connections

Connection	Features
iDRAC6 NIC	<ul style="list-style-type: none">• 10Mbps/100Mbps/1Gbps Ethernet via CMC Gb Ethernet port• DHCP support• SNMP traps and e-mail event notification• Support for SM-CLP (telnet or SSH) command shell for operations such as iDRAC6 configuration, system boot, reset, power on, and shutdown commands• Support for IPMI utilities, such as IPMItool and ipmish

iDRAC6 Ports

Table 1-4 lists the ports on which iDRAC6 listens for connections. Table 1-5 identifies the ports that iDRAC6 uses as a client. This information is required when opening firewalls for remote access to an iDRAC6.

Table 1-4. iDRAC6 Server Listening Ports

Port Number	Function
22*	Secure Shell (SSH)
23*	Telnet
80*	HTTP
443*	HTTPS
623	RMCP/RMCP+
3668*, 3669*	Virtual Media Service
3770*, 3771*	Virtual Media Secure Service
5900*	Console Redirection keyboard/mouse
5901*	Console Redirection video

* Configurable port

Table 1-5. iDRAC6 Client Ports

Port Number	Function
25	SMTP
53	DNS
68	DHCP-assigned IP address
69	TFTP
162	SNMP trap
636	LDAPS
3269	LDAPS for global catalog (GC)

Other Documents You May Need

In addition to this *User Guide*, the following documents provide additional information about the setup and operation of iDRAC6 in your system:

- The iDRAC6 online help provides information about using the Web interface.
- The *Dell Chassis Management Controller Firmware Version 2.0 User Guide* and the *Dell Chassis Management Controller Firmware Version 2.0 Administrator Reference Guide* provide information about using the controller that manages all modules in the chassis containing your PowerEdge server.
- The *Dell OpenManage IT Assistant User's Guide* provides information about using IT Assistant.
- The *Dell OpenManage Server Administrator User's Guide* provides information about installing and using Server Administrator.
- The *Dell Update Packages User's Guide* provides information about obtaining and using Dell Update Packages as part of your system update strategy.
- The *Dell Unified Server Configurator User's Guide* provides information on installing and running the Unified Server Configurator.

The following system documents are also available to provide more information about the system in which iDRAC6 is installed:

- The safety instructions that came with your system provide important safety and regulatory information. For additional regulatory information, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance. Warranty information may be included within this document or as a separate document.
- The *Getting Started Guide* provides an overview of system features, setting up your system, and technical specifications.
- The *Hardware Owner's Manual* provides information about system features and describes how to troubleshoot the system and install or replace system components.
- Systems management software documentation describes the features, requirements, installation, and basic operation of the software.

- Operating system documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation for any components you purchased separately provides information to configure and install these options.
- Updates are sometimes included with the system to describe changes to the system, software, and/or documentation.



NOTE: Always read the updates first because they often supersede information in other documents.

- Release notes or readme files may be included to provide last-minute updates to the system or documentation or advanced technical reference material intended for experienced users or technicians.

Configuring iDRAC6 Enterprise

This section provides information about how to establish access to iDRAC6 and to configure your management environment to use iDRAC6.

Before You Begin

Gather the following items prior to configuring iDRAC6:

- *Dell Chassis Management Controller Firmware User Guide*
- *Dell Systems Management Tools and Documentation DVD*

The *Dell Systems Management Tools and Documentation DVD* includes the following components:

- DVD root — Contains the Dell Systems Build and Update Utility, which provides server setup and system installation information
- SYSMGMT — Contains the systems management software products including Dell OpenManage Server Administrator
- DOCS — Contains documentation for systems management software products, peripherals, and RAID controllers
- SERVICE — Contains the tools you need to configure your system, and delivers the latest diagnostics and Dell-optimized drivers for your system

For more information, see the *Server Administrator User's Guide*, the *IT Assistant User's Guide*, and the *Unified Server Configurator User Guide* available on the Dell Support website at support.dell.com/manuals.

Interfaces for Configuring iDRAC6

You can configure iDRAC6 using the iDRAC6 Configuration Utility, the iDRAC6 Web interface, the local RACADM CLI, or the SM-CLP CLI. The local RACADM CLI is available after you have installed the operating system and the Dell OpenManage software on the managed server. Table 2-1 describes these interfaces.

For greater security, access to iDRAC6 configuration through the iDRAC6 Configuration Utility or Local RACADM CLI can be disabled by means of a RACADM command (see "RACADM Subcommand Overview") or from the GUI (see "Enabling or Disabling Local Configuration Access").



NOTE: Using more than one configuration interface at the same time may generate unexpected results.

Table 2-1. Configuration Interfaces

Interface	Description
iDRAC6 Configuration Utility	Accessed at boot time, the iDRAC6 Configuration Utility is useful when installing a new PowerEdge server. Use it for setting up the network and basic security features and for enabling other features.
iDRAC6 Web Interface	The iDRAC6 Web interface is a browser-based management application that you can use to interactively manage iDRAC6 and monitor the managed server. It is the primary interface for day-to-day tasks, such as monitoring system health, viewing the system event log, managing local iDRAC6 users, and launching the CMC Web interface and console redirection sessions.
CMC Web Interface	In addition to monitoring and managing the chassis, the CMC Web interface can be used to view the status of a managed server, configure iDRAC6 network settings, and to start, stop, or reset the managed server.

Table 2-1. Configuration Interfaces (continued)

Interface	Description
Chassis LCD Panel	The LCD panel on the chassis containing iDRAC6 can be used to view the high-level status of the servers in the chassis. During initial configuration of the CMC, the configuration wizard allows you to enable DHCP configuration of iDRAC6 networking.
Local RACADM	The local RACADM command line interface runs on the managed server. It is accessed from either the iKVM or a console redirection session initiated from the iDRAC6 Web interface. RACADM is installed on the managed server when you install Dell OpenManage Server Administrator. RACADM commands provide access to nearly all iDRAC6 features. You can inspect sensor data, system event log records, and the current status and configuration values maintained in iDRAC6. You can alter iDRAC6 configuration values, manage local users, enable and disable features, and perform power functions such as shutting down or rebooting the managed server.
iVMCLI	The iDRAC6 Virtual Media Command Line Interface (iVM-CLI) provides the managed server access to media on the management station. It is useful for developing scripts to install operating systems on multiple managed servers.

Table 2-1. Configuration Interfaces (continued)

Interface	Description
SM-CLP	<p>SM-CLP is the Server Management Workgroup Server Management-Command Line Protocol (SM-CLP) implementation incorporated in iDRAC6. The SM-CLP command line is accessed by logging in to iDRAC6 using telnet or SSH.</p> <p>SM-CLP commands implement a useful subset of the local RACADM commands. The commands are useful for scripting since they can be executed from a management station command line. The output of commands can be retrieved in well-defined formats, including XML, facilitating scripting and integration with existing reporting and management tools.</p> <p>See "RACADM and SM-CLP Equivalencies" for a comparison of the RACADM and SM-CLP commands.</p>
IPMI	<p>IPMI defines a standard way for embedded management subsystems, such as iDRAC6, to communicate with other embedded systems and management applications.</p> <p>You can use the iDRAC6 Web interface, SM-CLP, or RACADM commands to configure IPMI Platform Event Filters (PEF) and Platform Event Traps (PET).</p> <p>PEF causes iDRAC6 to perform specific actions (for example, rebooting the managed server) when it detects a condition. PET instructs iDRAC6 to send e-mail or IPMI alerts when it detects specified events or conditions.</p> <p>You can also use standard IPMI tools such as IPMITool and ipmish with iDRAC6 when you enable IPMI Over LAN.</p>

Configuration Tasks

This section is an overview of the configuration tasks for the management station, iDRAC6, and the managed server. The tasks to be performed include configuring iDRAC6 so that it can be used remotely, configuring iDRAC6 features you want to use, installing the operating system on the managed server, and installing management software on your management station and the managed server.

The configuration tasks that can be used to perform each task are listed beneath the task.



NOTE: Before performing configuration procedures in this guide, the CMC and I/O modules must be installed in the chassis and configured, and the PowerEdge server must be physically installed in the chassis.

Configure the Management Station

Set up a management station by installing the Dell OpenManage software, a Web browser, and other software utilities. See "Configuring the Management Station."

Configure iDRAC6 Networking

Enable the iDRAC6 network and configure IP, netmask, gateway, and DNS addresses.



NOTE: Access to iDRAC6 configuration through the iDRAC6 Configuration Utility or Local RACADM CLI can be disabled by means of a RACADM command (see "RACADM Subcommand Overview") or from the GUI (see "Enabling or Disabling Local Configuration Access").



NOTE: Changing the iDRAC6 network settings terminates all current network connections to iDRAC6.



NOTE: The option to configure the server using the LCD panel is available *only* during the CMC initial configuration. Once the chassis is deployed, the LCD panel cannot be used to reconfigure iDRAC6.



NOTE: The LCD panel can be used to enable DHCP to configure the iDRAC6 network. If you want to assign static addresses, you must use the iDRAC6 Configuration Utility or the CMC Web interface.

- Chassis LCD Panel — See the *Dell Chassis Management Controller Firmware User Guide*
- iDRAC6 Configuration Utility — See "Using the iDRAC6 Configuration Utility"
- CMC Web interface — See "Configuring Networking Using the CMC Web Interface"
- RACADM — See "cfgLanNetworking"

Configure iDRAC6 Users

Set up the local iDRAC6 users and permissions. iDRAC6 holds a table of sixteen local users in firmware. You can set usernames, passwords, and roles for these users.

- iDRAC6 Configuration Utility (configures administrative user only) — See "LAN User Configuration"
- iDRAC6 Web interface — See "Adding and Configuring iDRAC6 Users"
- RACADM — See "Adding an iDRAC6 User"



NOTE: When using iDRAC6 in an Active Directory environment, the user names you create must conform to the Active Directory naming convention in force.

Configure Active Directory

In addition to the local iDRAC6 users, you can use Microsoft® Active Directory® to authenticate iDRAC6 user logins.

For more information, see "Using iDRAC6 With Microsoft Active Directory."



NOTE: When using iDRAC6 in an Active Directory environment, be sure your user names conform to the Active Directory naming convention in force.

Configure IP Filtering and IP Blocking

In addition to user authentication, you can prevent unauthorized access by rejecting connection attempts from IP addresses outside of a defined range and by temporarily blocking connections from IP addresses where authentication has failed multiple times within a configurable timespan.

- iDRAC6 Web interface — See "Configuring IP Filtering and IP Blocking"
- RACADM — See "Configuring IP Filtering (IP Range)" and "Configuring IP Blocking"

Configure Platform Events

Platform events occur when iDRAC6 detects a warning or critical condition from one of the managed server's sensors.

Configure Platform Event Filters (PEF) to choose the events you want to detect, such as rebooting the managed server, when an event is detected.

- iDRAC6 Web interface — See "Configuring Platform Event Filters (PEF)"
- RACADM — See "Configuring PEF"

Configure Platform Event Traps (PET) to send alert notifications to an IP address, such as a management station with IPMI software or to send an e-mail to a specified e-mail address.

- iDRAC6 Web interface — See "Configuring Platform Event Traps (PET)"
- RACADM — See "Configuring PET"

Enabling or Disabling Local Configuration Access

Access to critical configuration parameters, such as network configuration and user privileges, can be disabled. Once disabled, the setting remains persistent across reboots. Configuration write access is blocked for both the Local RACADM program and the iDRAC6 Configuration Utility (at boot). Web access to configuration parameters is unimpeded and configuration data is always available for viewing. For information about the iDRAC6 Web interface, see "Enabling or Disabling Local Configuration Access." For `cfgRacTuning` commands, see "cfgRacTuning."

Configure iDRAC6 Services

Enable or disable iDRAC6 network services — such as telnet, SSH, and the Web server interface — and reconfigure ports and other service parameters.

- iDRAC6 Web interface — See "Configuring iDRAC6 Services"
- RACADM — See "Configuring iDRAC6 Telnet and SSH Services Using Local RACADM"

Configure Secure Sockets Layer (SSL)

Configure SSL for the iDRAC6 Web server.

- iDRAC6 Web interface — See "Secure Sockets Layer (SSL)"
- RACADM — See "cfgRacSecurity," "sslcsrgen," "sslcertupload," "sslcertdownload," and "sslcertview"

Configure Virtual Media

Configure the virtual media feature so that you can install the operating system on the PowerEdge server. Virtual media allows the managed server to access media devices on the management station or ISO CD/DVD images on a network share as if they were devices on the managed server.

- iDRAC6 Web interface — See "Configuring and Using Virtual Media"
- iDRAC6 Configuration Utility — See "Virtual Media Configuration"

Configure a VFlash Media Card

Install and configure a VFlash Media card for use with iDRAC6.

- iDRAC6 Web interface — See "Configuring a VFlash Media Card for Use With iDRAC6"

Install the Managed Server Software

Install the operating system on the PowerEdge server using virtual media and then install the Dell OpenManage software on the managed PowerEdge server and set up the last crash screen feature.

- Console redirection — See "Installing the Software on the Managed Server"
- iVMCLI — See "Using the Virtual Media Command Line Interface Utility"

Configure the Managed Server for the Last Crash Screen Feature

Set up the managed server so that iDRAC6 can capture the screen image after an operating system crash or freeze.

- Managed server — See "Configuring the Managed Server to Capture the Last Crash Screen" and "Disabling the Windows Automatic Reboot Option"

Configuring Networking Using the CMC Web Interface



NOTE: You must have Chassis Configuration Administrator privilege to set up iDRAC6 network settings from the CMC.



NOTE: The default CMC user is `root` and the default password is `calvin`.



NOTE: The CMC IP address can be found in the iDRAC6 Web interface by clicking **System**→**Remote Access**→**CMC**. You can also launch the CMC Web interface from this screen.

Launching the iDRAC6 Web-based Interface From the CMC

The CMC provides limited management of individual chassis components, such as servers. For complete management of these individual components, the CMC provides a launch point for the server's iDRAC6 Web-based interface.

To launch iDRAC6 from the **Servers** screen:

- 1 Log in to the CMC Web interface.
- 2 In the system tree, select **Servers**.
The **Servers Status** screen appears.
- 3 Click the **Launch iDRAC GUI** icon for the server you want to manage.

You can also launch the iDRAC6 Web-based interface for a single server using the **Servers** list in the system tree:

- 1 Log in to the CMC Web interface.
- 2 Expand **Servers** in the system tree.
All of the servers (1–16) appear in the expanded **Servers** list.
- 3 Click the server you want to view.
The **Server Status** screen for the server you selected displays.
- 4 Click the **Launch iDRAC GUI** icon.

Single Sign-On

Using the single sign-on feature, you can launch the iDRAC6 Web-based interface from the CMC without having to log in a second time. Single sign-on policies are described below.

- CMC user who has **Server Administrator** set under **User Privileges** will automatically be logged in to the iDRAC6 Web-based interface using single sign-on. After logging in, the user is automatically granted iDRAC6 Administrator privileges. This is true even if the same user does not have an account on iDRAC6, or if the account does not have the Administrator's privileges.
- CMC user who does not have **Server Administrator** set under **User Privileges**, but has the same account on iDRAC6, will automatically be logged in to iDRAC6 using single sign-on. Once logged in to the iDRAC6 Web-based interface, this user is granted the privileges that were created for the iDRAC6 account.



NOTE: In this context, "the same account" means that the user has the same login name and password for CMC as for iDRAC6. A user who has the same login name but a different password will not be recognized as a valid user.

- CMC user who does not have **Server Administrator** set under **User Privileges**, or the same account on iDRAC6, will *not* be automatically logged in to iDRAC6 using single sign-on. This user is directed to the iDRAC6 log in screen after clicking **Launch iDRAC GUI**.



NOTE: In this case, users may be prompted to log in to iDRAC6.



NOTE: If the iDRAC6 network LAN is disabled (LAN Enabled = No), single sign-on is not available.



NOTE: If the server is removed from the chassis, the iDRAC6 IP address is changed, or the iDRAC6 network connection experiences a problem, then clicking the **Launch iDRAC GUI** icon may display an error screen.

Configuring Networking for iDRAC6

1 Click the **System**→**Remote Access**→**iDRAC**.

2 Click the **Network/Security** tab:

To enable or disable Serial Over LAN:

a Click **Serial Over LAN**.

The **Serial Over LAN** screen appears.

b Select the **Enable Serial Over LAN** check box. You may also change the **Baud Rate** and **Channel Privilege Level Limit** settings.

c Click **Apply**.

To enable or disable IPMI Over LAN:

a Click **Network**.

The **Network Configuration** screen appears.

b Click **IPMI LAN Settings**.

c Select the **Enable IPMI Over LAN** check box. You may also change the **Channel Privilege Level Limit** and **Encryption Key** settings.

d Click **Apply**.

To enable or disable DHCP:


a Click **Network**.

The **Network Configuration** screen appears.

b Click **Network Settings**.

- To use DHCP for NIC IP address, select the **Use DHCP (for NIC IP Address)** check box.
- To use DHCP to obtain DNS server addresses, select the **Use DHCP to obtain DNS server addresses** check box.

c Click **Apply**.

 **NOTE:** If you choose not to enable DHCP, you must enter the static IP address, netmask, and default gateway for the server.

Viewing FlexAddress Mezzanine Card Fabric Connections

The M1000e includes FlexAddress, an advanced multilevel, multistandard networking system. FlexAddress allows the use of persistent, chassis-assigned World Wide Names and MAC addresses (WWN/MAC) for each managed server port connection.



NOTE: In order to avoid errors that may lead to an inability to power on the managed server, you *must* have the correct type of mezzanine card installed for each port and fabric connection.

Configuration of the FlexAddress feature is performed using the CMC Web interface. For more information on the FlexAddress feature and its configuration, see your *Dell Chassis Management Controller Firmware Version 2.0 User Guide*.

After the FlexAddress feature has been enabled and configured for the chassis, click **System**→**Properties**→**WWN/MAC** to view a list of installed mezzanine cards, the fabrics and ports to which they are connected, the fabric port location, type of fabric, and server-configured or chassis-assigned MAC addresses for each installed embedded Ethernet and optional mezzanine card port.

To view a list of installed mezzanine cards, the type of mezzanine cards installed, and if FlexAddress is configured, click **System**→**Properties**→**Summary**.

Updating iDRAC6 Firmware

Updating iDRAC6 firmware installs a new firmware image in flash memory. You can update the firmware using any of the following methods:

- SM-CLP **load** command
- iDRAC6 Web interface
- Dell Update Package (for Linux or Microsoft Windows)
- DOS iDRAC6 Firmware update utility
- CMC Web interface

Downloading the Firmware or Update Package

Download the firmware from support.dell.com. The firmware image is available in several different formats to support the different update methods available.

To update iDRAC6 firmware using the iDRAC6 Web interface or SM-CLP, or to recover iDRAC6 using the CMC Web interface, download the binary image, packaged as a self-extracting archive.

To update iDRAC6 firmware from the managed server, download the operating system-specific Dell Update Package (DUP) for the operating system running on the server whose iDRAC6 you are updating.

To update iDRAC6 firmware using the DOS iDRAC6 Firmware update utility, download both the update utility and the binary image, which are packaged in self-extracting archive files.

Executing the Firmware Update



NOTE: When the iDRAC6 firmware update begins, all existing iDRAC6 sessions are disconnected and new sessions are not permitted until the update process is completed.



NOTE: The chassis fans run at 100% during the iDRAC6 firmware update. When the update is complete, normal fan speed regulation resumes. This is normal behavior, designed to protect the server from overheating during a time when it cannot send sensor information to the CMC.

To use a Dell Update Package for Linux or Microsoft Windows, execute the operating-specific DUP on the managed server.


When using the SM-CLP **load** command, place the firmware binary image in a directory where a Trivial File Transfer Protocol (TFTP) server can serve it to iDRAC6. See "Updating iDRAC6 Firmware Using SM-CLP."


When using the iDRAC6 Web interface or the CMC Web interface, place the firmware binary image on a disk that is accessible to the management station from which you are running the Web interface. See "Updating iDRAC6 Firmware."



NOTE: The iDRAC6 Web interface also allows you to reset iDRAC6 configuration to the factory defaults.

You can use the CMC Web interface or CMC RACADM to update the iDRAC6 firmware. This feature is available both when iDRAC6 firmware is in Normal mode, as well as when it is corrupted. See "Updating iDRAC6 Firmware Using the CMC."

 **NOTE:** After the CMC updates iDRAC6 firmware, iDRAC6 generates new SHA1 and MD5 keys for the SSL certificate. Because the keys are different from those in the open Web browser, all browser windows that are connected to iDRAC6 must be closed after the firmware update is complete. If the browser windows are not closed, an **Invalid Certificate** error message is displayed.

 **NOTE:** If you are rolling back iDRAC6 firmware to an earlier version, you must delete the existing Internet Explorer ActiveX[®] browser plugin on any Windows-based Management Station to allow the firmware to install a compatible version of the ActiveX plugin. See "Deleting the ActiveX Plugin" for more information.

Deleting the ActiveX Plugin

You must delete the existing Internet Explorer ActiveX browser plugin on any Windows-based Management Station to allow the firmware to install a compatible version of the ActiveX plugin.

To delete the ActiveX plugin in Internet Explorer 6:

- 1 Go to **C:\WINDOWS\Downloaded Program Files**.
- 2 Delete the file **DELL IDRAC 11G AVCView**.

To delete the ActiveX plugin in Internet Explorer 7:

- 1 Open Internet Explorer 7.
- 2 Press the <Alt> key to display the menu bar, if necessary.
- 3 Click **Tools**→**Manage Add-ons**→**Enable or Disable Add-ons**.
- 4 In the **Manage Add-ons** window, select **Downloaded ActiveX Controls (32-bit)** from the **Show** drop-down menu.
- 5 In the **Enabled** list, click **DELL IDRAC 11G AVCView**, then click the **Delete** button in the **Delete ActiveX** section.
- 6 Click **OK**.

Using the iDRAC6 Web Interface



CAUTION: If iDRAC6 firmware becomes corrupted, as could occur if the iDRAC6 firmware update progress is interrupted before it completes, you can recover iDRAC6 using the iDRAC6 Web interface.



NOTE: The firmware update, by default, retains the current iDRAC6 settings. During the update process, you have the option to reset iDRAC6 configuration to the factory defaults. If you set the configuration to the factory defaults, external network access will be disabled when the update completes. You must enable and configure the network using the iDRAC6 Configuration Utility.

- 1 Start the iDRAC6 Web interface.
- 2 In the system tree, select **System**→ **Remote Access**→ **iDRAC**.
- 3 Click the **Update** tab.

The **Firmware Update** screen appears.



NOTE: To update the firmware, iDRAC6 must be placed in an update mode. Once in this mode, iDRAC6 will automatically reset, even if you cancel the update process.

- 4 In the **Upload (Step 1 of 4)** section, click **Browse** to locate the firmware image that you downloaded. You can also enter the path in the text field. For example:

`C:\Updates\V2.0\image_name.`

The default firmware image name is **firmimg.imc**.

- 5 Click **Upload**.

The file uploads to iDRAC6. This may take several minutes to complete.



NOTE: During the upload process, you abort the firmware upgrade process by clicking **Cancel**. Clicking **Cancel** resets iDRAC6 to normal operating mode.

When the upload is complete, the **Firmware Update - Validation (page 2 of 4)** screen displays.

- If the image file uploaded successfully and passed all verification checks, a message appears indicating that the firmware image has been verified.
- If the image did not upload successfully, or it did not pass the verification checks, the firmware update returns to the **Firmware Update** screen. You can try upgrading iDRAC6 again or click **Cancel** to reset iDRAC6 to normal operating mode.



NOTE: If you deselect the Preserve Configuration check box, iDRAC6 resets to its default settings. In the default settings, the LAN is disabled, and you cannot log in to the iDRAC6 Web interface. You must reconfigure the LAN settings using the iDRAC6 Configuration Utility during BIOS POST.

- 6 By default, the **Preserve Configuration** option is enabled (checked) to preserve the current settings on iDRAC6 after an upgrade. If you do not want the settings to be preserved, clear the **Preserve Configuration** check box.
- 7 Click **Begin Update** to start the upgrade process. Do not interrupt the upgrade process.
- 8 The **Firmware Update - Updating (page 3 of 4)** window, you will see the status of the upgrade. The progress of the firmware upgrade operation, measured in percentages, will appear in the **Progress** column.
- 9 Once the firmware update is complete, the **Firmware Update - Update Results (page 4 of 4)** window will appear and iDRAC6 will reset automatically. You must close the current browser window and reconnect to iDRAC6 using a new browser window.

Using the DOS Update Utility

To update iDRAC6 firmware using the DOS update utility, boot the managed server to DOS, and execute the **idrac16d** command. The syntax for the command is:

```
idrac16d [-f] [-i=<filename>] [-l=<logfile>]
```

When executed with no options, the **idrac16d** command updates iDRAC6 firmware using the firmware image file **firmimg.imc** in the current directory.

The options are as follows:

- **-f** — Forces the update. The **-f** option can be used to *downgrade* the firmware to an earlier image.
- **-i=<filename>** — Specifies the file name of the firmware image. This option is required if the firmware file name has been changed from the default name **firmimg.imc**.
- **-l=<logfile>** — Logs output from the update activity. This option is used for debugging.



NOTE: If you enter incorrect arguments to the `idrac16d` command, or supply the `-h` option, you may notice an additional option, `-nopresconfig` in the usage output. This option is used to update the firmware without preserving any configuration information. You should **not** use this option unless explicitly told to do so by a Dell Support Representative, because it *deletes* all of your existing iDRAC6 configuration information such as IP addresses, users, and passwords.

Verifying the Digital Signature

A digital signature is used to authenticate the identity of the signer of a file and to certify that the original content of the file has not been modified since it was signed.

If you do not already have it installed on your system, you must install the Gnu Privacy Guard (GPG) to verify a digital signature. To use the standard verification procedure, perform the following steps:

- 1 Download the Dell Linux public GnuPG key, if you do not already have it, by navigating to lists.us.dell.com and clicking the **Dell Public GPG key** link. Save the file to your local system. The default name is `linux-security-publickey.txt`.
- 2 Import the public key to your gpg trust database by running the following command:

```
gpg --import <Public Key Filename>
```



NOTE: You must have your private key to complete the process.

- 3 To avoid a distrusted-key warning, change the trust level for the Dell Public GPG key.

- a Enter the following command:

```
gpg --edit-key 23B66A9D
```

- b Within the GPG key editor, enter `fpr`. The following message appears:

```
pub 1024D/23B66A9D 2001-04-16 Dell, Inc.  
(Product Group) <linux-security@dell.com>  
Primary key fingerprint: 4172 E2CE 955A 1776  
A5E6 1BB7 CA77 951D 23B6 6A9D
```

If the fingerprint of your imported key is the same as above, you have a correct copy of the key.

- c While still in the GPG key editor, enter `trust`. The following menu appears:

```
Please decide how far you trust this user to
correctly verify other users' keys (by looking
at passports, checking fingerprints from
different sources, etc.)
```

```
1 = I don't know or won't say
2 = I do NOT trust
3 = I trust marginally
4 = I trust fully
5 = I trust ultimately
m = back to the main menu
```

Your decision?

- d Enter `5`, then press `<Enter>`. The following prompt appears:
Do you really want to set this key to ultimate trust? (y/N)
- e Enter `y` `<Enter>` to confirm your choice.
- f Enter `quit` `<Enter>` to exit the GPG key editor.

You must import and validate the public key only once.

- 4 Obtain the package you need, for example the Linux DUP or self-extracting archive) and its associated signature file from the Dell Support website at support.dell.com/support/downloads.



NOTE: Each Linux Update Package has a separate signature file, which is shown on the same Web page as the Update Package. You need both the Update Package and its associated signature file for verification. By default, the signature file is named the same as the DUP filename with a `.sign` extension. For example, the iDRAC6 firmware image has an associated `.sign` file (`IDRAC_FRMW_LX_2.0.BIN.sign`), which is included in the self-extracting archive with the firmware image (`IDRAC_FRMW_LX_2.0.BIN`). To download the files, right-click on the download link and use the **Save Target As...** file option.

5 Verify the Update Package:

```
gpg --verify <Linux Update Package signature filename> <Linux Update Package filename>
```

The following example illustrates the steps that you should follow to verify a Dell PowerEdge™ M610 iDRAC Update Package:

1 Download the following two files from support.dell.com:

- IDRAC_FRMW_LX_2.0.BIN.sign
- IDRAC_FRMW_LX_2.0.BIN

2 Import the public key by running the following command line:

```
gpg --import <linux-security-publickey.txt>
```

The following output message appears:

```
gpg: key 23B66A9D: "Dell Computer Corporation  
(Linux Systems Group) <linux-  
security@dell.com>" not changed  
gpg: Total number processed: 1  
gpg: unchanged: 1
```

3 Set the GPG trust level for the Dell public key, if you haven't done so previously.

a Enter the following command:

```
gpg --edit-key 23B66A9D
```

b At the command prompt, enter the following commands:

```
fpr  
trust
```

c Enter 5, then press <Enter> to choose `I trust` ultimately from the menu.

d Enter `y` <Enter> to confirm your choice.

e Enter `quit` <Enter> to exit the GPG key editor.

This completes validation of the Dell public key.

- 4 Verify the PowerEdge M610 iDRAC package digital signature by running the following command:

```
gpg --verify IDRAC_FRMW_LX_2.0.BIN.sign  
IDRAC_FRMW_LX_2.0.BIN
```

The following output message appears:

```
gpg: Signature made Fri Jul 11 15:03:47 2008  
CDT using DSA key ID 23B66A9D  
gpg: Good signature from "Dell, Inc. (Product  
Group) <linux-security@dell.com>"
```



NOTE: If you have not validated the key as shown in step 3, you will receive additional messages:

```
gpg: WARNING: This key is not certified with a  
trusted signature!  
gpg: There is no indication that the signature  
belongs to the owner.  
Primary key fingerprint: 4172 E2CE 955A 1776  
A5E6 1BB7 CA77 951D 23B6 6A9D
```

Clear Your Browser's Cache

To be able to use the features in the latest iDRAC6, you must clear the browser's cache to remove/delete any *old* Web pages that may be stored on the system.

Internet Explorer 6

- 1 Start Internet Explorer.
- 2 Click **Tools**, and then click **Internet Options**.
The **Internet Options** window appears.
- 3 Click the **General** tab.
- 4 Under **Temporary Internet files**, click **Delete Files**.
The **Delete Files** window appears.
- 5 Click to check **Delete all offline content**, and then click **OK**.
- 6 Click **OK** to close the **Internet Options** window.

Internet Explorer 7

- 1 Start Internet Explorer.
- 2 Click **Tools**, and then click **Internet Options...**
The **Internet Options** window appears.
- 3 Click the **General** tab.
- 4 Under **Browsing history**, click **Delete...**
The **Delete Files** window appears.
- 5 Click **Delete files** next to **Temporary Internet Files**.
- 6 Click **Close**, and then click **OK** to exit the **Internet Options** window.

Firefox

- 1 Start Firefox.
- 2 Click **Edit**→**Preferences**.
- 3 Click the **Privacy** tab.
- 4 Click the **Clear Cache Now**.
- 5 Click **Close**.

Updating the USC Repair Package

See the *Dell Unified Server Configurator User Guide* for information on updating the USC repair package from the iDRAC6 Web interface.

Configuring iDRAC6 For Use With IT Assistant

Dell OpenManage IT Assistant can discover managed devices that comply with Simple Network Management Protocol (SNMP) v1 and v2c and Intelligent Platform Management Interface (IPMI) v2.0.

iDRAC6 complies with IPMI v2.0. This section describes the steps necessary to configure iDRAC6 for discovery and monitoring by IT Assistant. There are two ways to accomplish this: through the iDRAC6 Configuration Utility and through the iDRAC6 graphical Web interface.

Using the iDRAC6 Configuration Utility to Enable Discovery and Monitoring

To set up iDRAC6 for IPMI discovery and alert trap sending at the iDRAC6 Configuration Utility level, restart your managed server (blade) and observe its power-up using the iKVM and either a remote monitor and console keyboard or a Serial over LAN (SOL) connection. When `Press <Ctrl-E> for Remote Access Setup` displays, press `<Ctrl><E>`.

When the **iDRAC Configuration Utility** screen appears, use the arrow keys to scroll down.

- 1 Enable **IPMI over LAN**.
- 2 Enter your site's **RMCP+ Encryption Key**, if used.



NOTE: See your senior Network Administrator or CIO to discuss implementing this option because it adds valuable security protection and must be implemented site-wide in order to function properly.

- 3 At **LAN Parameters**, press `<Enter>` to enter the sub-screen. Use Up and Down arrows to navigate.
- 4 Toggle **LAN Alert Enabled** to **On** using the spacebar.
- 5 Enter the IP address of your Management Station into **Alert Destination 1**.
- 6 Enter a name string into **iDRAC6 Name** with a consistent naming convention across your data center. The default is `iDRAC6-{Service Tag}`.

Exit the iDRAC6 Configuration Utility by pressing `<Esc>`, `<Esc>`, and then pressing `<Enter>` to save your changes. Your server will now boot into normal operation, and it will be discovered during IT Assistant's next scheduled Discovery pass.

Using the iDRAC6 Web Interface to Enable Discovery and Monitoring

IPMI Discovery can also be enabled through the remote Web interface:

- 1 Open a supported Web browser window.
- 2 Log in to the iDRAC6 Web-based interface using a login and password with Administrator rights.
- 3 In the system tree, select **System**→ **Remote Access**→ **iDRAC**.
- 4 Click the **Network/Security** tab.

The **Network Configuration** screen appears.

- 5 Click **IPMI LAN Settings**.
- 6 Ensure the **Enable IPMI over LAN** check box is selected (checked).
- 7 Select **Administrator** from the **Channel Level Privileges** drop-down menu.
- 8 Enter your site's **RMCP+ Encryption Key**, if used.
- 9 Click **Apply** if you made any changes on this screen.
- 10 In the system tree, select **System**.
- 11 Click the **Alert Management** tab, and then click **Platform Events**.
The **Platform Events** screen appears, displaying a list of events for which you can configure iDRAC6 to generate email alerts.
- 12 Enable email alerts for one or more events by selecting the check box in the **Generate Alerts** column.
- 13 Click **Apply** if you made any changes on this screen.
- 14 Click **Trap Settings**.
The **Platform Event Alert Destinations** screen appears.
- 15 In the first available **Destination IP Address** field in the **IPv4 Destination List** section, select the **Enabled** check box, and then enter the IP address of your Management Station.
- 16 Click **Apply** if you made any changes on this screen.

You can now send a test trap by clicking the **Send** link in the **Test Trap** column.

Dell highly recommends that for security purposes you create a separate User for IPMI commands with its own user name, IPMI over LAN privileges, and password:

- 1 In the system tree, select **System**→**Remote Access**→**iDRAC**.
- 2 Click the **Network Security** tab, and then click **Users**.
The **Users** screen appears, displaying a list of all users (defined or undefined).
- 3 Click the **User ID** of an undefined User.
The **User Configuration** screen for the selected User ID appears.
- 4 Select the **Enable User** check box, and then enter the user's name and password.

- 5 In the **IPMI LAN Privilege** section, ensure that **Maximum LAN User Privilege Granted** is set to **Administrator**.
- 6 Set other user privileges as needed.
- 7 Click **Apply** to save the new User settings.

Using IT Assistant to View iDRAC6 Status and Events

After discovery is complete, the iDRAC6 devices appear in the **Servers** category of the **ITA Devices detail** screen, and iDRAC6 information can be seen by clicking on the iDRAC6 name. This is different than DRAC5 systems, where the management card shows up in the RAC group. This is due to the fact that iDRAC6 uses IPMI discovery as opposed to SNMP.

iDRAC6 error and warning traps can now be seen in the primary **Alert Log** of IT Assistant. They will show up in the **Unknown** category, but the trap description and severity will be accurate.

For more information on using IT Assistant to manage your data center, see the *Dell OpenManage IT Assistant User's Guide*.

Configuring the Management Station

A management station is a computer used to monitor and manage the PowerEdge servers and other modules in the chassis. This section describes software installation and configuration tasks that set up a management station to work with iDRAC6 Enterprise. Before you begin configuring iDRAC6, follow the procedures in this section to ensure that you have installed and configured the tools you will need.

Management Station Set Up Steps

To set up your Management Station, perform the following steps:

- 1 Set up the management station network.
- 2 Install and configure a supported Web browser.
- 3 Install a Java Runtime Environment (JRE) (optional for Windows).
- 4 Install telnet or SSH clients, if required.
- 5 Install a TFTP server, if required.
- 6 Install Dell OpenManage IT Assistant (optional).

Management Station Network Requirements

To access iDRAC6, the management station must be on the same network as the CMC RJ45 connection port labelled "GB1". It is possible to isolate the CMC network from the network the managed server is on, so that your management station may have LAN access to iDRAC6 but not to the managed server.

Using the iDRAC6 console redirection feature (see "Configuring and Using Serial Over LAN"), you can access the managed server's console even if you do not have network access to the server's ports. You can also perform several management functions on the managed server, such as rebooting the computer, using iDRAC6 facilities. To access network and application services hosted on the managed server, however, you may need an additional NIC in the management computer.

Configuring a Supported Web Browser

The following sections provide instructions for configuring the supported Web browsers for use with the iDRAC6 Web interface. For a list of supported Web browsers, see "Supported Web Browsers."

Opening Your Web Browser

The iDRAC6 Web interface is designed to be viewed in a supported Web browser at a minimum screen resolution of 800 pixels wide by 600 pixels high. In order to view the interface and access all features, ensure that your resolution is set to at least 800 by 600 pixels and/or resize your browser, as needed.



NOTE: In some situations, most often during the first session after a firmware update, users of Internet Explorer 6 may see the message **Done, with errors** displayed in the browser status bar along with a partially rendered screen in the main browser window. This error can also occur if you are experiencing connectivity problems. This is a known issue with Internet Explorer 6. Close the browser and start again.

Configuring Your Web Browser to Connect to the Web Interface

If you are connecting to the iDRAC6 Web interface from a management station that connects to the Internet through a proxy server, you must configure the Web browser to access the Internet from this server.

To configure the Internet Explorer Web browser to access a proxy server, perform the following steps:

- 1 Open a Web browser window.
- 2 Click **Tools**, and click **Internet Options**.
The **Internet Options** window appears.

- 3** Select **Tools**→**Internet Options**→**Security**→**Local Network**.
- 4** Click the **Custom Level**.
- 5** Select **Medium-Low** from the drop-down menu and click **Reset**. Click **OK** to confirm. You will need to re-enter the **Custom Level** dialog by clicking its button.
- 6** Then, scroll down to the section labeled ActiveX controls and plug-ins and check each setting, as different versions of IE have differing settings in **Medium-Low** state:
 - Automatic prompting for ActiveX controls: Enable
 - Binary and script behaviors: Enable
 - Download signed ActiveX controls: Prompt
 - Initialize and script ActiveX controls not marked as safe: Prompt
 - Run ActiveX controls and plug-ins: Enable
 - Script ActiveX controls marked safe for scripting: Enable

In the section on **Downloads**:

- Automatic prompting for file downloads: Enable
- File download: Enable
- Font download: Enable

In the **Miscellaneous** section:

- Allow META-REFRESH: Enable
- Allow scripting of Internet Explorer Web browser control: Enable
- Allow script-initiated windows without size or position constraints: Enable
- Don't prompt for client certificate selection when no certificates or only one certificate exists: Enable
- Launching programs and files in an IFRAME: Enable
- Open files based on content, not file extension: Enable
- Software channel permissions: Low safety
- Submit nonencrypted form data: Enable
- Use Pop-up Blocker: Disable

In the **Scripting** section:

- Active scripting: Enable
- Allow paste operations via script: Enable
- Scripting of Java applets: Enable

7 Select **Tools**→**Internet Options**→**Advanced**.

8 Make sure the following items are checked or unchecked:

In the **Browsing** section:

- Always send URLs as UTF-8: checked
- Disable script debugging (Internet Explorer): checked
- Disable script debugging: (Other): checked
- Display a notification about every script error: unchecked
- Enable Install On demand (Other): checked
- Enable page transitions: checked
- Enable third-party browser extensions: checked
- Reuse windows for launching shortcuts: unchecked

In the **HTTP 1.1 settings** section:

- Use HTTP 1.1: checked
- Use HTTP 1.1 through proxy connections: checked

In the **Java (Sun)** section:

- Use JRE 1.6.x_yz: checked (optional; version may differ)

In the **Multimedia** section:

- Enable automatic image resizing: checked
- Play animations in Web pages: checked
- Play videos in Web pages: checked
- Show pictures: checked

In the **Security** section:

- Check for publishers' certificate revocation: unchecked
- Check for signatures on downloaded programs: unchecked

- Check for signatures on downloaded programs: checked
- Use SSL 2.0: unchecked
- Use SSL 3.0: checked
- Use TLS 1.0: checked
- Warn about invalid site certificates: checked
- Warn if changing between secure and not secure mode: checked
- Warn if forms submittal is being redirected: checked



NOTE: If you choose to alter any of the above settings, Dell recommends that you learn and understand the consequences of doing so. For example, if you choose to block pop-ups, portions of the iDRAC6 Web interface will not function properly.

- 9 Click **Apply**, then **OK**.
- 10 Click the **Connections** tab.
- 11 Under **Local Area Network (LAN) settings**, click **LAN Settings**.
- 12 If the **Use a proxy server** box is selected, select the **Bypass proxy server for local addresses** box.
- 13 Click **OK** twice.
- 14 Close and restart your browser to make sure all changes take effect.

Adding iDRAC6 to the List of Trusted Domains

When you access the iDRAC6 Web interface through the Web browser, you may be prompted to add the iDRAC6 IP address to the list of trusted domains if the IP address is missing from the list. When completed, click **Refresh** or relaunch the Web browser to establish a connection to the iDRAC6 Web interface.

Viewing Localized Versions of the Web Interface

The iDRAC6 Web interface is supported on the following operating system languages:

- English (en-us)
- French (fr)
- German (de)

- Spanish (es)
- Japanese (ja)
- Simplified Chinese (zh-cn)

The ISO identifiers in parentheses denote the specific language variants which are supported. Use of the interface with other dialects or languages is not supported and may not function as intended. For some supported languages, resizing the browser window to 1024 pixels wide may be necessary in order to view all features.

The iDRAC6 Web interface is designed to work with localized keyboards for the specific language variants listed above. Some features of the iDRAC6 Web interface, such as Console Redirection, may require additional steps to access certain functions/letters. For more details on how to use localized keyboards in these situations, see "Using the Video Viewer." Use of other keyboards is not supported and may cause unexpected problems.

Internet Explorer 6.0 (Windows)

To view a localized version of the iDRAC6 Web interface in Internet Explorer, perform the following steps:

- 1** Click the **Tools** menu and select **Internet Options**.
- 2** In the **Internet Options** window, click **Languages**.
- 3** In the **Language Preference** window, click **Add**.
- 4** In the **Add Language** window, select a supported language.
To select more than one language, press <Ctrl>.
- 5** Select your preferred language and click **Move Up** to move the language to the top of the list.
- 6** In the **Language Preference** window, click **OK**.
- 7** Click **OK**.

Firefox 2.0 (Linux or Windows)

To view a localized version of the iDRAC6 Web interface in Firefox 2.0, perform the following steps:

- 1** Click **Tools**→**Options**, and then click the **Advanced** tab.
- 2** Under **Language**, click **Choose**.
The **Languages** window appears.

- 3 In the **Select a language to add...** drop down menu, click to highlight a supported language, and then click **Add**.
- 4 Click to select your preferred language, and then click **Move Up** until the language appears at the top of the list.
- 5 Click **OK** to close the **Languages** window.
- 6 Click **OK** to close the **Options** window.

Setting the Locale in Linux

The console redirection viewer requires a UTF-8 character set to display correctly. If your display is garbled, check your locale and reset the character set if needed.

To set the character set on a Linux client with a Simplified Chinese GUI:

- 1 Open a command terminal.
- 2 Enter `locale` and press <Enter>. Output similar to the following output appears:

```
LANG=zh_CN.UTF-8
LC_CTYPE="zh_CN.UTF-8"
LC_NUMERIC="zh_CN.UTF-8"
LC_TIME="zh_CN.UTF-8"
LC_COLLATE="zh_CN.UTF-8"
LC_MONETARY="zh_CN.UTF-8"
LC_MESSAGES="zh_CN.UTF-8"
LC_PAPER="zh_CN.UTF-8"
LC_NAME="zh_CN.UTF-8"
LC_ADDRESS="zh_CN.UTF-8"
LC_TELEPHONE="zh_CN.UTF-8"
LC_MEASUREMENT="zh_CN.UTF-8"
LC_IDENTIFICATION="zh_CN.UTF-8"
LC_ALL=
```

- 3 If the values include `zh_CN.UTF-8`, no changes are required. If the values do not include `zh_CN.UTF-8`, go to step 4.
- 4 Edit the `/etc/sysconfig/i18n` file with a text editor.

- 5 In the file, apply the following changes:

Current entry:

```
LANG="zh_CN.GB18030"  
SUPPORTED="zh_CN.GB18030:zh_CN.GB2312:zh_CN:zh"
```

Updated entry:

```
LANG="zh_CN.UTF-8"  
SUPPORTED="zh_CN.UTF-8:zh_CN.GB18030:zh_CN.GB2312:zh_CN:zh"
```

- 6 Log out and then log in to the operating system.

When you switch from any other language, ensure that this fix is still valid. If not, repeat this procedure.

Disabling the Whitelist Feature in Firefox

Firefox has a "whitelist" security feature that requires user permission to install plugins for each distinct site that hosts a plugin. If enabled, the whitelist feature requires you to install a console redirection viewer for each iDRAC6 you visit, even though the viewer versions are identical.


To disable the whitelist feature and avoid unnecessary plugin installations, perform the following steps:

- 1 Open a Firefox Web browser window.
- 2 In the address field, enter `about:config` and press <Enter>.
- 3 In the **Preference Name** column, locate and double-click `xpinstall.whitelist.required`.

The values for **Preference Name**, **Status**, **Type**, and **Value** change to bold text. The **Status** value changes to **user set** and the **Value** value changes to **false**.

- 4 In the **Preferences Name** column, locate `xpinstall.enabled`.
Ensure that **Value** is **true**. If not, double-click `xpinstall.enabled` to set **Value** to **true**.

Installing a Java Runtime Environment (JRE)


 **NOTE:** If you use the Internet Explorer browser, an ActiveX control is provided for the console viewer. You can also use the Java console viewer with Internet Explorer if you install a JRE and configure the console viewer in iDRAC6 Web interface before you launch the viewer. See "Configuring Console Redirection and Virtual Media in the iDRAC6 Web Interface" for more information.

You can choose to use the Java viewer instead before you launch the viewer.

If you use the Firefox browser you must install a JRE (or a Java Development Kit [JDK]) to use the console redirection feature. The console viewer is a Java application that is downloaded to the management station from the iDRAC6 Web interface and then launched with Java Web Start on the management station.


Go to java.sun.com to install a JRE or JDK. Version 1.6 (Java 6.0) or higher is recommended.

The Java Web Start program is automatically installed with the JRE or JDK. The file `jviewer.jnlp` is downloaded to your desktop and a dialog box prompts you for what action to take. It may be necessary to associate the `.jnlp` extension type with the Java Web Start application in your browser. Otherwise, click **Open with** and then select the `javaws` application, which is located in the `bin` subdirectory of your JRE installation directory.

 **NOTE:** If the `.jnlp` file type is not associated with Java Web Start after installing JRE or JDK, you can set the association manually. For Windows (`javaws.exe`) click **Start**→ **Control Panel**→ **Appearance and Themes**→ **Folder Options**. Under the **File Types** tab, highlight `.jnlp` under **Registered file types**, and then click **Change**. For Linux (`javaws`), start Firefox, and click **Edit**→ **Preferences**→ **Downloads**, and then click **View and Edit Actions**.

For Linux, once you have installed either JRE or JDK, add a path to the Java `bin` directory to the front of your system `PATH`. For example, if Java is installed in `/usr/java`, add the following line to your local `.bashrc` or `/etc/profile`:

```
PATH=/usr/java/bin:$PATH; export PATH
```

 **NOTE:** There may already be `PATH`-modification lines in the files. Ensure that the path information you enter does not create conflicts.

Installing Telnet or SSH Clients

By default, the iDRAC6 telnet service is disabled and the SSH service is enabled. Since telnet is an insecure protocol, you should use it only if you cannot install an SSH client or your network connection is otherwise secured.



NOTE: There can be only one active telnet or SSH connection to iDRAC6 at a time. When there is an active connection, other connection attempts are denied.

Telnet with iDRAC6

Telnet is included in Windows and Linux operating systems, and can be run from a command shell. You may also choose to install a commercial or freely available telnet client with more convenience features than the standard version included with your operating system.

If your management station is running Windows XP SP1 or Windows 2003, you may experience an issue with the characters in an iDRAC6 telnet session. This issue may occur as a frozen login where the return key does not respond and the password prompt does not appear.

To fix this issue, download hotfix 824810 from the Microsoft Support website at support.microsoft.com. See Microsoft Knowledge Base article 824810 for more information.



NOTE: The hotfix is needed only for Windows XP SP1 and Windows 2003. Windows XP SP2 fixed the issue.

Configuring the Backspace Key For Telnet Sessions

Depending on the telnet client, using the <Backspace> key may produce unexpected results. For example, the session may echo ^h. However, most Microsoft and Linux telnet clients can be configured to use the <Backspace> key.

To configure Microsoft telnet clients to use the <Backspace> key, perform the following steps:

- 1 Open a command prompt window (if required).
- 2 If you are not running a telnet session, enter:

```
telnet
```

If you are running a telnet session, press <Ctrl><|>.

3 At the prompt, enter:

```
set bsasdel
```

The following message appears:

```
Backspace will be sent as delete.
```

To configure a Linux telnet session to use the <Backspace> key, perform the following steps:

1 Open a shell and enter:

```
stty erase ^h
```

2 At the prompt, enter:

```
telnet
```

SSH With iDRAC6

Secure Shell (SSH) is a command line connection with the same capabilities as a telnet session, but with session negotiation and encryption to improve security. iDRAC6 supports SSH version 2 with password authentication. SSH is enabled by default on iDRAC6.

You can use PuTTY (Windows) or OpenSSH (Linux) on a management station to connect to the managed server's iDRAC6. When an error occurs during the login procedure, the `ssh` client issues an error message. The message text is dependent on the client and is not controlled by iDRAC6.



NOTE: OpenSSH should be run from a VT100 or ANSI terminal emulator on Windows. Running OpenSSH at the Windows command prompt does not result in full functionality (that is, some keys do not respond and no graphics are displayed).

Only one telnet or SSH session is supported at any given time. The session timeout is controlled by the `cfgSsnMgtSshIdleTimeout` property as described in "iDRAC6 Enterprise Property Database Group and Object Definitions."

iDRAC6 SSH implementation supports multiple cryptography schemes, as shown in Table 3-1.



NOTE: SSHv1 is not supported.

Table 3-1. Cryptography Schemes

Scheme Type	Scheme
Asymmetric Cryptography	Diffie-Hellman DSA/DSS 512-1024 (random) bits per NIST specification
Symmetric Cryptography	<ul style="list-style-type: none">• AES256-CBC• RIJNDAEL256-CBC• AES192-CBC• RIJNDAEL192-CBC• AES128-CBC• RIJNDAEL128-CBC• BLOWFISH-128-CBC• 3DES-192-CBC• ARCFOUR-128
Message Integrity	<ul style="list-style-type: none">• HMAC-SHA1-160• HMAC-SHA1-96• HMAC-MD5-128• HMAC-MD5-96
Authentication	<ul style="list-style-type: none">• Password

Installing a TFTP Server



NOTE: If you use only the iDRAC6 Web interface to transfer SSL certificates and upload new iDRAC6 firmware, no TFTP server is required.

Trivial File Transfer Protocol (TFTP) is a simplified form of the File Transfer Protocol (FTP). It is used with the SM-CLP and RACADM command line interfaces to transfer files to and from iDRAC6.

The only times when you need to copy files to or from iDRAC6 are when you update iDRAC6 firmware or install certificates on iDRAC6. If you choose to use SM-CLP or RACADM when you perform these tasks, a TFTP server must be running on a computer iDRAC6 can access by IP number or DNS name.

You can use the **netstat -a** command on Windows or Linux operating systems to see if a TFTP server is already listening. Port 69 is the TFTP default port. If no server is running, you have the following options:

- Find another computer on the network running a TFTP service
- If you are using Linux, install a TFTP server from your distribution
- If you are using Windows, install a commercial or free TFTP server

Installing Dell OpenManage IT Assistant

Your system includes the Dell OpenManage System Management Software Kit. This kit includes, but is not limited to, the following components:

- *Dell Systems Management Tools and Documentation* DVD
- Dell Support website and Readme files — Check Readme files and the Dell Support website at support.dell.com for the most recent information about your Dell products.

Use the *Dell Systems Management Tools and Documentation* DVD to install the management console software, including Dell OpenManage IT Assistant, on the management station. For instructions on installing this software, see your *Dell OpenManage Software Quick Installation Guide*.

Configuring the Managed Server

This section describes tasks to set up the managed server to enhance your remote management capabilities. These tasks include installing the Dell Open Manage Server Administrator software and configuring the managed server to capture the last crash screen.

Installing the Software on the Managed Server

The Dell management software includes the following features:

- Local RACADM CLI — Allows you to configure and administer iDRAC6 from the managed server. It is a powerful tool for scripting configuration and management tasks.
- Server Administrator — Is required to use the iDRAC6 last-crash-screen feature.
- Server Administrator Instrumentation Service — Provides access to detailed fault and performance information gathered by industry-standard systems management agents and allows remote administration of monitored systems, including shutdown, startup, and security.
- Server Administration Storage Management Service — Provides storage management information in an integrated graphical view.
- Server Administrator Logs — Displays logs of commands issued to or by the system, monitored hardware events, POST events, and system alerts. You can view logs on the home page, print or save them as reports, and send them by e-mail to a designated service contact.

Use the *Dell Systems Management Tools and Documentation* DVD to install Server Administrator. For instructions on installing this software, see your *Quick Installation Guide*.

Configuring the Managed Server to Capture the Last Crash Screen

iDRAC6 can capture the last crash screen so that you can view it in the Web interface to help troubleshoot the cause of the managed server crash. Follow these steps to enable the last crash screen feature.

- 1 Install the managed server software. For more information about installing the managed server software, see the *Dell OpenManage Server Administrator User's Guide*.
- 2 If you are running Windows, ensure that **Automatically Reboot** is deselected in the **Windows Startup and Recovery Settings**. See "Disabling the Windows Automatic Reboot Option."
- 3 Enable the **Last Crash Screen** (disabled by default) in the iDRAC6 Web interface.

To enable the **Last Crash Screen** in the iDRAC6 Web interface, click **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Services**, then check the **Enable** checkbox under the Automatic System Recovery Agent Settings heading.

To enable the Last Crash Screen using local RACADM, open a command prompt on the managed server and enter the following command:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneAsrEnable 1
```

- 4 In the Server Administrator Web-based interface, enable the **Auto Recovery** timer and set the **Auto Recovery** action to **Reset, Power Off**, or **Power Cycle**.

For information about how to configure the **Auto Recovery** timer, see the *Server Administrator User's Guide*. To ensure that the last crash screen can be captured, the **Auto Recovery** timer should be set to 60 seconds. The default setting is 480 seconds.

The last crash screen is not available when the **Auto Recovery** action is set to **Shutdown** or **Power Cycle** if the managed server is powered off.

Disabling the Windows Automatic Reboot Option

To ensure that iDRAC6 can capture the last crash screen, disable the **Automatic Reboot** option on managed servers running Windows Server or Windows Vista.

- 1** Open the Windows **Control Panel** and double-click the **System** icon.
- 2** Click the **Advanced** tab.
- 3** Under **Startup and Recovery**, click **Settings**.
- 4** Deselect the **Automatically Reboot** check box.
- 5** Click **OK** twice.

Configuring iDRAC6 Enterprise Using the Web Interface

iDRAC6 provides a Web interface that enables you to configure iDRAC6 properties and users, perform remote management tasks, and troubleshoot a remote (managed) system for problems. For everyday systems management, use the iDRAC6 Web interface. This chapter provides information about how to perform common systems management tasks with the iDRAC6 Web interface and provides links to related information.

Most Web interface configuration tasks can also be performed with local RACADM commands or with SM-CLP commands.

Local RACADM commands are executed from the managed server. For more information about local RACADM, see "Using the Local RACADM Command Line Interface."

SM-CLP commands are executed in a shell that can be accessed remotely with a telnet or SSH connection. For more information about SM-CLP, see "Using iDRAC6 Enterprise SM-CLP Command Line Interface."

Accessing the Web Interface

To access the iDRAC6 Web interface, perform the following steps:

- 1 Open a supported Web browser window.
See "Supported Web Browsers" for more information.
- 2 In the **Address** field, enter `https://<iDRAC-IP-address>` and press <Enter>.
If the default HTTPS port number (port 443) has been changed, enter:
`https://<iDRAC-IP-address>:<port-number>`
where *iDRAC-IP-address* is the IP address for iDRAC6 and *port-number* is the HTTPS port number.
The iDRAC6 **Login** window appears.

Logging In

You can log in as either an iDRAC6 user or as a Microsoft® Active Directory® user. The default user name and password are **root** and **calvin**, respectively.

You must have been granted **Login to iDRAC** privilege by the administrator to log in to iDRAC6.

To log in, perform the following steps:

- 1 In the **Username** field, enter one of the following:
 - Your iDRAC6 user name.
The user name for local users is case sensitive. Examples are **root**, **it_user**, or **john_doe**.
 - Your Active Directory user name.
You can use any of the following forms for Active Directory names: `<domain>\<username>`, `<domain>/<username>`, or `<user>@<domain>`. They are not case sensitive. Examples are `dell.com\john_doe`, or `JOHN_DOE@DELL.COM`. Alternatively, you can enter the domain in the **Domain** field.
- 2 In the **Password** field, enter your iDRAC6 user password or Active Directory user password. Passwords are case sensitive.
- 3 Click **OK** or press <Enter>.

Logging Out

- 1 In the upper-right corner of the main window, click **Logout** to close the session.
- 2 Close the browser window.



NOTE: The **Logout** button does not appear until you log in.



NOTE: Closing the browser without gracefully logging out may cause the session to remain open until it times out. It is strongly recommended that you click the logout button to end the session; otherwise, the session may remain active until the session timeout is reached.



NOTE: Closing the iDRAC6 Web interface within Internet Explorer using the close button ("x") at the top right corner of the window may generate an application error. To fix this issue, download the latest Cumulative Security Update for Internet Explorer from the Microsoft Support website, located at support.microsoft.com.

Using Multiple Browser Tabs and Windows

Different versions of Web browsers exhibit different behaviors when opening new tabs and windows. Each window is a new session, but each new tab is not. Microsoft Internet Explorer 6 does not support tabs; therefore, each browser window opened becomes a new iDRAC6 Web interface session. Internet Explorer 7 has the option to open tabs as well as windows. Each tab inherits the characteristics of the most recently opened tab. For example, if a user logs in with Power User privileges on one tab, and then logs in as Administrator on another tab, both open tabs then have Administrator privileges. Closing any one tab expires all iDRAC6 Web interface tabs.

Tab behavior in Firefox 2 is the same as Internet Explorer 7; new tabs are new sessions. Window behavior in Firefox is different. Firefox windows will operate with the same privileges as the latest window opened. For example, if one Firefox window is open with a Power User logged in and another window is opened with Administrator privileges, **both** users will now have Administrator privileges.

Table 5-1. User Privilege Behavior in Supported Browsers

Browser	Tab Behavior	Window Behavior
Microsoft Internet Explorer 6	Not applicable	New session
Microsoft Internet Explorer 7	From latest session opened	New session
Firefox 2	From latest session opened	From latest session opened

Configuring the iDRAC6 NIC

This section assumes that iDRAC6 has already been configured and is accessible on the network. See "Configure iDRAC6 Networking" for help with the initial iDRAC6 network configuration.

Configuring the Network and IPMI LAN Settings



NOTE: You must have **Configure iDRAC6** privilege to perform the following steps.



NOTE: Most DHCP servers require a server to store a client identifier token in its reservations table. The client (iDRAC, for example) must provide this token during DHCP negotiation. iDRAC6 supplies the client identifier option using a one-byte interface number (0) followed by a six-byte MAC address.

- 1 Click **System**→ **Remote Access**→ **iDRAC**.
- 2 Click the **Network/Security** tab.
The **Network Configuration** screen appears.
- 3 Configure network and IPMI LAN settings as needed. See Table 5-2 and Table 5-3 for descriptions of the **Network Settings** and **IPMI LAN Settings** options.
- 4 Click **Apply**.
- 5 Click the appropriate button to continue. See Table 5-4.

Table 5-2. Network Settings

Setting	Description
Enable NIC	When checked, indicates that the NIC is enabled and activates the remaining controls in this group. When a NIC is disabled, all communication to and from iDRAC6 via the network is blocked. The default is off .
MAC Address	Displays the Media Access Control (MAC) address that uniquely identifies each node in a network. The MAC address cannot be changed.
Use DHCP (For NIC IP Address)	Prompts iDRAC6 to obtain an IP address for the NIC from the Dynamic Host Configuration Protocol (DHCP) server. Also deactivates the Static IP Address , Static Subnet Mask , and Static Gateway controls. The default is off .
Static IP Address	Allows you to enter or edit a static IP address for the iDRAC6 NIC. To change this setting, deselect the Use DHCP (For NIC IP Address) checkbox.
Static Subnet Mask	Allows you to enter or edit a subnet mask for the iDRAC6 NIC. To change this setting, first deselect the Use DHCP (For NIC IP Address) checkbox.
Static Gateway	Allows you to enter or edit a static gateway for the iDRAC6 NIC. To change this setting, first deselect the Use DHCP (For NIC IP Address) checkbox.
Use DHCP to obtain DNS server addresses	Enable DHCP to obtain DNS server addresses by selecting the Use DHCP to obtain DNS server addresses checkbox. When not using DHCP to obtain the DNS server addresses, provide the IP addresses in the Static Preferred DNS Server and Static Alternate DNS Server fields. The default is off . NOTE: When the Use DHCP to obtain DNS server addresses checkbox is selected, IP addresses cannot be entered into the Static Preferred DNS Server and Static Alternate DNS Server fields.

Table 5-2. Network Settings (continued)

Setting	Description
Static Preferred DNS Server	Allows the user to enter or edit a static IP address for the preferred DNS server. To change this setting, first deselect the Use DHCP to obtain DNS server addresses checkbox.
Static Alternate DNS Server	Uses the secondary DNS server IP address when Use DHCP to obtain DNS server addresses is not selected. Enter an IP address of 0.0.0.0 if there is no alternate DNS server.
Register iDRAC on DNS	Registers the iDRAC6 name on the DNS server. The default is Disabled .
DNS iDRAC Name	Displays the iDRAC6 name only when Register iDRAC on DNS is selected. The default name is <code>idrac-service_tag</code> , where <code>service_tag</code> is the service tag number of the Dell server. For example: <code>idrac-00002</code> .
Use DHCP for DNS Domain Name	Uses the default DNS domain name. When the box is not selected and the Register iDRAC on DNS option is selected, modify the DNS domain name in the DNS Domain Name field. The default is Disabled . NOTE: To select the Use DHCP for DNS Domain Name checkbox, also select the Use DHCP (For NIC IP Address) checkbox.
DNS Domain Name	The default DNS Domain Name is blank. When the Use DHCP for DNS Domain Name checkbox is selected, this option is grayed out and the field cannot be modified.

Table 5-3. IPMI LAN Settings

Setting	Description
Enable IPMI Over LAN	When checked, indicates that the IPMI LAN channel is enabled. The default is off .
Channel Privilege Level Limit	Configures the maximum privilege level, for the user, that can be accepted on the LAN channel. Select one of the following options: Administrator , Operator , or User . The default is Administrator .
Encryption Key	Configures the encryption key: 0 to 20 hexadecimal characters (with no blanks allowed). The default is blank.

Table 5-4. Network Configuration Buttons

Button	Description
Advanced Settings	Opens the Network Security screen, allowing the user to enter IP Range, and IP Blocking attributes.
Print	Prints the Network Configuration values that appear on the screen.
Refresh	Reloads the Network Configuration screen.
Apply	Saves any new settings made to the network configuration screen. NOTE: Changes to the NIC IP address settings will close all user sessions and require users to reconnect to the iDRAC6 Web interface using the updated IP address settings. All other changes will require the NIC to be reset, which may cause a brief loss in connectivity.

Configuring IP Filtering and IP Blocking



NOTE: You must have **Configure iDRAC** permission to perform the following steps.

- 1 Click **System**→ **Remote Access**→ **iDRAC**.
- 2 Click the **Network/Security** tab.
The **Network Configuration** screen appears.
- 3 Click **Advanced Settings**.
The **Network Security** screen appears.
- 4 Configure IP filtering and blocking settings as needed. See Table 5-5 for descriptions of the IP filtering and blocking settings.
- 5 Click **Apply**.
- 6 Click the appropriate button to continue. See Table 5-6.

Table 5-5. Network Security Settings

Settings	Description
IP Range Enabled	Enables the IP Range checking feature, which defines a range of IP addresses that can access iDRAC6. The default is off .
IP Range Address	Determines the acceptable IP subnet address. The default is 192.168.1.0 .
IP Range Subnet Mask	Defines the significant bit positions in the IP address. The subnet mask should be in the form of a netmask, where the more significant bits are all 1's with a single transition to all zeros in the lower-order bits. The default is 255.255.255.0 .
IP Blocking Enabled	Enables the IP address blocking feature, which limits the number of failed login attempts from a specific IP address for a preselected time span. The default is off .
IP Blocking Fail Count	Sets the number of login failures attempted from an IP address before the login attempts are rejected from that address. The default is 10 .
IP Blocking Fail Window	Determines the time span in seconds within which IP Block Fail Count failures must occur to trigger the IP Block Penalty Time. The default is 3600 .
IP Blocking Penalty Time	The time span in seconds that login attempts from an IP address with excessive failures are rejected. The default is 3600 .

Table 5-6. Network Security Buttons

Button	Description
Print	Prints the Network Security values that appear on the screen.
Refresh	Reloads the Network Security screen.
Apply	Saves any new settings that you made to the Network Security screen.
Go Back to Network Page	Returns to the Network screen.

Configuring Platform Events

Platform event configuration provides a mechanism for configuring iDRAC6 to perform selected actions on certain event messages. The actions include no action, reboot system, power cycle system, power off system, and generate an alert (Platform Event Trap [PET] and/or e-mail).

The filterable platform events are listed in Table 5-7.


Table 5-7. Filterable Platform Events

Index	Platform Event
1	Battery Warning Assert
2	Battery Critical Assert
3	Discrete Voltage Critical Assert
4	Temperature Warning Assert
5	Temperature Critical Assert
6	Redundancy Degraded
7	Redundancy Lost
8	Processor Warning Assert
9	Processor Critical Assert
10	Processor Absent Assert
11	Event Log Critical Assert
12	Watchdog Critical Assert


When a platform event occurs (for example, a battery warning assert), a system event is generated and recorded in the System Event Log (SEL). If this event matches a platform event filter (PEF) that is enabled and you have configured the filter to generate an alert (PET or e-mail), then a PET or e-mail alert is sent to one or more configured destinations.

If the same platform event filter is also configured to perform an action (such as rebooting the system), the action is performed.


Configuring Platform Event Filters (PEF)

 **NOTE:** Configure platform event filters before you configure the platform event traps or e-mail alert settings.


- 1 Log in to the iDRAC6 Web interface.
- 2 Click **System**, and then click the **Alert Management** tab.
The **Platform Events** screen appears.
- 3 Select the **Generate Alert** check box beside each event for which you want an alert generated.

 **NOTE:** You can enable or disable alert generation for all events by selecting or deselected the check box next to the **Generate Alert** column heading.


- 4 Select the radio button below the action you would like to enable for each event. You can only select one action for each event.
- 5 Click **Apply**.

 **NOTE:** **Generate Alert** must be enabled for an alert to be sent to any valid, configured destination (PET or e-mail).

Configuring Platform Event Traps (PET)

 **NOTE:** You must have **Configure iDRAC** permission to add or enable/disable an SNMP alert. The following options will not be available if you do not have **Configure iDRAC** permission.

- 1 Log in to the iDRAC6 Web interface.
- 2 Ensure that you followed the procedures in "Configuring Platform Event Filters (PEF)."
- 3 Click **System**, and then click the **Alert Management** tab.
The **Platform Events** screen appears.
- 4 Click **Trap Settings**.
The **Platform Event Alert Destinations** screen appears.
- 5 Configure your PET destination IP address:
 - a Select the **Enable** check box next to the **Destination Number** you would like to activate.
 - b Enter an IP address in the **Destination IP Address** box.

 **NOTE:** The destination community string must be the same as the iDRAC6 community string.

- c Click **Apply**.



NOTE: To successfully send a trap, configure the **Community String** value on the **Network Configuration** screen. The **Community String** value indicates the community string to use in a Simple Network Management Protocol (SNMP) alert trap sent from iDRAC6. SNMP alert traps are transmitted by iDRAC6 when a platform event occurs. The default setting for the **Community String** is **Public**.

- d To test the configured alert, click **Send**.
- e To add an additional destination IP address, repeat **Step a** through **Step d**. You may specify up to four destination IP addresses.

Configuring E-Mail Alerts

- 1 Log in to the iDRAC6 Web interface.
- 2 Ensure that you followed the procedures in "Configuring Platform Event Filters (PEF)."
- 3 Click **System**, and then click the **Alert Management** tab.

The **Platform Events** screen appears.

- 4 Click **Email Alert Settings**.

The **Email Alert Settings** screen appears.

- 5 Configure your e-mail alert destination.
 - a Select the **Enabled** check box for the first undefined email alert.
 - b Enter a valid email address in the **Destination Email Address** field.
 - c Click **Apply**.



NOTE: To successfully send a test e-mail, the **SMTP Server Address** must be configured in the **SMTP (e-mail) Server Address Settings** section of the **Email Alert Settings** screen. The IP address of the **SMTP Server** communicates with iDRAC6 to send e-mail alerts when a platform event occurs.


- d Click **Send** to test the configured e-mail alert (if desired).
- e To add an additional email alert destination, repeat **Step a** through **Step d**. You may specify up to four email alert destinations.

Configuring IPMI Over LAN

- 1 Log in to the iDRAC6 Web interface.
- 2 Configure IPMI over LAN:
 - a Click **System**→ **Remote Access**→ **iDRAC**, and then click the **Network/Security** tab.


The **Network Configuration** screen appears.


- b Click **IPMI LAN Settings**.
- c Select the **Enable IPMI Over LAN** check box.
- d Update the IPMI LAN channel privileges, if required:

 **NOTE:** This setting determines the IPMI commands that can be executed from the IPMI over LAN interface. For more information, see the IPMI 2.0 specifications.

Under **IPMI LAN Settings**, click the **Channel Privilege Level Limit** drop-down menu, select **Administrator**, **Operator**, or **User**, and then click **Apply**.

- e Set the IPMI LAN channel encryption key, if required.

 **NOTE:** The iDRAC6 IPMI supports the RMCP+ protocol.

 **NOTE:** The encryption key must consist of an even number of hexadecimal characters with a maximum length of 20 characters.

Under **IPMI LAN Settings** in the **Encryption Key** field, enter the encryption key.


- f Click **Apply**.

- 3 Configure IPMI Serial over LAN (SOL):

- a Click **System**→ **Remote Access**→ **iDRAC**, and then click the **Network/Security** tab.

The **Network Configuration** screen appears.

- b Open the **Serial Over LAN** screen.
- c Select the **Enable Serial Over LAN** check box.

- d Update the IPMI SOL baud rate, if needed, by selecting a data speed from the Baud Rate drop-down menu.
-  **NOTE:** To redirect the serial console over the LAN, ensure that the SOL baud rate is identical to your managed server's baud rate.
- e Click **Apply**.

Adding and Configuring iDRAC6 Users

To manage your system with iDRAC6 and maintain system security, create unique users with specific administrative permissions (or *role-based authority*).


To add and configure iDRAC6 users, perform the following steps:

 **NOTE:** You must have **Configure iDRAC** permission to perform the following steps.

1 Click **System**→**Remote Access**→**iDRAC** and then click the **Network/Security** tab.

2 Open the **Users** screen to configure users.

The **Users** screen displays each user's User ID, State, Username, IPMI LAN Privileges, iDRAC Privileges, and Serial Over LAN.

 **NOTE:** User-1 is reserved for the IPMI anonymous user and is not configurable.

3 In the **User ID** column, click a user ID number.

4 On the **User Configuration** screen, configure the user's properties and privileges.

Table 5-8 describes the **General** settings for configuring an iDRAC6 user name and password.

Table 5-9 describes the **IPMI LAN Privileges** for configuring the user's LAN privileges.

Table 5-10 describes the **User Group** permissions for the **IPMI LAN Privileges** and the **iDRAC User Privileges** settings.

Table 5-11 describes the **iDRAC Group** permissions. If you add an **iDRAC User Privilege** to the **Administrator**, **Power User**, or **Guest User**, the **iDRAC Group** will change to the **Custom** group.

5 When completed, click **Apply**.

6 Click the appropriate button to continue. See Table 5-12.

Table 5-8. General Properties

Property	Description
User ID	Contains one of 16 preset User ID numbers. This field cannot be edited.
Enable User	When checked, indicates that the user's access to iDRAC6 is enabled. When unchecked, user access is disabled.
Username	Specifies an iDRAC6 user name with up to 16 characters. Each user must have a unique user name. NOTE: User names on iDRAC6 cannot include the / (forward slash) or . (period) characters. NOTE: If the user name is changed, the new name will not appear in the user interface until the next user login.
Change Password	Enables the New Password and Confirm New Password fields. When unchecked, the user's Password cannot be changed.
New Password	Enables editing the iDRAC6 user's password. Enter a Password with up to 20 characters. The characters will not display.
Confirm New Password	Re-enter the iDRAC6 user's password to confirm.

Table 5-9. IPMI LAN User Privileges

Property	Description
Maximum LAN User Privilege Granted	Specifies the user's maximum privilege on the IPMI LAN channel to one of the following user groups: None , Administrator , Operator , or User .
Enable Serial Over LAN	Allows the user to use IPMI Serial Over LAN. When checked, this privilege is enabled.

Table 5-10. iDRAC6 User Privileges

Property	Description
iDRAC Group	Specifies the user's maximum iDRAC6 user privilege as one of the following: Administrator , Power User , Guest User , Custom , or None . See Table 5-11 for iDRAC6 Group permissions.
Login to iDRAC	Enables the user to log in to iDRAC6.
Configure iDRAC	Enables the user to configure iDRAC6.
Configure Users	Enables the user to allow specific users to access the system.
Clear Logs	Enables the user to clear the iDRAC6 logs.
Execute Server Control Commands	Enables the user to execute RACADM commands.
Access Console Redirection	Enables the user to run Console Redirection.
Access Virtual Media	Enables the user to run and use Virtual Media.
Test Alerts	Enables the user to send test alerts (e-mail and PET) to a specific user.
Execute Diagnostic Commands	Enables the user to run diagnostic commands.

Table 5-11. iDRAC6 Group Permissions

User Group	Permissions Granted
Administrator	Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
Power User	Login to iDRAC, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts
Guest User	Login to iDRAC

Table 5-11. iDRAC6 Group Permissions (continued)

User Group	Permissions Granted
Custom	Selects any combination of the following permissions: Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Action Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
None	No assigned permissions

Table 5-12. User Configuration Buttons

Button	Action
Print	Prints the User Configuration values that appear on the screen.
Refresh	Reloads the User Configuration screen.
Apply	Saves any new settings made to the user configuration.
Go Back To Users screen	Returns to the Users screen.

Securing iDRAC6 Communications Using SSL and Digital Certificates

This section provides information about the following data security features that are incorporated in iDRAC6:

- Secure Sockets Layer (SSL)
- Certificate Signing Request (CSR)
- Accessing the SSL main menu
- Generating a new CSR
- Uploading a server certificate
- Viewing a server certificate

Secure Sockets Layer (SSL)

iDRAC6 includes a Web server that is configured to use the industry-standard SSL security protocol to transfer encrypted data over a network. Built upon public-key and private-key encryption technology, SSL is a widely accepted technology for providing authenticated and encrypted communication between clients and servers to prevent eavesdropping across a network.

An SSL-enabled system can perform the following tasks:

- Authenticate itself to an SSL-enabled client
- Allow the client to authenticate itself to the server
- Allow both systems to establish an encrypted connection

The encryption process provides a high level of data protection. iDRAC6 employs the 128-bit SSL encryption standard, the most secure form of encryption generally available for Internet browsers in North America.

The iDRAC6 Web server has a Dell self-signed SSL digital certificate (Server ID) by default. To ensure high security over the Internet, replace the Web server SSL certificate with a certificate signed by a well-known certificate authority. To initiate the process of obtaining a signed certificate, you can use the iDRAC6 Web interface to generate a Certificate Signing Request (CSR) with your company's information. You can then submit the generated CSR to a CA such as VeriSign or Thawte.

Certificate Signing Request (CSR)

A CSR is a digital request to a Certificate Authority (CA) for a secure server certificate. Secure server certificates allow clients of the server to trust the identity of the server they have connected to and to negotiate an encrypted session with the server.

A Certificate Authority is a business entity that is recognized in the IT industry for meeting high standards of reliable screening, identification, and other important security criteria. Examples of CAs include Thawte and VeriSign. After the CA receives a CSR, they review and verify the information the CSR contains. If the applicant meets the CA's security standards, the CA issues a digitally-signed certificate that uniquely identifies that applicant for transactions over networks and on the Internet.

After the CA approves the CSR and sends the certificate, upload the certificate to the iDRAC6 firmware. The CSR information stored on iDRAC6 firmware must match the information contained in the certificate.

Accessing the SSL Main Menu

- 1 Click **System**→ **Remote Access**→ **iDRAC**, then click the **Network/Security** tab.
- 2 Click **SSL** to open the **SSL Main Menu** screen.

Use the **SSL Main Menu** screen to generate a CSR to send to a CA. The CSR information is stored on the iDRAC6 firmware.

Table 5-13 describes the options available when generating a CSR.

Table 5-14 describes the available buttons on the **SSL Main Menu** screen.

Table 5-13. SSL Main Menu Options

Field	Description
Generate a New Certificate Signing Request (CSR)	Select the option and click Next to open the Generate Certificate Signing Request (CSR) screen. NOTE: Each new CSR overwrites any previous CSR on the firmware. For a CA to accept your CSR, the CSR in the firmware must match the certificate returned from the CA.
Upload Server Certificate	Select the option and click Next to open the Certificate Upload screen and upload the certificate sent to you by the CA. NOTE: Only X509, Base 64-encoded certificates are accepted by iDRAC6. DER-encoded certificates are not accepted.
View Server Certificate	Select the option and click Next to open the View Server Certificate screen and view an existing server certificate.

Table 5-14. SSL Main Menu Buttons

Button	Description
Print	Prints the SSL Main Menu values that appear on the screen.
Refresh	Reloads the SSL Main Menu screen.
Next	Processes the information on the SSL Main Menu screen and continues to the next step.

Generating a New Certificate Signing Request



NOTE: Each new CSR overwrites any previous CSR data stored in the firmware. The CSR in the firmware must match the certificate returned from the CA. Otherwise, iDRAC6 will not accept the certificate.

- 1** On the **SSL Main Menu** screen, select **Generate a New Certificate Signing Request (CSR)** and click **Next**.
- 2** On the **Generate Certificate Signing Request (CSR)** screen, enter a value for each CSR attribute.
Table 5-15 describes the **Generate Certificate Signing Request (CSR)** screen options.
- 3** Click **Generate** to create the CSR.
- 4** Click **Download** to save the CSR file to your local computer.
- 5** Click the appropriate button to continue. See Table 5-16.

Table 5-15. Generate Certificate Signing Request (CSR) Options

Field	Description
Common Name	The exact name being certified (usually the Web server's domain name, for example, www.xyzcompany.com). Only alphanumeric characters, hyphens, underscores, and periods are valid. Spaces are not valid.
Organization Name	The name associated with this organization (for example, XYZ Corporation). Only alphanumeric characters, hyphens, underscores, periods and spaces are valid.

Table 5-15. Generate Certificate Signing Request (CSR) Options (continued)

Field	Description
Organization Unit	The name associated with an organizational unit, such as a department (for example, Information Technology). Only alphanumeric characters, hyphens, underscores, periods, and spaces are valid.
Locality	The city or other location of the entity being certified (for example, Round Rock). Only alphanumeric characters and spaces are valid. Do not separate words using an underscore or other character.
State Name	The state or province where the entity who is applying for a certification is located (for example, Texas). Only alphanumeric characters and spaces are valid. Do not use abbreviations.
Country Code	The name of the country where the entity applying for certification is located.
Email	The e-mail address associated with the CSR. Enter the company's e-mail address, or any e-mail address associated with the CSR. This field is optional.

Uploading a Server Certificate

Table 5-16. Generate Certificate Signing Request (CSR) Buttons

Button	Description
Print	Prints the Generate Certificate Signing Request values that appear on the screen.
Refresh	Reloads the Generate Certificate Signing Request screen.
Generate	Generates a CSR and then prompts the user to save it to a specified directory.
Download	Downloads the certificate to the local computer.
Go Back to SSL Main Menu	Returns the user to the SSL Main Menu screen.

- 1 In the **SSL Main Menu** screen, select **Upload Server Certificate** and click **Next**.

The **Certificate Upload** screen appears.

- 2 In the **File Path** field, enter the path to the certificate or click **Browse** to navigate to the certificate file.



NOTE: The **File Path** value displays the file path of the certificate you are uploading. You must enter the file path, which includes the full path and the complete file name and file extension.

- 3 Click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-17.

Table 5-17. Certificate Upload Buttons

Button	Description
Print	Prints the values that appear on the Certificate Upload screen
Refresh	Reloads the Certificate Upload screen
Apply	Applies the certificate to iDRAC6 firmware
Go Back to SSL Main Menu	Returns the user to the SSL Main Menu screen

Viewing a Server Certificate

- 1 On the **SSL Main Menu** screen, select **View Server Certificate** and click **Next**.
Table 5-18 describes the fields and associated descriptions listed in the **Certificate** window.
- 2 Click the appropriate button to continue. See Table 5-19.

Table 5-18. Certificate Information


Field	Description
Serial Number	Certificate serial number
Subject Information	Certificate attributes entered by the subject
Issuer Information	Certificate attributes returned by the issuer
Valid From	Issue date of the certificate
Valid To	Expiration date of the certificate

Table 5-19. View Server Certificate Buttons

Button	Description
Print	Prints the View Server Certificate values that appear on the screen.
Refresh	Reloads the View Server Certificate screen.
Go Back to SSL Main Menu	Return to the SSL Main Menu screen.

Configuring and Managing Active Directory Certificates

 **NOTE:** You must have **Configure iDRAC** permission to configure Active Directory and upload, download, and view an Active Directory certificate.

 **NOTE:** For more information about Active Directory configuration and how to configure Active Directory with the standard schema or an extended schema, see "Using iDRAC6 With Microsoft Active Directory."

To access the **Active Directory Main Menu**:

- 1 Click **System**→ **Remote Access**→ **iDRAC**, and then click the **Network/Security** tab.
- 2 Click **Active Directory** to open the **Active Directory Main Menu** screen. Table 5-20 lists the **Active Directory Main Menu** options.
- 3 Click the appropriate button to continue. See Table 5-20.

Table 5-20. Active Directory Main Menu Options

Field	Description
Configure Active Directory	Configures the Active Directory ROOT Domain Name , Active Directory Authentication Timeout , Active Directory Schema Selection , iDRAC Name , iDRAC Domain Name , Role Groups , Group Name , and Group Domain settings.
Upload Active Directory CA Certificate	Uploads an Active Directory certificate to iDRAC6.
View Active Directory CA Certificate	Displays an Active Directory Certificate that has been uploaded to iDRAC6.

Table 5-21. Active Directory Main Menu Buttons

Button	Definition
Print	Prints the Active Directory Main Menu values that appear on the screen.
Refresh	Reloads the Active Directory Main Menu screen.
Next	Processes the information on the Active Directory Main Menu screen and continues to the next step.

Configuring Active Directory (Standard Schema and Extended Schema)

- 1 On the Active Directory Main Menu screen, select **Configure Active Directory** and click **Next**.
- 2 On the **Active Directory Configuration** screen, enter the Active Directory settings.
Table 5-22 describes the **Active Directory Configuration and Management** settings.
- 3 Click **Apply** to save the settings.
- 4 Click the appropriate button to continue. See Table 5-23.
- 5 To configure the Role Groups for Active Directory Standard Schema, click on the individual Role Group (1-5). See Table 5-24 and Table 5-25.



NOTE: To save the settings on the **Active Directory Configuration** screen, click **Apply** before proceeding to the **Custom Role Group** screen.

Table 5-22. Active Directory Configuration Settings

Setting	Description
Enable Active Directory	When checked, enables Active Directory. The default is disabled.
ROOT Domain Name	The Active Directory ROOT domain name. This default is blank. The name must be a valid domain name consisting of <i>x.y</i> , where <i>x</i> is a 1-254 character ASCII string with no spaces between characters, and <i>y</i> is a valid domain type such as com, edu, gov, int, mil, net, or org. The default is blank.

Table 5-22. Active Directory Configuration Settings (continued)

Setting	Description
Timeout	The time, in seconds, to wait for Active Directory queries to complete. Minimum value is equal to or greater than 15 seconds. The default value is 120.
Use Standard Schema	Uses standard schema with Active Directory.
Use Extended Schema	Uses the extended schema with Active Directory.
iDRAC Name	The name that uniquely identifies iDRAC6 in Active Directory. This default is blank. The name must be a 1-254 character ASCII string with no spaces between characters.
iDRAC Domain Name	The DNS name of the domain, where the Active Directory iDRAC6 object resides. This default is blank. The name must be a valid domain name consisting of x.y, where x is a 1-254 character ASCII string with no spaces between characters, and y is a valid domain type such as com, edu, gov, int, mil, net, or org.
Role Groups	The list of role groups associated with iDRAC6. To change the settings for a role group, click their role group number, in the role groups list.
Group Name	The name that identifies the role group in the Active Directory associated with iDRAC6. This default is blank.
Group Domain	The domain type where the Role Group resides.

Table 5-23. Active Directory Configuration Buttons

Button	Description
Print	Prints the Active Directory Configuration values that appear on the screen.
Refresh	Reloads the Active Directory Configuration screen.
Apply	Saves any new settings made to the Active Directory Configuration screen.
Go Back to Active Directory Main Menu	Returns to the Active Directory Main Menu screen.

Table 5-24. Role Group Privileges

Setting	Description
Role Group Privilege Level	Specifies the user's maximum iDRAC6 user privilege as one of the following: Administrator, Power User, Guest User, None, or Custom . See Table 5-25 for Role Group permissions.
Login to iDRAC	Allows the group log in access to iDRAC6.
Configure iDRAC	Allows the group permission to configure iDRAC6.
Configure Users	Allows the group permission to configure users.
Clear Logs	Allows the group permission to clear logs.
Execute Server Control Commands	Allows the group permission to execute server control commands.
Access Console Redirection	Allows the group access to Console Redirection.
Access Virtual Media	Allows the group access to Virtual Media.
Test Alerts	Allows the group to send test alerts (e-mail and PET) to a specific user.
Execute Diagnostic Commands	Allows the group permission to execute diagnostic commands.

Table 5-25. Role Group Permissions

Property	Description
Administrator	Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
Power User	Login to iDRAC, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts

Table 5-25. Role Group Permissions (continued)

Property	Description
Guest User	Login to iDRAC
Custom	Selects any combination of the following permissions: Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Action Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands
None	No assigned permissions

Uploading an Active Directory CA Certificate

- 1 On the Active Directory Main Menu screen, select **Upload Active Directory CA Certificate** and click **Next**.
- 2 On the **Certificate Upload** screen, enter the file path of the certificate in the **File Path** field, or click **Browse** to navigate to the certificate file.



NOTE: The **File Path** value displays the file path of the certificate you are uploading. You must enter the file path, which includes the full path and the complete file name and file extension.

Ensure that the domain controller's SSL certificates have been signed by the same Certificate Authority and that this Certificate is available on the management station accessing iDRAC6.

- 3 Click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-26.

Table 5-26. Certificate Upload Buttons

Button	Description
Print	Prints the Certificate Upload values that appear on the screen
Refresh	Reloads the Certificate Upload screen
Apply	Applies the certificate to iDRAC6 firmware
Go Back to Active Directory Main Menu	Returns to the Active Directory Main Menu screen

Viewing an Active Directory CA Certificate

Use the **Active Directory Main Menu** screen to view a CA server certificate for iDRAC6.

- 1 On the **Active Directory Main Menu** screen, select **View Active Directory CA Certificate** and click **Next**.

Table 5-27 describes the fields and associated descriptions listed in the **Certificate** window.

- 2 Click the appropriate button to continue. See Table 5-28.

Table 5-27. Active Directory CA Certificate Information

Field	Description
Serial Number	Certificate serial number.
Subject Information	Certificate attributes entered by the subject.
Issuer Information	Certificate attributes returned by the issuer.
Valid From	Certificate issue date.
Valid To	Certificate expiration date.

Table 5-28. View Active Directory CA Certificate Buttons

Button	Description
Print	Prints the Active Directory CA Certificate values that appear on the screen.
Refresh	Reloads the Active Directory CA Certificate screen.
Go Back to Active Directory Main Menu	Returns the user to the Active Directory Main Menu screen.

Enabling or Disabling Local Configuration Access



NOTE: The default setting for local configuration access is **Enabled**.

Enabling Local Configuration Access

- 1 Click **System**→**Remote Access**→**iDRAC**→**Network/Security**.
- 2 Under **Local Configuration**, click to uncheck **Disable iDRAC local USER Configuration Updates** to enable access.

- 3 Click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-34.

Disabling Local Configuration Access

- 1 Click **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**.
- 2 Under **Local Configuration**, click to check **Disable iDRAC local USER Configuration Updates** to disable access.
- 3 Click **Apply**.
- 4 Click the appropriate button to continue. See Table 5-34.

Configuring iDRAC6 Services



NOTE: To modify these settings, you must have **Configure iDRAC** permission.



NOTE: When you apply changes to services, the changes take effect immediately. Existing connections may be terminated without warning.



NOTE: There is a known issue with the Telnet client supplied with Microsoft Windows communicating with a BMU. Use another Telnet client such as HyperTerminal or PuTTY.

- 1 Click **System**→ **Remote Access**→ **iDRAC**, and then click the **Network/Security** tab.
- 2 Click **Services** to open the **Services** configuration screen.
- 3 Configure the following services, as required:
 - Web server — see Table 5-29 for Web server settings
 - SSH — see Table 5-30 for SSH settings
 - Telnet — see Table 5-31 for telnet settings
 - SNMP Agent — see Table 5-32 for SNMP Agent settings
 - Automated System Recovery Agent — see Table 5-33 for Automated System Recovery Agent settings
- 4 Click **Apply**.
- 5 Click the appropriate button to continue. See Table 5-34.

Table 5-29. Web Server Settings

Setting	Description
Enabled	Enables or disables the iDRAC6 Web server. When checked, indicates that the Web server is enabled. The default value is enabled .
Max Sessions	The maximum number of simultaneous sessions allowed for this system. This field is not editable. There can be four simultaneous sessions.
Current Sessions	The number of current sessions on the system, less than or equal to the Max Sessions . This field is not editable.
Timeout	The time, in seconds, that a connection is allowed to remain idle. The session is cancelled when the timeout is reached. Changes to the timeout setting take affect immediately and will reset the Web server. Timeout range is 60 to 10800 seconds. The default is 1800 seconds.
HTTP Port Number	The port on which iDRAC6 listens for a browser connection. The default is 80 .
HTTPS Port Number	The port on which iDRAC6 listens for a secure browser connection. The default is 443 .

Table 5-30. SSH Settings

Setting	Description
Enabled	Enables or disables SSH. When checked, the checkbox indicates that SSH is enabled.
Max Sessions	The maximum number of simultaneous sessions allowed for this system. Only one session is supported.
Active Sessions	The number of current sessions on the system.
Timeout	The secure shell idle timeout, in seconds. Timeout range is 60 to 10800 seconds. Enter 0 seconds to disable the Timeout feature. The default is 1800 .
Port Number	The port on which iDRAC6 listens for an SSH connection. The default is 22 .

Table 5-31. Telnet Settings

Setting	Description
Enabled	Enables or disables telnet. When checked, telnet is enabled. The default value is disabled .
Max Sessions	The maximum number of simultaneous sessions allowed for this system. Only one session is supported.
Active Sessions	The number of current sessions on the system.
Timeout	The telnet idle timeout, in seconds. Timeout range is 60 to 10800 seconds. Enter 0 seconds to disable the Timeout feature. The default is 1800 .
Port Number	The port on which iDRAC6 listens for a telnet connection. The default is 23 .

Table 5-32. SNMP Agent

Setting	Description
Enabled	Enables or disables email alerts.
SNMP Community Name	The name of the community that contains the IP address for the SNMP Alert destination. The Community Name may be up to 31 non-blank characters in length. Default=public.

Table 5-33. Automated System Recovery Agent Setting


Setting	Description
Enabled	Enables the Automated System Recovery Agent.

Table 5-34. Services Buttons


Button	Description
Print	Prints the Services screen.
Refresh	Refreshes the Services screen.
Apply Changes	Applies the Services screen settings.

Updating iDRAC6 Firmware

 **NOTE:** If iDRAC6 firmware becomes corrupted, as could occur if the iDRAC6 firmware update progress is interrupted before it completes, you can recover iDRAC6 using the CMC. See your *CMC Firmware User Guide* for instructions.

 **NOTE:** The firmware update, by default, retains the current iDRAC6 settings. During the update process, you have the option to reset iDRAC6 configuration to the factory defaults. If you set the configuration to the factory defaults external network access will be disabled when the update completes. You must enable and configure the network using the iDRAC6 Configuration Utility or the CMC Web interface.

- 1 Start the iDRAC6 Web interface.
- 2 Click **System**→ **Remote Access**→ **iDRAC**, then click the **Update** tab.

 **NOTE:** To update the firmware, iDRAC6 must be placed in an update mode. Once in this mode, iDRAC6 will automatically reset, even if you cancel the update process.

- 3 On the **Firmware Update** screen, click **Next** to start the update process.
- 4 In the **Firmware Update - Upload (page 1 of 4)** window, click **Browse**, or enter the path to the firmware image that you downloaded.

For example:

`C:\Updates\V2.0\image_name.`

The default firmware image name is **firmimg.imc**.

- 5 Click **Next**.
 - The file will be uploaded to iDRAC6. This may take several minutes to complete.
- OR
- You can click **Cancel** at this time, if you would like to end the firmware upgrade process. Clicking **Cancel** will reset iDRAC6 to normal operating mode.

- 6 In the **Firmware Update - Validation (page 2 of 4)** window, you will see the results of the validation performed on the image file you uploaded.
 - If the image file uploaded successfully and passed all verification checks, a message will appear indicating that the firmware image has been verified.

OR

- If the image did not upload successfully, or it did not pass the verification checks, the firmware update will return to the **Firmware Update - Upload (page 1 of 4)** window. You can attempt to upgrade iDRAC6 again or click **Cancel** to reset iDRAC6 to normal operating mode.



NOTE: If you deselect the **Preserve Configuration** checkbox, iDRAC6 will be reset to its default settings. In the default settings, the LAN is disabled. You will not be able to log in to the iDRAC6 Web interface. You will have to reconfigure the LAN settings using the CMC Web interface or iKVM using the iDRAC6 Configuration Utility during BIOS POST.

- 7 By default the **Preserve Configuration** checkbox is checked, to preserve the current settings on iDRAC6 after an upgrade. If you do not want the settings to be preserved, deselect the **Preserve Configuration** checkbox.
- 8 Click **Begin Update** to start the upgrade process. Do not interrupt the upgrade process.
- 9 In the **Firmware Update - Updating (page 3 of 4)** window, you will see the status of the upgrade. The progress of the firmware upgrade operation, measured in percentages, will appear in the **Progress** column.
- 10 Once the firmware update is complete, the **Firmware Update - Update Results (page 4 of 4)** window will appear and iDRAC6 will reset automatically. You must close the current browser window and reconnect to iDRAC6 using a new browser window.

Updating iDRAC6 Firmware Using the CMC

Typically, iDRAC6 firmware is updated using iDRAC6 utilities, such as the iDRAC6 Web interface or operating system specific update packages downloaded from support.dell.com.

You can use the CMC Web interface or CMC RACADM to update the iDRAC6 firmware. This feature is available both when iDRAC6 firmware is in Normal mode, as well as when it is corrupted. See "Updating iDRAC6 Firmware Using the CMC."]



NOTE: See the *Chassis Management Controller Firmware User Guide* for instructions for using the CMC Web interface.

To update iDRAC6 firmware, perform the following steps:

- 1** Download the latest iDRAC6 firmware to your management computer from support.dell.com.
- 2** Log in to the CMC Web-based interface.
- 3** Click **Chassis** in the system tree.
- 4** Click the **Update** tab. The **Updatable Components** screen appears.
- 5** Click **server-*n***, where *n* is the number of the server whose iDRAC6 you want to update.
- 6** Click **Browse**, navigate to the iDRAC6 firmware image you downloaded, and then click **Open**.
- 7** Click **Begin Firmware Update**.

After the firmware image file has been uploaded to the CMC, iDRAC6 will update itself with the image.

Using iDRAC6 With Microsoft Active Directory

A directory service maintains a common database of all information needed for controlling users, computers, printers, etc. on a network. If your company already uses the Microsoft® Active Directory® service software, you can configure the software to provide access to iDRAC6, allowing you to add and control iDRAC6 user privileges to your existing users in your Active Directory software.



NOTE: Using Active Directory to recognize iDRAC6 users is supported on the Microsoft Windows 2000, Windows Server 2003, and Windows Server 2008 operating systems.

Table 6-1 shows the nine iDRAC6 Active Directory user privileges.

Table 6-1. iDRAC6 User Privileges

Privilege	Description
Login to iDRAC	Enables the user to log in to iDRAC6
Configure iDRAC	Enables the user to configure iDRAC6
Configure Users	Enables the user to allow specific users to access the system
Clear Logs	Enables the user to clear the iDRAC6 logs
Execute Server Control Commands	Enables the user to execute RACADM commands
Access Console Redirection	Enables the user to run Console Redirection
Access Virtual Media	Enables the user to run and use Virtual Media
Test Alerts	Enables the user to send test alerts (e-mail and PET) to a specific user
Execute Diagnostic Commands	Enables the user to run diagnostic commands

Prerequisites for Enabling Active Directory Authentication for iDRAC6

To use the Active Directory authentication feature of iDRAC6, you must have already deployed an Active Directory infrastructure. See the Microsoft website for information on how to set up an Active Directory infrastructure, if you don't already have one.

iDRAC6 uses the standard Public Key Infrastructure (PKI) mechanism to authenticate securely into the Active Directory; therefore, you would also require an integrated PKI into the Active Directory infrastructure.

See the Microsoft website for more information on the PKI setup.

To correctly authenticate to all the domain controllers, you also need to enable the Secure Socket Layer (SSL) on all domain controllers that iDRAC6 connects to. See "Enabling SSL on a Domain Controller" for more specific information.

Supported Active Directory Authentication Mechanisms

You can use Active Directory to define user access on iDRAC6 through two methods: you can use the *extended schema* solution, which Dell has customized to add Dell-defined Active Directory objects. Or, you can use the *standard schema* solution, which uses Active Directory group objects only. See the sections that follow for more information about these solutions.

When using Active Directory to configure access to iDRAC6, you must choose either the extended schema or the standard schema solution.

The advantages of using the extended schema solution are:

- All of the access control objects are maintained in Active Directory.
- Maximum flexibility is provided in configuring user access on different iDRAC6 cards with varying privilege levels.

The advantage of using the standard schema solution is that no schema extension is required because all of the necessary object classes are provided by Microsoft's default configuration of the Active Directory schema.

Extended Schema Active Directory Overview

Using the extended schema solution requires the Active Directory schema extension, as described in the following section.

Extending the Active Directory Schema

Important: The schema extension for this product is different from the previous generations of Dell Remote Management products. You must extend the new schema and install the new **Active Directory Users and Computers Microsoft Management Console (MMC) Snap-in** on your directory. The old schema does not work with this product.



NOTE: Extending the new schema or installing the new extension to Active Directory User and Computer Snap-in has no impact on previous versions of the product.

The schema extender and Active Directory Users and Computers MMC Snap-in extension are available on the *Dell Systems Management Tools and Documentation* DVD. For more information, see "Extending the Active Directory Schema" and "Installing the Dell Extension to the Active Directory Users and Computers Snap-In." For further details on extending the schema for iDRAC6 and installing the Active Directory Users and Computers MMC Snap-in, see the *Dell OpenManage Installation and Security User's Guide* available on support.dell.com/manuals.



NOTE: When you create iDRAC6 Association Objects or iDRAC6 Device Objects, be certain to select **Dell Remote Management Object Advanced**.

Active Directory Schema Extensions

The Active Directory data is a distributed database of Attributes and Classes. The Active Directory schema includes the rules that determine the type of data that can be added or included in the database. The user class is one example of a Class that is stored in the database. Some example user class attributes can include the user's first name, last name, phone number, and so on. Companies can extend the Active Directory database by adding their own unique Attributes and Classes to solve environment-specific needs. Dell has extended the schema to include the necessary changes to support remote management Authentication and Authorization.

Each Attribute or Class that is added to an existing Active Directory Schema must be defined with a unique ID. To maintain unique IDs across the industry, Microsoft maintains a database of Active Directory Object

Identifiers (OIDs) so that when companies add extensions to the schema, they can be guaranteed to be unique and not to conflict with each other. To extend the schema in Microsoft's Active Directory, Dell received unique OIDs, unique name extensions, and uniquely linked attribute IDs for our attributes and classes that are added into the directory service.

- Dell extension is: `de11`
- Dell base OID is: `1.2.840.113556.1.8000.1280`
- RAC LinkID range is: `12070 to 12079`

Overview of the iDRAC6 Schema Extensions

To provide the greatest flexibility in the multitude of customer environments, Dell provides a group of properties that can be configured by the user depending on the desired results. Dell has extended the schema to include an Association, Device, and Privilege property. The Association property is used to link together the users or groups with a specific set of privileges to one or more iDRAC6 devices. This model provides an Administrator maximum flexibility over the different combinations of users, iDRAC6 privileges, and iDRAC6 devices on the network without adding too much complexity.

Active Directory Object Overview

For each physical iDRAC6 device on the network that you want to integrate with Active Directory for Authentication and Authorization, create at least one Association Object and one iDRAC6 Device Object. You can create multiple Association Objects, and each Association Object can be linked to as many users, groups of users, or iDRAC6 Device Objects as required. The users and iDRAC6 user groups can be members of any domain in the enterprise.

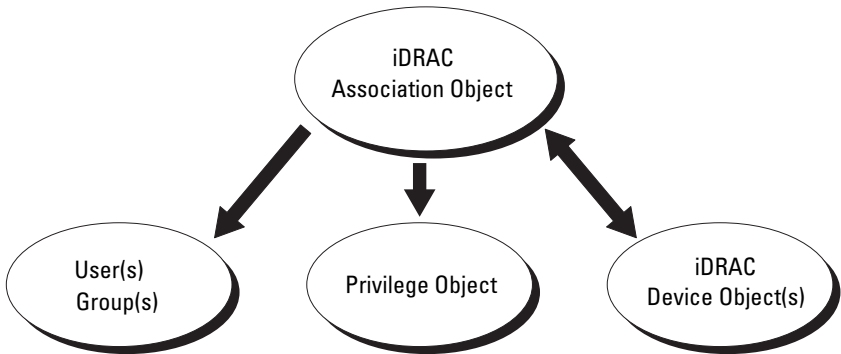
However, each Association Object can be linked (or, may link users, groups of users, or iDRAC6 Device Objects) to only one Privilege Object.

This example allows an Administrator to control each user's privileges on specific iDRAC6 devices.

The iDRAC6 Device object is the link to the iDRAC6 firmware for querying Active Directory for authentication and authorization. When iDRAC6 is added to the network, the Administrator must configure iDRAC6 and its device object with its Active Directory name so users can perform authentication and authorization with Active Directory. Additionally, the Administrator must add iDRAC6 to at least one Association Object in order for users to authenticate.

Figure 6-1 illustrates that the Association Object provides the connection that is needed for all of the Authentication and Authorization.

Figure 6-1. Typical Setup for Active Directory Objects



You can create as many or as few association objects as required. However, you must create at least one Association Object, and you must have one iDRAC6 Device Object for each iDRAC6 device on the network that you want to integrate with Active Directory for Authentication and Authorization with iDRAC6.

The Association Object allows for as many or as few users and/or groups as well as iDRAC6 Device Objects. However, the Association Object only includes one Privilege Object per Association Object. The Association Object connects the *Users* who have *Privileges* on the iDRAC6 devices.

The Dell extension to the ADUC MMC Snap-in only allows associating the Privilege Object and iDRAC6 Objects from the same domain with the Association Object. The Dell extension does not allow a group or an iDRAC6 object from other domains to be added as a product member of the Association Object.

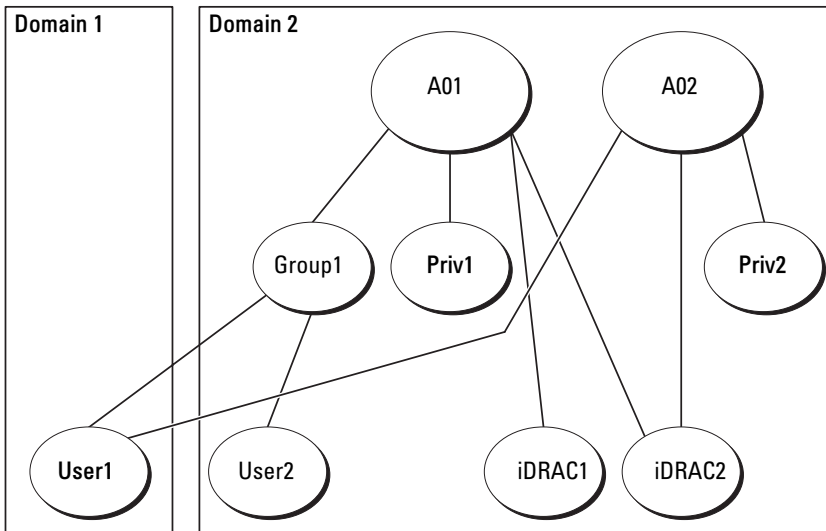
Users, user groups, or nested user groups from any domain can be added into the Association Object. Extended Schema solutions support any user group type and any user group nesting across multiple domains allowed by Microsoft Active Directory.

Accumulating Privileges Using Extended Schema

The Extended Schema Authentication mechanism supports Privilege Accumulation from different privilege objects associated with the same user through different Association Objects. In other words, Extended Schema Authentication accumulates privileges to allow the user the super set of all assigned privileges corresponding to the different privilege objects associated with the same user.

Figure 6-2 provides an example of accumulating privileges using Extended Schema.

Figure 6-2. Privilege Accumulation for a User



The figure shows two Association Objects—A01 and A02. User1 is associated to iDRAC2 through both association objects. Therefore, User1 has accumulated privileges that are the result of combining the privileges set for objects Priv1 and Priv2 on iDRAC2.

For example, Priv1 has these privileges: Login, Virtual Media, and Clear Logs and Priv2 has these privileges: Login to iDRAC, Configure iDRAC, and Test Alerts. As a result, User1 now has the privilege set: Login to iDRAC, Virtual Media, Clear Logs, Configure iDRAC, and Test Alerts, which is the combined privilege set of Priv1 and Priv2.

Extended Schema Authentication accumulates privileges to allow the user the maximum set of privileges possible considering the assigned privileges of the different privilege objects associated to the same user.

In this configuration, User1 has both Priv1 and Priv2 privileges on iDRAC2. User1 has Priv1 privileges on iDRAC1 only. User2 has Priv1 privileges on both iDRAC1 and iDRAC2. In addition, this figure shows that User1 can be in a different domain and can be a member of a group.

Configuring Extended Schema Active Directory to Access iDRAC6

Before using Active Directory to access iDRAC6, configure the Active Directory software and iDRAC6 by performing the following steps in order:

- 1** Extend the Active Directory schema (see "Extending the Active Directory Schema").
- 2** Extend the Active Directory Users and Computers Snap-in (see "Installing the Dell Extension to the Active Directory Users and Computers Snap-In").
- 3** Add iDRAC6 users and their privileges to Active Directory (see "Adding iDRAC6 Users and Privileges to Active Directory").
- 4** Enable SSL on each of your domain controllers (see "Enabling SSL on a Domain Controller").
- 5** Configure iDRAC6 Active Directory properties using either the iDRAC6 Web-based interface or the RACADM (see "Configuring Active Directory With Extended Schema Using the iDRAC6 Web-Based Interface" or "Configuring Active Directory With Extended Schema Using RACADM").

Extending your Active Directory schema adds a Dell organizational unit, schema classes and attributes, and example privileges and association objects to the Active Directory schema. Before you extend the schema, ensure that you 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 one of the following methods:

- Dell Schema Extender utility
- LDIF script file

If you use the LDIF script file, the Dell organizational unit will not be added to the schema.


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

- *DVD drive*:`\SYSMGMT\ManagementStation\support\OMActiveDirectory_Tools\Remote_Management_Advanced\LDIF_Files`
- *<DVD drive>*:`\SYSMGMT\ManagementStation\support\OMActiveDirectory_Tools\Remote_Management_Advanced\Schema Extender`

To use the LDIF files, see the instructions in the readme included in the **LDIF_Files** directory. To use the Dell Schema Extender to extend the Active Directory Schema, see "Using the Dell Schema Extender."

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

Using the Dell Schema Extender

 **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 of this file.**

- 1 In the **Welcome** screen, click **Next**.
- 2 Read and understand 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**.

The schema is extended. To verify the schema extension, use the MMC and the Active Directory Schema Snap-in to verify that the following exist:

- Classes (see Table 6-2 through Table 6-7)
- Attributes (Table 6-8)

See your Microsoft documentation for details about using the MMC and the Active Directory Schema Snap-in.

Table 6-2. Class Definitions for Classes Added to the Active Directory Schema

Class Name	Assigned Object Identification Number (OID)
delliDRACDevice	1.2.840.113556.1.8000.1280.1.7.1.1
delliDRACAssociation	1.2.840.113556.1.8000.1280.1.7.1.2
dellRAC4Privileges	1.2.840.113556.1.8000.1280.1.1.1.3
dellPrivileges	1.2.840.113556.1.8000.1280.1.1.1.4
dellProduct	1.2.840.113556.1.8000.1280.1.1.1.5

Table 6-3. dellRacDevice Class

OID	1.2.840.113556.1.8000.1280.1.7.1.1
Description	Represents the Dell iDRAC6 device. iDRAC6 must be configured as delliDRACDevice in Active Directory. This configuration enables iDRAC6 to send Lightweight Directory Access Protocol (LDAP) queries to Active Directory.
Class Type	Structural Class
SuperClasses	dellProduct
Attributes	dellSchemaVersion dellRacType

Table 6-4. delliDRACAssociationObject Class

OID	1.2.840.113556.1.8000.1280.1.7.1.2
Description	Represents the Dell Association Object. The Association Object provides the connection between the users and the devices.
Class Type	Structural Class
SuperClasses	Group
Attributes	dellProductMembers dellPrivilegeMember

Table 6-5. dellRAC4Privileges Class

OID	1.2.840.113556.1.8000.1280.1.1.1.3
Description	Defines the privileges (Authorization Rights) for iDRAC6
Class Type	Auxiliary Class
SuperClasses	None
Attributes	dellIsLoginUser dellIsCardConfigAdmin dellIsUserConfigAdmin dellIsLogClearAdmin dellIsServerResetUser dellIsConsoleRedirectUser dellIsVirtualMediaUser dellIsTestAlertUser dellIsDebugCommandAdmin

Table 6-6. dellPrivileges Class

OID	1.2.840.113556.1.8000.1280.1.1.1.4
Description	Used as a container Class for the Dell Privileges (Authorization Rights).
Class Type	Structural Class
SuperClasses	User
Attributes	dellRAC4Privileges

Table 6-7. dellProduct Class

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

Table 6-8. List of 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 dellRacDevice and DelliDRACDevice 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
dellIsLoginUser TRUE if the user has Login rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.3 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsCardConfigAdmin TRUE if the user has Card Configuration rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.4 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsUserConfigAdmin TRUE if the user has User Configuration rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.5 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsLogClearAdmin TRUE if the user has Log Clearing rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.6 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsServerResetUser TRUE if the user has Server Reset rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.7 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsConsoleRedirectUser TRUE if the user has Console Redirection rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.8 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE

Table 6-8. List of Attributes Added to the Active Directory Schema (continued)

Attribute Name/Description	Assigned OID/Syntax Object Identifier	Single Valued
dellIsVirtualMediaUser TRUE if the user has Virtual Media rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.9 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsTestAlertUser TRUE if the user has Test Alert User rights on the device.	1.2.840.113556.1.8000.1280.1.1.2.10 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellIsDebugCommandAdmin TRUE if the user has Debug Command Admin rights on the vdevice.	1.2.840.113556.1.8000.1280.1.1.2.11 Boolean (LDAPTYPE_BOOLEAN 1.3.6.1.4.1.1466.115.121.1.7)	TRUE
dellSchemaVersion The Current Schema Version is used to update the schema.	1.2.840.113556.1.8000.1280.1.1.2.12 Case Ignore String (LDAPTYPE_CASEIGNORESTRING 1.2.840.113556.1.4.905)	TRUE
dellRacType This attribute is the Current RAC Type for the dellIDRACDevice object and the backward link to the dellAssociationObjectMembers forward link.	1.2.840.113556.1.8000.1280.1.1.2.13 Case Ignore String (LDAPTYPE_CASEIGNORESTRING 1.2.840.113556.1.4.905)	TRUE
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

Installing the Dell Extension to the 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 the administrator can manage iDRAC6 devices, Users and User Groups, iDRAC6 Associations, and iDRAC6 Privileges.

When you install your systems management software using the *Dell Systems Management Tools and Documentation* DVD, you can extend the Snap-in by selecting the **Active Directory Users and Computers Snap-in** option during the installation procedure. See the *Dell OpenManage Software Quick Installation Guide* for additional instructions about installing systems management software. For 64-bit Windows Operating Systems, the Snap-in installer is located under:

```
<DVD drive>:\SYSMGMT\ManagementStation\support\OMActiveDirectory_SnapIn64
```

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

Installing the Administrator Pack

You must install the Administrator Pack on each system that is managing the Active Directory iDRAC6 Objects. If you do not install the Administrator Pack, you cannot view the Dell iDRAC6 Object in the container.

See "Opening the Active Directory Users and Computers Snap-In" for more information.

Opening the Active Directory Users and Computers Snap-In

To open the Active Directory Users and Computers Snap-in:

- 1 If you are logged in to the domain controller, click **Start Admin Tools**→ **Active Directory Users and Computers**.

If you are not logged in to the domain controller, you must have the appropriate Microsoft Administrator Pack installed on your local system. To install this Administrator Pack, click **Start**→ **Run**, enter **MMC**, and press **Enter**.

The MMC appears.

- 2 In the **Console 1** window, click **File** (or **Console** on systems running Windows 2000).

- 3 Click **Add/Remove Snap-in**.
- 4 Select the **Active Directory Users and Computers Snap-in** and click **Add**.
- 5 Click **Close** and click **OK**.

Adding iDRAC6 Users and Privileges to Active Directory

Using the Dell-extended Active Directory Users and Computers Snap-in, you can add iDRAC6 users and privileges by creating iDRAC6, Association, and Privilege objects. To add each object type, perform the following procedures:

- Create an iDRAC6 device Object
- Create a Privilege Object
- Create an Association Object
- Add objects to an Association Object

Creating an iDRAC6 Device Object

- 1 In the MMC **Console Root** window, right-click a container.
- 2 Select **New→ Dell Remote Management Object Advanced**.
The **New Object** window appears.
- 3 Enter a name for the new object. The name must be identical to the iDRAC6 name that you will enter in Step A of "Configuring Active Directory With Extended Schema Using the iDRAC6 Web-Based Interface."
- 4 Select **iDRAC Device Object**.
- 5 Click **OK**.

Creating a Privilege Object



NOTE: A Privilege Object must be created in the same domain as the related Association Object.

- 1 In the **Console Root** (MMC) window, right-click a container.
- 2 Select **New→ Dell Remote Management Object Advanced**.
The **New Object** window appears.
- 3 Enter a name for the new object.
- 4 Select **Privilege Object**.

- 5 Click **OK**.
- 6 Right-click the privilege object that you created, and select **Properties**.
- 7 Click the **Remote Management Privileges** tab and select the privileges that you want the user or group to have (see Table 5-10).

Creating an Association Object



NOTE: The iDRAC6 Association Object is derived from Group and its scope is set to Domain Local.

- 1 In the **Console Root** (MMC) window, right-click a container.
- 2 Select **New**→ **Dell Remote Management Object Advanced**.
This opens the **New Object** window.
- 3 Enter a name for the new object.
- 4 Select **Association Object**.
- 5 Select the scope for the **Association Object**.
- 6 Click **OK**.

Adding Objects to an Association Object

Using the **Association Object Properties** window, you can associate users or user groups, privilege objects, and iDRAC6 devices or iDRAC6 device groups. You can add groups of Users and iDRAC6 devices. The procedure for creating Dell-related groups and non-Dell-related groups is identical.

Adding Users or User Groups

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

Adding Privileges

- 1 Select the **Privileges Object** tab and click **Add**.
- 2 Enter the Privilege Object name 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 an iDRAC6 device. Only one privilege object can be added to an Association Object.

Adding iDRAC6 Devices or iDRAC6 Device Groups

To add iDRAC6 devices or iDRAC6 device groups:

- 1 Select the **Products** tab and click **Add**.
- 2 Enter iDRAC6 devices or iDRAC6 device group name and click **OK**.
- 3 In the **Properties** window, click **Apply** and click **OK**.

Click the **Products** tab to add one iDRAC6 device connected to the network that is available for the defined users or user groups. You can add multiple iDRAC6 devices to an Association Object.

Configuring Active Directory With Extended Schema Using the iDRAC6 Web-Based Interface

- 1 Open a supported Web browser window.
- 2 Log in to the iDRAC6 Web-based interface.
- 3 In the system tree, select **System**→ **Remote Access**→ **iDRAC**.
The **iDRAC Information** screen appears.
- 4 Click the **Network Security** tab, and then click **Active Directory**.
The **Active Directory Configuration and Management** screen appears.
- 5 Scroll to the bottom of the screen and click **Configure Active Directory**.
The **Step 1 of 4 Active Directory Configuration and Management** screen appears.
- 6 To validate the SSL certificate of your Active Directory servers, select the **Enable Certificate Validation** check box under **Certificate Settings**.
If you don't want to validate the SSL certificate of your Active Directory servers, take no action, and skip to step 8.
- 7 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**.



NOTE: You must enter the absolute file path, which includes the full path and the complete file name and file extension.

The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.

- 8 Click **Next**.

The **Step 2 of 4 Active Directory Configuration and Management** screen appears.

- 9 Select the **Enable Active Directory** check box.

- 10 Click **Add** to enter the user domain name, enter the user domain name in the text field, and then click **OK**.

- 11 Type the user domain name in the prompt and click **OK**. Note that this step is optional. If you configure a list of user domains, the list will be available in the Web-based interface login screen. You can choose from the list, and then you only need to enter the user name.

- 12 In the **Timeout** field, enter the number of seconds you want iDRAC6 to wait for Active Directory responses. The default is 120 seconds.

- 13 Enter the **Domain Controller Server Address**. You can enter up to three Active Directory servers for login processing, but you must configure at least one server by entering the IP address or the fully qualified domain name (FQDN). iDRAC6 attempts to connect to each configured server until a connection is established.



NOTE: The FQDN or IP address that you specify in this field should match the **Subject** or **Subject Alternative Name** field of your domain controller certificate if you have certificate validation enabled.

- 14 Click **Next**.

The **Step 3 of 4 Active Directory Configuration and Management** screen appears.

- 15 Under **Schema Selection**, select the **Extended Schema** check box.

- 16 Click **Next**.


The **Step 4 of 4 Active Directory Configuration and Management** screen appears.

- 17 Under **Extended Schema Settings**, enter the iDRAC6 name and iDRAC6 domain name to configure the iDRAC6 device object and its location in Active Directory.

- 18 Click **Finish** to save your changes, and then **Done**.

The main **Active Directory Configuration and Management** appears. Next, you must test the Active Directory settings you just configured.

- 19 Scroll to the bottom of the screen and click **Test Settings**.
The **Test Active Directory Settings** screen appears.
- 20 Enter your iDRAC6 user name and password, and then click **Start Test**.
Test results and the test log display. For additional information, see "Testing Your Configurations."

 **NOTE:** You must have a DNS server configured properly on iDRAC6 to support Active Directory log in. Navigate to the **Network Configuration** screen (click **System**→**Remote Access**→**iDRAC**, and then click the **Network/Security** tab) to configure DNS server(s) manually or use DHCP to get DNS server(s).

You have completed the Active Directory configuration with Extended Schema.

Configuring Active Directory With Extended Schema Using RACADM

Use the following commands to configure the iDRAC6 Active Directory feature with Extended Schema using the RACADM command line interface (CLI) tool instead of the Web-based interface.

- 1 Open a command prompt and enter the following RACADM commands:

```
racadm config -g cfgActiveDirectory -o cfgADEnable 1  
racadm config -g cfgActiveDirectory -o cfgADType 1  
racadm config -g cfgActiveDirectory -o  
cfgADRacName <RAC common name>  
racadm config -g cfgActiveDirectory -o  
cfgADRacDomain <fully qualified rac domain name>  
racadm config -g cfgActiveDirectory -o  
cfgDomainController1 <fully qualified domain name  
or IP Address of the domain controller>  
racadm config -g cfgActiveDirectory -o  
cfgDomainController2 <fully qualified domain name  
or IP Address of the domain controller>  
racadm config -g cfgActiveDirectory -o  
cfgDomainController3 <fully qualified domain name  
or IP Address of the domain controller>
```



NOTE: You must configure at least one of the three addresses. iDRAC6 attempts to connect to each of the configured addresses one-by-one until a successful connection is made. With Extended Schema, these are the FQDN or IP addresses of the domain controllers where this iDRAC6 device is located. Global catalog servers are not used in extended schema mode at all.

If you want to disable the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 0
```

In this case, you do not have to upload a CA certificate.

If you want to enforce the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o  
cfgADCertValidationEnable 1
```

In this case, you must upload a CA certificate using the following RACADM command:

```
racadm sslcertupload -t 0x2 -f <ADS root CA  
certificate>
```

Using the following RACADM command may be optional. See "Importing the iDRAC6 Firmware SSL Certificate" for additional information.

```
racadm sslcertdownload -t 0x1 -f <RAC SSL  
certificate>
```

- 2 If DHCP is enabled on iDRAC6 and you want to use the DNS provided by the DHCP server, enter the following RACADM command:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 1
```

- 3 If DHCP is disabled in iDRAC6 or you want to manually input your DNS IP address, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 0
```

```
racadm config -g cfgLanNetworking -o cfgDNSServer1  
<primary DNS IP address>
```

```
racadm config -g cfgLanNetworking -o cfgDNSServer2  
<secondary DNS IP address>
```

- 4 If you want to configure a list of user domains so that you only need to enter the user name during log in to the iDRAC6 Web-based interface, enter the following command:

```
racadm config -g cfgUserDomain -o  
cfgUserDomainName -i <index>
```

You can configure up to 40 user domains with index numbers between 1 and 40.

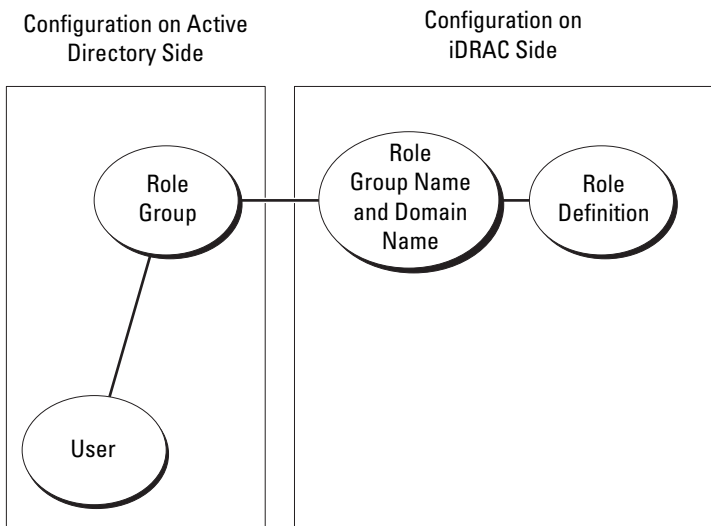
See "Using Active Directory to Log In to iDRAC6" for details about user domains.

- 5 Press **Enter** to complete the Active Directory configuration with Extended Schema.

Standard Schema Active Directory Overview

As shown in Figure 6-3, using standard schema for Active Directory integration requires configuration on both Active Directory and iDRAC6.

Figure 6-3. Configuration of iDRAC6 with Microsoft Active Directory and Standard Schema



On the Active Directory side, a standard group object is used as a role group. A user who has iDRAC6 access will be a member of the role group. To give this user access to a specific iDRAC6 card, the role group name and its domain name need to be configured on the specific iDRAC6 card. Unlike the extended schema solution, the role and the privilege level is defined on each iDRAC6 card, not in the Active Directory. Up to five role groups can be configured and defined in each iDRAC6. Table 6-9 shows the default role group privileges.

Table 6-9. Default Role Group Privileges

Role Groups	Default Privilege Level	Permissions Granted	Bit Mask
Role Group 1	Administrator	Login to iDRAC, Configure iDRAC, Configure Users, Clear Logs, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands	0x000001ff
Role Group 2	Operator	Login to iDRAC, Configure iDRAC, Execute Server Control Commands, Access Console Redirection, Access Virtual Media, Test Alerts, Execute Diagnostic Commands	0x000000f9
Role Group 3	Read Only	Login to iDRAC	0x00000001
Role Group 4	None	No assigned permissions	0x00000000
Role Group 5	None	No assigned permissions	0x00000000



NOTE: The Bit Mask values are used only when setting Standard Schema with the RACADM.

Single Domain Versus Multiple Domain Scenarios

If all of the login users and role groups, as well as the nested groups, are in the same domain, then only the domain controllers' addresses must be configured on iDRAC6. In this single domain scenario, any group type is supported.

If all of the login users and role groups, or any of the nested groups, are from multiple domains, then Global Catalog server addresses are required to be configured on iDRAC6. In this multiple domain scenario, all of the role groups and nested groups, if any, must be Universal Group type.

Configuring Standard Schema Active Directory to Access iDRAC6

You must perform the following steps to configure Active Directory before an Active Directory user can access iDRAC6:

- 1 On an Active Directory server (domain controller), open the **Active Directory Users and Computers Snap-in**.
- 2 Create a group or select an existing group. The name of the group and the name of this domain must be configured on iDRAC6 by using either the Web-based interface or RACADM (see "Configuring Active Directory With Standard Schema Using the iDRAC6 Web-Based Interface" or "Configuring Active Directory With Standard Schema Using RACADM").
- 3 Add the Active Directory user as a member of the Active Directory group to access iDRAC6.

Configuring Active Directory With Standard Schema Using the iDRAC6 Web-Based Interface

- 1 Open a supported Web browser window.
- 2 Log in to the iDRAC6 Web interface.
- 3 In the system tree, select **System**→ **Remote Access**→ **iDRAC**.
- 4 Click the **Network Security** tab, and then click **Active Directory**.
The **Active Directory Configuration and Management** screen appears.
- 5 Scroll to the bottom of the screen and click **Configure Active Directory**.
The **Step 1 of 4 Active Directory Configuration and Management** screen appears.
- 6 Under **Certificate Settings**, select **Enable Active Directory**.

- 7 Under **Upload Active Directory CA Certificate**, enter the file path of the certificate or browse to find the certificate file, and then click **Upload**.



NOTE: You must enter the absolute file path, which includes the full path and the complete file name and file extension.

The certificate information for the Active Directory CA certificate that you uploaded appears in the **Current Active Directory CA Certificate** section.

- 8 Click **Next**.

The **Step 2 of 4 Active Directory Configuration and Management** screen appears.

- 9 Select the **Enable Active Directory** check box.

- 10 Click **Add** to enter the user domain name, enter the user domain name in the text field, and then click **OK**.

- 11 In the **Timeout** field, enter the number of seconds you want iDRAC6 to wait for Active Directory responses. The default is 120 seconds.

- 12 Enter the **Domain Controller Server Address**. You can enter up to three Active Directory servers for login processing, but you must configure at least one server by entering the IP address or the fully qualified domain name (FQDN). iDRAC6 attempts to connect to each configured server until a connection is established.

- 13 Click **Next**.

The **Step 3 of 4 Active Directory Configuration and Management** screen appears.

- 14 Under **Schema Selection**, select the **Standard Schema** check box.

- 15 Click **Next**.

The **Step 4a of 4 Active Directory Configuration and Management** screen appears.

- 16 Under **Standard Schema Settings**, enter the Global Catalog Server Address(es).



NOTE: The Global Catalog server is only required for standard schema when the user accounts and role groups are in different domains. And, in this multiple domain case, only the Universal Group can be used.

- 17 Click a **Role Group** button to add a role group.

The **Step 4b of 4 Configure Role Group 1** screen appears.

- 18 Enter the **Group Name**. The group name identifies the role group in the Active Directory associated with iDRAC6.
- 19 Enter the **Group Domain**. The **Group Domain** is the fully qualified root domain name for the forest.
- 20 In the **Role Group Privileges** section, set the group privileges. Refer to Table 5-11 on page 93 for information on role group privileges.



NOTE: If you modify any of the permissions, the existing role group privilege (Administrator, Power User, or Guest User) will change to either the Custom Group or the appropriate role group privilege based on the permissions you modified.

- 21 Click **OK** to save the role group settings.
An alert dialog appears, indicating that your settings are changed. Click **OK** to return to the **Step 4a of 4 Active Directory Configuration and Management** screen.
- 22 To add an additional role group, repeat step 17 through step 21.
- 23 Click **Finish**, and then click **Done**.
The main **Active Directory Configuration and Management** appears. Next, you must test the Active Directory settings you just configured.
- 24 Scroll to the bottom of the screen and click **Test Settings**.
The **Test Active Directory Settings** screen appears.
- 25 Enter your iDRAC6 user name and password, and then click **Start Test**.
Test results and the test log display. For additional information, see "Testing Your Configurations."



NOTE: You must have a DNS server configured properly on iDRAC6 to support Active Directory login. Navigate to **Remote Access**→**Configuration**→**Network** page to configure DNS server(s) manually or use DHCP to get DNS server(s).

You have completed the Active Directory configuration with Standard Schema.

Configuring Active Directory With Standard Schema Using RACADM

Use the following commands to configure the iDRAC6 Active Directory Feature with Standard Schema using the RACADM CLI instead of the Web-based interface.

- 1 Open a command prompt and enter the following RACADM commands:


```
racadm config -g cfgActiveDirectory -o
cfgADEnable 1

racadm config -g cfgActiveDirectory -o cfgADType 2

racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupName <common name of the role
group>

racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupDomain <fully qualified domain
name>


racadm config -g cfgStandardSchema -i <index> -o
cfgSSADRoleGroupPrivilege <Bit Mask Number for
specific user permissions>
```


 **NOTE:** For Bit Mask Number values, see Table B-1.

```
racadm config -g cfgActiveDirectory -o
cfgDomainController1 <fully qualified domain name
or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o
cfgDomainController2 <fully qualified domain name
or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o
cfgDomainController3 <fully qualified domain name
or IP address of the domain controller>
```


 **NOTE:** Enter the FQDN of the domain controller, *not* the FQDN of the domain. For example, enter `servername.dell.com` instead of `dell.com`.


 **NOTE:** At least one of the 3 addresses is required to be configured. iDRAC6 attempts to connect to each of the configured addresses one-by-one until a successful connection is made. With Standard Schema, these are the addresses of the domain controllers where the user accounts and the role groups are located.

```
racadm config -g cfgActiveDirectory -o cfgGlobalCatalog1 <fully qualified domain name or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o cfgGlobalCatalog2 <fully qualified domain name or IP address of the domain controller>
```

```
racadm config -g cfgActiveDirectory -o cfgGlobalCatalog3 <fully qualified domain name or IP address of the domain controller>
```

 **NOTE:** The Global Catalog server is only required for standard schema when the user accounts and role groups are in different domains. And, in this multiple domain case, only the Universal Group can be used.

 **NOTE:** The FQDN or IP address that you specify in this field should match the **Subject** or **Subject Alternative Name** field of your domain controller certificate if you have certificate validation enabled.

If you want to disable the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o cfgADCertValidationEnable 0
```

In this case, no Certificate Authority (CA) certificate needs to be uploaded.

If you want to enforce the certificate validation during SSL handshake, enter the following RACADM command:

```
racadm config -g cfgActiveDirectory -o cfgADCertValidationEnable 1
```

In this case, you must also upload the CA certificate using the following RACADM command:

```
racadm sslcertupload -t 0x2 -f <ADS root CA certificate>
```

Using the following RACADM command may be optional. See "Importing the iDRAC6 Firmware SSL Certificate" for additional information.

```
racadm sslcertdownload -t 0x1 -f <RAC SSL certificate>
```

- 2 If DHCP is enabled on iDRAC6 and you want to use the DNS provided by the DHCP server, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 1
```

- 3 If DHCP is disabled on iDRAC6 or you want manually to input your DNS IP address, enter the following RACADM commands:

```
racadm config -g cfgLanNetworking -o  
cfgDNSServersFromDHCP 0  
  
racadm config -g cfgLanNetworking -o cfgDNSServer1  
<primary DNS IP address>  
  
racadm config -g cfgLanNetworking -o cfgDNSServer2  
<secondary DNS IP address>
```

- 4 If you want to configure a list of user domains so that you only need to enter the user name when logging in to the Web-based interface, enter the following command:

```
racadm config -g cfgUserDomain -o  
cfgUserDomainName -i <index>
```

Up to 40 user domains can be configured with index numbers between 1 and 40.

See "Using Active Directory to Log In to iDRAC6" for details about user domains.

Testing Your Configurations

If you want to verify whether your configuration works, or if you need to diagnose the problem with your failed Active Directory log in, you can test your settings from the iDRAC6 Web-based interface.

After you finish configuring settings in the iDRAC6 Web-based interface, click **Test Settings** at the bottom of the screen. You will be required to enter a test user's name (for example, username@domain.com) and password to run the test. Depending on your configuration, it may take some time for all of the test steps to complete and display the results of each step. A detailed test log will display at the bottom of the results screen.

If there is a failure in any step, examine the details in the test log to identify the problem and a possible solution. For most common errors, see "Frequently Asked Questions."

If you need to make changes to your settings, click the **Active Directory** tab and change the configuration step-by-step.

Enabling SSL on a Domain Controller

When iDRAC6 authenticates users against an Active Directory domain controller, it starts an SSL session with the domain controller. At this time, the domain controller should publish a certificate signed by the Certificate Authority (CA)—the root certificate of which is also uploaded into iDRAC6. In other words, for iDRAC6 to authenticate to *any* domain controller—whether it is the root or the child domain controller—that domain controller should have an SSL-enabled certificate signed by the domain's CA.

If you are using Microsoft Enterprise Root CA to *automatically* assign all your domain controllers to an SSL certificate, perform the following steps to enable SSL on each domain controller:

- 1** Enable SSL on each of your domain controllers by installing the SSL certificate for each controller.
 - a** Click **Start**→**Administrative Tools**→**Domain Security Policy**.
 - b** Expand the **Public Key Policies** folder, right-click **Automatic Certificate Request Settings** and click **Automatic Certificate Request**.
 - c** In the **Automatic Certificate Request Setup Wizard**, click **Next** and select **Domain Controller**.
 - d** Click **Next** and click **Finish**.

Exporting the Domain Controller Root CA Certificate to iDRAC6



NOTE: If your system is running Windows 2000, the following steps may vary.



NOTE: If you are using a standalone CA, the following steps may vary.


- 1** Locate the domain controller that is running the Microsoft Enterprise CA service.
- 2** Click **Start**→**Run**.
- 3** In the **Run** field, enter `mmc` and click **OK**.

- 4 In the **Console 1** (MMC) window, click **File** (or **Console** on Windows 2000 systems) and select **Add/Remove Snap-in**.
- 5 In the **Add/Remove Snap-In** window, click **Add**.
- 6 In the **Standalone Snap-In** window, select **Certificates** and click **Add**.
- 7 Select **Computer** account and click **Next**.
- 8 Select **Local Computer** and click **Finish**.
- 9 Click **OK**.
- 10 In the **Console 1** window, expand the **Certificates** folder, expand the **Personal** folder, and click the **Certificates** folder.
- 11 Locate and right-click the root CA certificate, select **All Tasks**, and click **Export...**
- 12 In the **Certificate Export Wizard**, click **Next**, and select **No do not export the private key**.
- 13 Click **Next** and select **Base-64 encoded X.509 (.cer)** as the format.
- 14 Click **Next** and save the certificate to a directory on your system.
- 15 Upload the certificate you saved in step 14 to iDRAC6.

To upload the certificate using RACADM, see "Configuring Active Directory With Standard Schema Using RACADM."


To upload the certificate using the Web-based interface, see "Configuring Active Directory With Standard Schema Using the iDRAC6 Web-Based Interface."

Importing the iDRAC6 Firmware SSL Certificate

 **NOTE:** If the Active Directory Server is set to authenticate the client during an SSL session initialization phase, you need to upload the iDRAC6 Server certificate to the Active Directory Domain controller as well. This additional step is not required if the Active Directory does not perform a client authentication during an SSL session's initialization phase.

Use the following procedure to import the iDRAC6 firmware SSL certificate to all domain controller trusted certificate lists.

 **NOTE:** If your system is running Windows 2000, the following steps may vary.

 **NOTE:** If the iDRAC6 firmware SSL certificate is signed by a well-known CA and the certificate of that CA is already in the domain controller's Trusted Root Certificate Authority list, you are not required to perform the steps in this section.

The iDRAC6 SSL certificate is the identical certificate used for the iDRAC6 Web server. All iDRAC6 controllers are shipped with a default self-signed certificate.

To download the iDRAC6 SSL certificate, run the following RACADM command:

```
racadm sslcertdownload -t 0x1 -f <RAC SSL certificate>
```

- 1 On the domain controller, open an **MMC Console** window and select **Certificates**→ **Trusted Root Certification Authorities**.
- 2 Right-click **Certificates**, select **All Tasks** and click **Import**.
- 3 Click **Next** and browse to the SSL certificate file.
- 4 Install the iDRAC6 SSL Certificate in each domain controller's **Trusted Root Certification Authority**.

If you have installed your own certificate, ensure that the CA signing your certificate is in the **Trusted Root Certification Authority** list. If the Authority is not in the list, you must install it on all your Domain Controllers.

- 5 Click **Next** and select whether you would like Windows to automatically select the certificate store based on the type of certificate, or browse to a store of your choice.
- 6 Click **Finish** and click **OK**.

Using Active Directory to Log In to iDRAC6

You can use Active Directory to log in to iDRAC6 using one of the following methods:

- Web-based interface
- Local RACADM
- SSH or telnet console for SM-CLP CLI

The login syntax is the same for all three methods:

```
<username@domain>
```

or

```
<domain>\<username> or <domain>/<username>
```

where *username* is an ASCII string of 1–256 bytes.

White space and special characters (such as \, /, or @) cannot be used in the user name or the domain name.



NOTE: You cannot specify NetBIOS domain names, such as *Americas*, because these names cannot be resolved.

If you log in from the Web-based interface and you have configured user domains, the Web-based interface log in screen will list all the user domains in the pull-down menu for you to choose. If you select a user domain from the pull-down menu, you should only enter the user name. If you select **This iDRAC**, you can still log in as an Active Directory user if you use the login syntax described above in "Using Active Directory to Log In to iDRAC6."

Frequently Asked Questions

Active Directory Log In Issues

My Active Directory log in failed. What do I do?

iDRAC6 provides a diagnostic tool in the Web-based interface.

- 1 Log in as a local user with administrator privilege from the Web-based interface.
- 2 In the system tree, select **System**→ **Remote Access**→ **iDRAC**.
- 3 Click the **Network/Security** tab, and then click the **Active Directory** sub-tab. The **Active Directory Configuration and Management** screen appears.
- 4 Scroll to the bottom of the screen and click **Test Settings**. The **Test Active Directory Settings** screen appears.
- 5 Enter a test user name and password, and then click **Start Test**.
iDRAC6 runs the tests step-by-step and displays the result for each step. iDRAC6 also logs a detailed test result to help you resolve any problems.

If problems persist:

- a On the **Test Settings** screen, click the **Active Directory** sub-tab to return to the **Active Directory Configuration and Management** screen.
- b Scroll to the bottom of the screen and click **Configure Active Directory**.
- c Change your user configuration, and run the test again until the test user passes the authorization step.

I enabled certificate validation but I failed my Active Directory log in. I ran the diagnostics from the GUI and the test result shows the following error message:

```
ERROR: Can't contact LDAP server,  
error:14090086:SSL  
routines:SSL3_GET_SERVER_CERTIFICATE:certificate  
verify failed: Please check the correct  
Certificate Authority (CA) certificate has been  
uploaded to iDRAC. Please also check if the iDRAC  
date is within the valid period of the  
certificates and if the Domain Controller Address  
configured in iDRAC matches the subject of the  
Directory Server Certificate.
```

What could the problem be and how do I fix it?

If certificate validation is enabled, iDRAC6 uses the uploaded CA certificate to verify the directory server certificate when iDRAC6 establishes the SSL connection with the directory server. The most common reasons for failing certification validation are:

- The iDRAC6 date is not within the valid period of the server certificate or CA certificate. Check the iDRAC6 time and the valid period of your certificate.
- The Domain Controller Addresses configured in iDRAC6 do not match the Subject or Subject Alternative Name of the directory server certificate.
 - If you are using an IP address, see "I'm using an IP address for a Domain Controller Address, and I failed certificate validation. What's the problem?".
 - If you are using FQDN, ensure you are using the FQDN of the domain controller, and not the domain itself. For example, use `servername.example.com` and *not* `example.com`.

What should I check if I cannot log in to iDRAC6 using Active Directory?

First, diagnose the problem using the Test Settings feature. For directions, see "My Active Directory log in failed. What do I do?"

Then, fix the specific problem indicated by the test results. For additional information, see "Testing Your Configurations."

Most common issues are explained in this section. However, in general, you should check the following:

- 1** Ensure that you use the correct user domain name during a log in and not the NetBIOS name.
- 2** If you have a local iDRAC6 user account, log in to iDRAC6 using your local credentials.
- 3** Check the following settings:
 - a** Navigate to the **Active Directory Configuration and Management** screen. Select **System**→**Remote Access**→**iDRAC**, click the **Network/Security** tab, and then click the **Active Directory** subtab.
 - b** Ensure that the **Active Directory Enabled** check box is checked.
 - c** If you enabled certificate validation, ensure that you have uploaded the correct Active Directory root CA certificate to iDRAC6. The certificate appears in the **Active Directory CA Certificate** area. Ensure that the iDRAC6 time is within the valid period of the CA certificate.
 - d** If you are using the Extended Schema, ensure that the **iDRAC Name** and **iDRAC Domain Name** match your Active Directory environment configuration.

If you are using the Standard Schema, ensure that the **Group Name** and **Group Domain Name** match your Active Directory configuration.
 - e** Navigate to the Network Configuration screen. Select **System**→**Remote Access**→**iDRAC**, and then click **Network/Security**. Ensure that the DNS settings are correct.
 - f** Check the Domain Controller SSL certificates to ensure that the iDRAC6 time is within the valid period of the certificate.

Active Directory Certificate Validation

I'm using an IP address for a Domain Controller Address, and I failed certificate validation. What's the problem?

Check the Subject or Subject Alternative Name field of your domain controller certificate. Usually Active Directory uses the hostname, not the IP address, of the domain controller in the Subject or Subject Alternative Name field of the domain controller certificate. You can fix the problem by taking any of the following actions:

- Configure the hostname (FQDN) of the domain controller as the *domain controller address(es)* on iDRAC6 to match the Subject or Subject Alternative Name of the server certificate.
- Re-issue the server certificate to use an IP address in the Subject or Subject Alternative Name field so it matches the IP address configured in iDRAC6.
- Disable certificate validation if you choose to trust this domain controller without certificate validation during the SSL handshake.

Why does iDRAC6 enable certificate validation by default?

iDRAC6 enforces strong security to ensure the identity of the domain controller that iDRAC6 connects to. Without certificate validation, a hacker could spoof a domain controller and hijack the SSL connection. If you choose to trust all the domain controllers in your security boundary without certificate validation, you can disable it through the GUI or the CLI.

Extended and Standard Schema

I'm using extended schema in a multiple domain environment. How do I configure the domain controller address(es)?

Use the host name (FQDN) or the IP address of the domain controller(s) that serves the domain in which the iDRAC6 object resides.

Do I need to configure Global Catalog Address(es)?

If you are using extended schema, you cannot configure global catalog addresses, because they are not used with extended schema.

If you are using standard schema, and users and role groups are from different domains, you must configure global catalog address(es). In this case, you can use only Universal Group.

If you are using standard schema, and all the users and all the role groups are in the same domain, you are not required to configure global catalog address(es).

How does standard schema query work?

iDRAC6 connects to the configured domain controller address(es) first. If the user and role groups reside in that domain, the privileges are saved.

If global controller address(es) is configured, iDRAC6 continues to query the Global Catalog. If additional privileges are retrieved from the Global Catalog, these privileges are accumulated.

Miscellaneous

Does iDRAC6 always use LDAP over SSL?

Yes. All the transportation is over secure port 636 and/or 3269.

During *test setting*, iDRAC6 does a LDAP CONNECT only to help isolate the problem, but it does not do an LDAP BIND on an insecure connection.

Does iDRAC6 support the NetBIOS name?

Not in this release.

Viewing the Configuration and Health of the Managed Server

System Summary

Click **System**→**Properties**→**Summary** to obtain information about the Main System Enclosure and the Integrated Dell Remote Access Controller.

Main System Enclosure

System Information

This section of the iDRAC6 Web interface provides the following basic information about the managed server:

- **Description** — The model number or name of the managed server
- **BIOS Version** — The version number of the managed server's BIOS
- **Service Tag** — The Service Tag number of the managed server
- **Host Name** — The DNS hostname associated with the managed server
- **OS Name** — The name of the operating system installed on the managed server

I/O Mezzanine Card

This section of the iDRAC6 Web interface provides the following information about the I/O Mezzanine cards installed on the managed server:

- **Connection** — Lists the I/O Mezzanine card(s) installed on the managed server
- **Card Type** — The physical type of the installed Mezzanine card/connection
- **Model Name** — The model number, type, or description of the installed Mezzanine card(s)

Integrated Storage Card

This section of the iDRAC6 Web interface provides information about the integrated Storage Controller Card installed on the Managed Server:

- Card Type — shows the model name of the installed storage card

Auto Recovery

This section of the iDRAC6 Web interface details the current mode of operation of the Auto Recovery feature of the managed server as set by Open Manage Server Administrator:

- Recovery Action — Action to be performed when a system fault or *hang* is detected. Available actions are **No Action**, **Hard Reset**, **Power Down**, or **Power Cycle**.
- Initial Countdown — The amount of time (in seconds) after a system hang is detected at which time iDRAC6 performs a recovery action.
- Present Countdown — The current value (in seconds) of the countdown timer.


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iDRAC6 Information

This section of the iDRAC6 Web interface provides the following information about iDRAC6 itself:

- Date/Time — The current date and time (as of last page refresh) of iDRAC6
- Firmware Version — The current version of iDRAC6 firmware installed on the managed server
- Firmware Updated — The date and time of the last successful iDRAC6 firmware update
- Hardware Version — The version number of the primary planar (circuit board) of the managed server
- IP Address — The IP address associated with iDRAC6 (not the managed server)
- Gateway — The IP address of the network gateway configured for iDRAC6
- Subnet Mask — The TCP/IP Subnet Mask configured for iDRAC6
- MAC Address — The MAC address associated with the LOM (LAN on Motherboard) Network Interface Controller of iDRAC6

- DHCP Enabled — Enabled if iDRAC6 is set to fetch its IP address and associated info from a DHCP server
- Preferred DNS Address 1 — Set to the currently active primary DNS server
- Alternate DNS Address 2 — Set to the alternate DNS server address


 **NOTE:** This information is also available at **iDRAC**→ **Properties**→ **iDRAC Information**.

WWN/MAC Summary

Click **System**→ **Properties**→ **WWN/MAC** to view the current configuration of installed I/O Mezzanine cards and their associated network fabrics. If the FlexAddress feature is enabled, the globally assigned (Chassis-Assigned) persistent MAC addresses supersede the hardwired values of each LOM.

System Health

Click **System**→ **Properties**→ **Health** to view important information about the health of iDRAC6 and components monitored by iDRAC6. The **Severity** column shows the status for each component. For a list of status icons and their meaning, see Table 17-3. Click the component name in the **Component** column for more detailed information about the component.

 **NOTE:** Component information can also be obtained by clicking the component name in the left pane of the window. Components remain visible in the left pane independent of the tab/screen that is selected.

iDRAC6

The **iDRAC6 Information** screen lists a number of important details about iDRAC6, such as health status, name, firmware revision, and network parameters. Additional details are available by clicking the appropriate tab at the top of the screen.

CMC

The CMC screen displays the health status, firmware revision, and IP address of the Chassis Management Controller. You can also launch the CMC Web interface by clicking the **Launch the CMC Web Interface** button. See the *Chassis Management Controller Firmware User Guide*.

Batteries

The **Batteries** screen displays the status and values of the system board coin-cell battery that maintains the Real-Time Clock (RTC) and CMOS configuration data storage of the managed system.

Temperatures

The **Temperature Probes Information** screen displays the status and readings of the on-board ambient temperature probe. Minimum and maximum temperature thresholds for *warning* or *failure* states are shown, along with the current health status of the probe.

Voltages

The **Voltage Probes Information** screen displays the status and reading of the Voltage probes, providing such information as the status of the on-board voltage rail and CPU core sensors.



NOTE: Depending on the model of your server, temperature thresholds for *warning* or *failure* states and/or the health status of the probe may not be displayed.

Power Monitoring

The **Power Monitoring** screen enables you to view the following monitoring and power statistics information:

- **Power Monitoring** — Displays the amount of power being used (in watts) by the server as reported by the System Board Current Monitor.
- **Power Tracking Statistics** — Displays information about the amount of power used by the system since the **Measurement Start Time** was last reset.
- **Peak Statistics** — Displays information about the peak amount of power used by the system since the **Measurement Start Time** was last reset.

CPU

The **CPU Information** screen reports the health of each CPU on the managed server. This health status is a roll-up of a number of individual thermal, power, and functional tests.

POST

The **Post Code** screen displays the last system post code (in hexadecimal) prior to booting the operating system of the managed server.

Misc Health

The **Misc Health** screen provides access to the following system logs:

- System Event Log — Displays system-critical events that occur on the managed system.
- Post Code — Displays the last system post code (in hexadecimal) prior to booting the operating system of the managed server.
- Last Crash — Displays the most recent crash screen and time.
- Boot Capture — Provides playback of the last three boot screens.



NOTE: This information is also available at **System**→**Properties**→**Logs**.

Power Monitoring and Power Management

Dell™ PowerEdge™ systems incorporate many new and enhanced power management features. The entire platform, from hardware to firmware to systems management software, has been designed with a focus on power efficiency, power monitoring, and power management.

PowerEdge systems provide many features for monitoring and managing power:

- **Power Monitoring:** iDRAC6 collects a history of power measurements and calculates running averages, peaks, and so on. Using the iDRAC6 Web-based interface, you can view the information on the **Power Monitoring** screen. You can also view the information in graph form by clicking **Show Graph** at the bottom of the **Power Monitoring** screen. See "Power Control" for more information.
- **Power Budgeting:** At boot, a system inventory enables a system power budget of the current configuration to be calculated. See "Power Monitoring" for more information.
- **Power Control:** iDRAC6 enables you to remotely perform several power management actions on the managed system. See "Power Control" for more information.

Configuring and Managing Power

You can use the iDRAC6 Web-based interface and RACADM command line interface (CLI) to manage and configure power controls on the PowerEdge system. Specifically, you can:

- View the power status of the server. See "Viewing Power Monitoring."
- View power budget information for the server, including the minimum and maximum potential power consumption. See "Viewing Power Budget."

- View power budget threshold for the server. See "Viewing Power Budget Threshold."
- Execute power control operations on the server (for example, power on, power off, system reset, power cycle). See "Executing Power Control Operations on the Server."

Power Monitoring

iDRAC6 monitors the power consumption in PowerEdge servers continuously. iDRAC6 calculates the following power values and provides the information through its Web-based interface or RACADM CLI:

- Cumulative power
- Average, minimum, and maximum power
- Power consumption (also shown in graphs in the Web-based interface)
- Power budget thresholds

Viewing Power Monitoring

Using the Web Interface

To view the power monitoring data:

- 1 Log in to the iDRAC6 Web interface.
- 2 In the system tree, select **Power Monitoring**.

The **Power Monitoring** screen appears, displaying the following information:

Power Monitoring

- **Status:** A **green check** indicates that the power status is normal, **Warning** indicates that a warning alert was issued, and **Severe** indicates a failure alert was issued.
- **Probe Name:** System Board System Level. This description indicates the probe is being monitored by its location in the system.
- **Reading:** The current power consumption in Watts.

Amperage

- **Location:** System Board Current Monitor Current
- **Reading:** The current power consumption in Amps

Power Tracking Statistics

- **Statistic:**
 - **Cumulative System Power** displays the current cumulative energy consumption (in KWh) for the server. The value represents the total energy used by the system. You can reset this value to 0 by clicking **Reset** at the end of the table row.
 - **System Peak Power** specifies the system peak value in Watts within the interval specified by the **Measurement Start Time** and **Measure Current Time**. You can reset this value to 0 by clicking **Reset** at the end of the table row.
 - **System Peak Amperage** specifies the system peak amperage within the interval specified by the **Measurement Start Time** and **Measure Current Time**. You can reset this value to 0 by clicking **Reset** at the end of the table row.
- **Measurement Start Time** displays the date and time recorded when the system energy consumption value was last cleared and the new measurement cycle began. For **Cumulative System Power**, **System Peak Amperage**, and **System Peak Power** statistics, you can reset each value to 0 by clicking **Reset** at the end of the table row; however, it will persist through a system reset or CMC failover operation.
- **Measurement Current Time** for **Cumulative System Power** displays the current date and time when the system energy consumption was calculated for display. For **System Peak Amperage** and **System Peak Power**, the **Peak Time** fields display the time when these peaks occurred.
- **Reading:** The amount of power (in KWh) used since the counter was started.



NOTE: Power Tracking Statistics are maintained across system resets and so reflect all activity in the interval between the stated Start and Finish Times. The **Reset Max Peaks** button will reset to peak statistics value. In the next table, Power Consumption data is not maintained across system resets and so will reset back to peak statistics value. The power values displayed are cumulative averages over the respective time interval (previous minute, hour, day and week). Since the Start to Finish time intervals here may differ from those of the Power Tracking Statistics ones, peak power values (Max Peak Watts versus Max Power Consumption) may differ.

Power Consumption

- **Average Power Consumption:** Average over previous minute, previous hour, previous day and previous week.
- **Max Power Consumption and Min Power Consumption:** The maximum and minimum power consumptions observed within the given time interval.
- **Max Power Time and Min Power Time:** The times (by minute, hour, day, and week) when the maximum and minimum power consumptions occurred.

Show Graph

Click **Show Graph** to display graphs illustrating iDRAC6 power consumption in Watts over the last hour, 24 hours, three days, and one week. Use the drop-down menu provided above the graph to select the time period.



NOTE: Each data point plotted on the graphs represents the average of readings over a 5 minute period. As a result, the graphs may not reflect brief fluctuations in power or current consumption.

Power Budgeting

iDRAC6 can be configured to enforce the minimum and maximum power threshold limits, as set by the CMC, for the current system configuration. The **Power Budget** screen displays these power threshold limits, which cover the range of AC power consumptions a thresholded system under heavy workload will present to the datacenter. These limits are not configurable.

Viewing Power Budget

The server provides power budget status overviews of the power subsystem on the **Power Budget Information** screen.

Using the Web Interface



NOTE: To perform power management actions, you must have **Administrative** privilege.

- 1 Log in to the iDRAC6 Web-based interface.
- 2 In the system tree, select **System**.
- 3 Click the **Power Management** tab, and then click **Power Budget**.

The **Power Budget Information** screen appears.

The **Power Budget Information** table displays the minimum and maximum limits of power thresholds for the current system configuration. These cover the range of AC power consumptions a thresholded system under heavy workload will present to the datacenter.

- **Minimum Potential Power Consumption** represents the lowest Power Budget Threshold value.
- **Maximum Potential Power Consumption** represents the highest Power Budget Threshold value. This value is also the current system configuration's absolute maximum power consumption.

Using RACADM

On a Managed Node, open a command line interface and enter:

```
racadm getconfig -g cfgServerPower
```



NOTE: For more information about `cfgServerPower`, including output details, see "`cfgServerPower`."

Viewing Power Budget Threshold

Power Budget Threshold, if enabled, enforces power limits for the system. System performance is dynamically adjusted to maintain power consumption near the specified threshold.



NOTE: Power budget threshold is read-only and cannot be enabled or configured in iDRAC6.

Actual power consumption may be less for light workloads and momentarily exceed the threshold until performance adjustments have completed.

Using the Web-Based Interface

- 1 Log in to the iDRAC6 Web-based interface.
- 2 In the system tree, select **System**.
- 3 Click the **Power Management** tab, and then click **Power Budget**.
The **Power Budget Information** screen appears.
- 4 Click **Power Budget Threshold**.

The **Power Budget Threshold** table displays the power limit information for the system:

- **Enabled** indicates whether the system enforces the power budget threshold.
- **Threshold in Watts** and **Threshold in BTU/hr** display the limit in Watts and BTU/hr, respectively.
- **Threshold Percentage** displays the percentage of power range.

Using RACADM

On a Managed Node, open a command line interface and enter:

```
racadm getconfig -g cfgServerPower -o
cfgServerPowerCapWatts <power cap value in Watts>

racadm getconfig -g cfgServerPower -o
cfgServerPowerCapBTUhr <power cap value in BTU/hr>

racadm getconfig -g cfgServerPower -o
cfgServerPowerCapPercent <power cap value in %>
```



NOTE: For more information about `cfgServerPower`, including output details, see "`cfgServerPower`."

Power Control

iDRAC6 enables you to remotely perform a power-on, reset, graceful shutdown, non-masking interruption (NMI), or power cycle. Use the **Power Control** screen to perform an orderly shutdown through the operating system when rebooting and powering on or off.

Executing Power Control Operations on the Server



NOTE: To perform power management actions, you must have **Chassis Control Administrator** privilege.

iDRAC6 enables you to remotely perform a power-on, reset, graceful shutdown, NMI, or power cycle.

Using the Web Interface

- 1 Log in to the iDRAC6 Web interface.
- 2 In the system tree, select **System**.

3 Click the **Power Management** tab.

The **Power Control** screen displays.

4 Select one of the following **Power Control Operations** by clicking its radio button:

- **Power On System** turns on the server (the equivalent of pressing the power button when the server power is off). This option is disabled if the system is already powered on.
- **Power Off System** turns off the server. This option is disabled if the system is already powered off.
- **NMI (Non-Masking Interrupt)** generates an NMI to halt system operation. An NMI sends a high-level interrupt to the operating system, which causes the system to halt operation to allow for critical diagnostic or troubleshooting activities.
- **Graceful Shutdown** attempts to cleanly shutdown the operating system, then powers off the system. Graceful shutdown requires an ACPI (Advanced Configuration and Power Interface)-aware operating system, which allows for system directed power management.
- **Reset System (warm boot)** reboots the system without powering off. This option is disabled if the system is already powered off.
- **Power Cycle System (cold boot)** powers off and then reboots the system. This option is disabled if the system is already powered off.

5 Click **Apply**.

A dialog box appears requesting confirmation.

6 Click **OK** to execute the power management action you selected.

Using RACADM

Open a Managed Node open command line interface text console to the server, log in, and enter:

```
racadm serveraction <action>
```

where <action> is `powerup`, `powerdown`, `powercycle`, `hardreset`, or `powerstatus`.



NOTE: For more information about `serveraction`, including output details, see "serveraction."

Configuring and Using Serial Over LAN

Serial Over LAN (SOL) is an IPMI feature that allows a managed server's text based console data that would traditionally be sent to the serial I/O port to be redirected over the iDRAC's dedicated Out of Band Ethernet management network. The SOL out-of-band console enables system administrators to remotely manage the blade server's text-based console from any location with network access. Benefits of SOL are as follows:

- Remotely access operating systems with no timeout.
- Diagnose host systems on Emergency Management Services (EMS) or Special Administrator Console (SAC) for Windows or in a Linux shell.
- View the progress of a blade server during POST and reconfigure the BIOS setup program (while redirected to a serial port).

Enabling Serial Over LAN in the BIOS

To configure the server for Serial Over LAN, the following configuration steps are required and will be explained in detail.

- 1 Configure Serial Over LAN in BIOS (disabled by default)
- 2 Configure iDRAC6 for Serial over LAN
- 3 Select a method to initialize Serial Over LAN (SSH, telnet, SOL Proxy, or IPMI Tool)
- 4 Configure the OS for SOL

Serial communication is **off** by default in BIOS. In order to redirect the host text console data to Serial over LAN, you must enable console redirection via COM1. To change the BIOS setting, perform the following steps:

- 1 Boot the managed server.
- 2 Press <F2> to enter the BIOS setup utility during POST.
- 3 Scroll down to Serial Communication and press <Enter>.

In the pop-up window, the serial communication list is presented with the following options:

- Off
- On without console redirection
- On with console redirection via COM1

Use the arrow keys to navigate between options.

- 4 Ensure that **On with console redirection via COM1** is enabled.
- 5 Ensure that the **Failsafe Baud Rate** is identical to SOL baud rate that is configured on iDRAC. The default value for both the failsafe baud rate and the iDRAC's SOL baud rate setting is 115.2 kbps.
- 6 Enable the **Redirection After Boot** (the default value is DISABLED). This option enables BIOS SOL redirection across subsequent reboots.
- 7 Save the changes and exit.

The managed server reboots.

Configuring Serial Over LAN in the iDRAC6 Web GUI

- 1 Open the **Serial Over LAN Configuration** screen by selecting **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Serial Over LAN**.
- 2 Ensure the **Enable Serial Over LAN** option is selected (enabled). By default it is enabled.
- 3 Update the IPMI SOL baud rate by selecting a data speed from the **Baud Rate** drop-down menu. The options are 19.2 kbps, 57.6 kbps, and 115.2 kbps. The default value is 115.2 kbps.



NOTE: Ensure that the SOL baud rate is identical to the Failsafe Baud Rate that was set in BIOS.

- 4 Click **Apply** if you have made any changes.

Table 9-1. Serial Over LAN Configuration Settings

Setting	Description
Enable Serial Over LAN	When selected, the checkbox indicates that Serial Over LAN is enabled.
Baud Rate	Indicates the data speed. Select a data speed of 19.2 kbps, 57.6 kbps, or 115.2 kbps.

Table 9-2. Serial Over LAN Configuration Buttons

Button	Description
Print	Prints the Serial Over LAN Configuration values that appear on the screen.
Refresh	Reloads the Serial Over LAN Configuration screen.
Advanced Settings	Opens the Serial Over LAN Configuration Advanced Settings screen.
Apply	Supplies any new settings that you make while viewing the Serial Over LAN Configuration screen.

- 5 Change the configuration on the **Advanced Settings** screen, if necessary. Dell recommends using the default values. **Advanced Settings** allows you to adjust SOL performance by changing the **Character Accumulate Interval** and **Character Send Threshold** values. For optimal performance, use the default settings of 10 milliseconds and 250 characters, respectively.

Table 9-3. Serial Over LAN Configuration Advanced Settings

Setting	Description
Character Accumulate Interval	The typical amount of time iDRAC6 waits before sending a partial SOL data packet. This parameter is specified in milliseconds and increments by 10 milliseconds.
Character Send Threshold	Specifies the number of characters per SOL data packet. As soon as the number of characters accepted by iDRAC6 is equal to or greater than the Character Send Threshold value, iDRAC6 starts transmitting SOL data packets that contain numbers of characters equal to or less than the Character Send Threshold value. If a packet contains fewer characters than this value, it is defined to be a partial SOL data packet.



NOTE: If you change these values to lower values, the console redirection feature of SOL may experience a reduction in performance. Furthermore, the SOL session must wait to receive an acknowledgement for each packet before sending the next packet. As a result, the performance is significantly reduced.


Table 9-4. Serial Over LAN Configuration Advanced Settings Buttons

Button	Description
Print	Prints the Serial Over LAN Configuration Advanced Settings values that appear on the screen.
Refresh	Reloads the Serial Over LAN Configuration Advanced Settings screen.
Apply	Saves any new settings that you make while viewing the Serial Over LAN Configuration Advanced Settings screen.
Go Back To Serial Over LAN Configuration Page	Returns the user to the Serial Over LAN Configuration screen.


- 6 Configure SSH/Telnet for SOL at System→ Remote Access→ iDRAC→ Network/Security→ Services.



NOTE: Each blade server only supports one active SOL session through SSH or Telnet protocol.


 **NOTE:** SSH protocol is enable by default. Telnet protocol is disabled by default.


- 7 Click **Services** to open the **SSH and Telnet Configuration** screen.

 **NOTE:** SSH and Telnet programs both provide access on a remote machine.

- 8 Click **Enable** on either **SSH** or **Telnet** as required.

- 9 Click **Apply**.

 **NOTE:** SSH is a recommended method due to better security and encryption mechanisms.

 **NOTE:** SSH/Telnet session duration can be infinite as long as the timeout value is set to 0. The default timeout value is **1800 seconds**.

- 10 Enable **iDRAC6 Out-of-Band interface (IPMI over LAN)** by selecting **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**→ **Network**.
- 11 Enable the **IPMI Over LAN** option under **IPMI LAN Settings**. **IPMI Over LAN** functionality is disabled by default.
- 12 Click **Apply**.

Using Serial Over LAN (SOL)

This section provides several methods to initialize a Serial-Over-LAN session including a Telnet program, an SSH client, IPMItool, and SOL Proxy. The purpose of Serial Over LAN feature is to redirect the serial port of the managed server through iDRAC6 into the console of your management station.

Model for Redirecting SOL Over Telnet or SSH

Telnet (port 23)/ SSH (port 22) client ↔ WAN connection ↔
iDRAC6 server

The IPMI-based SOL over SSH/Telnet implementation eliminates the need for an additional utility because the serial to network translation happens within the iDRAC. The SSH or Telnet console that you use should be able to interpret and respond to the data arriving from the managed server's serial port. The serial port usually attaches to a shell that emulates an ANSI- or VT100- terminal. The serial console is automatically redirected to your SSH or Telnet console. The SOL redirection can then be started from the `/system/soll` target.

See "Installing Telnet or SSH Clients" for more information about using Telnet and SSH clients with iDRAC.

Model for the SOL Proxy

Telnet Client (port 623) ↔ WAN connection ↔ SOL Proxy ↔ iDRAC6 server

When the SOL Proxy communicates with the Telnet client on a management station, it uses the TCP/IP protocol. However, SOL proxy communicates with the managed server's iDRAC6 over the RMCP/IPMI/SOL protocol, which is a UDP-based protocol. Therefore if you communicate with your managed system's iDRAC6 from SOL Proxy over a WAN connection, you may experience network performance issues. The recommended usage model is to have the SOL Proxy and the iDRAC6 server on the same LAN. The management station with the Telnet client can then connect to the SOL Proxy over a WAN connection. In this usage model, SOL Proxy will function as desired.

Model for Redirecting SOL Over IPMITool

IPMITool ↔ WAN connection ↔ iDRAC6 server


The IPMI-based SOL utility, IPMITool, uses RMCP+ protocol delivered using UDP datagrams to port 623. iDRAC6 requires this RMCP+ connection to be encrypted. The encryption key (KG key) must contain characters of zero or NULL that can be configured in the iDRAC6 Web GUI or in the iDRAC6 Configuration Utility. You can also wipe out the encryption key by pressing the backspace key so that iDRAC6 will provide NULL characters as the encryption key by default. The advantage of using RMCP+ is improved authentication, data integrity checks, encryption, and the ability to carry multiple types of payloads. See "Using SOL over IPMITool" or the IPMITool website for more information: <http://ipmitool.sourceforge.net/manpage.html>.

Disconnecting SOL session in SM-CLP

When using SSH or Telnet protocols to access the Serial Over LAN functionality, you first will be first connecting into the iDRAC's SM-CLP service, from which you will launch the SOL session with an SM-CLP command (`start /system1/sol1`). Thus, users wanting to disconnect an SOL session must first terminate the SOL session from SM-CLP.


Commands to disconnect a SOL session are utility oriented. Read this section carefully. Only when a SOL session is terminated fully can you exit the utility.

When you are ready to quit SOL redirection from SM-CLP, press <Enter>, <Esc>, and then <t> (press the keys in sequence, one after the other). The SOL session will close.

 **NOTE:** If a SOL session is not closed successfully in the utility, more SOL sessions may not be available. The way to resolve this situation is to delete the SMASH console in the Web GUI under **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Sessions**.


Using SOL over PuTTY

To start SOL from PuTTY on a Windows management station, follow these steps:

 **NOTE:** If required, you can change the default SSH/telnet timeout at **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Services**.


- 1 Connect to iDRAC6 with the following command in the command prompt:

```
putty.exe [-ssh | -telnet] <login name>@<iDRAC-ip-address> <port number>
```

 **NOTE:** The port number is optional. It is required only when the port number is reassigned.


- 2 Enter the following command in the SM-CLP prompt to start SOL:

```
start /system1/sol1
```

 **NOTE:** This connects you to the managed server's serial port. The SM-CLP commands are no longer available to you. You cannot return to SM-CLP once you have started SOL. You must quit the SOL session using the command sequence detailed in "Disconnecting SOL session in SM-CLP," and start a new one to use SM-CLP.


Using SOL over Telnet with Linux

To start SOL from Telnet on a Linux management station, follow these steps:

 **NOTE:** If required, you can change the default Telnet timeout at **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**→ **Services**.

- 1 Start a shell.
- 2 Connect to iDRAC6 with the following command:

```
telnet <iDRAC-ip-address>
```


 **NOTE:** If you have changed the port number for the Telnet service from the default (port 23), add the port number to the end of the telnet command.

- 3 Input iDRAC's username and password in order to connect to iDRAC6 SM-CLP.
- 4 Enter the following command in the SM-CLP prompt to start SOL:

```
start /system1/sol1
```
- 5 To quit a SOL session from Telnet on Linux, press <Ctrl>+] (hold down the control key, press the right-square-bracket key, and then release). A telnet prompt displays. Enter `quit` to exit telnet.

Using SOL over OpenSSH with Linux

OpenSSH is an open source utility for using the SSH protocol. To start SOL from OpenSSH on a Linux management station, follow these steps:


 **NOTE:** If required, you can change the default SSH session timeout at **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**→ **Services**.

- 1 Start a shell.
- 2 Connect to iDRAC6 with the following command:

```
ssh <iDRAC-ip-address> -l <login name>
```

- 3 Enter the following command in the SM-CLP prompt to start SOL:

```
start /system1/sol1
```

 **NOTE:** This connects you to the managed server's serial port. The SM-CLP commands are no longer available to you. You cannot return to SM-CLP once you have started SOL. You must quit the SOL session (refer to "Disconnecting SOL session in SM-CLP" to close an active SOL session), and start a new one to use SM-CLP.

Using SOL over IPMItool

The *Dell Systems Management Tools and Documentation* DVD provides IPMItool, which can be installed on various operating systems. To start SOL with IPMItool on a management station, follow these steps:



NOTE: If required, you can change the default SOL timeout at **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Services**.

- 1 Locate IPMItool.exe under the proper directory.

The default path in Windows is C:\Program Files\Dell\SysMgt\bmc.

- 2 Ensure the **Encryption Key** is all zeroes at **System**→**Remote Access**→**iDRAC**→**Network/Security**→**Network**→**IPMI LAN Settings**.
- 3 Enter the following command in the Windows command prompt or in the Linux shell prompt to start SOL from iDRAC:

```
ipmitool -H <iDRAC-ip-address> -I lanplus -U  
<login name> -P <login password> sol activate
```

This connects you to the managed server's serial port.

- 4 To quit a SOL session from IPMItool, press <~> and <.> (press the tilde and period keys in sequence, one after the other). The SOL session will close.





NOTE: If a user does not terminate the SOL session correctly, enter the following command to reboot iDRAC. Allow iDRAC6 1-2 minutes to complete booting. See "RACADM Subcommand Overview" for more details.


```
racadm racreset
```


Opening SOL with SOL proxy

Serial-Over-LAN Proxy (SOL Proxy) is a telnet daemon that allows LAN-based administration of remote systems using the Serial over LAN (SOL) and IPMI protocols. Any standard telnet client application, such as HyperTerminal on Microsoft Windows or telnet on Linux, can be used to access the daemon's features. SOL can be used either in the menu mode or command mode. The SOL protocol coupled with the remote system's BIOS console redirection allows administrators to remotely view and change a managed system's BIOS settings over a LAN. The Linux serial console and Microsoft's EMS/SAC interfaces can also be accessed over a LAN using SOL.

 **NOTE:** All versions of the Windows operating system include HyperTerminal terminal emulation software. However, the included version does not provide many functions required during console redirection. Instead, you can use any terminal emulation software that supports VT100 or ANSI emulation mode. One example of a full VT100 or ANSI terminal emulator that supports console redirection on your system is HyperTerminal Private Edition 6.1 or later.

 **NOTE:** See your system's User's Guide for more information about console redirection, including hardware and software requirements and instructions for configuring host and client systems to use console redirection.

 **NOTE:** HyperTerminal and telnet settings must be consistent with the settings on the managed system. For example, the baud rates and terminal modes should match.

 **NOTE:** The Windows `telnet` command that is run from a MS-DOS[®] prompt supports ANSI terminal emulation, and the BIOS needs to be set for ANSI emulation to display all the screens correctly.

Before Using SOL proxy

Before using SOL proxy, see the *Baseboard Management Controller Utilities User's Guide* to learn how to configure your management stations before using SOL proxy. By default, BMC Management Utility is installed in the following directory on Windows operating systems:

`C:\Program Files\Dell\SysMgt\bmc`

The installation program copies the files to the following locations on Linux Enterprise Operating Systems:

`/etc/init.d/SOLPROXY.cfg`

`/etc/SOLPROXY.cfg`

`/usr/sbin/dsm_bmu_solproxy32d`

`/usr/sbin/solconfig`

`/usr/sbin/ipmish`

Initiating the SOL Proxy session

For Windows 2003

To start the SOL Proxy service on Windows system after installation, you can reboot the system (SOL Proxy automatically starts on a reboot). Or, you can start the SOL Proxy service manually by completing the following steps:

- 1** Right-click **My Computer** and click **Manage**.
The **Computer Management** window is displayed.
- 2** Click **Services and Applications** and then click **Services**.
Available services are displayed to the right.
- 3** Locate **DSM_BMU_SOLProxy** in the list of services and right-click to start the service.

Depending on the console you use, there are different steps for accessing SOL Proxy. Throughout this section, the management station where the SOL Proxy is running is referred as the SOL Proxy Server.

For Linux

The SOL Proxy will start automatically during system startup. Alternatively, you can go to directory `/etc/init.d` and use the following commands to manage the SOL Proxy service:

```
solproxy status  
  
dsm_bmu_solproxy32d start  
  
dsm_bmu_solproxy32d stop  
  
solproxy restart
```

Using Telnet with SOL Proxy

This assumes that the SOL Proxy service is already up and running on the management station.

For Windows 2003:

- 1 Open a Command Prompt window on your management station.
- 2 Enter the `telnet` command in the command-line and provide `localhost` as the IP address if the SOL Proxy server is running in the same machine and the port number that you specified in the SOL Proxy installation (the default value is 623). For example:

```
telnet localhost 623
```

For Linux:

- 1 Open a Linux shell on your management station.
- 2 Enter the `telnet` command and provide `localhost` as the IP address of the SOL Proxy server and the port number that you specified in the SOL Proxy installation (the default value is 623). For example:

```
telnet localhost 623
```



NOTE: Whether your host operating system is Windows or Linux, if the SOL Proxy server is running on a different machine than your management station, input SOL Proxy server IP address instead of `localhost`.

```
telnet <SOL Proxy server IP address> 623
```

Using HyperTerminal with SOL Proxy

- 1 From the remote station, open `HyperTerminal.exe`.
- 2 Choose `TCPIP(Winsock)`.
- 3 Enter host address `localhost` and port number 623.

Connecting to the Remote Managed System's BMC

After a SOL Proxy session is established successfully, you are presented with the following choices:

1. Connect to the Remote Server's BMC
2. Configure the Serial-Over-LAN for the Remote Server

3. Activate Console Redirection
4. Reboot and Activate Console Redirection
5. Help
6. Exit



NOTE: While multiple SOL sessions can be active at the same time, only one console redirection session can be active at any given time for a managed system.



NOTE: To exit an active SOL session, use the <~><.> character sequence. This sequence terminates SOL and returns you to the top-level menu.

- 1 Select option 1 in the main menu.
- 2 Enter the **iDRAC IP Address** of the remote managed system.
- 3 Provide the **iDRAC6 Username** and **Password** for iDRAC6 on the managed system. The iDRAC6 username and password must be assigned and stored in the iDRAC6 non-volatile storage.



NOTE: Only one SOL console redirection session with iDRAC6 is permitted at one time.



NOTE: If required, extend SOL session duration to infinite by changing the **Telnet timeout** value to zero in the iDRAC6 Web GUI under **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**→ **Services**.

- 4 Provide the IPMI encryption key if it was configured in the iDRAC.



NOTE: You can locate the IPMI encryption key in the iDRAC6 GUI on **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**→ **Network**→ **IPMI LAN Settings**→ **Encryption Key**.



NOTE: The default IPMI encryption key is all zeros. If you press <Enter> for the encryption option, iDRAC6 will use this default encryption key.

- 5** Select **Configure the Serial-Over-LAN for the Remote Server** (option 2) in the main menu.

The SOL configuration menu appears. According to the current SOL status, the content of the SOL configuration menu varies:

- If SOL is already enabled, the current settings are displayed and you are presented with three choices:
 1. `Disable Serial-Over-LAN`
 2. `Change Serial-Over-LAN settings`
 3. `Cancel`
- If SOL is enabled, ensure that the SOL baud rate is consistent with the iDRAC's and the minimum iDRAC6 user privilege level of **administrator** is required for activating console redirection.
- If SOL is currently disabled, enter `Y` to enable SOL or `N` to keep SOL disabled.

- 6** Select **Activate Console Redirection** (option 3) in the main menu

The remote managed system's text console is redirected to your management station.

- 7** Select **Reboot and Activate Console Redirection** (option 4) in the main menu (optional).

The power state of the remote managed system is confirmed. If power is on, you are asked to decide between a graceful or forceful shutdown.

The power state is monitored until the state changes to **On**. Console redirection begins, and the remote managed system text console is redirected to your management station.

While the managed system reboots, you can enter BIOS system setup program to view or configure BIOS settings.

- 8** Select **Help** (option 5) in the main menu to display a detailed description for each option.
- 9** Select **Exit** (option 6) in the main menu to end your telnet session and disconnect from SOL Proxy.



NOTE: If a user does not terminate the SOL session correctly, issue the following command to reboot iDRAC. Allow iDRAC6 1-2 minutes to complete booting. Refer to "RACADM Subcommand Overview" for more details.

```
racadm racreset
```


Operating System Configuration

Complete the steps below to configure generic Unix-like operating systems. This configuration is based on default installations of Red Hat Enterprise Linux 5.0, SUSE Linux Enterprise Server 10 SP1, and Windows 2003 Enterprise.

Linux Enterprise Operating System

- 1 Edit the `/etc/inittab` file to enable hardware flow control and to allow users to log in through the SOL console. Add the line below to the end of `#Run gettys in standard runlevels` section.

```
7:2345:respawn:/sbin/agetty -h 115200 ttyS0 vt220
```

Example of original `/etc/inittab`:

```
#
# inittab      This file describes how the INIT process should set up
#              the system in a certain run-level.
#

SKIP this part of file

# Run gettys in standard runlevels
1:2345:respawn:/sbin/miagetty tty1
2:2345:respawn:/sbin/miagetty tty1
3:2345:respawn:/sbin/miagetty tty1
4:2345:respawn:/sbin/miagetty tty1
5:2345:respawn:/sbin/miagetty tty1
6:2345:respawn:/sbin/miagetty tty1

# Run xdm in runlevel 5
x:5:respawn:/etc/X11/prefdm -nodaemon
```

Example of modified `/etc/inittab`:

```
#
# inittab      This file describes how the INIT process should set up
#              the system in a certain run-level.
#

SKIP this part of file

# Run gettys in standard runlevels
1:2345:respawn:/sbin/miagetty tty1
2:2345:respawn:/sbin/miagetty tty1
3:2345:respawn:/sbin/miagetty tty1
4:2345:respawn:/sbin/miagetty tty1
5:2345:respawn:/sbin/miagetty tty1
6:2345:respawn:/sbin/miagetty tty1
7:2345:respawn:/sbin/agetty -h ttyS0 115200 vt220

# Run xdm in runlevel 5
x:5:respawn:/etc/X11/prefdm -nodaemon
```

-
- 2 Edit the `/etc/securetty` file to allow users to log in as root user through the SOL console. Add the following line after `console`:

```
ttyS0
```

Example of original `/etc/securetty`:

```
console
vc/1
vc/2
vc/3
vc/4

SKIP the rest of file
```

Example of modified `/etc/securetty`:

Console

ttys0

vc/1

vc/2

vc/3

vc/4

SKIP the rest of file

- 3** Edit the `/boot/grub/grub.conf` or `/boot/grub/menu.list` file to add boot options for SOL:
 - a** Comment out the graphical display lines in the various Unix-like operating systems:
 - `splashimage=(hda0,0)/grub/splash.xpm.gz` in RHEL 5
 - `gfxmenu (hda0,5)/boot/message` in SLES 10
 - b** Add the following line before the first `title= ...` line:
`# Redirect OS boot via SOL`
 - c** Append the following entry to the first `title= ...` line:
SOL redirection
 - d** Append the following text to the `kernel/...` line of the first `title= ...`:
`console=tty1 console=ttyS0,115200`



NOTE: `/boot/grub/grub.conf` in Red Hat Enterprise Linux 5 is a symbolic link to `/boot/grub/menu.list`. You can change the settings in either one of them.

Example of original `/boot/grub/grub.conf` in RHEL 5:

```
# grub.conf generated by anaconda
#
# Note that you do not have to return grub after making changes
to this
# file
# NOTICE: You have a /boot partition. This means that
#         all kernel and initrd paths are relative to /boot/,
eg.
#         root (hd0,0)
#         kernel /vmlinuz-version ro root=/dev/VolGroup00/
LogVol00
#         initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
splashimage=(hd0,0)/grub/splash.xpm/gz
hiddenmenu

title Red Hat Enterprise Linux 5
    root (hd0,0)
    kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/
LogVol00 rhgb quiet
    initrd /initrd-2.6.18-8.el5.img
```

Example of modified `/boot/grub/grub.conf`:

```
# grub.conf generated by anaconda
#
# Note that you do not have to return grub after making changes
to this
# file
# NOTICE: You have a /boot partition. This means that
```

```

#           all kernel and initrd paths are relative to /boot/,
eg.
#           root (hd0,0)
#           kernel /vmlinuz-version ro root=/dev/VolGroup00/
LogVol100
#           initrd /initrd-version.img
#boot=/dev/sda
default=0
timeout=5
#splashimage=(hd0,0)/grub/splash.xpm/gz
hiddenmenu

# Redirect the OS boot via SOL
title Red Hat Enterprise Linux 5 SOL redirection
    root (hd0,0)
    kernel /vmlinuz-2.6.18-8.el5 ro root=/dev/VolGroup00/
LogVol100 rhgb quiet console=tty1 console=ttyS0,115200
    initrd /initrd-2.6.18-8.el5.img

```

Example of original `/boot/grub/menu.list` in SLES 10:

```

#Modified by YaST2. Last modification on Sat Oct 11 21:52:09
UTC 2008
Default 0
Timeout 8
gfxmenu (hd0.5)/boot/message

###Don't change this comment - YaST2 identifier: Original name:
linux###

title SUSE Linux Enterprise Server 10 SP1
    root (hd0,5)
    kernel /boot/vmlinuz-2.6.16-46-0.12-bigsmpt root=/dev/disk/
by-id/scsi-35000c5000155c resume=/dev/sda5 splash=silent
showopts
    initrd /boot/initrd-2.6.16.46-0.12-bigsmpt

```

Example of modified `/boot/grub/menu.list` in SLES 10:

```
#Modified by YaST2. Last modification on Sat Oct 11 21:52:09
UTC 2008

Default 0

Timeout 8

#gfxmenu (hd0.5)/boot/message


###Don't change this comment - YaST2 identifier: Original name:
linux###

title SUSE Linux Enterprise Server 10 SP1 SOL redirection
    root (hd0,5)

    kernel /boot/vmlinuz-2.6.16-46-0.12-bigsmpt root=/dev/disk/
by-id/scsi-35000c5000155c resume=/dev/sda5 splash=silent
showopts console=tty1 console=ttyS0,115200

    initrd /boot/initrd-2.6.16.46-0.12-bigsmpt
```

Windows 2003 Enterprise

- 1 Find out the boot entry ID by entering `bootcfg` in the Windows command prompt. Locate the boot entry ID for the section with the OS-friendly name **Windows Server 2003 Enterprise**. Press `<Enter>` to display the boot options on the management station.
 - 2 Enable EMS at a Windows command prompt by entering:
`bootcfg /EMS ON /PORT COM1 /BAUD 115200 /ID <boot id>`
-  **NOTE:** `<boot id>` is the boot entry ID from step 1.
- 3 Press `<Enter>` to verify that the EMS console setting takes effect.

Example of original bootcfg setting:

Boot Loader Settings

timeout:30

default:multi(0)disk(0)rdisk(0)partition(1)\WINDOWS

Boot Entries

Boot entry ID: 1

Os Friendly Name: Winodws Server 2003, Enterprise

Path: multi(0)disk(0)rdisk(0)partition(1)\WINDOWS

OS Load Options: /nonexecute=optout /fastdetect /usepmtimer /
redirect

Example of modified bootcfg setting:

Boot Loader Settings

timeout: 30

default: multi(0)disk(0)rdisk(0)partition(1)\WINDOWS

redirect: COM1

redirectbaudrate:115200

Boot Entries

Boot entry ID: 1

Os Friendly Name: Windows Server 2003, Enterprise

Path: multi(0)disk(0)rdisk(0)partition(1)\WINDOWS

OS Load Options: /nonexecute=optout /fastdetect /usepmtimer /
redirect

Using GUI Console Redirection

This section provides information about using the iDRAC6 console redirection feature.

Overview

The iDRAC6 console redirection feature enables you to remotely access local consoles in graphic or text mode, allowing you to control one or more iDRAC6-enabled systems from a single location.

Using Console Redirection



NOTE: When you open a console redirection session, the managed server does not indicate that the console has been redirected.

The **Console Redirection** screen enables you to manage the remote system by using the keyboard, video, and mouse on your local management station to control the corresponding devices on a remote managed server. This feature can be used in conjunction with the Virtual Media feature to perform remote software installations.

The following rules apply to a console redirection session:

- A maximum of two simultaneous console redirection sessions are supported. Both sessions view the same managed server console simultaneously.
- A console redirection session should not be launched from a Web browser on the managed system.
- A minimum available network bandwidth of 1 MB/sec is required.

If a second user requests a console redirection session, the first user is notified and is given the option to refuse access, allow only video, or allow full shared access. The second user is notified that another user has control. The first user must respond within thirty seconds or full access is automatically granted to the second user. During the time that two sessions are concurrently active,

each user sees a message in the upper-right corner of the screen that identifies the other user with an active session. A third active session is not permitted. If a third user requests a console redirection session, access is denied without interruption to the first or second user's session.

If the neither the first or second user has administrator privileges, termination of the first user's active session automatically results in termination of the second user's session.

Supported Screen Resolutions and Refresh Rates

Table 10-1 lists the supported screen resolutions and corresponding refresh rates for a console redirection session that is running on the managed server.

Table 10-1. Supported Screen Resolutions and Refresh Rates

Screen Resolution	Refresh Rate (Hz)
720x400	70
640x480	60, 72, 75, 85
800x600	60, 70, 72, 75, 85
1024x768	60, 70, 72, 75, 85
1280x1024	60

Configuring the Management Station

To use Console Redirection on the management station, perform the following procedures:

- 1 Install and configure a supported Web browser. See "Supported Web Browsers" and "Configuring a Supported Web Browser."
- 2 If you are using Firefox or want to use the Java Viewer with Internet Explorer, install a Java Runtime Environment (JRE). See "Installing a Java Runtime Environment (JRE)."
- 3 Dell recommends that you configure your monitor display resolution to 1280x1024 pixels.



NOTE: If you have an active console redirection session and a lower resolution monitor is connected to the iKVM, the server console resolution may reset if the server is selected on the local console. If the server is running a Linux operating system, an X11 console may not be viewable on the local monitor. Pressing <Ctrl><Alt><F1> at the iKVM will switch Linux to a text console.

Configuring Console Redirection and Virtual Media in the iDRAC6 Web Interface

To configure console redirection in the iDRAC6 Web interface, perform the following steps:

- 1 Click **System** and then click the **Console** tab.
- 2 Click **Configuration** to open the **Console Redirection Configuration** screen.
- 3 Configure the console redirection properties. Table 10-2 describes the settings for console redirection.
- 4 When completed, click **Apply**.
- 5 Click the appropriate button to continue. See Table 10-3.

Table 10-2. Console Redirection Configuration Properties

Property	Description
Enabled	Click to enable or disable Console Redirection. Checked indicates that Console Redirection is enabled. Unchecked indicates that Console Redirection is disabled. The default is enabled .
Max Sessions	Displays the maximum number of Console Redirection sessions that are possible, 1 or 2 . Use the drop-down menu to change the maximum number of Console Redirection sessions allowed. The default is 2 .
Active Sessions	Displays the number of Active Console sessions. This field is read-only.
Keyboard and Mouse Port Number	The network port number used for connecting to the Console Redirection Keyboard/Mouse option. This traffic is always encrypted. You may need to change this number if another program is using the default port. The default is 5900 .
Video Port Number	The network port number used for connecting to the Console Redirection Screen service. You may need to change this setting if another program is using the default port. The default is 5901 .

Table 10-2. Console Redirection Configuration Properties (continued)

Property	Description
Video Encryption Enabled	<p>Checked indicates that video encryption is enabled. All traffic going to the video port is encrypted.</p> <p>Unchecked indicates that video encryption is disabled. Traffic going to the video port is not encrypted.</p> <p>The default is Encrypted. Disabling encryption can improve performance on slower networks.</p>
Mouse Mode	<p>Choose Windows if the managed server is running on a Windows operating system.</p> <p>Choose Linux if your server is running on Linux.</p> <p>Choose No Access if your server is not running on a Windows or Linux operating system.</p> <p>NOTE: You must select No Access Mouse Mode in HyperV, Dell Diagnostics, or USC.</p> <p>The default is Windows.</p>
Console Plug-In Type for IE	<p>When using Internet Explorer on a Windows operating system, you can choose from the following viewers:</p> <p><i>ActiveX</i> - The <i>ActiveX Console Redirection</i> viewer</p> <p><i>Java</i> - <i>Java Console Redirection</i> viewer</p> <p>NOTE: Depending on your version of Internet Explorer, additional security restrictions may need to be turned off (see "Configuring and Using Virtual Media").</p> <p>NOTE: You must have the Java runtime environment installed on your client system to use the Java viewer.</p>
Local Server Video Enabled	<p>Checked indicates that output to the iKVM monitor is enabled during console redirection. Unchecked indicates that the tasks you perform using Console Redirection will not be visible on the managed server's local monitor.</p>



NOTE: For information about using Virtual Media with Console Redirection, see "Configuring and Using Virtual Media."

The buttons in Table 10-5 are available on the **Console Redirection Configuration** screen.

Table 10-3. Console Redirection Configuration Buttons

Button	Definition
Print	Prints the Console Redirection Configuration screen
Refresh	Reloads the Console Redirection Configuration screen
Apply	Saves any new settings made to the console redirection

Opening a Console Redirection Session

When you open a console redirection session, the Dell Virtual KVM Viewer Application starts and the remote system's desktop appears in the viewer. Using the Virtual KVM Viewer Application, you can control the remote system's mouse and keyboard functions from your local management station.

To open a console redirection session in the Web interface, perform the following steps:

- 1 Click **System** and then click the **Console** tab.
- 2 In the **Console Redirection** screen, use the information in Table 10-4 to ensure that a console redirection session is available.

If you wish to reconfigure any of the property values displayed, see "Configuring Console Redirection and Virtual Media in the iDRAC6 Web Interface."

Table 10-4. Console Redirection Information

Property	Description
Console Redirection Enabled	Yes/No
Video Encryption Enabled	Yes/No
Max Sessions	Displays the maximum number of supported Console Redirection sessions.
Current Sessions	Displays the current number of active console redirection sessions.

Table 10-4. Console Redirection Information (continued)

Property	Description
Mouse Mode	Displays the mouse acceleration currently in effect. Mouse Acceleration mode should be chosen based on the type of operating system installed on the managed server.
Console Plug-in Type	Shows the plug-in type currently configured. ActiveX — An Active-X viewer will be launched. Active-X viewer will only work on Internet Explorer while running on a Windows Operating System. Java — A Java viewer will be launched. The Java viewer can be used on any browser including Internet Explorer. If your client runs on an operating system other than Windows, then you must use the Java Viewer. If you are accessing iDRAC6 using Internet Explorer while running on a Windows operating system, you may choose either Active-X or Java as the plug-in type.
Local Server Video Enabled	Checked indicates that output to the iKVM monitor is enabled during console redirection. Unchecked ensures that the tasks you perform using Console Redirection will not be visible on the managed server's local monitor.



NOTE: For information about using Virtual Media with Console Redirection, see "Configuring and Using Virtual Media."

The buttons in Table 10-5 are available on the **Console Redirection** screen.

Table 10-5. Console Redirection Buttons

Button	Definition
Refresh	Reloads the Console Redirection Configuration screen
Launch Viewer	Opens a console redirection session on the targeted remote system
Print	Prints the Console Redirection Configuration screen

- 3 If a console redirection session is available, click **Launch Viewer**.



NOTE: Multiple message boxes may appear after you launch the application. To prevent unauthorized access to the application, you must navigate through these message boxes within three minutes. Otherwise, you will be prompted to relaunch the application.



NOTE: If one or more **Security Alert** windows appear in the following steps, read the information in the window and click **Yes** to continue.

The management station connects to iDRAC6 and the remote system's desktop appears in the Dell Digital KVM Viewer Application.

- 4 Two mouse pointers appear in the viewer window: one for the remote system and one for your local system. You must synchronize the two mouse pointers so that the remote mouse pointer follows your local mouse pointer. See "Synchronizing the Mouse Pointers."

Using the Video Viewer

The Video Viewer provides a user interface between the management station and the managed server, allowing you to see the managed server's desktop and control its mouse and keyboard functions from your management station. When you connect to the remote system, the Video Viewer starts in a separate window.

The Video Viewer provides various control adjustments such as color mode, mouse synchronization, snapshots, keyboard macros, and access to Virtual Media. Click **Help** for more information on these functions.

When you start a console redirection session and the Video Viewer appears, you may need to adjust the color mode and synchronize the mouse pointers.

Table 10-6 describes the menu options that are available for use in the viewer.

Table 10-6. Viewer Menu Bar Selections

Menu Item	Item	Description
Video	Pause	Temporarily pauses console redirection.
	Resume	Resumes console redirection.
	Refresh	Redraws the viewer screen image.
	Capture Current Screen	Captures the current remote system screen to a .bmp file on Windows or a .png file on Linux. A dialog box is displayed that allows you to save the file to a specified location.
	Full Screen	To make the Video Viewer expand into full screen mode, select Full Screen from the Video menu.
	Exit	When you have finished using the Console and have logged out (using the remote system's logout procedure), select Exit from the Video menu to close the Video Viewer window.
Keyboard	Hold Right Alt Key	Select this item before typing keys you want to combine with the right <Alt> key.
	Hold Left Alt Key	Select this item before typing keys you want to combine with the left <Alt> key.
	Left Windows Key	Select Hold Down before typing characters you want to combine with the left Windows key. Select Press and Release to send a left Windows key keystroke.
	Right Windows Key	Select Hold Down before typing characters you want to combine with the right Windows key. Select Press and Release to send a right Windows key keystroke.

Table 10-6. Viewer Menu Bar Selections (continued)

Menu Item	Item	Description
	Macros	<p>When you select a macro, or enter the hotkey specified for the macro, the action is executed on the remote system. The Video Viewer provides the following macros:</p> <ul style="list-style-type: none">• Ctrl-Alt-Del• Alt-Tab• Alt-Esc• Ctrl-Esc• Alt-Space• Alt-Enter• Alt-Hyphen• Alt-F4• PrtScn• Alt-PrtScn• F1• Pause• Alt+m
	Keyboard Pass-through	The Keyboard pass-through mode allows all keyboard functions on the client to be redirected to the server.
Mouse	Synchronize Cursor	Synchronizes the cursor so that the mouse on the client is redirected to the mouse on the server.
	Hide Local Cursor	Only the cursor from the KVM will be displayed. Dell recommends this setting when running USC in a vKVM.
Options	Color Mode	<p>Allows you to select a color depth to improve performance over the network. For example, if you are installing software from virtual media, you can choose the lowest color depth (3-bit gray), so that less network bandwidth is used by the console viewer leaving more bandwidth for transferring data from the media.</p> <p>The color mode can be set to 15-bit color, 7-bit color, 4-bit color, 4-bit gray, and 3-bit gray.</p>

Table 10-6. Viewer Menu Bar Selections (continued)

Menu Item	Item	Description
Media	Virtual Media Wizard	<p>The Media menu provides access to the Virtual Media Wizard, which allows you to redirect to a device or image such as a:</p> <ul style="list-style-type: none">• Floppy drive• CD• DVD• Image in ISO format• USB Flash drive <p>For information about the Virtual Media feature, see "Configuring and Using Virtual Media."</p> <p>You must keep the Console Viewer window active when using Virtual Media.</p>
Help	N/A	Activates the Help menu.

Synchronizing the Mouse Pointers

When you connect to a remote PowerEdge system using Console Redirection, the mouse acceleration speed on the remote system may not synchronize with the mouse pointer on your management station, causing two mouse pointers to appear in the Video Viewer window.

To synchronize the mouse pointers click **Mouse**→ **Synchronize cursor** or press <Alt><M>.

The Synchronize cursor menu item is a toggle. Ensure that there is a check mark next to the item in the menu so that the mouse synchronization is active.

When using Red Hat Enterprise Linux or Novell SUSE Linux, be sure to configure the mouse mode for Linux before you launch the viewer. See "Configuring Console Redirection and Virtual Media in the iDRAC6 Web Interface" for help with configuration. The operating system's default mouse settings are used to control the mouse arrow in the iDRAC6 **Console Redirection** screen.

Disabling or Enabling Local Console

You can configure iDRAC6 to disallow iKVM connections using the iDRAC6 Web interface. When the local console is disabled, a yellow status dot appears in the list of servers (OSCAR) to indicate that the console is locked in iDRAC6. When the local console is enabled, the status dot is green.

If you want to ensure that you have exclusive access to the managed server console, you must disable the local console *and* reconfigure the **Max Sessions** to 1 on the **Console Redirection** screen.



NOTE: The local console feature is supported on all x9xx PowerEdge systems except PowerEdge SC1435 and 6950.



NOTE: By disabling (turning off) the local video on the server, the monitor, keyboard, and mouse connected to the iKVM are disabled.

To disable or enable the local console, perform the following procedure:

- 1 On your management station, open a supported Web browser and log in to iDRAC6. See "Accessing the Web Interface" for more information.
- 2 Click **System**, click the **Console** tab, and then click **Configuration**.
- 3 If you want to disable (turn off) local video on the server, in the **Console Redirect Configuration** screen, uncheck **Local Server Video Enabled** and then click **Apply**. The default value is **Enabled (checked)**.
- 4 If you want to enable (turn on) local video on the server, in the **Console Redirect Configuration** screen, check **Local Server Video Enabled** and then click **Apply**.

The **Console Redirection** screen displays the status of the Local Server Video.

Frequently Asked Questions

Table 10-7 lists frequently asked questions and answers.

Table 10-7. Using Console Redirection: Frequently Asked Questions

Question	Answer
Can a new remote console video session be started when the local video on the server is turned off?	Yes.
Why does it take 15 seconds to turn off the local video on the server after requesting to turn off the local video?	It gives a local user an opportunity to take any action before the video is switched off.
Is there a time delay when turning on the local video?	No, once a local video turn ON request is received by iDRAC6 the video is turned on instantly.
Can the local user also turn off the video?	Yes, a local user can use the local RACADM CLI to turn off the video.
Can the local user also turn on the video?	No. Once the local console is disabled, the local user's keyboard and mouse are disabled and they are unable to change any settings.
Does switching off the local video also switch off the local keyboard and mouse?	Yes.
Does turning off the local console turn off the video on the remote console session?	No, turning the local video on or off is independent of the remote console session.

Table 10-7. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
What privileges are needed for an iDRAC6 user to turn on or off the local server video?	Any user with iDRAC6 configuration privileges can turn the local console on or off.
How can I get the current status of the local server video?	<p>The status is displayed on the Console Redirection Configuration screen of the iDRAC6 Web interface.</p> <p>The RACADM CLI command <code>racadm getconfig -g cfgRacTuning</code> displays the status in the object <code>cfgRacTuneLocalServerVideo</code>.</p> <p>The status is also seen on the iKVM OSCAR display. When the local console is enabled, a green status appears next to the server name. When disabled, a yellow dot indicates that the local console is locked by iDRAC6.</p>
I cannot see the bottom of the system screen from the Console Redirection window.	Ensure that the management station's monitor resolution is set to 1280x1024.
The console window is garbled.	The console viewer on Linux requires a UTF-8 character set. Check your locale and reset the character set if needed. See "Setting the Locale in Linux" for more information.
Why do I get a blank screen on the managed server when loading the Windows 2000 operating system?	The managed server does not have the correct ATI video driver. You must update the video driver by using the <i>Dell PowerEdge Installation and Server Management CD</i> .

Table 10-7. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
Why doesn't the mouse sync in DOS when performing Console Redirection?	The Dell BIOS is emulating the mouse driver as a PS/2 mouse. By design, the PS/2 mouse uses relative position for the mouse pointer, which causes the lag in syncing. iDRAC6 has a USB mouse driver, which allows absolute position and closer tracking of the mouse pointer. Even if iDRAC6 passes the USB absolute mouse position to the Dell BIOS, the BIOS emulation would convert it back to relative position and the behavior would remain. To fix this problem, set the mouse mode to No Access in the Console Redirection configuration.
Why doesn't the mouse sync under the Linux text console?	Virtual KVM requires the USB mouse driver, but the USB mouse driver is available only under the X-Window operating system.
I am still having issues with mouse synchronization.	Ensure that the correct mouse is selected for your operating system before starting a console redirection session. Ensure that Synchronize Mouse is checked in the Mouse menu. Press <Alt><M> or select Mouse → Synchronize mouse to toggle mouse synchronization. When synchronization is enabled, a check mark appears next to the selection in the Mouse menu.
Why can't I use a keyboard or mouse while installing a Microsoft® operating system remotely by using iDRAC6 Console Redirection?	When you remotely install a supported Microsoft operating system on a system with Console Redirection enabled in the BIOS, you receive an EMS Connection Message that requires that you select OK before you can continue. You cannot use the mouse to select OK remotely. You must either select OK on the local system or restart the remotely managed server, reinstall, and then turn Console Redirection off in the BIOS. This message is generated by Microsoft to alert the user that Console Redirection is enabled. To ensure that this message does not appear, always turn off Console Redirection in the BIOS before installing an operating system remotely.


Table 10-7. Using Console Redirection: Frequently Asked Questions (continued)

Question	Answer
Why doesn't the Num Lock indicator on my management station reflect the status of the Num Lock on the remote server?	When accessed through iDRAC6, the Num Lock indicator on the management station does not necessarily coincide with the state of the Num Lock on the remote server. The state of the Num Lock is dependent on the setting on the remote server when the remote session is connected, regardless of the state of the Num Lock on the management station.
Why do multiple Session Viewer windows appear when I establish a console redirection session from the local host?	You are configuring a console redirection session from the local system. This is not supported.
If I am running a console redirection session and a local user accesses the managed server, do I receive a warning message?	No. If a local user accesses the system, you both have control of the system.
How much bandwidth do I need to run a console redirection session?	Dell recommends a 5 MB/sec connection for good performance. A 1 MB/sec connection is required for minimal performance.
What are the minimum system requirements for my management station to run console redirection?	The management station requires an Intel Pentium III 500 MHz processor with at least 256 MB of RAM.


Configuring a VFlash Media Card for Use With iDRAC6

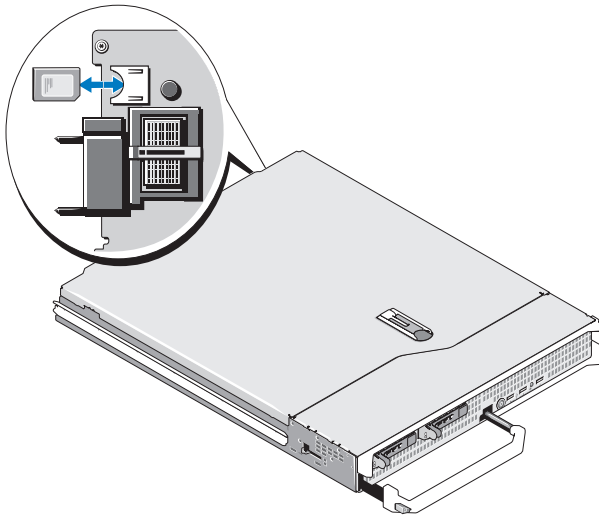
The VFlash media card is a Secure Digital (SD) card that plugs into the optional iDRAC6 Enterprise card slot at the back corner of the system. It provides storage space that behaves like a common USB Flash Key device.


Installing a VFlash Media Card

 **NOTE:** Dell-branded vFlash media is required for the virtual flash partition.

- 1 Remove the blade from the chassis.
- 2 Locate the VFlash media slot at the back corner of the system.

 **NOTE:** You do not need to remove the blade cover to install or remove the card.



- 3 With the label side facing up, insert the contact-pin end of the SD card into the card slot on the module.
 **NOTE:** The slot is keyed to ensure correct insertion of the card.
- 4 Press inward on the card to lock it into the slot.
- 5 Place the blade back in the chassis.

Removing a VFlash Media Card

To remove the VFlash media, push inward on the card to release it, and pull the card from the card slot.

Configuring the VFlash Media Card Using the iDRAC6 Web Interface

Enabling or Disabling the VFlash Media Card



NOTE: The VFlash Enable check box is active only if a VFlash card is present. If card is not present, the following message displays:

SD Card not inserted. Please insert an SD card of size greater than 256MB.

- 1 Ensure that the VFlash card has been installed.
- 2 Open a supported Web browser window.
- 3 Log in to the iDRAC6 Web interface.
- 4 In the system tree, select **System**.
- 5 Click the **VFlash** tab.
The **VFlash** screen appears.
- 6 Select the **Enable VFlash** check box to enable the VFlash Media Card. To disable, deselect the check box.
- 7 Click **Apply**.

Formatting the VFlash Media Card



NOTE: The **Format** option is active only if a VFlash card is present.

- 1 Log in to the iDRAC6 Web interface.
- 2 In the system tree, select **System**.
- 3 Click the **VFlash** tab.

The **VFlash** screen appears.

- 4 Ensure that VFlash is disabled. The **VFlash Enable** check box should be cleared (unchecked).
- 5 Click **Format**.

An alert box appears, warning that any existing image on the card will be erased during formatting and requesting confirmation. Click **OK** to continue.

A status bar appears, indicating formatting progress.

Uploading Disk Image

- 1 Ensure the image file has the extension **.img** and that the image is not larger than 256 MB.



NOTE: Though your VFlash card may be larger than 256 MB, only 256 MB is accessible at this time.

- 2 Log in to the iDRAC6 Web interface.
- 3 In the system tree, select **System**.
- 4 Click the **VFlash** tab.

The **VFlash** screen appears.

- 5 Ensure that VFlash is disabled. The **VFlash Enable** check box should be cleared (unchecked).
- 6 In the **VFlash Drive** section, enter the path to the image file or click **Browse** to navigate to its location on your system.
Click **Upload**.

A status bar appears, indicating upload progress.

Viewing the VFlash Key Size

The **Virtual Flash Key Size** drop-down menu displays the current size setting.

Configuring the VFlash Media Card Using RACADM

Enabling or Disabling the VFlash Media Card

Open a local console to the server, log in, and enter:

```
racadm cfgRacVirtual cfgVirMediaKeyEnable [ 1 or 0 ]
```

where 1 is enabled and 0 is disabled.



NOTE: For more information about `cfgRacVirtual`, including output details, see "`cfgRacVirtual`."

Formatting the VFlash Media Card

Open a Telnet/SSH text console to the server, log in, and enter:

```
racadm vmkey reset
```



CAUTION: Formatting the VFlash media card deletes all existing data.



NOTE: For more information about `vmkey`, see "`vmkey`."

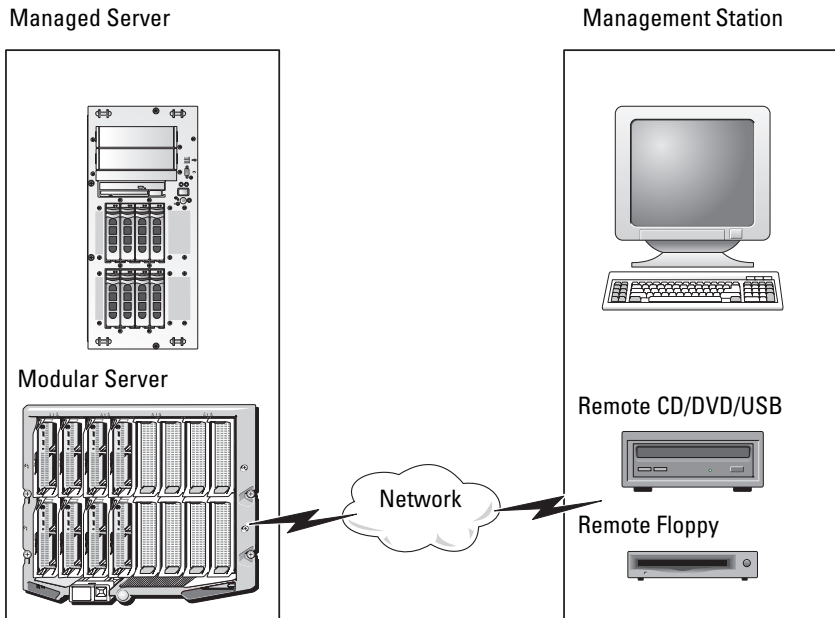
12

Configuring and Using Virtual Media


Overview

The **Virtual Media** feature, accessed through the console redirection viewer, provides the managed server access to media connected to a remote system on the network. Figure 12-1 shows the overall architecture of **Virtual Media**.

Figure 12-1. Overall Architecture of Virtual Media



Using **Virtual Media**, administrators can remotely boot their managed servers, install applications, update drivers, or even install new operating systems remotely from the virtual CD/DVD and diskette drives.

 **NOTE:** **Virtual media** requires a minimum available network bandwidth of 128 Kbps.

Virtual media defines two devices for the managed server's operating system and BIOS: a floppy disk device and an optical disk device.

The management station provides the physical media or image file across the network. When **Virtual Media** is connected, all virtual CD/floppy drive access requests from the managed server are directed to the management station across the network. Connecting **Virtual Media** appears the same as inserting media into physical devices. When virtual media is not connected, virtual devices on the managed server appear as two drives without media installed in the drives.

Table 12-1 lists the supported drive connections for virtual floppy and virtual optical drives.


 **NOTE:** Changing **Virtual Media** while connected could stop the system boot sequence.

Table 12-1. Supported Drive Connections

Supported Virtual Floppy Drive Connections	Supported Virtual Optical Drive Connections
Legacy 1.44 floppy drive with a 1.44 floppy diskette	CD-ROM, DVD, CDRW, combination drive with CD-ROM media
USB floppy drive with a 1.44 floppy diskette	CD-ROM/DVD image file in the ISO9660 format
1.44 floppy image	USB CD-ROM drive with CD-ROM media
USB removable disk (minimum size 128 MB)	

Windows-Based Management Station

To run the **Virtual Media** feature on a management station running the Windows operating system, install a supported version of Internet Explorer with the ActiveX Control plug-in (see "Supported Web Browsers"). Set the browser security to **Medium** or a lower setting to enable Internet Explorer to download and install signed ActiveX controls.

Depending on your version of Internet Explorer, a custom security setting for ActiveX may be required:

- 1** Start Internet Explorer.
- 2** Click **Tools**→ **Internet Options**, and then click the **Security** tab.
- 3** Under **Select a Web content zone to specify its security settings**, click to select the desired zone.
- 4** Under **Security level for this zone**, click **Custom Level**.

The **Security Settings** window appears.

- 5** Under **ActiveX controls and plugins**, ensure that the following settings are set to **Enable**:
 - Allow Scriptlets
 - Automatic prompting for ActiveX controls
 - Download signed ActiveX controls
 - Download unsigned ActiveX controls
- 6** Click **OK** to save any changes and close the **Security Settings** window.
- 7** Click **OK** to close the **Internet Options** window.
- 8** Restart Internet Explorer.

You must have administrator rights to install ActiveX. Before installing the ActiveX control, Internet Explorer may display a security warning. To complete the ActiveX control installation procedure, accept the ActiveX control when Internet Explorer prompts you with a security warning.

Linux-Based Management Station

To run the virtual media feature on a management station running the Linux operating system, install a supported version of Firefox. See "Supported Web Browsers" for more information.

A Java Runtime Environment (JRE) is required to run the console redirection plugin. You can download a JRE from java.sun.com. JRE version 1.6 or above is recommended.

Configuring Virtual Media

- 1 Log in to the iDRAC6 Web interface.
- 2 Click the **Console/Media** tab.
- 3 Click **Configuration**, and then click **Virtual Media**.
The **Console Redirection Configuration** screen appears.
- 4 Click **Virtual Media**.
- 5 In the **Virtual Media** section, select values for the settings. See Table 12-2 for information on **Virtual Media** configuration values.
- 6 Click **Apply** to save your settings.

An alert dialog appears with the following message: You are about to change device configuration. All existing redirection sessions will be closed. Do you want to continue?

- 7 Click **OK** to continue.

An alert dialog appears with the following message: Virtual Media Configuration successfully set.

Table 12-2. Virtual Media Configuration Values


Attribute	Value
Attach Virtual Media	Attach — Immediately attaches Virtual Media to the server. Detach — Immediately detaches Virtual Media from the server. Auto-Attach — Attaches Virtual Media to the server only when a virtual media session is started.
Maximum Sessions	Displays the maximum number of Virtual Media sessions allowed. This value is always 1. NOTE: Only one virtual media user session is allowed; however, multiple devices can be attached in a single session. See "Running Virtual Media."
Active Sessions	Displays the current number of Virtual Media sessions.

Table 12-2. Virtual Media Configuration Values (continued)

Attribute	Value
Virtual Media Encryption Enabled	Enables (checked) or disables (not checked) encryption on Virtual Media connections.
Virtual Media Port Number	The network port number used for connecting to the Virtual Media service without encryption. Two consecutive ports starting from the port number specified are used to connect to the Virtual Media service. The port number following the specified port must not be configured for any other iDRAC6 service. The default is 3668 .
Virtual Media SSL Port Number	The network port number used for encrypted connections to the Virtual Media service. Two consecutive ports starting from the port number specified are used to connect to the Virtual Media service. The port number following the specified port must not be configured for any other iDRAC6 service. The default is 3670 .
Floppy Emulation	Indicates whether the Virtual Media appears as a floppy drive or as a USB key to the server. If Floppy Emulation is checked, the Virtual Media device appears as a floppy device on the server. If it is unchecked, it appears as a USB Key drive.
Enable Boot Once	Enables (checked) or disables (not checked) the boot-once option, which automatically terminates the Virtual Media session after the server has booted once. This option is useful for automated deployments.

Running Virtual Media

 **CAUTION:** Do not issue a **racreset** command when running a **Virtual Media** session. Otherwise, undesirable results may occur, including data loss.


 **NOTE:** The Console Viewer window application must remain active while you access the virtual media.


- 1 Open a supported Web browser on your management station.
- 2 Log in to the iDRAC6 Web interface.


3 Click the **Console/Media** tab.

The **Console Redirection and Virtual Media** screen appears.


To change the values of any of the displayed attributes, see "Configuring Virtual Media."

 **NOTE:** The **Floppy Image File** under **Floppy Drive** (if applicable) may appear, as this device can be virtualized as a virtual floppy. You can select one optical drive and one floppy at the same time, or a single drive.

 **NOTE:** The virtual device drive letters on the managed server do not coincide with the physical drive letters on the management station.

 **NOTE:** **Virtual Media** may not function properly on Windows operating system clients that are configured with Internet Explorer Enhanced Security. To resolve this issue, see your Microsoft operating system documentation or contact your administrator.

4 Click **Launch Viewer**.

 **NOTE:** On Linux, the file `jviewer.jnlp` is downloaded to your desktop and a dialog box will ask what to do with the file. Choose the option to **Open with program** and then select the `javaws` application, which is located in the `bin` subdirectory of your JRE installation directory.

The **iDRACView** application launches in a separate window.

5 Select **Media** → **Virtual Media Wizard...**

The **Media Redirection Wizard** appears.

6 View the **Status** window at the bottom of the **Wizard** screen. If media is connected, you must disconnect it before connecting a different media source. To disconnect media, click the **Disconnect** button next to the media in the **Status** window.

7 Select the radio button next to the media types you want to connect.

You can select both the **Floppy Image** radio button and one of the radio buttons in the **CD/DVD Drive** section.

To connect a floppy image or ISO image, enter the path to the image location on your local computer, or click the **Browse** button to navigate to the image location.

- 8 Click the **Connect** button next to each selected media type.
The media is connected and the **Status** window is updated.
- 9 Click **Close**.

Disconnecting Virtual Media

- 1 Select **Media** → **Virtual Media Wizard...**
The **Media Redirection Wizard** appears.
- 2 Click **Disconnect** next to the media you wish to disconnect.
The media is disconnected and the **Status** window is updated.
- 3 Click **Close**.

Booting From Virtual Media

The system BIOS enables you to boot from virtual optical drives or virtual floppy drives. During POST, enter the BIOS setup window and verify that the virtual drives are enabled and listed in the correct order.

To change the BIOS setting, perform the following steps:

- 1 Boot the managed server.
- 2 Press <F2> to enter the BIOS setup window.
- 3 Scroll to the boot sequence and press <Enter>.
In the pop-up window, the virtual optical drives and virtual floppy drives are listed with the standard boot devices.
- 4 Ensure that the virtual drive is enabled and listed as the first device with bootable media. If required, follow the on-screen instructions to modify the boot order.
- 5 Save the changes and exit.
The managed server reboots.

The managed server attempts to boot from a bootable device based on the boot order. If the virtual device is connected and a bootable media is present, the system boots to the virtual device. Otherwise, the system overlooks the device—similar to a physical device without bootable media.

Installing Operating Systems Using Virtual Media

This section describes a manual, interactive method to install the operating system on your management station that may take several hours to complete. A scripted operating system installation procedure using **Virtual Media** may take fewer than 15 minutes to complete. See "Deploying the Operating System" for more information.

- 1 Verify the following:
 - The operating system installation DVD/CD is inserted in the management station's DVD/CD drive.
 - The local DVD/CD drive is selected.
 - You are connected to the virtual drives.
- 2 Follow the steps for booting from the virtual media in the "Bootting From Virtual Media" section to ensure that the BIOS is set to boot from the DVD/CD drive from which you are installing.
- 3 Follow the on-screen instructions to complete the installation.

Using Virtual Media When the Server's Operating System Is Running

Windows-Based Systems

On Windows systems, the virtual media drives are automounted if they are attached and configured with a drive letter.

Using the virtual drives from within Windows is similar to using your physical drives. When you connect to the media using the Virtual Media wizard, the media is available at the system by clicking the drive and browsing its content.

Linux-Based Systems

Depending on the configuration of the software on your system, the virtual media drives may not be automounted. If your drives are not automounted, manually mount the drives using the Linux **mount** command.

Frequently Asked Questions

Table 12-3 lists frequently asked questions and answers.

Table 12-3. Using Virtual Media: Frequently Asked Questions

Question	Answer
Sometimes, I notice my Virtual Media client connection drop. Why?	<p>When a network time-out occurs, iDRAC6 firmware drops the connection, disconnecting the link between the server and the Virtual Drive.</p> <p>If the Virtual Media configuration settings are changed in the iDRAC6 Web interface or by local RACADM commands, any connected media is disconnected when the configuration change is applied.</p> <p>To reconnect to the Virtual Drive, use the Virtual Media wizard.</p>
Which operating systems support iDRAC6?	See "Supported Operating Systems" for a list of supported operating systems.
Which Web browsers support iDRAC6?	See "Supported Web Browsers" for a list of supported Web browsers.
Why do I sometimes lose my client connection?	<ul style="list-style-type: none">• You can sometimes lose your client connection if the network is slow or if you change the CD in the client system CD drive. For example, if you change the CD in the client system's CD drive, the new CD might have an autostart feature. If this is the case, the firmware can time out and the connection can be lost if the client system takes too long before it is ready to read the CD. If a connection is lost, reconnect from the GUI and continue the previous operation.• When a network timeout occurs, iDRAC6 firmware drops the connection, disconnecting the link between the server and the Virtual Drive. Also, someone may have altered the Virtual Media configuration settings in the Web interface or by entering RADACM commands. To reconnect to the Virtual Drive, use the Virtual Media feature.

Table 12-3. Using Virtual Media: Frequently Asked Questions (continued)

Question	Answer
An installation of the Windows operating system seems to take too long. Why?	If you are installing the Windows operating system using the <i>Dell PowerEdge Installation and Server Management</i> CD and a slow network connection, the installation procedure may require an extended amount of time to access the iDRAC6 Web interface due to network latency. While the installation window does not indicate the installation progress, the installation procedure is in progress.
I am viewing the contents of a floppy drive or USB memory key. If I try to establish a Virtual Media connection using the same drive, I receive a connection failure message and am asked to retry. Why?	Simultaneous access to Virtual Floppy drives is not allowed. Close the application used to view the drive contents before you attempt to virtualize the drive.
How do I configure my virtual device as a bootable device?	On the managed server, access the BIOS Setup and navigate to the boot menu. Locate the virtual CD, Virtual Floppy, or Virtual Flash and change the device boot order as needed. For example, to boot from a CD drive, configure the CD drive as the first drive in the boot order.

Table 12-3. Using Virtual Media: Frequently Asked Questions (*continued*)

Question	Answer
What types of media can I boot from?	<p>iDRAC6 allows you to boot from the following bootable media:</p> <ul style="list-style-type: none">• CDROM/DVD Data media• ISO 9660 image• 1.44 Floppy disk or floppy image• A USB key that is recognized by the operating system as a removable disk (minimum size 128 MB)• A USB key image
How can I make my USB key bootable?	<p>Search support.dell.com for the Dell Boot Utility, a Windows program you can use to make your Dell USB key bootable.</p> <p>You can also boot with a Windows 98 startup disk and copy system files from the startup disk to your USB key. For example, from the DOS prompt, enter the following command:</p> <pre>sys a: x: /s</pre> <p>where x: is the USB key you want to make bootable.</p> <p>You can also use the Dell boot utility to create a bootable USB key. This utility is only compatible with Dell-branded USB keys. To download the utility, open a Web browser, navigate to the Dell Support website located at support.dell.com, and search for R122672.exe.</p>

Table 12-3. Using Virtual Media: Frequently Asked Questions (continued)

Question	Answer
I cannot locate my Virtual Floppy device on a system running Red Hat® Enterprise Linux® or the SUSE® Linux operating system. My Virtual Media is attached and I am connected to my remote floppy. What should I do?	<p data-bbox="456 280 964 483">Some Linux versions do not automount the Virtual Floppy Drive and the Virtual CD drive in a similar manner. To mount the Virtual Floppy Drive, locate the device node that Linux assigns to the Virtual Floppy Drive. Perform the following steps to correctly find and mount the Virtual Floppy Drive:</p> <ol data-bbox="468 491 964 1267" style="list-style-type: none"><li data-bbox="468 491 964 547">1 Open a Linux command prompt and run the following command: <pre data-bbox="484 563 919 619">grep "Virtual Floppy" /var/log/messages</pre><li data-bbox="468 627 964 683">2 Locate the last entry to that message and note the time.<li data-bbox="468 691 964 746">3 At the Linux prompt, run the following command: <pre data-bbox="484 762 947 818">grep "hh:mm:ss" /var/log/messages</pre>where: <pre data-bbox="512 834 947 890">hh:mm:ss</pre> is the time stamp of the message returned by grep in step 1.<li data-bbox="468 898 964 978">4 In step 3, read the result of the grep command and locate the device name that is given to the Dell Virtual Floppy.<li data-bbox="468 986 964 1042">5 Ensure that you are attached and connected to the Virtual Floppy Drive.<li data-bbox="468 1050 964 1267">6 At the Linux prompt, run the following command: <pre data-bbox="484 1121 748 1145">mount /dev/sdx /mnt/floppy</pre>where: <pre data-bbox="512 1201 964 1225">/dev/sdx</pre> is the device name found in step 4 <pre data-bbox="512 1241 860 1267">/mnt/floppy</pre> is the mount point.

Table 12-3. Using Virtual Media: Frequently Asked Questions (continued)

Question	Answer
What file system types are supported on my Virtual Floppy Drive?	Your Virtual Floppy Drive supports FAT16 or FAT32 file systems.
When I performed a firmware update remotely using the iDRAC6 Web interface, my virtual drives at the server were removed. Why?	Firmware updates cause iDRAC6 to reset, drop the remote connection, and unmount the virtual drives. The drives will reappear when the iDRAC6 reset is complete.

Using the Local RACADM Command Line Interface

The local RACADM command line interface (CLI) provides access to iDRAC6 management features from the managed server. RACADM provides access to the same features as the iDRAC6 Web interface. However, RACADM can be used in scripts to ease configuration of multiple servers and iDRACs, where the Web interface is more useful for interactive management.

Local RACADM commands do not use network connections to access iDRAC6 from the managed server. This means that you can use local RACADM commands to configure the initial iDRAC6 networking.

For more information about configuring multiple iDRACs, see "Configuring Multiple iDRACs."

This section provides the following information:

- Using RACADM from a command prompt
- Configuring iDRAC6 using the `racadm` command
- Using the RACADM configuration file to configure multiple iDRACs

Using the RACADM Command

You run RACADM commands locally (on the managed server) from a command prompt or shell prompt.

Log in to the managed server, start a command shell, and enter local RACADM commands in the following format:

```
racadm <subcommand> -g <group> -o <object> <value>
```

Without options, the RACADM command displays general use information. To display the RACADM subcommand list, enter:

```
racadm help
```

The subcommand list includes all commands that are supported by iDRAC6.

To get help for a subcommand, enter:

```
racadm help <subcommand>
```

The command displays the syntax and command-line options for the subcommand.

RACADM Subcommands

Table 13-1 provides a description of each RACADM subcommand that you can run in RACADM. For a detailed listing of RACADM subcommands including syntax and valid entries, see "RACADM Subcommand Overview."

Table 13-1. RACADM Subcommands

Command	Description
clrascreen	Clears the last crash (ASR) screen.
clrlog	Clears the iDRAC6 log. After clearing, a single entry is made to indicate the user and time that the log was cleared.
clrsl	Clears the managed server's System Event Log entries.
config	Configures iDRAC6.
getconfig	Displays the current iDRAC6 configuration properties.
getniccfg	Displays the current IP configuration for the controller.
getraclog	Displays the iDRAC6 log.
getractime	Displays the iDRAC6 time.
getssninfo	Displays information about active sessions.
getsvctag	Displays service tags.
getsysinfo	Displays information about iDRAC6 and the managed server, including IP configuration, hardware model, firmware versions, and operating system information.
gettracelog	Displays the iDRAC6 trace log. If used with <code>-i</code> , the command displays the number of entries in the iDRAC6 trace log.
help	Lists iDRAC6 subcommands.
help <subcommand>	Lists usage statement for the specified subcommand.

Table 13-1. RACADM Subcommands (continued)

Command	Description
localconredirdisable	Performs local kVM disable from the local system.
racreset	Resets iDRAC6.
racresetcfg	Resets iDRAC6 to the default configuration.
serveraction	Performs power management operations on the managed server.
setniccfg	Sets the IP configuration for the controller.
sslcertdownload	Downloads a CA certificate.
sslcertupload	Uploads a CA certificate or server certificate to iDRAC6.
sslcertview	Views a CA certificate or server certificate in iDRAC6.
sslsrsgen	Generates and downloads the SSL CSR.
testemail	Forces iDRAC6 to send an e-mail over the iDRAC6 NIC.
testtrap	Forces iDRAC6 to send an SNMP alert over the iDRAC6 NIC.
vmkey	Resets the virtual media key to the default size of 256MB.

Using the RACADM Utility to Configure iDRAC6

This section describes how to use RACADM to perform various iDRAC6 configuration tasks.

Displaying Current iDRAC6 Settings

The RACADM `getconfig` subcommand retrieves current configuration settings from iDRAC6. The configuration values are organized into *groups* containing one or more *objects*, and the objects have *values*.

See "iDRAC6 Enterprise Property Database Group and Object Definitions" for a complete description of the groups and objects.

To display a list of all iDRAC6 groups, enter this command:

```
racadm getconfig -h
```

To display the objects and values for a particular group, enter this command:

```
racadm getconfig -g <group>
```

For example, to display a list of all `cfgLanNetworking` group object settings, enter the following command:

```
racadm getconfig -g cfgLanNetworking
```

Managing iDRAC6 Users with RACADM



NOTE: Use caution when using the `racresetcfg` command, as *all* configuration parameters are reset to the original defaults. Any previous changes are lost.



NOTE: If you are configuring a new iDRAC6 or if you ran the `racadm racresetcfg` command, the only current user is `root` with the password `calvin`.



NOTE: Users can be enabled and disabled over time. As a result, a user may have a different index number on each iDRAC6.



NOTE: Users and groups created for Active Directory environments must conform to the Active Directory naming convention.

You can configure up to 15 users in the iDRAC6 property database. (A sixteenth user is reserved for the IPMI LAN user.) Before you manually enable an iDRAC6 user, verify if any current users exist.

To verify if a user exists, enter the following command at the command prompt:

```
racadm getconfig -u <username>
```

OR

enter the following command once for each index from 1 to 16:

```
racadm getconfig -g cfgUserAdmin -i <index>
```



NOTE: You can also enter `racadm getconfig -f <filename>` and view the generated `<filename>` file, which includes all users, as well as all other iDRAC6 configuration parameters.

Several parameters and object IDs are displayed with their current values. Two objects of interest are:

```
# cfgUserAdminIndex=nn
```

```
cfgUserAdminUserName=
```

If the `cfgUserAdminUserName` object has no value, that index number, which is indicated by the `cfgUserAdminIndex` object, is available for use. If a name appears after the =, that index is assigned to that user name.



NOTE: Users and groups created for Active Directory environments must conform to the Active Directory naming convention.

Adding an iDRAC6 User

To add a new user to iDRAC6, perform the following steps:

- 1 Set the user name.
- 2 Set the password.
- 3 Set the Login to iDRAC6 user privilege.
- 4 Enable the user.

Example

The following example describes how to add a new user named "John" with a "123456" password and login privileges to iDRAC6:

```
racadm config -g cfgUserAdmin -o cfgUserAdminUserName  
-i 2 john
```

```
racadm config -g cfgUserAdmin -o cfgUserAdminPassword  
-i 2 123456
```

```
racadm config -g cfgUserAdmin -o cfgUserPrivilege -i 2  
0x00000001
```

```
racadm config -g cfgUserAdmin -o cfgUserAdminEnable  
-i 2 1
```

To verify the new user, use one of the following commands:

```
racadm getconfig -u john
```

```
racadm getconfig -g cfgUserAdmin -i 2
```

Enabling an iDRAC6 User With Permissions

To grant a user a specific administrative (role-based) permissions, set the `cfgUserAdminPrivilege` property to a bitmask constructed from the values show in Table 13-2:

Table 13-2. Bit Masks for User Privileges

User Privilege	Privilege Bit Mask
Login to iDRAC6	0x0000001
Configure iDRAC6	0x0000002
Configure Users	0x0000004
Clear Logs	0x0000008
Execute Server Control Commands	0x0000010
Access Console Redirection	0x0000020
Access Virtual Media	0x0000040
Test Alerts	0x0000080
Execute Debug Commands	0x0000100

For example, to allow the user **Configure iDRAC**, **Configure Users**, **Clear Logs**, and **Access Console Redirection** privileges, add the values `0x0000002`, `0x0000004`, `0x0000008`, and `0x0000010` to construct the bitmap `0x0000002E`. Then enter the following command to set the privilege:

```
racadm config -g cfgUserAdmin -o  
cfgUserAdminPrivilege -i 2 0x0000002E
```

Removing an iDRAC6 User

When using RACADM, users must be disabled manually and on an individual basis. Users cannot be deleted by using a configuration file.

The following example illustrates the command syntax that can be used to delete a RAC user:

```
racadm config -g cfgUserAdmin -o cfgUserAdminUserName  
-i <index> ""
```


A null string of double quote characters ("") instructs iDRAC6 to remove the user configuration at the specified index and reset the user configuration to the original factory defaults.

Testing E-mail Alerting

The iDRAC6 e-mail alert feature allows users to receive e-mail alerts when a critical event occurs on the managed server. The following example shows how to test the e-mail alert feature to ensure that iDRAC6 can properly send e-mail alerts across the network.

```
racadm testemail -i 2
```



NOTE: Ensure that the SMTP and E-mail Alert settings are configured before testing the e-mail alert feature. See "Configuring E-Mail Alerts" for more information.

Testing the iDRAC6 SNMP Trap Alert Feature

The iDRAC6 SNMP trap alerting feature allows SNMP trap listener configurations to receive traps for system events that occur on the managed server.

The following example shows how a user can test the SNMP trap alert feature.

```
racadm testtrap -i 2
```



NOTE: Before you test the iDRAC6 SNMP trap alerting feature, ensure that the SNMP and trap settings are configured correctly. See the `testtrap` and `testemail` subcommand descriptions to configure these settings.

Configuring iDRAC6 Network Properties

To generate a list of available network properties, enter the following:

```
racadm getconfig -g cfgLanNetworking
```

To use DHCP to obtain an IP address, use the following command to write the object `cfgNicUseDhcp` and enable this feature:

```
racadm config -g cfgLanNetworking -o cfgNicUseDHCP 1
```

The commands provide the same configuration functionality as the iDRAC6 Configuration Utility when you are prompted to press <Ctrl><E>. For more information about configuring network properties with the iDRAC6 Configuration Utility, see "iDRAC6 LAN."

The following is an example of how the command may be used to configure desired LAN network properties.

```
racadm config -g cfgLanNetworking -o cfgNicEnable 1
racadm config -g cfgLanNetworking -o cfgNicIpAddress
192.168.0.120
racadm config -g cfgLanNetworking -o cfgNicNetmask
255.255.255.0
racadm config -g cfgLanNetworking -o cfgNicGateway
192.168.0.120
racadm config -g cfgLanNetworking -o cfgNicUseDHCP 0
racadm config -g cfgLanNetworking -o
cfgDNSServersFromDHCP 0
racadm config -g cfgLanNetworking -o cfgDNSServer1
192.168.0.5
racadm config -g cfgLanNetworking -o cfgDNSServer2
192.168.0.6
racadm config -g cfgLanNetworking -o
cfgDNSRegisterRac 1
racadm config -g cfgLanNetworking -o cfgDNSRacName
RAC-EK00002
racadm config -g cfgLanNetworking -o
cfgDNSDomainNameFromDHCP 0
racadm config -g cfgLanNetworking -o cfgDNSDomainName
MYDOMAIN
```



NOTE: If `cfgNicEnable` is set to 0, the iDRAC6 LAN is disabled even if DHCP is enabled.

Configuring IPMI Over LAN

- 1 Configure IPMI over LAN by entering the following command:

```
racadm config -g cfgIpmiLan -o cfgIpmiLanEnable 1
```



NOTE: This setting determines the IPMI commands that can be executed from the IPMI over LAN interface. For more information, see the IPMI 2.0 specifications.

- a Update the IPMI channel privileges by entering the following command:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiLanPrivilegeLimit <level>
```

where <level> is one of the following:

- 2 (User)
- 3 (Operator)
- 4 (Administrator)

For example, to set the IPMI LAN channel privilege to 2 (User), enter the following command:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiLanPrivilegeLimit 2
```

- b Set the IPMI LAN channel encryption key, if required, using a command such as the following:



NOTE: The iDRAC6 IPMI supports the RMCP+ protocol. See the IPMI 2.0 specifications for more information.

```
racadm config -g cfgIpmiLan -o  
cfgIpmiEncryptionKey <key>
```

where <key> is a 20-character encryption key in a valid hexadecimal format.

- 2 Configure IPMI Serial over LAN (SOL) using the following command:

```
racadm config -g cfgIpmiSol -o cfgIpmiSolEnable 1
```



NOTE: The IPMI SOL minimum privilege level determines the minimum privilege required to activate IPMI SOL. For more information, see the IPMI 2.0 specification.

- a Update the IPMI SOL minimum privilege level using the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolMinPrivilege <level>
```

where <level> is one of the following:

- 2 (User)
- 3 (Operator)
- 4 (Administrator)

For example, to configure the IPMI privileges to 2 (User), enter the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolMinPrivilege 2
```



NOTE: To redirect the serial console over LAN, ensure that the SOL baud rate is identical to your managed server's baud rate.

- b Update the IPMI SOL baud rate using the following command:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolBaudRate <baud-rate>
```

where <baud-rate> is 19200, 57600, or 115200 bps.

For example:

```
racadm config -g cfgIpmiSol -o  
cfgIpmiSolBaudRate 57600
```

- c Enable SOL by typing the following command at the command prompt.



NOTE: SOL can be enabled or disabled for each individual user.

```
racadm config -g cfgUserAdmin -o  
cfgUserAdminSolEnable -i <id> 2
```

where <id> is the user's unique ID.

Configuring PEF

You can configure the action you wish iDRAC6 to take for each platform alert. Table 13-3 lists the possible actions and the value to identify them in RACADM.

Table 13-3. Platform Event Action

Action	Value
No action	0
Power off	1
Reboot	2
Power Cycle	3

- 1 Configure PEF actions using the following command:

```
racadm config -g cfgIpmiPef -o cfgIpmiPefAction  
-i <index> <action-value>
```

where <index> is the PEF index (Table 5-7), and <action-value> is a value from Table 13-3.

For example, to enable PEF to reboot the system and send an IPMI alert when a processor critical event is detected, enter the following command:

```
racadm config -g cfgIpmiPef -o cfgIpmiPefAction  
-i 9 2
```

Configuring PET

- 1 Enable global alerts using the following command:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiLanAlertEnable 1
```

- 2 Enable PET using the following command:

```
racadm config -g cfgIpmiPet -o  
cfgIpmiPetAlertEnable -i <index> <0|1>
```

where <index> is the PET destination index and 0 or 1 disable PET or enable PET, respectively.

For example, to enable PET with index 4, enter the following command:

```
racadm config -g cfgIpmiPet -o  
cfgIpmiPetAlertEnable -i 4 1
```

- 3 Configure your PET policy using the following command:

```
racadm config -g cfgIpmiPet -o  
cfgIpmiPetAlertDestIPAddr -i <index> <IP-address>
```

where <index> is the PET destination index and <IP-address> is the destination IP address of the system that receives the platform event alerts.

- 4 Configure the Community Name string.

At the command prompt, enter:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiPetCommunityName <name>
```

where <name> is the PET Community Name.

Configuring E-mail Alerts

- 1 Enable global alerts by entering the following command:

```
racadm config -g cfgIpmiLan -o  
cfgIpmiLanAlertEnable 1
```

- 2 Enable e-mail alerts by entering the following commands:

```
racadm config -g cfgEmailAlert -o  
cfgEmailAlertEnable -i <index> <0|1>
```

where <index> is the e-mail destination index and 0 disables the e-mail alert or 1 enables the alert. The e-mail destination index can be a value from 1 through 4.

For example, to enable e-mail with index 4, enter the following command:

```
racadm config -g cfgEmailAlert -o  
cfgEmailAlertEnable -i 4 1
```

- 3 Configure your e-mail settings by entering the following command:

```
racadm config -g cfgEmailAlert -o  
cfgEmailAlertAddress -i 1 <email-address>
```

where 1 is the e-mail destination index and <email-address> is the destination e-mail address that receives the platform event alerts.

- 4 To configure a custom message, enter the following command:

```
racadm config -g cfgEmailAlert -o  
cfgEmailAlertCustomMsg -i <index> <custom-message>
```

where <index> is the e-mail destination index and <custom-message> is the custom message.

- 5 Test the configured e-mail alert, if desired, by entering the following command:

```
racadm testemail -i <index>
```

where <index> is the e-mail destination index to test.

Configuring IP Filtering (IP Range)

IP address filtering (or *IP Range Checking*) allows iDRAC6 access only from clients or management workstations whose IP addresses are within a user-specified range. All other login requests are denied.

IP filtering compares the IP address of an incoming login to the IP address range that is specified in the following **cfgRacTuning** properties:

- **cfgRacTuneIpRangeAddr**
- **cfgRacTuneIpRangeMask**

The **cfgRacTuneIpRangeMask** property is applied to both the incoming IP address and to the **cfgRacTuneIpRangeAddr** properties. If the results are identical, the incoming login request is allowed to access iDRAC6. Logins from IP addresses outside this range receive an error.

The login proceeds if the following expression equals zero:

```
cfgRacTuneIpRangeMask & (<incoming-IP-address> ^  
cfgRacTuneIpRangeAddr)
```

where & is the bitwise AND of the quantities and ^ is the bitwise exclusive-OR.

See "cfgRacTuning" for a complete list of **cfgRacTuning** properties.

Table 13-4. IP Address Filtering (IPRange) Properties

Property	Description
<code>cfgRacTuneIpRangeEnable</code>	Enables the IP range checking feature.
<code>cfgRacTuneIpRangeAddr</code>	Determines the acceptable IP address bit pattern, depending on the 1's in the subnet mask. This property is bitwise <i>anded</i> with <code>cfgRacTuneIpRangeMask</code> to determine the upper portion of the allowed IP address. Any IP address that contains this bit pattern in its upper bits is allowed to log in. Logins from IP addresses that are outside this range fail. The default values in each property allow an address range from 192.168.1.0 to 192.168.1.255 to log in.
<code>cfgRacTuneIpRangeMask</code>	Defines the significant bit positions in the IP address. The mask should be in the form of a netmask, where the more significant bits are all 1's with a single transition to all zeros in the lower-order bits.

Configuring IP Filtering

To configure IP filtering in the Web interface, follow these steps:

- 1** Click **System**→ **Remote Access**→ **iDRAC**→ **Network/Security**.
- 2** On the **Network Configuration** screen, click **Advanced Settings**.
- 3** Check the **IP Range Enabled** checkbox and enter the **IP Range Address** and **IP Range Subnet Mask**.
- 4** Click **Apply**.

Following are examples using local RACADM to set up IP filtering.



NOTE: See "Using the Local RACADM Command Line Interface" for more information about RACADM and RACADM commands.

- 1 The following RACADM commands block all IP addresses except 192.168.0.57:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeEnable 1
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeAddr 192.168.0.57
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeMask 255.255.255.255
```

- 2 To restrict logins to a small set of four adjacent IP addresses (for example, 192.168.0.212 through 192.168.0.215), select all but the lowest two bits in the mask, as shown below:

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeEnable 1
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeAddr 192.168.0.212
```

```
racadm config -g cfgRacTuning -o  
cfgRacTuneIpRangeMask 255.255.255.252
```

The last byte of the range mask is set to 252, the decimal equivalent of 1111100b.

IP Filtering Guidelines

Use the following guidelines when enabling IP filtering:

- Ensure that **cfgRacTuneIpRangeMask** is configured in the form of a netmask, where all most significant bits are 1's (which defines the subnet in the mask) with a transition to all 0's in the low-order bits.
- Use the desired range's base address as the value of **cfgRacTuneIpRangeAddr**. The 32-bit binary value of this address should have zeros in all the low-order bits where there are zeros in the mask.

Configuring IP Blocking

IP blocking dynamically determines when excessive login failures occur from a particular IP address and blocks (or prevents) the address from logging in to iDRAC6 for a preselected time span.

The IP blocking features include:

- The number of allowed login failures (**cfgRacTuneIpBlkFailcount**)
- The time frame in seconds during which these failures must occur (**cfgRacTuneIpBlkFailWindow**)
- The amount of time in seconds that the blocked IP address is prevented from establishing a session after the allowed number of failures is exceeded (**cfgRacTuneIpBlkPenaltyTime**)

As login failures accumulate from a specific IP address, they are registered by an internal counter. When the user logs in successfully, the failure history is cleared and the internal counter is reset.



NOTE: When login attempts are refused from the client IP address, some SSH clients may display the following message: `ssh exchange identification: Connection closed by remote host.`

See "iDRAC6 Enterprise Property Database Group and Object Definitions" for a complete list of **cfgRacTune** properties.

"Log In Retry Restriction (IP Blocking) Properties" lists the user-defined parameters.

Table 13-5. Log In Retry Restriction (IP Blocking) Properties

Property	Definition
cfgRacTuneIpBlkEnable	Enables the IP blocking feature. When consecutive failures (cfgRacTuneIpBlkFailCount) from a single IP address are encountered within a specific amount of time (cfgRacTuneIpBlkFailWindow), all further attempts to establish a session from that address are rejected for a certain time span (cfgRacTuneIpBlkPenaltyTime).
cfgRacTuneIpBlkFailCount	Sets the number of login failures from an IP address before the login attempts are rejected.

Table 13-5. Log In Retry Restriction (IP Blocking) Properties (continued)

Property	Definition
<code>cfgRacTuneIpBlkFailWindow</code>	The time frame in seconds during which the failure attempts are counted. When the failures exceed this limit, they are dropped from the counter.
<code>cfgRacTuneIpBlkPenaltyTime</code>	Defines the time span in seconds that login attempts from an IP address with excessive failures are rejected.

Enabling IP Blocking

The following example prevents a client IP address from establishing a session for five minutes if that client has failed five login attempts in a one-minute period of time.

```
racadm config -g cfgRacTuning -o
cfgRacTuneIpRangeEnable 1
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailCount 5
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailWindow 60
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkPenaltyTime 300
```


The following example prevents more than three failed attempts within one minute, and prevents additional login attempts for an hour.

```
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkEnable 1
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailCount 3
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkFailWindow 60
racadm config -g cfgRacTuning -o
cfgRacTuneIpBlkPenaltyTime 360
```

Configuring iDRAC6 Telnet and SSH Services Using Local RACADM

The telnet/SSH console can be configured locally (on the managed server) using RACADM commands.

 **NOTE:** You must have **Configure iDRAC6** permission to execute the commands in this section.

 **NOTE:** When you reconfigure telnet or SSH settings in iDRAC6, any current sessions are terminated without warning.

To enable telnet and SSH from the local RACADM, log in to the managed server and enter the following commands at a command prompt:

```
racadm config -g cfgSerial -o cfgSerialTelnetEnable 1
racadm config -g cfgSerial -o cfgSerialSshEnable 1
```

To disable the telnet or SSH service, change the value from 1 to 0:

```
racadm config -g cfgSerial -o cfgSerialTelnetEnable 0
racadm config -g cfgSerial -o cfgSerialSshEnable 0
```

Enter the following command to change the telnet port number on iDRAC6:

```
racadm config -g cfgRacTuning -o cfgRacTuneTelnetPort
<new port number>
```

For example, to change the telnet port from the default 22 to 8022, enter this command:

```
racadm config -g cfgRacTuning -o cfgRacTuneTelnetPort
8022
```

For a complete list of available RACADM CLI commands, see "Using the Local RACADM Command Line Interface."

Using an iDRAC6 Configuration File

An iDRAC6 configuration file is a text file that contains a representation of the values in the iDRAC6 database. You can use the RACADM **getconfig** subcommand to generate a configuration file containing the current values from iDRAC6. You can then edit the file and use the RACADM **config -f** subcommand to load the file back into iDRAC6, or to copy the configuration to other iDRACs.

Creating an iDRAC6 Configuration File

The configuration file is a plain text file. You can use any valid file name; however, the `.cfg` file extension is the recommended convention.

The configuration file can be:

- Created with a text editor
- Obtained from iDRAC6 with the RACADM `getconfig` subcommand
- Obtained from iDRAC6 with the RACADM `getconfig` subcommand and then edited

To obtain a configuration file, with the RACADM `getconfig` command, enter the following command at a command prompt on the managed server:

```
racadm getconfig -f myconfig.cfg
```

This command creates the file `myconfig.cfg` in the current directory.

Configuration File Syntax



NOTE: Edit the configuration file with a plain text editor, such as Notepad on Windows or `vi` on Linux. The `racadm` utility parses ASCII text only. Any formatting confuses the parser and may corrupt the iDRAC6 database.

This section describes the format of the configuration file.

- Lines that start with `#` are comments.

A comment *must* start in the first column of the line. A `#` character in any other column is treated as a normal `#` character.

Example:

```
#  
# This is a comment  
[cfgUserAdmin]  
cfgUserAdminPrivilege=4
```

- Group entries must be surrounded by `[` and `]` characters.

The starting `[` character denoting a group name *must* start in column one. This group name *must* be specified before any of the objects in that group. Objects that do not include an associated group name generate an error.

The configuration data is organized into groups as defined in "iDRAC6 Enterprise Property Database Group and Object Definitions."

The following example displays a group name, object, and the object's property value.

Example:

```
[cfgLanNetworking] (group name)
cfgNicIpAddress=143.154.133.121 (object name)
```

- Parameters are specified as *object=value* pairs with no white space between the object, =, and value.

White space that is included after the value is ignored. White space inside a value string remains unmodified. Any character to the right of the = is taken as is (for example, a second =, or a #, [,], and so forth).

- The parser ignores an index object entry.

You *cannot* specify which index is used. If the index already exists, it is either used or the new entry is created in the first available index for that group.

The `racadm getconfig -f <filename>` command places a comment in front of index objects, allowing you to see the included comments.



NOTE: You can create an indexed group manually using the following command:
`racadm config -g <groupName> -o <anchored-object> -i <index> <unique-anchor-name>`.

- The line for an indexed group *cannot* be deleted from a configuration file.

You must remove an indexed object manually using the following command:

```
racadm config -g <groupName> -o <objectName> -i
<index> ""
```



NOTE: A NULL string (identified by two "" characters) directs iDRAC6 to delete the index for the specified group.

To view the contents of an indexed group, use the following command:

```
racadm getconfig -g <groupName> -i <index>
```

- For indexed groups the object anchor *must* be the first object after the [] pair. The following are examples of the current indexed groups:

```
[cfgUserAdmin]
```

```
cfgUserAdminUserName=<username>
```

- If the parser encounters an indexed group, it is the value of the anchored object that differentiates the various indexes.

The parser reads in all of the indexes from iDRAC6 for that group. Any objects within that group are simple modifications when iDRAC6 is configured. If a modified object represents a new index, the index is created on iDRAC6 during configuration.

- You cannot specify a desired index in a configuration file.

Indexes may be created and deleted, so over time the group may become fragmented with used and unused indexes. If an index is present, it is modified. If an index is not present, the first available index is used. This method allows flexibility when adding indexed entries where you do not need to make exact index matches between all the RACs being managed. New users are added to the first available index. A configuration file that parses and runs correctly on one iDRAC6 may not run correctly on another if all indexes are full and you must add a new user.

Modifying the iDRAC6 IP Address in a Configuration File

When you modify the iDRAC6 IP address in the configuration file, remove all unnecessary `<variable>=<value>` entries. Only the actual variable group's label with "[" and "]" remains, including the two `<variable>=<value>` entries pertaining to the IP address change.

For example:

```
#
# Object Group "cfgLanNetworking"
#
[cfgLanNetworking]
cfgNicIpAddress=10.35.10.110
cfgNicGateway=10.35.10.1
```

This file will be updated as follows:

```
#  
#   Object Group "cfgLanNetworking"  
#  
[cfgLanNetworking]  
cfgNicIpAddress=10.35.9.143  
# comment, the rest of this line is ignored  
cfgNicGateway=10.35.9.1
```

Loading the Configuration File Into iDRAC6

The command `racadm config -f <filename>` parses the configuration file to verify that valid group and object names are present and that syntax rules are followed. If the file is error-free the command then updates the iDRAC6 database with the contents of the file.



NOTE: To verify the syntax only and not update the iDRAC6 database, add the `-c` option to the `config` subcommand.

Errors in the configuration file are flagged with the line number and a message that explains the problem. You must correct all errors before the configuration file can update iDRAC6.



NOTE: Use the `racresetcfg` subcommand to reset the database and the iDRAC6 NIC settings to the original default settings and remove all users and user configurations. While the root user is available, other users' settings are also reset to the default settings.

Before you execute the `racadm config -f <filename>` command, you can run the `racresetcfg` subcommand to reset iDRAC6 to its default settings. Ensure that the configuration file you will load includes all desired objects, users, indexes, and other parameters.

To update iDRAC6 with the configuration file, execute the following command at the managed server's command prompt:

```
racadm config -f <filename>
```

After the command has completed, you can execute the RACADM `getconfig` subcommand to confirm that the update succeeded.

Configuring Multiple iDRACs

Using a configuration file, you can configure other iDRACs with identical properties. Follow these steps to configure multiple iDRACs:

- 1 Create the configuration file from the iDRAC6 settings you want to replicate to the others. At a command prompt on the managed server, enter the following command:

```
racadm getconfig -f <filename>
```

where <filename> is the name of a file to save the iDRAC6 properties, such a myconfig.cfg.

See "Creating an iDRAC6 Configuration File" for more information.



NOTE: Some configuration files contain unique iDRAC6 information (such as the static IP address) that must be modified before you export the file to other iDRACs.

- 2 Edit the configuration file you created in the previous step and remove or comment-out any settings you *do not* want to replicate.
- 3 Copy the edited configuration file to a network drive where it is accessible to each managed server whose iDRAC6 you want to configure.
- 4 For each iDRAC6 you want to configure:

- a Log in to the managed server and start a command prompt.
- b If you want to reconfigure iDRAC6 from the default settings, enter the following command:

```
racadm racreset
```

- c Load the configuration file into iDRAC6 with the following command:

```
racadm config -f <filename>
```

where <filename> is the name of the configuration file you created. Include the full path if the file is not in the working directory.

- d Reset the iDRAC6 that was configured by entering the following command:

```
racadm reset
```


Using iDRAC6 Enterprise SM-CLP Command Line Interface

This section provides information about the Server Management Workgroup (SMWG) Server Management-Command Line Protocol (SM-CLP) that is incorporated in iDRAC6.



NOTE: This section assumes that you are familiar with the Systems Management Architecture for Server Hardware (SMASH) Initiative and the SMWG SM-CLP specifications. For more information on these specifications, see the Distributed Management Task Force (DMTF) website at www.dmtf.org.

The iDRAC6 SM-CLP is a protocol driven by the DMTF and SMWG to provide standards for systems management CLI implementations. Many efforts are driven by a defined SMASH architecture that is targeted as a foundation for more standardized systems management set of components. The SMWG SM-CLP is a subcomponent of the overall SMASH efforts driven by DMTF.

SM-CLP provides a subset of the functionality provided by the local RACADM command line interface, but with a different access path. SM-CLP executes within iDRAC6, while RACADM executes on the managed server. Also, RACADM is a Dell proprietary interface, where SM-CLP is an industry standard interface. See "RACADM and SM-CLP Equivalencies" for a mapping of the RACADM and SM-CLP commands.

System Management With SM-CLP

The iDRAC6 SM-CLP enables you to manage the following system features from a command line or script:

- Server Power Management — Turn on, shutdown, or reboot the system
- System Event Log (SEL) Management — Display or clear the SEL records
- iDRAC6 user account management

- Active Directory configuration
- iDRAC6 LAN configuration
- SSL Certificate Signature Request (CSR) generation
- Virtual media configuration
- Serial over LAN (SOL) redirection over Telnet or SSH

iDRAC6 SM-CLP Support

SM-CLP is hosted from iDRAC6 firmware, and supports telnet and SSH connections. The iDRAC6 SM-CLP interface is based on the SM-CLP Specification Version 1.0 provided by the DMTF organization.

The following sections provide an overview of the SM-CLP feature that is hosted from iDRAC6.

SM-CLP Features

The SM-CLP specification provides a common set of standard SM-CLP verbs that can be used for simple systems management through the CLI.

SM-CLP promotes the concept of verbs and targets to provide system configuration capabilities through the CLI. The verb indicates the operation to perform and the target determines the entity (or object) that runs the operation.

The following is the syntax of the SM-CLP command line:

```
<verb> [<options>] [<target>] [<properties>]
```

Table 14-1 provides a list of the verbs the iDRAC6 CLI supports, the syntax of each command, and a list of the options the verb supports.

Table 14-1. Supported SM-CLP CLI Verbs

Verb	Description	Options
cd	Navigates through the managed system address space using the shell. Syntax: <code>cd [options] [target]</code>	-default, -examine, -help, -output, -version
delete	Deletes an object instance. Syntax: <code>delete [options] target</code>	-examine, -help, -output, -version
dump	Moves a binary image from the MAP to a URI. <code>dump -destination <URI> [options] [target]</code>	-destination, -examine, -help, -output, -version
exit	Exits from the SM-CLP shell session. Syntax: <code>exit [options]</code>	-help, -output, -version
help	Displays help for SM-CLP commands. <code>help</code>	-examine, -help, -output, -version
load	Moves a binary image to the MAP from a URI. Syntax: <code>load -source <URI> [options] [target]</code>	-examine, -help, -output, -source, -version
reset	Resets the target. Syntax: <code>reset [options] [target]</code>	-examine, -help, -output, -version
set	Sets the properties of a target Syntax: <code>set [options] [target] <property name>=<value></code>	-examine, -help, -output, -version

Table 14-1. Supported SM-CLP CLI Verbs (continued)

Verb	Description	Options
show	Displays the target properties, verbs, and subtargets. Syntax: show [options] [target] <property name>=<value>	-all, -default, -display, -examine, -help, -level, -output, -version
start	Starts a target. Syntax: start [options] [target]	-examine, -force, -help, -output, -version
stop	Shuts down a target. Syntax: stop [options] [target]	-examine, -force, -help, -output, -version, -wait
version	Displays the version attributes of a target. Syntax: version [options]	-examine, -help, -output, -version

Table 14-2 describes the SM-CLP options. Some options have abbreviated forms, as shown in the table.

Table 14-2. Supported SM-CLP Options

SM-CLP Option	Description
-all, -a	Instructs the verb to perform all possible functions.
-destination	Specifies the location to store an image in the dump command. Syntax: -destination <URI>
-display, -d	Filters the command output. Syntax: -display <properties targets verbs>[, <properties targets verbs>]*

Table 14-2. Supported SM-CLP Options (continued)

SM-CLP Option	Description
-examine, -x	Instructs the command processor to validate the command syntax without executing the command.
-help, -h	Displays help for the verb.
-level, -l	Instructs the verb to operate on targets at additional levels beneath the specified target. Syntax: -level <n all>
-output, -o	Specifies the format for the output. Syntax: -output <text clpcsv clpxml>
-source	Specifies the location of an image in a load command. Syntax: -source <URI>
-version, -v	Displays the SMASH-CLP version number.

Navigating the MAP Address Space



NOTE: The slash (/) and backslash (\) are interchangeable in SM-CLP address paths. However, a backslash at the end of a command line continues the command on the next line and is ignored when the command is parsed.

Objects that can be managed with SM-CLP are represented by targets arranged in a hierarchical space called the Manageability Access Point (MAP) address space. An address path specifies the path from the root of the address space to an object in the address space.

The root target is represented by a slash (/) or a backslash (\). It is the default starting point when you log in to iDRAC6. Navigate down from the root using the `cd` verb. For example to navigate to the third record in the System Event Log (SEL), enter the following command:

```
->cd /system1/sp1/logs1/record3
```

Enter the `cd` verb with no target to find your current location in the address space. The `..` and `.` abbreviations work as they do in Windows and Linux: `..` refers to the parent level and `.` refers to the current level.

Targets

Table 14-3 provides a list of targets available through the SM-CLP.

Table 14-3. SM-CLP Targets

Target	Definition
/system1/	The managed system target.
/system1/sp1	The service processor.
/system1/soll	Serial over LAN target.
/system1/sp1/account1 through /system1/sp1/account16	The sixteen local iDRAC6 user accounts. <code>account1</code> is the root account.
/system1/sp1/enetport1	The iDRAC6 NIC MAC address.
/system1/sp1/enetport1/lanendpt1/ipendpt1	The iDRAC6 IP, gateway, and netmask settings.
/system1/sp1/enetport1/lanendpt1/ipendpt1/dnsendpt1	The iDRAC6 DNS server settings.
/system1/sp1/group1 through /system1/sp1/group5	The Active Directory standard schema groups.
/system1/sp1/logs1	The log collections target.
/system1/sp1/logs1/record1	An individual SEL record instance on the managed system.
/system1/sp1/logs1/records	The SEL target on the managed system.
/system1/sp1/oem Dell_racecurity1	Storage for parameters used to generate a Certificate Signing Request.
/system1/sp1/oem Dell_ssl1	SSL certificate request state.
/system1/sp1/oem Dell_vm service1	The virtual media configuration and state.

Using the Show Verb

To learn more about a target use the `show` verb. This verb displays the target's properties, sub-targets, and a list of the SM-CLP verbs that are allowed at that location.

Using the `-display` Option

The `show -display` option allows you to limit the output of the command to one or more of properties, targets, and verbs. For example, to display just the properties and targets at the current location, use the following command:

```
show -d properties,targets /system1/sp1/account1
```

To list only certain properties, qualify them, as in the following command:

```
show -d properties=(userid,username) /system1/sp1/  
account1
```

If you only want to show one property, you can omit the parentheses.

Using the `-level` Option

The `show -level` option executes `show` over additional levels beneath the specified target. For example, if you want to see the `username` and `userid` properties of the `account1` through `account16` targets beneath `/system1/sp1`, you could enter the following command:

```
show -l 1 -d properties=(userid,username) /system1/  
sp1/account*
```

To see all targets and properties in the address space, use the `-l all` option, as in the following command:

```
show -l all -d properties /
```

Using the `-output` Option

The `-output` option specifies one of four formats for the output of SM-CLP verbs: `text`, `clpcsv`, `keyword`, and `clpxml`.

The default format is `text`, and is the most readable output. The `clpcsv` format is a comma-separated values format suitable for loading into a spreadsheet program. The `keyword` format outputs information as a list of `keyword=value` pairs one per line. The `clpxml` format is an XML document

containing a **response** XML element. The DMTF has specified the **clpcsv** and **clpxml** formats and their specifications can be found on the DMTF website at www.dmtf.org.

The following example shows how to output the contents of the SEL in XML:

```
show -l all -output format=clpxml /system1/sp1/logs1
```

iDRAC6 SM-CLP Examples

The following subsections provide examples for using the SM-CLP to perform the following operations:

- Server power management
- SEL management
- MAP target navigation
- Display system properties
- Setting the iDRAC6 IP address, subnet mask, and gateway address

For information on the use of the iDRAC6 SM-CLP interface, see "iDRAC6 SM-CLP Property Database."

Server Power Management

Table 14-4 provides examples of using SM-CLP to perform power management operations on a managed server.

Table 14-4. Server Power Management Operations

Operation	Syntax
Logging in to iDRAC6 using the SSH interface	<pre>>ssh 192.168.0.120 >login: root >password:</pre>
Power down the server	<pre>->stop /system1 system1 has been stopped successfully</pre>
Power up the server from a powered-off state	<pre>->start /system1 system1 has been started successfully</pre>
Reboot the server	<pre>->reset /system1 system1 has been reset successfully</pre>

SEL Management

Table 14-5 provides examples of using the SM-CLP to perform SEL-related operations on the managed system.

Table 14-5. SEL Management Operations

Operation	Syntax
Viewing the SEL	<pre>->show /system1/sp1/logs1 Targets: record1 record2 record3 record4 record5 Properties: Description=IPMI SEL MaxNumberOfRecords=512 CurrentNumberOfRecords=5 Verbs: cd delete exit help show version</pre>

Table 14-5. SEL Management Operations (continued)

Operation	Syntax
Viewing the SEL record	<pre>->show /system1/sp1/logs1/record4 ufip=/system1/sp1/logs1/log1/record4 Properties: Caption=Not defined Description=Backplane Drive 0: drive slot sensor for Backplane, drive presence was asserted ElementName=Not Supported LogCreationClassName=CIM_RecordLog LogName=IPMI SEL CreationClassName=CIM_LogRecord RecordID=4 MessageTimeStamp=16:37:10,January 13,2007 Verbs: cd exit help show version</pre>
Clearing the SEL	<pre>->delete /system1/sp1/logs1 All records deleted successfully</pre>

MAP Target Navigation

Table 14-6 provides examples of using the `cd` verb to navigate the MAP. In all examples, the initial default target is assumed to be `/`.

Table 14-6. Map Target Navigation Operations


Operation	Syntax
Navigate to the system target and reboot	<code>->cd system1</code> <code>->reset</code>
NOTE: The current default target is <code>/</code> .	
Navigate to the SEL target and display the log records	<code>->cd system1</code> <code>->cd spl</code> <code>->cd logs1</code> <code>->show</code>
Display current target	<code>->cd .</code>
Move up one level	<code>->cd ..</code>
Exiting the shell	<code>->exit</code>


Setting the iDRAC6 IP Address, Subnet Mask, and Gateway Address

Using SM-CLP to update the iDRAC6 network properties is a two-part process:

- 1 Set new values for the NIC properties at location `/system1/spl/enetport1/lanendpt1/ipendpt1`:
 - `oem Dell_nicenable` — Set to `1` to enable iDRAC6 networking, `0` to disable iDRAC6 networking
 - `ipaddress` — The IP address
 - `subnetmask` — The subnet mask
 - `oem Dell_usedhcp` — Set to `1` to enable using DHCP to set the `ipaddress` and `subnetmask` properties, `0` to set static values
- 2 Commit the new values by setting the `committed` property to `1`.

Whenever the **commit** property has the value of 1, the current settings of the properties are active. When you change any of the properties, the **commit** property is reset to 0 to indicate that the values have not been committed.

 **NOTE:** The **commit** property only affects the properties at the `/system1/sp1/enetport1/lanendpt1/ipendpt1` MAP location. All other SM-CLP commands take effect immediately.

 **NOTE:** If you use local RACADM to set the iDRAC6 network properties, your changes take effect immediately because local RACADM does not depend upon a network connection.

When you commit the changes, the new network settings take effect, which causes your telnet or ssh session to be terminated. By introducing the commit step, you can delay the termination of your session until you have completed all of your SM-CLP commands.

Table 14-7 provides examples of setting the iDRAC6 properties using SM-CLP.

Table 14-7. Setting iDRAC6 Networking Properties with SM-CLP

Operation	Syntax
Navigate to the iDRAC6 NIC properties location	<code>->cd /system1/sp1/enetport1/lanendpt1/ipendpt1</code>
Set the new IP address	<code>->set ipaddress=10.10.10.10</code>
Set the subnet mask	<code>->set subnetmask=255.255.255.255</code>
Turn on the DHCP flag	<code>->set oemdel1_usedhcp=1</code>
Enable the NIC	<code>->set oemdel1_nicenable=1</code>
Commit the changes	<code>->set committed=1</code>

Updating iDRAC6 Firmware Using SM-CLP

To update iDRAC6 firmware using SM-CLP, you must know the TFTP URI for the Dell update package.

Follow these steps to update the firmware using SM-CLP:

- 1 Log in to iDRAC6 using telnet or SSH.
- 2 Check the current firmware version by entering the following command:

```
version
```

- 3 Enter the following command:

```
load -source tftp://<tftp-server>/<update-path> /  
system1/sp1
```

where *<tftp-server>* is the DNS name or IP address of your TFTP server and *<update-path>* is the path to the update package on the TFTP server.

Your telnet or SSH session will be terminated. You may need to wait several minutes for the firmware update to complete.

- 4 To verify that the new firmware was written, start a new telnet or SSH session and re-enter the version command again.

Deploying Your Operating System Using iVMCLI

The Integrated Virtual Media Command Line Interface (iVMCLI) utility is a command-line interface that provides virtual media features from the management station to iDRAC6 in the remote system. Using iVMCLI and scripted methods, you can deploy your operating system on multiple remote systems in your network.

This section provides information on integrating the iVMCLI utility into your corporate network.

Before You Begin

Before using the iVMCLI utility, ensure that your targeted remote systems and corporate network meet the requirements listed in the following sections.

Remote System Requirements

- iDRAC6 is configured in each remote system.

Network Requirements

A network share must contain the following components:

- Operating system files
- Required drivers
- Operating system boot image file(s)

The image file must be an operating system CD or a CD/DVD ISO image with an industry-standard, bootable format.

Creating a Bootable Image File

Before you deploy your image file to the remote systems, ensure that a supported system can boot from the file. To test the image file, transfer the image file to a test system using the iDRAC6 Web user interface and then reboot the system.

The following sections provide specific information for creating image files for Linux and Windows systems.

Creating an Image File for Linux Systems

Use the Data Duplicator (dd) utility to create a bootable image file for your Linux system.

To run the utility, open a command prompt and enter the following:

```
dd if=<input-device> of=<output-file>
```

For example:

```
dd if=/dev/sdc0 of=mycd.img
```

Creating an Image File for Windows Systems

When choosing a data replicator utility for Windows image files, select a utility that copies the image file and the CD/DVD boot sectors.

Preparing for Deployment

Configuring the Remote Systems

- 1 Create a network share that can be accessed by the management station.
- 2 Copy the operating system files to the network share.
- 3 If you have a bootable, preconfigured deployment image file to deploy the operating system to the remote systems, skip this step.

If you do not have a bootable, preconfigured deployment image file, create the file. Include any programs and/or scripts used for the operating system deployment procedures.

For example, to deploy a Microsoft® Windows® operating system, the image file may include programs that are similar to deployment methods used by Microsoft Systems Management Server (SMS).

When you create the image file, do the following:

- Follow standard network-based installation procedures.
 - Mark the deployment image as "read only" to ensure that each target system boots and executes the same deployment procedure.
- 4** Perform one of the following procedures:
- Integrate **IPMItool** and the Virtual Media command line interface (iVMCLI) into your existing operating system deployment application. Use the sample **ivmdeploy** script as a guide to using the utility.
 - Use the existing **ivmdeploy** script to deploy your operating system.

Deploying the Operating System

Use the iVMCLI utility and the **ivmdeploy** script included with the utility to deploy the operating system to your remote systems.

Before you begin, review the sample **ivmdeploy** script included with the iVMCLI utility. The script shows the detailed steps needed to deploy the operating system to remote systems in your network.

The following procedure provides a high-level overview for deploying the operating system on targeted remote systems.

- 1** List the iDRAC6 IP addresses of the remote systems that will be deployed in the **ip.txt** text file, one IP address per line.
- 2** Insert a bootable operating system CD or DVD into the client media drive.
- 3** Run **ivmdeploy** at the command line.

To run the **ivmdeploy** script, enter the following command at the command prompt:

```
ivmdeploy -r ip.txt -u <idrac-user> -p <idrac-passwd>  
-c {<iso9660-img> | <path>}
```

where:

- **<idrac-user>** is the iDRAC6 user name—for example, **root**
- **<idrac-passwd>** is the password for the iDRAC6 user—for example, **calvin**

- `<iso9660-img>` is the path to an ISO9660 image of the operating system installation CD or DVD
- `<path>` is the path to the device containing the operating system installation CD or DVD


The `ivmdeploy` script passes its command line options to the `iVMCLI` utility. See "Command Line Options" for details about these options. The script processes the `-r` option slightly differently than the `iVMCLI -r` option. If the argument to the `-r` option is the name of an existing file, the script reads iDRAC6 IP addresses from the specified file and runs the `iVMCLI` utility once for each line. If the argument to the `-r` option is not a filename, then it should be the address of a single iDRAC6. In this case, the `-r` works as described for the `iVMCLI` utility.

The `ivmdeploy` script supports installation only from a CD/DVD or a CD/DVD ISO9660 image. If you need to install from a floppy disk or a floppy disk image, you can modify the script to use the `iVMCLI -f` option.

Using the Virtual Media Command Line Interface Utility

The Virtual Media Command Line Interface (`iVMCLI`) utility is a scriptable command-line interface that provides virtual media features from the management station to iDRAC6.

The `iVMCLI` utility provides the following features:

 **NOTE:** When virtualizing read-only image files, multiple sessions may share the same image media. When virtualizing physical drives, only one session can access a given physical drive at a time.

- Removable media devices or image files that are consistent with the Virtual Media plug-ins
- Automatic termination when the iDRAC6 firmware boot once option is enabled
- Secure communications to iDRAC6 using Secure Sockets Layer (SSL)

Before you run the utility, ensure that you have Virtual Media user privilege to iDRAC6.

If your operating system supports administrator privileges or an operating system-specific privilege or group membership, administrator privileges are also required to run the iVMCLI command.

The client system's administrator controls user groups and privileges, thereby controlling the users who can run the utility.

For Windows systems, you must have Power User privileges to run the iVMCLI utility.

For Linux systems, you can access the iVMCLI utility without administrator privileges by using the **sudo** command. This command provides a centralized means of providing non-administrator access and logs all user commands.

To add or edit users in the iVMCLI group, the administrator uses the **visudo** command. Users without administrator privileges can add the **sudo** command as a prefix to the iVMCLI command line (or to the iVMCLI script) to obtain access to iDRAC6 in the remote system and run the utility.

Installing the iVMCLI Utility

The iVMCLI utility is located on the *Dell Systems Management Tools and Documentation* DVD, which is included with your Dell OpenManage System Management Software Kit. To install the utility, insert the DVD into your system, and follow the on-screen instructions.

The *Dell Systems Management Tools and Documentation* DVD contains the latest systems management software products, including diagnostics, storage management, remote access service, and the RACADM utility. This DVD also contains readme files, which provide the latest systems management software product information.

The *Dell Systems Management Tools and Documentation* DVD also includes **ivmdeploy**—a sample script that illustrates how to use the iVMCLI and RACADM utilities to deploy software to multiple remote systems.



NOTE: The **ivmdeploy** script is dependent upon the other files that are present in its directory when it is installed. If want to use the script from another directory, you must copy all of the files with it.

Command Line Options

The iVMCLI interface is identical on both Windows and Linux systems. The utility uses options that are consistent with the RACADM utility options. For example, an option to specify the iDRAC6 IP address requires the same syntax for both RACADM and iVMCLI utilities.

The iVMCLI command format is as follows:

```
iVMCLI [parameter] [operating_system_shell_options]
```

Command-line syntax is case sensitive. See "iVMCLI Parameters" for more information.

If the remote system accepts the commands and iDRAC6 authorizes the connection, the command continues to run until either of the following occurs:

- The iVMCLI connection terminates for any reason.
- The process is manually terminated using an operating system control. For example, in Windows, you can use the Task Manager to terminate the process.

iVMCLI Parameters

iDRAC6 IP Address

```
-r <iDRAC-IP-address>[:<iDRAC-SSL-port>]
```

This parameter provides the iDRAC6 IP address and SSL port, which the utility needs to establish a Virtual Media connection with the target iDRAC6. If you enter an invalid IP address or DDNS name, an error message appears and the command is terminated.

<iDRAC-IP-address> is a valid, unique IP address or the iDRAC6 Dynamic Domain Naming System (DDNS) name (if supported). If <iDRAC-SSL-port> is omitted, port 443 (the default port) is used. The optional SSL port is not required unless you change the iDRAC6 default SSL port.

iDRAC6 User Name

```
-u <iDRAC-user-name>
```

This parameter provides the iDRAC6 user name that will run Virtual Media.

The *<iDRAC-user-name>* must have the following attributes:

- Valid user name
- iDRAC6 Virtual Media User permission

If iDRAC6 authentication fails, an error message appears and the command is terminated.

iDRAC6 User Password

`-p <iDRAC-user-password>`

This parameter provides the password for the specified iDRAC6 user.

If iDRAC6 authentication fails, an error message displays and the command terminates.

Floppy/Disk Device or Image File

`-f {<device-name> | <image-file>}`

where *<device-name>* is a valid drive letter (for Windows systems) or a valid device file name, including the mountable file system partition number, if applicable (for Linux systems); and *<image-file>* is the filename and path of a valid image file.

This parameter specifies the device or file to supply the virtual floppy/disk media.

For example, an image file is specified as:

`-f c:\temp\myfloppy.img` (Windows system)

`-f /tmp/myfloppy.img` (Linux system)

If the file is not write-protected, Virtual Media may write to the image file. Configure the operating system to write-protect a floppy image file that should not be overwritten.

For example, a device is specified as:

`-f a:\` (Windows system)

`-f /dev/sdb4 # 4th partition on device /dev/sdb`
(Linux system)

If the device provides a write-protection capability, use this capability to ensure that Virtual Media will not write to the media.

Omit this parameter from the command line if you are not virtualizing floppy media. If an invalid value is detected, an error message displays and the command terminates.

CD/DVD Device or Image File

`-c {<device-name> | <image-file>}`

where *<device-name>* is a valid CD/DVD drive letter (Windows systems) or a valid CD/DVD device file name (Linux systems) and *<image-file>* is the file name and path of a valid ISO-9660 image file.

This parameter specifies the device or file that will supply the virtual CD/DVD-ROM media:

For example, an image file is specified as:

`-c c:\temp\mydvd.img` (Windows systems)

`-c /tmp/mydvd.img` (Linux systems)

For example, a device is specified as:

`-c d:\` (Windows systems)

`-c /dev/cdrom` (Linux systems)

Omit this parameter from the command line if you are not virtualizing CD/DVD media. If an invalid value is detected, an error message is listed and the command terminates.

Specify at least one media type (floppy or CD/DVD drive) with the command, unless only switch options are provided. Otherwise, an error message displays and the command terminates and generates an error.

Version Display

`-v`

This parameter is used to display the iVMCLI utility version. If no other non-switch options are provided, the command terminates without an error message.

Help Display

-h

This parameter displays a summary of the iVMCLI utility parameters. If no other non-switch options are provided, the command terminates without error.

Manual Display

-m

This parameter displays a detailed “man page” for the iVMCLI utility, including descriptions of all of the possible options.


Encrypted Data

-e

When this parameter is included in the command line, iVMCLI will use an SSL-encrypted channel to transfer data between the management station and iDRAC6 in the remote system. If this parameter is not included in the command line, the data transfer is not encrypted.

iVMCLI Operating System Shell Options

The following operating system features can be used in the iVMCLI command line:

- **stderr/stdout redirection** — Redirects any printed utility output to a file. For example, using the greater-than character (>) followed by a filename overwrites the specified file with the printed output of the iVMCLI utility.
 **NOTE:** The iVMCLI utility does not read from standard input (stdin). As a result, **stdin** redirection is not required.
- **Background execution** — By default, the iVMCLI utility runs in the foreground. Use the operating system's command shell features to cause the utility to run in the background. For example, under a Linux operating system, the ampersand character (&) following the command causes the program to be spawned as a new background process.

The latter technique is useful in script programs, as it allows the script to proceed after a new process is started for the iVMCLI command (otherwise, the script would block until the iVMCLI program is terminated). When multiple iVMCLI instances are started in this way, and one or more of the command instances must be manually terminated, use the operating system-specific facilities for listing and terminating processes.

iVMCLI Return Codes

- 0 = No error
- 1 = Unable to connect
- 2 = iVMCLI command line error
- 3 = RAC firmware connection dropped

English-only text messages are also issued to standard error output whenever errors are encountered.

Using the iDRAC6 Configuration Utility

Overview

The iDRAC6 Configuration Utility is a pre-boot configuration environment that allows you to view and set parameters for iDRAC6 and for the managed server. Specifically, you can:

- View the firmware revision numbers for iDRAC6 and primary backplane firmware
- Configure, enable, or disable the iDRAC6 local area network (LAN)
- Enable or disable IPMI Over LAN
- Configure LAN parameters
- Enable, disable, or cancel System Services
- Attach or detach the Virtual Media devices
- Change the administrative username and password
- Reset the iDRAC6 configuration to the factory defaults
- View System Event Log (SEL) messages or clear messages from the log

The tasks you can perform using iDRAC6 Configuration Utility can also be performed using other utilities provided by the iDRAC6 or Dell OpenManage software, including the Web-based interface, the SM-CLP command line interface, the local RACADM command line interface and, in the case of basic network configuration, at the iDRAC6 LCD during initial iDRAC6 configuration.

Starting the iDRAC6 Configuration Utility

You must use an iDRAC6 KVM-connected console to access the iDRAC6 Configuration Utility initially or after a resetting iDRAC6 to the default settings.

- 1 At the keyboard connected to the iDRAC6 KVM console, press <Print Screen> to display the **iDRAC6 KVM On Screen Configuration and Reporting (OSCAR)** menu. Use <Up Arrow> and <Down Arrow> to highlight the slot containing your server, then press <Enter>.
- 2 Turn on or restart the server by pressing the power button on the front of the server.
- 3 When you see the message **Press <Ctrl-E> for Remote Access Setup within 5 sec.....**, immediately press <Ctrl><E>. The iDRAC6 Configuration Utility displays.



NOTE: If your operating system begins to load before you press <Ctrl><E>, allow the system to finish booting, then restart your server and try again.

The first two lines of the Configuration Utility provide information about iDRAC6 firmware and primary backplane firmware revisions. The revision levels can be useful in determining whether a firmware upgrade is needed.

iDRAC6 firmware is the portion of the firmware concerned with external interfaces, such as the Web-based interface, SM-CLP, and Web interfaces. The primary backplane firmware is the portion of the firmware that interfaces with and monitors the server hardware environment.

Using the iDRAC6 Configuration Utility

Beneath the firmware revision messages, the remainder of the iDRAC6 Configuration Utility is a menu of items that you can access by using the up-arrow and down-arrow keys.

- If a menu item leads to a submenu or an editable text field, press <Enter> to access the item and <Esc> to leave it when you have finished configuring it.
- If an item has selectable values, such as Yes/No or Enabled/Disabled, press the left-arrow or right-arrow keys or the spacebar to choose a value.
- If an item is not editable, it appears in blue. Some items become editable depending upon other selections you make.

- The bottom line of the screen displays instructions for the current item. You can press <F1> to display help for the current item.
- When you have finished using the iDRAC6 Configuration Utility, press <Esc> to view the exit menu, where you can choose to save or discard your changes or return to the utility.

The following sections describe the iDRAC6 Configuration Utility menu items.

iDRAC6 LAN

Use the left-arrow and right-arrow keys and the spacebar to select between **Enabled** and **Disabled**.

The iDRAC6 LAN is disabled in the default configuration. The LAN must be enabled to permit the use of iDRAC6 facilities, such as the Web-based interface, telnet/SSH access to the SM-CLP command line interface, console redirection, and virtual media.

If you choose to disable the LAN the following warning displays:

```
iDRAC Out-of-Band interface will be disabled if the
LAN Channel is OFF.
```

The message informs you that in addition to facilities that you access by connecting to the iDRAC6 HTTP, HTTPS, telnet, or SSH ports directly, out-of-band management network traffic, such as IPMI messages sent to iDRAC6 from a management station, are not received when the LAN is disabled. The local RACADM interface remains available and can be used to reconfigure the iDRAC6 LAN.

Press any key to clear the message and continue.

IPMI Over LAN

Press the left-arrow and right-arrow keys and the spacebar to choose between **On** and **Off**. When **Off** is selected, iDRAC6 will not accept IPMI messages arriving over the LAN interface.

If you choose **Off**, the following warning displays:

```
iDRAC Out-of-Band interface will be disabled if IPMI
Over LAN is OFF.
```

Press any key to clear the message and continue. For an explanation of the message, see "iDRAC6 LAN."

LAN Parameters

Press <Enter> to display the LAN Parameters submenu. When you have finished configuring the LAN parameters, press <Esc> to return to the previous menu.

Table 16-1. LAN Parameters

Item	Description
RMCP+ Encryption Key	Press <Enter> to edit the value, <Esc> when finished. The RMCP+ Encryption key is a 40-character hexadecimal string (characters 0-9, a-f, and A-F). RMCP+ is an IPMI extension that adds authentication and encryption to IPMI. The default value is a string of 40 zeroes.
IP Address Source	Select between DHCP and Static . When DHCP is selected, the Ethernet IP Address , Subnet Mask , and Default Gateway fields are obtained from a DHCP server. If no DHCP server is found on the network, the fields are set to zeros. When Static is selected, the Ethernet IP Address , Subnet Mask , and Default Gateway items become editable.
Ethernet IP Address	If the IP Address Source is set to DHCP , this field displays the IP address obtained from DHCP. If the IP Address Source is set to Static , enter the IP address you wish to assign to the iDRAC. The default is 192.168.0.120 plus the number of the slot containing the server.
MAC Address	This is the non-editable MAC address of the iDRAC6 network interface.
Subnet Mask	If the IP Address Source is set to DHCP , this field displays the subnet mask address obtained from DHCP. If the IP Address Source is set to Static , enter the subnet mask for the iDRAC. The default is 255.255.255.0 .

Table 16-1. LAN Parameters (continued)

Item	Description
Default Gateway	If the IP Address Source is set to DHCP , this field displays the IP address of the default gateway obtained from DHCP. If the IP Address Source is set to Static , enter the IP address of the default gateway. The default is 192.168.0.1 .
LAN Alert Enabled	Select On to enable the Platform Event Trap (PET) LAN alert.
Alert Policy Entry 1	Select Enable or Disable to activate the first alert destination.
Alert Destination 1	Enter the IP address where PET LAN alerts will be forwarded.
Host Name String	Press <Enter> to edit. Enter the name of the host for PET alerts.
DNS Servers from DHCP	Select On to retrieve DNS server addresses from a DHCP service on the network. Select Off to specify the DNS server addresses below.
DNS Server 1	If DNS Servers from DHCP is Off , enter the IP address of the first DNS server.
DNS Server 2	If DNS Servers from DHCP is Off , enter the IP address of the second DNS server.
Register iDRAC Name	Select On to register the iDRAC6 name in the DNS service. Select Off if you do not want users to be able to find the iDRAC6 name in DNS.
iDRAC Name	If Register iDRAC Name is set to On , press <Enter> to edit the Current DNS iDRAC Name text field. Press <Enter> when you have finished editing the iDRAC6 name. Press <Esc> to return to the previous menu. The iDRAC6 name must be a valid DNS host name.
Domain Name from DHCP	Select On if you want to obtain the domain name from a DHCP service on the network. Select Off if you want to specify the domain name.
Domain Name	If Domain Name from DHCP is Off , press <Enter> to edit the Current Domain Name text field. Press <Enter> when you have finished editing. Press <Esc> to return to the previous menu. The domain name must be a valid DNS domain, for example mycompany.com .

Virtual Media Configuration

Virtual Media

Use the left-arrow and right-arrow keys to select **Attached** or **Detached**.

- If you select **Attached**, the virtual media devices are attached to the USB bus, making them available for use during **Console Redirection** sessions.
- If you select **Detached**, users cannot access virtual media devices during **Console Redirection** sessions.



NOTE: To use a USB Flash Drive with the Virtual Media feature, you must set **USB Flash Drive Emulation Type** to **Hard disk** in the BIOS Setup Utility. Access the BIOS Setup Utility by pressing <F2> during server start-up. If **USB Flash Drive Emulation Type** is set to **Auto**, the Flash Drive appears as a floppy drive to the system.

Virtual Flash

Use the left-arrow and right-arrow keys to select **Enabled** or **Disabled**.

- **Enable/Disable** causes a **Detach** and an **Attach** of all Virtual Media devices from the USB bus.
- **Disable** causes the Virtual Flash to be removed and to become unavailable for use.



NOTE: This field will be read-only if an SD card of a size larger than 256 MB is not present on AMEA card slot.



NOTE: Dell-branded vFlash media is required for the virtual flash partition.

System Services Configuration

System Services

Use the left-arrow and right-arrow keys to select **Enabled** or **Disabled**. If enabled, certain iDRAC6 features can be configured through the Unified Server Configuration (USC). For more information, see the *Unified Server Configurator User Guide*, available on the Dell Support Website at support.dell.com.



NOTE: Modifying this option restarts the server when you **Save** and **Exit** to apply the new settings.

Cancel System Services

Use the left-arrow and right-arrow keys to select **Yes** or **No**.

When you select **Yes**, all Unified Server Configurator sessions are closed, and the server restarts when you **Save** and **Exit** to apply the new settings.

LAN User Configuration

The LAN user is the iDRAC6 administrator account, which is **root** by default. Press <Enter> to display the LAN User Configuration submenu. When you have finished configuring the LAN user, press <Esc> to return to the previous menu.

Table 16-2. Lan User Configuration Screen

Item	Description
Account Access	Select Enabled to enable the administrator account. Select Disabled to disable the administrator account.
Account Privilege	Select between Admin , User , Operator , and No Access .
Account User Name	Press <Enter> to edit the user name and press <Esc> when you have finished. The default user name is root .
Enter Password	Enter the new password for the administrator account. The characters are not echoed on the display as you enter them.
Confirm Password	Re-enter the new password for the administrator account. If the characters you enter do not match the characters you entered in the Enter Password field, a message displays and you must re-enter the password.

Reset to Default

Use the **Reset to Default** menu item to reset all of iDRAC6 configuration items to the factory defaults. This may be required, for example, if you have forgotten the administrative user password or if you want to reconfigure iDRAC6 from the default settings.



NOTE: In the default configuration, iDRAC6 networking is disabled. You cannot reconfigure the iDRAC6 over the network until you have enabled the iDRAC6 network in the iDRAC6 Configuration Utility.

Press <Enter> to select the item. The following warning message appears:
Resetting to factory defaults will restore remote Non-Volatile user settings. Continue?

< NO (Cancel) >

< YES (Continue) >

To reset iDRAC6 to the defaults, select **YES** and press <Enter>.

System Event Log Menu

The **System Event Log** Menu allows you to view System Event Log (SEL) messages and to clear the log messages. Press <Enter> to display the **System Event Log Menu**. The system counts the log entries and then displays the total number of records and the most recent message. The SEL retains a maximum of 512 messages.

To view SEL messages, select **View System Event Log** and press <Enter>.

To navigate:

- Use the left-arrow key to move to the previous (older) message and the right-arrow key to move to the next (newer) message.
- Enter a specific record number to jump to that record.

Press <Esc> to exit the System Event Log.



NOTE: You can only clear the SEL in the iDRAC6 Configuration Utility or in the iDRAC6 Web-based interface.

To clear the SEL, select **Clear the System Event Log** and press <Enter>.

When you have finished with the SEL menu, press <Esc> to return to the previous menu.

Exiting the iDRAC6 Configuration Utility

When you have finished making changes to iDRAC6 configuration, press the <Esc> key to display the Exit menu.

Select **Save Changes and Exit** and press <Enter> to retain your changes.

Select **Discard Changes and Exit** and press <Enter> to ignore any changes you made.

Select **Return to Setup** and press <Enter> to return to the iDRAC6 Configuration Utility.


Recovering and Troubleshooting the Managed Server

This section explains how to perform tasks related to diagnosing and troubleshooting a remote managed server using iDRAC6 utilities. It contains the following subsections:

- Trouble indications — Helps you to find messages and other system indications that can lead to a diagnosis of the problem
- Problem-solving tools — Describes iDRAC6 tools that you can use to troubleshoot your system
- Troubleshooting and frequently asked questions — Answers to typical situations you may encounter

Safety First—For You and Your System

To perform certain procedures in this section, you must work with the chassis, the PowerEdge server, or other hardware modules. Do not attempt to service the system hardware except as explained in this guide and elsewhere in your system documentation.

 **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

Trouble Indicators

This section describes indications that there may be a problem with your system.

LED Indicators

LEDs on the chassis or on components installed in the chassis are generally the first indicators of system trouble. The following components and modules have status LEDs:

- Chassis LCD display
- Servers
- Fans
- CMCs
- I/O modules
- Power supplies

The single LED on the chassis LCD summarizes the status of all of the components in the system. A solid blue LED on the LCD indicates that no fault conditions have been detected in the system. A blinking amber LED on the LCD indicates that one or more fault conditions have been detected.

If the chassis LCD has a blinking amber LED, you can use the LCD menu to locate the component that has a fault. See the *Dell CMC Firmware User Guide* for help using the LCD.

Table 17-1 describes the meanings of the LED on the PowerEdge Server:

Table 17-1. Server LED Indicators

LED indicator	Meaning
solid green	The server is powered on. Absence of the green LED means the server is not powered on.
solid blue	iDRAC6 is healthy.
flashing amber	iDRAC6 has detected a fault condition or may be in the process of updating firmware.
flashing blue	A user has activated the locator ID for this server.

Hardware Trouble Indicators

Indications that a module has a hardware problem include the following:

- Failure to power up
- Noisy fans
- Loss of network connectivity
- Battery, temperature, voltage, or power monitoring sensor alerts
- Hard drive failures
- USB media failure
- Physical damage caused by dropping, water, or other external stress

When these kinds of problems occur, you can try to correct the problem using these strategies:

- Reseat the module and restart it
- Try inserting the module into a different bay in the chassis
- Try replacing hard drives or USB keys
- Reconnect or replace the power and network cables

If these steps do not correct the problem, consult the *Hardware Owner's Manual* for specific troubleshooting information for the hardware device.

Other Trouble Indicators

Table 17-2. Trouble Indicators

Look for:	Action:
Alert messages from the systems management software	See the systems management software documentation.
Messages in the System Event Log	See "Checking the System Event Log (SEL)."
Messages in the start-up POST codes	See "Checking the Post Codes."
Messages on the last crash screen	See "Viewing the Last System Crash Screen."
Alert Messages on the Server Status Screen in the LCD	See "Checking the Server Status Screen for Error Messages."
Messages in the iDRAC6 Log	See "Viewing the iDRAC6 Log."

Problem Solving Tools





This section describes iDRAC6 utilities you can use to diagnose problems with your system, especially when you are trying to solve problems remotely.

- Checking the system health
- Checking the System Event Log for error messages
- Checking the POST codes
- Viewing the last crash screen
- Checking the Server Status Screen on the LCD for Error Messages
- Viewing the iDRAC6 log
- Accessing system information
- Identifying the managed server in the chassis
- Using the diagnostics console
- Managing power on a remote system

Checking the System Health

When you log in to the iDRAC6 Web interface, the first screen displayed describes the health of the system components. Table 17-3 describes the meaning of the system health indicators.

Table 17-3. System Health Indicators

Indicator	Description
	A green check mark indicates a healthy (normal) status condition.
	A yellow triangle containing an exclamation point indicates a warning (noncritical) status condition.
	A red X indicates a critical (failure) status condition.
	A question mark icon indicates that the status is unknown.

Click any component on the **Health** screen to see information about the component. Sensor readings are displayed for batteries, temperatures, voltages, and power monitoring, helping to diagnose some types of problems. The iDRAC6 and CMC information screens provide useful current status and configuration information.

Checking the System Event Log (SEL)

The **SEL Log** screen displays messages for events that occur on the managed server.

To view the **System Event Log**, perform the following steps:

- 1 Click **System** and then click the **Logs** tab.
- 2 Click **System Event Log** to display the **System Event Log** screen.

The **System Event Log** screen displays a system health indicator (see Table 17-3), a time stamp, and a description of the event.

- 3 Click the appropriate **System Event Log** button to continue (see Table 17-4).

Table 17-4. SEL Buttons

Button	Action
Print	Prints the SEL in the sort order that it appears in the window.
Clear Log	Clears the SEL. NOTE: The Clear Log button appears only if you have Clear Logs permission.
Save As	Opens a pop-up window that enables you to save the SEL to a directory of your choice. NOTE: If you are using Internet Explorer and encounter a problem when saving, be sure to download the Cumulative Security Update for Internet Explorer, located on the Microsoft® Support website at support.microsoft.com .
Refresh	Reloads the SEL screen.

Checking the Post Codes

The **Post Codes** screen displays the last system post code prior to booting the operating system. Post codes are progress indicators from the system BIOS, indicating various stages of the boot sequence from Power on Reset, and allow you to diagnose any faults related to system boot-up.



NOTE: View the text for POST code message numbers in the LCD display or in the *Hardware Owner's Manual*.


To view the Post Codes, perform the following steps:

- 1 Click **System**, the **Logs** tab, and then **Post Codes**.
The **Post Codes** screen displays a system health indicator (see Table 17-3), a hexadecimal code, and a description of the code.
- 2 Click the appropriate **Post Code** button to continue (see Table 17-5).

Table 17-5. Post Code Buttons

Button	Action
Print	Prints the Post Codes screen.
Refresh	Reloads the Post Codes screen.

Viewing the Last System Crash Screen

 **NOTE:** The last crash screen feature must be configured in the Server Administrator and in the iDRAC6 Web interface. See "Configuring the Managed Server to Capture the Last Crash Screen" for instructions on configuring this feature.

The **Last Crash Screen** screen displays the most recent crash screen, which includes information about the events that occurred before the system crash. The last system crash image is saved in the iDRAC6 persistent store and is remotely accessible.

To view the **Last Crash Screen** screen, perform the following steps:

- Click **System**, the **Logs** tab, and then **Last Crash**.

The **Last Crash Screen** screen provides the buttons shown in Table 17-6:


 **NOTE:** The **Save** and **Delete** buttons do not appear if there is no saved crash screen.

Table 17-6. Last Crash Screen Buttons

Button	Action
Print	Prints the Last Crash Screen screen.
Save	Opens a pop-up window that enables you to save the Last Crash Screen to a directory of your choice.
Delete	Deletes the Last Crash Screen screen.
Refresh	Reloads the Last Crash Screen screen.



NOTE: Due to fluctuations in the Auto Recovery timer, the Last Crash Screen may not be captured when the System Reset Timer is configured with a value that is too high. The default setting is 480 seconds. Use Server Administrator or IT Assistant to set the System Reset Timer to 60 seconds and ensure that the Last Crash Screen functions properly. See "Configuring the Managed Server to Capture the Last Crash Screen" for additional information.

Viewing the Most Recent Boot Sequences

If you experience boot problems, you can view the screen activity of what happened during the last three boot sequences from the **Boot Capture** screen. Playback of the boot screens occurs at a rate of 1 frame per second. Table 17-7 lists the control actions available.



NOTE: You must have administrator privileges to view playback of the Boot Capture sequences.

Table 17-7. Boot Capture Options

Button/Option	Description
Select the boot sequence	Allows you to select the boot sequence to load and play. <ul style="list-style-type: none">• Boot Capture 1 — Loads the most recent boot sequence.• Boot Capture 2 — Loads the (second most recent) boot sequence that occurred prior to Boot Capture 1.• Boot Capture 3 — Loads the (third most recent) boot sequence that occurred prior to Boot Capture 2.
Save As	Creates a compressed .zip file that contains all boot capture images of the current sequence. The user must have administrator privileges to perform this action.

Table 17-7. Boot Capture Options (continued)

Button/Option	Description
Previous Screen	Takes you to previous screen, if any, in the replay console.
Play	Starts the screenplay from current screen in the replay console.
Pause	Pauses the screenplay on the current screen being displayed in the replay console.
Stop	Stops the screenplay and loads the first screen of that boot sequence.
Next Screen	Takes you to next screen, if any, in the replay console.
Print	Prints the Boot Capture image that appears on the screen.
Refresh	Reloads the Boot Capture screen.

Checking the Server Status Screen for Error Messages

When a flashing amber LED is lit, and a particular server has an error, the main Server Status Screen on the LCD will highlight the affected server in orange. Use the LCD navigation buttons to highlight the affected server, then click the center button. Error and warning messages will be displayed on the second line. The following table lists all of the error messages and their severity.

Table 17-8. Server Status Screen

Severity	Message	Cause
Warning	System Board Ambient Temp: Temperature sensor for System Board, warning event	Server ambient temperature crossed a warning threshold
Critical	System Board Ambient Temp: Temperature sensor for System Board, failure event	Server ambient temperature crossed a failure threshold
Critical	System Board CMOS Battery: Battery sensor for System Board, failed was asserted	CMOS battery is not present or has no voltage
Warning	System Board System Level: Current sensor for System Board, warning event	Current crossed a warning threshold

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	System Board System Level: Current sensor for System Board, failure event	Current crossed a failure threshold
Critical	CPU<number> <voltage sensor name>: Voltage sensor for CPU<number>, state asserted was asserted	Voltage out of range
Critical	System Board <voltage sensor name>: Voltage sensor for System Board, state asserted was asserted	Voltage out of range
Critical	CPU<number> <voltage sensor name>: Voltage sensor for CPU<number>, state asserted was asserted	Voltage out of range
Critical	CPU<number> Status: Processor sensor for CPU<number>, IERR was asserted	CPU failure
Critical	CPU<number> Status: Processor sensor for CPU<number>, thermal tripped was asserted	CPU overheated
Critical	CPU<number> Status: Processor sensor for CPU<number>, configuration error was asserted	Incorrect processor type or in wrong location
Critical	CPU<number> Status: Processor sensor for CPU<number>, presence was deasserted	Required CPU is missing or not present
Critical	System Board Video Riser: Module sensor for System Board, device removed was asserted	Required module was removed

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	Mezz B<slot number> Status: Add-in Card sensor for Mezz B<slot number>, install error was asserted	Incorrect Mezzanine card installed for IO fabric
Critical	Mezz C<slot number> Status: Add-in Card sensor for Mezz C<slot number>, install error was asserted	Incorrect Mezzanine card installed for I/O fabric
Critical	Backplane Drive <number>: Drive Slot sensor for Backplane, drive removed	Storage drive was removed
Critical	Backplane Drive <number>: Drive Slot sensor for Backplane, drive fault was asserted	Storage drive failed
Critical	System Board PFault Fail Safe: Voltage sensor for System Board, state asserted was asserted	This event is generated when the system board voltages are not at normal levels
Critical	System Board OS Watchdog: Watchdog sensor for System Board, timer expired was asserted	The iDRAC6 watchdog timer expired and no action is set
Critical	System Board OS Watchdog: Watchdog sensor for System Board, reboot was asserted	The iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to reboot
Critical	System Board OS Watchdog: Watchdog sensor for System Board, power off was asserted	The iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to power off

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	System Board OS Watchdog: Watchdog sensor for System Board, power cycle was asserted	The iDRAC6 watchdog detected that the system has crashed (timer expired because no response was received from Host) and the action is set to power cycle
Critical	System Board SEL: Event Log sensor for System Board, log full was asserted	The SEL device detects that only one entry can be added to the SEL before it is full
Warning	ECC Corr Err: Memory sensor, correctable ECC (<DIMM Location>) was asserted	Correctable ECC errors reached a critical rate
Critical	ECC Uncorr Err: Memory sensor, uncorrectable ECC (<DIMM Location>) was asserted	An uncorrectable ECC error was detected
Critical	I/O Channel Chk: Critical Event sensor, I/O channel check NMI was asserted	A critical interrupt is generated in the I/O Channel
Critical	PCI Parity Err: Critical Event sensor, PCI PERR was asserted	Parity error was detected on the PCI bus
Critical	PCI System Err: Critical Event sensor, PCI SERR (<Slot number or PCI Device ID>) was asserted	PCI error detected by device
Critical	SBE Log Disabled: Event Log sensor, correctable memory error logging disabled was asserted	Single bit error logging is disabled when too many SBE get logged
Critical	Logging Disabled: Event Log sensor, all event logging disabled was asserted	All error logging is disabled
Non-Recoverable	CPU Protocol Err: Processor sensor, transition to non-recoverable was asserted	The processor protocol entered a non-recoverable state

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Non-Recoverable	CPU Bus PERR: Processor sensor, transition to non-recoverable was asserted	The processor bus PERR entered a non-recoverable state
Non-Recoverable	CPU Init Err: Processor sensor, transition to non-recoverable was asserted	The processor initialization entered a non-recoverable state
Non-Recoverable	CPU Machine Chk: Processor sensor, transition to non-recoverable was asserted	The processor machine check entered a non-recoverable state
Critical	Memory Spared: Memory sensor, redundancy lost (<DIMM Location>) was asserted	Memory spare is no longer redundant
Critical	Memory Mirrored: Memory sensor, redundancy lost (<DIMM Location>) was asserted	Mirrored memory is no longer redundant
Critical	Memory RAID: Memory sensor, redundancy lost (<DIMM Location>) was asserted	RAID Memory is no longer redundant
Warning	Memory Added: Memory sensor, presence (<DIMM Location>) was deasserted	Added memory module was removed
Warning	Memory Removed: Memory sensor, presence (<DIMM Location>) was deasserted	Memory module was removed
Critical	Memory Cfg Err: Memory sensor, configuration error (<DIMM Location>) was asserted	Memory configuration is incorrect for the system
Warning	Mem Redun Gain: Memory sensor, redundancy degraded (<DIMM Location>) was asserted	Memory redundancy is downgraded but not lost

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	PCIe Fatal Err: Critical Event sensor, bus fatal error was asserted	Fatal error is detected on the PCIe bus
Critical	Chipset Err: Critical Event sensor, PCI PERR was asserted	Chip error is detected
Warning	Mem ECC Warning: Memory sensor, transition to non-critical from OK (<DIMM Location>) was asserted	Correctable ECC errors have increased from a normal rate
Critical	Mem ECC Warning: Memory sensor, transition to critical from less severe (<DIMM Location>) was asserted	Correctable ECC errors have reached a critical rate
Critical	POST Err: POST sensor, No memory installed	No memory detected on board
Critical	POST Err: POST sensor, Memory configuration error	Memory detected but is not configurable
Critical	POST Err: POST sensor, Unusable memory error	Memory configured but not usable
Critical	POST Err: POST sensor, Shadow BIOS failed	System BIOS shadow failure
Critical	POST Err: POST sensor, CMOS failed	CMOS failure
Critical	POST Err: POST sensor, DMA controller failed	DMA controller failure
Critical	POST Err: POST sensor, Interrupt controller failed	Interrupt controller failure
Critical	POST Err: POST sensor, Timer refresh failed	Timer refresh failure
Critical	POST Err: POST sensor, Programmable interval timer error	Programmable interval timer error
Critical	POST Err: POST sensor, Parity error	Parity error

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	POST Err: POST sensor, SIO failed	SIO failure
Critical	POST Err: POST sensor, Keyboard controller failed	Keyboard controller failure
Critical	POST Err: POST sensor, System management interrupt initialization failed	System Management Interrupt initialization failure
Critical	POST Err: POST sensor, BIOS shutdown test failed	BIOS shutdown test failure
Critical	POST Err: POST sensor, BIOS POST memory test failed	BIOS POST memory test failure
Critical	POST Err: POST sensor, Dell remote access controller configuration failed	Dell Remote Access Controller configuration failure
Critical	POST Err: POST sensor, CPU configuration failed	CPU configuration failure
Critical	POST Err: POST sensor, Incorrect memory configuration	Incorrect memory configuration
Critical	POST Err: POST sensor, POST failure	General failure after video
Critical	Hdwar version err: Version Change sensor, hardware incompatibility was asserted	Incompatible hardware was detected
Critical	Hdwar version err: Version Change sensor, hardware incompatibility (BMC firmware) was asserted	Hardware is incompatible with the firmware
Critical	Hdwar version err: Version Change sensor, hardware incompatibility (BMC firmware and CPU mismatch) was asserted	CPU and firmware not compatible

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	Mem Overtemp: Memory sensor, correctable ECC <DIMM Location> was asserted	Memory module overheating
Critical	Mem Fatal SB CRC: Memory sensor, uncorrectable ECC was asserted	South bridge memory failed
Critical	Mem Fatal NB CRC: Memory sensor, uncorrectable ECC was asserted	North bridge memory failed
Critical	WatchDog Timer: Watchdog sensor, reboot was asserted	Watch dog timer caused system to reboot
Critical	WatchDog Timer: Watchdog sensor, timer expired was asserted	Watch dog timer expired but no action taken
Warning	Link Tuning: Version Change sensor, successful software or F/W change was deasserted	Failed to update link tuning setting for proper NIC operation
Warning	Link Tuning: Version Change sensor, successful hardware change <device slot number> was deasserted	Failed to update link tuning setting for proper NIC operation
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to program virtual MAC address (Bus # Device # Function #) was asserted	Flex address could not be programmed for this device
Critical	LinkT/FlexAddr: Link Tuning sensor, device option ROM failed to support link tuning or flex address (Mezz <location>) was asserted	Option ROM does not support Flex address or linking tuning
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to get link tuning or flex address data from BMC/iDRAC6 was asserted	Failed to obtain linking tuning or Flex address information from BMC/iDRAC6

Table 17-8. Server Status Screen (continued)

Severity	Message	Cause
Critical	LinkT/FlexAddr: Link Tuning sensor, device option ROM failed to support link tuning or flex address (Mezz XX) was asserted	This event is generated when the PCI device Option ROM for a NIC does not support link tuning or the Flex addressing feature
Critical	LinkT/FlexAddr: Link Tuning sensor, failed to program the virtual MAC address (<location>) was asserted	This event is generated when the BIOS fails to program the virtual MAC address on the given NIC device
Critical	I/O Fatal Err: Fatal IO Group sensor, fatal IO error (<location>)	This event is generated in association with a CPU IERR and indicates which device caused the CPU IERR
Warning	PCIE NonFatal Er: Non Fatal I/O Group sensor, PCIe error (<location>)	This event is generated in association with a CPU IERR

Viewing the iDRAC6 Log

The **iDRAC6 Log** is a persistent log maintained in iDRAC6 firmware. The log contains a list of user actions (such as log in, log out, and security policy changes) and alerts issued by iDRAC6. The oldest entries are overwritten when the log becomes full.

Where the **System Event Log (SEL)** contains records of events that occur in the managed server, the **iDRAC Log** contains records of events that occur in iDRAC6.

To access the **iDRAC Log**, perform the following steps:

- Click **System**→**Remote Access**→**iDRAC** and then click **iDRAC Log**.

The **iDRAC Log** provides the information in Table 17-9.

Table 17-9. iDRAC6 Log Information

Field	Description
Date/Time	The date and time (for example, Dec 19 16:55:47). iDRAC6 sets its clock from the managed server's clock. When iDRAC6 initially starts and is unable to communicate with the managed server, the time is displayed as the string <code>System Boot</code> .
Source	The interface that caused the event.
Description	A brief description of the event and the user name that logged in to iDRAC6.

Using the iDRAC6 Log Buttons

The iDRAC Log screen provides the following buttons (see Table 17-10).

Table 17-10. iDRAC6 Log Buttons

Button	Action
Print	Prints the iDRAC Log screen.
Clear Log	Clears the iDRAC Log entries. NOTE: The Clear Log button only appears if you have Clear Logs permission.
Save As	Opens a pop-up window that enables you to save the iDRAC Log to a directory of your choice. NOTE: If you are using Internet Explorer and encounter a problem when saving, be sure to download the Cumulative Security Update for Internet Explorer, located on the Microsoft Support website at support.microsoft.com .
Refresh	Reloads the iDRAC Log screen.

Viewing System Information

The **System Summary** screen displays information about the following system components:

- Main system enclosure
- Integrated Dell Remote Access Controller

To access the system information, click **System**→ **Properties**.

Main System Enclosure

Table 17-11 and Table 17-12 describe the main system enclosure properties.

Table 17-11. System Information Fields

Field	Description
Description	Provides a system description.
BIOS Version	Lists the system BIOS version.
Service Tag	Lists the system Service Tag number.
Host Name	Provides the host system's name.
OS Name	Lists the operating system running on the system.

Table 17-12. Auto Recovery Fields

Field	Description
Recovery Action	When a <i>system hang</i> is detected, iDRAC6 can be configured to perform one of the following actions: No Action , Hard Reset , Power Down , or Power Cycle .
Initial Countdown	The number of seconds after a <i>system hang</i> is detected at which iDRAC6 will perform a Recovery Action.
Present Countdown	The current value, in seconds, of the countdown timer.

Integrated Dell Remote Access Controller

Table 17-13 describes iDRAC6 properties.

Table 17-13. iDRAC6 Information Fields

Field	Description
Date/Time	Provides the current date and time on iDRAC6 in GMT.
Firmware Version	Lists the version of iDRAC6 firmware.
Firmware Updated	Lists the date the firmware was last updated. The date is displayed in UTC format, for example: Tue, 8 May 2007, 22:18:21 UTC.

Table 17-13. iDRAC6 Information Fields (continued)

Field	Description
IP Address	The 32-bit address that identifies the network interface. The value is displayed in a <i>dot separated</i> format, such as 143.166.154.127.
Gateway	The IP Address of the gateway that acts as a bridge to other networks. This value is in a <i>dot separated</i> format, such as 143.166.150.5.
Subnet Mask	The subnet mask identifies the parts of the IP Address that make up the Extended Network Prefix and the Host Number. The value is displayed in a <i>dot separated</i> format, such as 255.255.0.0.
MAC Address	The Media Access Control (MAC) Address that uniquely identifies each NIC in a network, for example 00-00-0c-ac-08. This is a Dell-assigned ID and cannot be edited.
DHCP Enabled	Enabled indicates that the Dynamic Host Configuration Protocol (DHCP) is enabled. Disabled indicates that DHCP is <i>not</i> enabled.

Identifying the Managed Server in the Chassis

The PowerEdge M1000e chassis holds up to sixteen servers. To locate a specific server in the chassis, you can use the iDRAC6 Web interface to turn on a blue flashing LED on the server. When you turn on the LED, you can specify the number of seconds that you want the LED to flash to ensure that you can reach the chassis while the LED is still flashing. Entering 0 leaves the LED flashing until you disable it.

To identify the server:

- 1 Click **System**→**Remote Access**→**iDRAC**→**Troubleshooting**.
- 2 On the **Identify** screen, check **Identify Server**.
- 3 In the **Identify Server Timeout** field, enter the number of seconds that you want the LED to blink. Enter 0 if you want the LED to remain flashing until you disable it.
- 4 Click **Apply**.

A blue LED on the server will flash for the number of seconds you specified.

If you entered 0 to leave the LED flashing, follow these steps to disable it:

- 1 Click **System**→ **Remote Access**→ **iDRAC**→ **Troubleshooting**.
- 2 On the **Identify** screen, uncheck **Identify Server**.
- 3 Click **Apply**.

Using the Diagnostics Console

iDRAC6 provides a standard set of network diagnostic tools (see Table 17-14) that are similar to the tools included with Microsoft® Windows® or Linux-based systems. Using the iDRAC6 Web interface, you can access the network debugging tools.

To access the **Diagnostics Console** screen, perform the following steps:

- 1 Click **System**→ **iDRAC**→ **Troubleshooting**.
- 2 Click the **Diagnostics** tab.

Table 17-14 describes the commands that can be entered on the **Diagnostics Console** screen. Enter a command and click **Submit**. The debugging results appear in the **Diagnostics Console** screen.

Click the **Clear** button to clear the results displayed by the previous command.

To refresh the **Diagnostics Console** screen, click **Refresh**.

Table 17-14. Diagnostic Commands

Command	Description
arp	Displays the contents of the Address Resolution Protocol (ARP) table. ARP entries may not be added or deleted.
ifconfig	Displays the contents of the network interface table.
netstat	Prints the content of the routing table.
ping <IP Address>	Verifies that the destination IP address is reachable from iDRAC6 with the current routing-table contents. A destination IP address must be entered in the field to the right of this option. An Internet control message protocol (ICMP) echo packet is sent to the destination IP address based on the current routing-table contents.
gettracelog	Displays the iDRAC6 trace log. See "gettracelog" for more information.

Managing Power on a Remote System

iDRAC6 enables you to remotely perform several power management actions on the managed server. Use the **Power Management** screen to perform an orderly shutdown through the operating system when rebooting and powering on and off.



NOTE: You must have **Execute Server Action Commands** permission to perform power management actions. See "Adding and Configuring iDRAC6 Users" for help configuring user permissions.

- 1 Click **System**, then click the **Power Management** tab.
- 2 Select a **Power Control Action**, for example **Reset System (warm boot)**. Table 17-15 provides information about Power Control Actions.
- 3 Click **Apply** to perform the selected action.
- 4 Click the appropriate button to continue. See Table 17-15.

Table 17-15. Power Control Actions

Power On System	Turns on the system power (equivalent to pressing the power button when the system power is off).
Powers Off System	Turns off the system power (equivalent to pressing the power button when the system power is on).
NMI (Non-Masking Interrupt)	Sends a high-level interrupt to the operating system, which causes the system to halt operation to allow for critical diagnostic or troubleshooting activities.
Graceful Shutdown	Attempts to cleanly shut down the operating system, then powers off the system. It requires an ACPI (Advanced Configuration and Power Interface) aware operating system, which allows for system directed power management.

NOTE: A graceful shutdown of the server operating system may not be possible when the server software stops responding, or if you are not logged as an administrator at a local Windows console. In these cases, you must specify a forced reboot instead of a graceful shutdown of Windows. In addition, depending on the version of the Windows OS, there might be a policy configured around the shutdown process that modifies shutdown behavior when triggered from iDRAC6. See Microsoft's documentation for the local computer policy "Shutdown: Allow system to be shut down without having to login."

Table 17-15. Power Control Actions (continued)

Reset System (warm boot)	Reboots the system without powering off (warm boot).
Power Cycle System	Powers off, then reboots the system (cold boot).

Table 17-16. Power Management Buttons

Button	Action
Print	Prints the Power Management values that appear on the screen.
Refresh	Reloads the Power Management screen.
Apply	Saves any new settings that you make while viewing the Power Management screen.

Troubleshooting and Frequently Asked Questions

Table 17-17 contains frequently asked questions about troubleshooting issues.

Table 17-17. Frequently Asked Questions/Troubleshooting

Question	Answer
The LED on the server is blinking amber.	Check the SEL for messages and then clear the SEL to stop the blinking LED. From the iDRAC6 Web interface: <ul style="list-style-type: none">• See "Checking the System Event Log (SEL)" From SM-CLP: <ul style="list-style-type: none">• See "SEL Management" From the iDRAC6 Configuration Utility: <ul style="list-style-type: none">• See "System Event Log Menu"
There is a blinking blue LED on the server.	A user has activated the locator ID for the server. This is a signal to help them identify the server in the chassis. See "Identifying the Managed Server in the Chassis" for information about this feature.

Table 17-17. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
How can I find the IP address of iDRAC6?	<p data-bbox="344 277 658 303">From the CMC Web interface:</p> <ol data-bbox="356 312 922 440" style="list-style-type: none">1 Click Chassis→ Servers, then click the Setup tab.2 Click Deploy.3 Read the IP address for your server from the table that is displayed. <p data-bbox="344 453 512 478">From the iKVM:</p> <ul data-bbox="356 491 983 740" style="list-style-type: none">• Reboot the server and enter the iDRAC6 Configuration Utility by pressing <Ctrl><E>. OR• Watch for the IP address to display during BIOS POST. OR• Select the "Dell CMC" console in the OSCAR to log in to the CMC through a local serial connection. <p data-bbox="374 753 996 836">CMC RACADM commands can be issued from this connection. Refer to the CMC <i>Firmware User Guide</i> for a complete list of the CMC RACADM subcommands.</p> <p data-bbox="344 849 996 906">You can also use the local RACADM <code>getsysinfo</code> command to view the iDRAC6 IP address.</p> <p data-bbox="374 919 501 944">For example:</p> <pre data-bbox="374 963 882 1123">\$ racadm getniccfg -m server-1 DHCP Enabled = 1 IP Address = 192.168.0.1 Subnet Mask = 255.255.255.0 Gateway = 192.168.0.1</pre> <p data-bbox="344 1161 571 1187">From local RACADM:</p> <ol data-bbox="356 1197 896 1264" style="list-style-type: none">1 Enter the following command at a command prompt: <code>racadm getsysinfo</code> <p data-bbox="344 1276 504 1302">From the LCD:</p> <ol data-bbox="356 1311 996 1401" style="list-style-type: none">1 On the Main Menu, highlight Server and press the check button.2 Select the server whose IP address you seek and press the check button.

Table 17-17. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
How can I find the IP address of the CMC?	<p>From the iDRAC6 Web interface:</p> <ul style="list-style-type: none"> • Click System→ Remote Access→ CMC. The CMC IP address is displayed on the Summary screen. <p>OR</p> <ul style="list-style-type: none"> • Select the "Dell CMC" console in the OSCAR to log in to the CMC through a local serial connection. CMC RACADM commands can be issued from this connection. Refer to the <i>CMC Firmware User Guide</i> for a complete list of the CMC RACADM subcommands. <pre>\$ racadm getniccfg -m chassis NIC Enabled = 1 DHCP Enabled = 1 Static IP Address = 192.168.0.120 Static Subnet Mask = 255.255.255.0 Static Gateway = 192.168.0.1 Current IP Address = 10.35.155.151 Current Subnet Mask = 255.255.255.0 Current Gateway = 10.35.155.1 Speed = Autonegotiate Duplex = Autonegotiate</pre>
The iDRAC6 network connection is not working.	<ul style="list-style-type: none"> • Ensure the LAN cable is connected to the CMC. • Ensure the iDRAC6 LAN is enabled.
I inserted the server into the chassis and pressed the power button, but nothing happened.	<ul style="list-style-type: none"> • iDRAC6 requires about 30 seconds to initialize before the server can power up. Wait for 30 seconds and then press the power button again. • Check the CMC power budget. The chassis power budget may be exceeded.

Table 17-17. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
I have forgotten the iDRAC6 administrative user name and password.	<p>You must restore iDRAC6 to its default settings.</p> <ol style="list-style-type: none"><li data-bbox="359 316 964 371">1 Reboot the server and press <Ctrl><E> when prompted to enter the iDRAC6 Configuration Utility.<li data-bbox="359 379 994 435">2 On the Configuration Utility menu, highlight Reset to Default and press <Enter>. <p>For more information, see "Reset to Default."</p>
How can I change the name of the slot for my server?	<ol style="list-style-type: none"><li data-bbox="359 491 712 515">1 Log in to the CMC Web interface.<li data-bbox="359 523 762 547">2 Open the Chassis tree and click Servers.<li data-bbox="359 555 572 579">3 Click the Setup tab.<li data-bbox="359 587 936 611">4 Enter the new name for the slot in the row for your server.<li data-bbox="359 619 493 659">5 Click Apply.
When starting a console redirection session from the iDRAC6 Web interface, an ActiveX security popup appears.	<p>iDRAC6 may not be a trusted site from the client browser.</p> <p>To prevent the security popup from appearing every time you begin a console redirection session, add iDRAC6 to the trusted site list:</p> <ol style="list-style-type: none"><li data-bbox="359 810 972 834">1 Click Tools→Internet Options...→Security→Trusted sites.<li data-bbox="359 842 1003 866">2 Click Sites and enter the IP address or the DNS name of iDRAC6.<li data-bbox="359 874 479 898">3 Click Add.
When I start a console redirection session, the viewer screen is blank.	<p>If you have Virtual Media privilege but not Console Redirection privilege, you are able to start the viewer so that you can access the virtual media feature, but the managed server's console will not display.</p>

Table 17-17. Frequently Asked Questions/Troubleshooting (continued)

Question	Answer
iDRAC6 does not boot.	Remove and reinsert the server. Check the CMC Web interface to see if iDRAC6 appears as an upgradable component. If it does, follow the instructions in "Updating iDRAC6 Firmware Using the CMC." If this does not correct the problem, contact Technical Support.
When attempting to boot the managed server, the power indicator is green, but there is no POST or no video at all.	This can happen if any of the following conditions is true: <ul style="list-style-type: none">• Memory is not installed or is inaccessible.• The CPU is not installed or is inaccessible.• The video riser card is missing or improperly connected. Also, look for error messages in the iDRAC6 log from the iDRAC6 Web interface or from the LCD.

A

RACADM Subcommand Overview

This section provides descriptions of the subcommands that are available in the RACADM command line interface.

help

Table A-1 describes the **help** command.

Table A-1. Help Command

Command	Definition
help	Lists all of the subcommands available to use with racadm and provides a short description for each.

Synopsis

```
racadm help
```

```
racadm help <subcommand>
```

Description

The **help** subcommand lists all of the subcommands that are available when using the **racadm** command along with a one-line description. You may also enter a subcommand after **help** to get the syntax for a specific subcommand.

Output

The **racadm help** command displays a complete list of subcommands.

The **racadm help <subcommand>** command displays information for the specified subcommand only.

Supported Interfaces

- Local RACADM

config

Table A-2 describes the `config` and `getconfig` subcommands.

Table A-2. config/getconfig

Subcommand	Definition
<code>config</code>	Configures iDRAC6.
<code>getconfig</code>	Gets iDRAC6 configuration data.

Synopsis

```
racadm config [-c|-p] -f <filename>
```

```
racadm config -g <groupName> -o <objectName> [-i  
<index>] <value>
```

Supported Interfaces

- Local RACADM

Description

The `config` subcommand allows you to set iDRAC6 configuration parameters individually or to batch them as part of a configuration file. If the data is different, that iDRAC6 object is written with the new value.

Input

Table A-3 describes the `config` subcommand options.

Table A-3. config Subcommand Options and Descriptions

Option	Description
<code>-f</code>	The <code>-f <filename></code> option causes <code>config</code> to read the contents of the file specified by <code><filename></code> and configure iDRAC6. The file must contain data in the format specified in "Configuration File Syntax" on page 237.
<code>-p</code>	The <code>-p</code> , or password, option directs <code>config</code> to delete the password entries contained in the config file <code>-f <filename></code> after the configuration is complete.
<code>-g</code>	The <code>-g <groupName></code> , or group, option must be used with the <code>-o</code> option. The <code><groupName></code> specifies the group containing the object that is to be set.

Table A-3. config Subcommand Options and Descriptions (continued)

Option	Description
-o	The -o <objectName> <value>, or object, option must be used with the -g option. This option specifies the object name that is written with the string <value>.
-i	The -i <index>, or index, option is only valid for indexed groups and can be used to specify a unique group. The index is specified here by the index value, not a "named" value.
-c	The -c, or check, option is used with the config subcommand and allows you to parse the .cfg file to find syntax errors. If errors are found, the line number and a short description of what is incorrect are displayed. Writes do not occur to iDRAC6. This option is a check only.

Output

This subcommand generates error output upon encountering either of the following:

- Invalid syntax, group name, object name, index, or other invalid database members
- RACADM CLI failures

This subcommand returns an indication of how many configuration objects that were written out of how many total objects were in the .cfg file.

Examples

- ```
racadm config -g cfgLanNetworking -o
cfgNicIpAddress 10.35.10.110
```

Sets the **cfgNicIpAddress** configuration parameter (object) to the value 10.35.10.110. This IP address object is contained in the group **cfgLanNetworking**.

- ```
racadm config -f myrac.cfg
```

Configures or reconfigures iDRAC6. The **myrac.cfg** file may be created with the **getconfig** command. The **myrac.cfg** file may also be edited manually as long as the parsing rules are followed.



NOTE: The **myrac.cfg** file does not contain passwords. To include passwords in the file, you must enter them manually. If you want to remove passwords from the **myrac.cfg** file during configuration, use the **-p** option.

getconfig

The `getconfig` subcommand allows you to retrieve iDRAC6 configuration parameters individually, or all the iDRAC6 configuration groups may be retrieved and saved into a file.

Input

Table A-4 describes the `getconfig` subcommand options.



NOTE: The `-f` option without a file specification will output the contents of the file to the terminal screen.

Table A-4. getconfig Subcommand Options

Option	Description
<code>-f</code>	The <code>-f <filename></code> option directs <code>getconfig</code> to write the entire iDRAC6 configuration to a configuration file. This file can then be used for batch configuration operations using the <code>config</code> subcommand. NOTE: The <code>-f</code> option does not create entries for the <code>cfglpmiPet</code> and <code>cfglpmiPef</code> groups. You must set at least one trap destination to capture the <code>cfglpmiPet</code> group to the file.
<code>-g</code>	The <code>-g <groupName></code> , or <code>group</code> , option can be used to display the configuration for a single group. The <code>groupName</code> is the name for the group used in the <code>racadm.cfg</code> files. If the group is an indexed group, use the <code>-i</code> option.
<code>-h</code>	The <code>-h</code> , or <code>help</code> , option displays a list of all available configuration groups that you can use. This option is useful when you do not remember exact group names.
<code>-i</code>	The <code>-i <index></code> , or <code>index</code> , option is valid only for indexed groups and can be used to specify a unique group. If <code>-i <index></code> is not specified, a value of 1 is assumed for groups, which are tables that have multiple entries. The index is specified by the index value, not a "named" value.
<code>-o</code>	The <code>-o <objectname></code> , or <code>object</code> , option specifies the object name that is used in the query. This option can be used with the <code>-g</code> option.
<code>-u</code>	The <code>-u <username></code> , or <code>user name</code> , option can be used to display the configuration for the specified user. The <code><username></code> option is the login name for the user.
<code>-v</code>	The <code>-v</code> , or <code>verbose</code> , option displays additional details with the display of the properties and is used with the <code>-g</code> option.

Output

This subcommand generates error output upon encountering either of the following:

- Invalid syntax, group name, object name, index, or other invalid database members
- RACADM CLI transport failures

If errors are not encountered, this subcommand displays the contents of the specified configuration.

Examples

- `racadm getconfig -g cfgLanNetworking`
Displays all of the configuration properties (objects) that are contained in the group `cfgLanNetworking`.
- `racadm getconfig -f myrac.cfg`
Saves all group configuration objects from iDRAC6 to `myrac.cfg`.
- `racadm getconfig -h`
Displays a list of the available configuration groups on iDRAC6.
- `racadm getconfig -u root`
Displays the configuration properties for the user named `root`.
- `racadm getconfig -g cfgUserAdmin -i 2 -v`
Displays the user group instance at index 2 with extensive information for the property values.

Synopsis

```
racadm getconfig -f <filename>
```

```
racadm getconfig -g <groupName> [-i <index>]
```

```
racadm getconfig -u <username>
```

```
racadm getconfig -h
```

Supported Interfaces

- Local RACADM

getssninfo

Table A-5 describes the `getssninfo` subcommand.

Table A-5. getssninfo Subcommand

Subcommand	Definition
<code>getssninfo</code>	Retrieves session information for one or more currently active or pending sessions from the Session Manager's session table.

Synopsis

```
racadm getssninfo [-A] [-u <username> | *]
```

Description

The `getssninfo` command returns a list of users that are connected to iDRAC6. The summary information provides the following information:

- Username
- IP address (if applicable)
- Session type (for example, SSH or telnet)
- Consoles in use (for example, Virtual Media or Virtual KVM)

Supported Interfaces

- Local RACADM

Input

Table A-6 describes the `getssninfo` subcommand options.

Table A-6. getssninfo Subcommand Options

Option	Description
<code>-A</code>	The <code>-A</code> option eliminates the printing of data headers.
<code>-u</code>	The <code>-u <username></code> user name option limits the printed output to only the detail session records for the given user name. If an asterisk (*) symbol is given as the user name, all users are listed. Summary information is not printed when this option is specified.

Examples

- `racadm getssninfo`

Table A-7 provides an example of output from the `racadm getssninfo` command.

Table A-7. getssninfo Subcommand Output Example

User	IP Address	Type	Consoles
root	192.168.0.10	Telnet	Virtual KVM

- `racadm getssninfo -A`
"root" 143.166.174.19 "Telnet" "NONE"
- `racadm getssninfo -A -u *`
"root" "143.166.174.19" "Telnet" "NONE"
- "bob" "143.166.174.19" "GUI" "NONE"

getsysinfo

Table A-8 describes the `racadm getsysinfo` subcommand.

Table A-8. getsysinfo

Command	Definition
<code>getsysinfo</code>	Displays iDRAC6 information, system information, and watchdog status information.

Synopsis

```
racadm getsysinfo [-d] [-s] [-w] [-A]
```

Description

The `getsysinfo` subcommand displays information related to iDRAC6, the managed server, and the watchdog configuration.

Supported Interfaces

- Local RACADM

Input

Table A-9 describes the `getsysinfo` subcommand options.

Table A-9. getsysinfo Subcommand Options

Option	Description
-d	Displays iDRAC6 information.
-s	Displays system information
-w	Displays watchdog information
-A	Eliminates the printing of headers/labels.

Output

The `getsysinfo` subcommand displays information related to iDRAC6, the managed server, and the watchdog configuration.

Sample Output

```
RAC Information:
RAC Date/Time           = Wed Aug 22 20:01:33 2007
Firmware Version       = 0.32
Firmware Build         = 13661
Last Firmware Update   = Mon Aug 20 08:09:36 2007

Hardware Version       = NA
Current IP Address     = 192.168.0.120
Current IP Gateway     = 192.168.0.1
Current IP Netmask     = 255.255.255.0
DHCP Enabled          = 1
MAC Address           = 00:14:22:18:cd:f9
Current DNS Server 1   = 10.32.60.4
Current DNS Server 2   = 10.32.60.5
DNS Servers from DHCP = 1
Register DNS RAC Name = 1
DNS RAC Name          = iDRAC-783932693338
Current DNS Domain    = us.dell.com
```

```
System Information:
System Model           = PowerEdge M600
System BIOS Version   = 0.2.1
BMC Firmware Version  = 0.32
Service Tag           = 48192
Host Name              = dell-x92i38xc2n
OS Name                =
Power Status           = OFF
```

```
Watchdog Information:
Recovery Action        = None
Present countdown value = 0 seconds
Initial countdown value = 0 seconds
```

Examples

- `racadm getsysinfo -A -s`
"System Information:" "PowerEdge M600" "0.2.1"
"0.32" "48192" "dell-x92i38xc2n" "" "ON"
- `racadm getsysinfo -w -s`

```
System Information:
System Model           = PowerEdge M600
System BIOS Version   = 0.2.1
BMC Firmware Version  = 0.32
Service Tag           = 48192
Host Name              = dell-x92i38xc2n
OS Name                =
Power Status           = ON
```

```
Watchdog Information:
Recovery Action        = None
Present countdown value = 0 seconds
Initial countdown value = 0 seconds
```

Restrictions

The **Hostname** and **OS Name** fields in the **getsysinfo** output display accurate information only if Dell OpenManage is installed on the managed server. If OpenManage is not installed on the managed server, these fields may be blank or inaccurate.

getractive

Table A-10 describes the **getractive** subcommand.

Table A-10. getractive

Subcommand	Definition
getractive	Displays the current time from the remote access controller.

Synopsis

```
racadm getractive [-d]
```

Description

With no options, the **getractive** subcommand displays the time in a common readable format.

With the **-d** option, **getractive** displays the time in the format, *yyyymmddhhmmss.mmmmmms*, which is the same format returned by the UNIX[®] **date** command.

Output

The **getractive** subcommand displays the output on one line.

Sample Output

```
racadm getractive
Thu Dec 8 20:15:26 2005
```

```
racadm getractive -d
20071208201542.000000
```

Supported Interfaces

- Local RACADM

setniccfg

Table A-11 describes the `setniccfg` subcommand.

Table A-11. `setniccfg`

Subcommand	Definition
<code>setniccfg</code>	Sets the IP configuration for the controller.

Synopsis

```
racadm setniccfg -d
racadm setniccfg -s [<ipAddress> <netmask> <gateway> ]
racadm setniccfg -o [<ipAddress> <netmask> <gateway> ]
```

Description

The `setniccfg` subcommand sets the iDRAC6 IP address.

- The `-d` option enables DHCP for the NIC (default is DHCP enabled).
- The `-s` option enables static IP settings. The IP address, netmask, and gateway can be specified. Otherwise, the existing static settings are used. `<ipAddress>`, `<netmask>`, and `<gateway>` must be entered as dot-separated strings.

```
racadm setniccfg -s 192.168.0.120 255.255.255.0
192.168.0.1
```

- The `-o` option disables the NIC completely. `<ipAddress>`, `<netmask>`, and `<gateway>` must be entered as dot-separated strings.

```
racadm setniccfg -o 192.168.0.120 255.255.255.0
192.168.0.1
```

Output

The `setniccfg` subcommand displays an appropriate error message if the operation is not successful. If successful, a message is displayed.

Supported Interfaces

- Local RACADM

getniccfg



Table A-12 describes the `getniccfg` subcommand.

Table A-12. `getniccfg`

Subcommand	Definition
<code>getniccfg</code>	Displays the current IP configuration for iDRAC6.

Synopsis

```
racadm getniccfg
```

Description

The `getniccfg` subcommand displays the current NIC settings.

Sample Output

The `getniccfg` subcommand will display an appropriate error message if the operation is not successful. Otherwise, on success, the output is displayed in the following format:

```
NIC Enabled      = 1
DHCP Enabled     = 1
IP Address       = 192.168.0.1
Subnet Mask      = 255.255.255.0
Gateway          = 192.168.0.1
```

Supported Interfaces

- Local RACADM

getsvctag

Table A-13 describes the `getsvctag` subcommand.

Table A-13. `getsvctag`

Subcommand	Definition
<code>getsvctag</code>	Displays a service tag.

Synopsis

```
racadm getsvctag
```

Description

The `getsvctag` subcommand displays the service tag of the host system.

Example

Enter `getsvctag` at the command prompt. The output is displayed as follows:

```
Y76TPOG
```

The command returns `0` on success and nonzero on errors.

Supported Interfaces

- Local RACADM

racreset

Table A-14 describes the `racreset` subcommand.

Table A-14. `racreset`

Subcommand	Definition
<code>racreset</code>	Resets iDRAC6.



NOTE: When you issue a `racreset` subcommand, iDRAC6 may require up to one minute to return to a usable state.

Synopsis

```
racadm racreset
```

Description

The `racreset` subcommand issues a reset to iDRAC6. The reset event is written into the iDRAC6 log.

Examples

- `racadm racreset`
Start the iDRAC6 soft-reset sequence.

Supported Interfaces

- Local RACADM

racresetcfg

Table A-15 describes the `racresetcfg` subcommand.

Table A-15. `racresetcfg`

Subcommand	Definition
<code>racresetcfg</code>	Resets the entire RAC configuration to factory default values.

Synopsis

```
racadm racresetcfg
```

Supported Interfaces

- Local RACADM

Description

The `racresetcfg` command removes all user-configured database property entries. The database has default properties for all entries that are used to restore iDRAC6 back to the default settings.



NOTE: This command deletes your current iDRAC6 configuration and resets iDRAC6 configuration to the default settings. After reset, the default name and password are `root` and `calvin`, respectively, and the IP address is `192.168.0.120` plus the number of the slot the server inhabits in the chassis.

serveraction

Table A-16 describes the **serveraction** subcommand.

Table A-16. serveraction

Subcommand	Definition
serveraction	Executes a managed server reset or power-on/off/cycle.

Synopsis

```
racadm serveraction <action>
```

Description

The **serveraction** subcommand enables users to perform power management operations on the host system. Table A-17 describes the **serveraction** power control options.

Table A-17. serveraction Subcommand Options

String	Definition
<action>	Specifies the action. The <action> string options are: <ul style="list-style-type: none">• powerdown — Powers down the managed server.• powerup — Powers up the managed server.• powercycle — Issues a power-cycle operation on the managed server. This action is similar to pressing the power button on the system's front panel to power down and then power up the system.• powerstatus — Displays the current power status of the server (ON, or OFF).• hardreset — Performs a reset (reboot) operation on the managed server.

Output

The **serveraction** subcommand displays an error message if the requested operation could not be performed, or a success message if the operation completed successfully.

Supported Interfaces

- Local RACADM

getraclog

Table A-18 describes the `racadm getraclog` command.

Table A-18. getraclog

Command	Definition
<code>getraclog -i</code>	Displays the number of entries in the iDRAC6 log.
<code>getraclog</code>	Displays the iDRAC6 log entries.

Synopsis

```
racadm getraclog -i
```

```
racadm getraclog [-A] [-o] [-c count] [-s start-record] [-m]
```

Description

The `getraclog -i` command displays the number of entries in the iDRAC6 log.



NOTE: If no options are provided, the entire log is displayed.

The following options allow the `getraclog` command to read entries:

Table A-19. getraclog Subcommand Options

Option	Description
<code>-A</code>	Displays the output with no headers or labels.
<code>-c</code>	Provides the maximum count of entries to be returned.
<code>-m</code>	Displays one screen of information at a time and prompts the user to continue (similar to the UNIX <code>more</code> command).
<code>-o</code>	Displays the output in a single line.
<code>-s</code>	Specifies the starting record used for the display.

Output

The default output display shows the record number, time stamp, source, and description. The timestamp begins at midnight, January 1 and increases until the managed server boots. After the managed server boots, the managed server's system time is used for the timestamp.

Sample Output

```
Record:          1
Date/Time:      Dec  8 08:10:11
Source:         login[433]
Description:    root login from 143.166.157.103
```

Supported Interfaces

- Local RACADM

clrraclog

Synopsis

```
racadm clrraclog
```

Description

The `clrraclog` subcommand removes all existing records from the iDRAC6 log. A new single record is created to record the date and time when the log was cleared.

getsel

Table A-20 describes the `getsel` command.

Table A-20. `getsel`

Command	Definition
<code>getsel -i</code>	Displays the number of entries in the System Event Log .
<code>getsel</code>	Displays SEL entries.

Synopsis

```
racadm getsel -i
```

```
racadm getsel [-E] [-R] [-A] [-o] [-c count] [-s  
count] [-m]
```

Description

The `getsel -i` command displays the number of entries in the SEL.

The following `getsel` options (without the `-i` option) are used to read entries.



NOTE: If no arguments are specified, the entire log is displayed.

Table A-21. getsel Subcommand Options

Option	Description
-A	Specifies output with no display headers or labels.
-c	Provides the maximum count of entries to be returned.
-o	Displays the output in a single line.
-s	Specifies the starting record used for the display.
-E	Places the 16 bytes of raw SEL at the end of each line of output as a sequence of hex values.
-R	Only the raw data is printed.
-m	Displays one screen at a time and prompts the user to continue (similar to the UNIX <code>more</code> command).

Output

The default output display shows the record number, timestamp, severity, and description.

For example:

```
Record:      1  
Date/Time:   11/16/2005 22:40:43  
Severity:    Ok  
Description: System Board SEL: event log sensor for  
System Board, log cleared was asserted
```

Supported Interfaces

- Local RACADM

clrsel

Synopsis

```
racadm clrsel
```

Description

The `clrsel` command removes all existing records from the System Event Log (SEL).

Supported Interfaces

- Local RACADM

gettracelog

Table A-22 describes the `gettracelog` subcommand.

Table A-22. `gettracelog`

Command	Definition
<code>gettracelog -i</code>	Displays the number of entries in the iDRAC trace log.
<code>gettracelog</code>	Displays the iDRAC trace log.

Synopsis

```
racadm gettracelog -i
```

```
racadm gettracelog [-A] [-o] [-c count] [-s  
startrecord] [-m]
```

Description

The `gettracelog` (without the `-i` option) command reads entries. The following `gettracelog` entries are used to read entries:

Table A-23. gettracelog Subcommand options

Option	Description
<code>-i</code>	Displays the number of entries in the iDRAC trace log.
<code>-m</code>	Displays one screen at a time and prompts the user to continue (similar to the UNIX <code>more</code> command).
<code>-o</code>	Displays the output in a single line.
<code>-c</code>	specifies the number of records to display.
<code>-s</code>	specifies the starting record to display.
<code>-A</code>	do not display headers or labels.

Output

The default output display shows the record number, timestamp, source, and description. The timestamp begins at midnight, January 1 and increases until the managed system boots. After the managed system boots, the managed system's system time is used for the timestamp.

For example:

```
Record:          1
Date/Time:      Dec  8 08:21:30
Source:         ssnmgrd[175]
Description:    root from 143.166.157.103: session
timeout sid 0be0aef4
```

Supported Interfaces

- Local RACADM

sslcsrgen

Table A-24 describes the `sslcsrgen` subcommand.

Table A-24. sslcsrgen

Subcommand	Description
<code>sslcsrgen</code>	Generates and downloads an SSL certificate signing request (CSR) from the RAC.

Synopsis

```
racadm sslcsrgen [-g] [-f <filename>]
```

```
racadm sslcsrgen -s
```

Description

The `sslcsrgen` subcommand can be used to generate a CSR and download the file to the client's local file system. The CSR can be used for creating a custom SSL certificate that can be used for SSL transactions on the RAC.

Options

Table A-25 describes the `sslcsrgen` subcommand options.

Table A-25. sslcsrgen Subcommand Options

Option	Description
<code>-g</code>	Generates a new CSR.
<code>-s</code>	Returns the status of a CSR generation process (generation in progress, active, or none).
<code>-f</code>	Specifies the filename of the location, <i><filename></i> , where the CSR will be downloaded.



NOTE: If the `-f` option is not specified, the filename defaults to `sslcsr` in your current directory.

If no options are specified, a CSR is generated and downloaded to the local file system as `sslcsr` by default. The `-g` option cannot be used with the `-s` option, and the `-f` option can only be used with the `-g` option.

The `sslcsrgen -s` subcommand returns one of the following status codes:

- CSR was generated successfully.
- CSR does not exist.
- CSR generation in progress.



NOTE: Before a CSR can be generated, the CSR fields must be configured in the RACADM `cfgRacSecurity` group. For example: `racadm config -g cfgRacSecurity -o cfgRacSecCsrCommonName MyCompany`

Examples

```
racadm sslcsrgen -s
```

or

```
racadm sslcsrgen -g -f c:\csr\csrtest.txt
```

Supported Interfaces

- Local RACADM

sslcertupload

Table A-26 describes the `sslcertupload` subcommand.

Table A-26. sslcertupload

Subcommand	Description
<code>sslcertupload</code>	Uploads a custom SSL server or CA certificate from the client to iDRAC6.

Synopsis

```
racadm sslcertupload -t <type> [-f <filename>]
```

Options

Table A-27 describes the `sslcertupload` subcommand options.

Table A-27. sslcertupload Subcommand Options

Option	Description
-t	Specifies the type of certificate to upload, either the CA certificate or server certificate. 1 = server certificate 2 = CA certificate
-f	Specifies the file name of the certificate to be uploaded. If the file is not specified, the <code>sslcert</code> file in the current directory is selected.

The `sslcertupload` command returns 0 when successful and returns a nonzero number when unsuccessful.

Example

```
racadm sslcertupload -t 1 -f c:\cert\cert.txt
```

Supported Interfaces

- Local RACADM

sslcertdownload

Table A-28 describes the `sslcertdownload` subcommand.

Table A-28. sslcertdownload

Subcommand	Description
<code>sslcertdownload</code>	Downloads an SSL certificate from the RAC to the client's file system.

Synopsis

```
racadm sslcertdownload -t <type> [-f <filename>]
```

Options

Table A-29 describes the `sslcertdownload` subcommand options.

Table A-29. sslcertdownload Subcommand Options

Option	Description
-t	Specifies the type of certificate to download, either the Microsoft [®] Active Directory [®] certificate or server certificate. 1 = server certificate 2 = Microsoft Active Directory certificate
-f	Specifies the file name of the certificate to be downloaded. If the -f option or the filename is not specified, the <code>sslcert</code> file in the current directory is selected.

The `sslcertdownload` command returns 0 when successful and returns a nonzero number when unsuccessful.

Example

```
racadm sslcertdownload -t 1 -f c:\cert\cert.txt
```

Supported Interfaces

- Local RACADM

sslcertview

Table A-30 describes the `sslcertview` subcommand.

Table A-30. sslcertview

Subcommand	Description
<code>sslcertview</code>	Displays the SSL server or CA certificate that exists on iDRAC6.

Synopsis

```
racadm sslcertview -t <type> [-A]
```

Options

Table A-31 describes the `sslcertview` subcommand options.

Table A-31. sslcertview Subcommand Options

Option	Description
-t	Specifies the type of certificate to view, either the Microsoft Active Directory certificate or server certificate. 1 = server certificate 2 = Microsoft Active Directory certificate
-A	Prevents printing headers/labels.

Output Example

```
racadm sslcertview -t 1
```

```
Serial Number                : 00
```

```
Subject Information:
```

```
Country Code (CC)           : US
```

```
State (S)                    : Texas
```

```
Locality (L)                 : Round Rock
```

```
Organization (O)            : Dell Inc.
```

```
Organizational Unit (OU)    : Remote Access Group
```

```
Common Name (CN)            : iDRAC default certificate
```

```
Issuer Information:
```

```
Country Code (CC)           : US
```

```
State (S)                    : Texas
```

```
Locality (L)                 : Round Rock
```

```
Organization (O)            : Dell Inc.
```

```
Organizational Unit (OU)    : Remote Access Group
```

```
Common Name (CN)            : iDRAC default certificate
```

```
Valid From           : Jul  8 16:21:56 2005 GMT
Valid To             : Jul  7 16:21:56 2010 GMT
```

```
racadm sslcertview -t 1 -A
```

```
00
US
Texas
Round Rock
Dell Inc.
Remote Access Group
iDRAC default certificate
US
Texas
Round Rock
Dell Inc.
Remote Access Group
iDRAC default certificate
Jul 8 16:21:56 2005 GMT
Jul 7 16:21:56 2010 GMT
```

Supported Interfaces

- Local RACADM

testemail

Table A-32 describes the **testemail** subcommand.

Table A-32. testemail configuration

Subcommand	Description
testemail	Tests the iDRAC6 e-mail alerting feature.

Synopsis

```
racadm testemail -i <index>
```

Description

Sends a test e-mail from iDRAC6 to a specified destination.

Prior to executing the `testemail` command, ensure that the specified index in the RACADM `cfgEmailAlert` group is enabled and configured properly. Table A-33 provides an example of commands for the `cfgEmailAlert` group.

Table A-33. testemail Configuration

Action	Command
Enable the alert	<pre>racadm config -g cfgEmailAlert -o cfgEmailAlertEnable -i 1 1</pre>
Set the destination e-mail address	<pre>racadm config -g cfgEmailAlert -o cfgEmailAlertAddress -i 1 user1@mycompany.com</pre>
Set the custom message that is sent to the destination e-mail address	<pre>racadm config -g cfgEmailAlert -o cfgEmailAlertCustomMsg -i 1 "This is a test!"</pre>
Ensure the SNMP IP address is configured properly	<pre>racadm config -g cfgRemoteHosts -o cfgRhostsSmtpServerIpAddr -i 192.168.0.152</pre>
View the current e-mail alert settings	<pre>racadm getconfig -g cfgEmailAlert -i <index></pre> <p>where <i><index></i> is a number from 1 to 4</p>

Options

Table A-34 describes the `testemail` subcommand options.

Table A-34. testemail Subcommand Option

Option	Description
<code>-i</code>	Specifies the index of the e-mail alert to test.

Output

None.

Supported Interfaces

- Local RACADM

testtrap

Table A-35 describes the **testtrap** subcommand.

Table A-35. testtrap

Subcommand	Description
testtrap	Tests the iDRAC6 SNMP trap-alerting feature.

Synopsis

```
racadm testtrap -i <index>
```

Description

The **testtrap** subcommand tests the iDRAC6 SNMP trap-alerting feature by sending a test trap from iDRAC6 to a specified destination trap listener on the network.

Before you execute the **testtrap** subcommand, ensure that the specified index in the RACADM **cfgIpmiPet** group is configured properly.

Table A-36 provides a list and associated commands for the **cfgIpmiPet** group.

Table A-36. cfg e-mail Alert Commands

Action	Command
Enable the alert	<pre>racadm config -g cfgIpmiPet -o cfgIpmiPetAlertEnable -i 1 1</pre>
Set the destination e-mail IP address	<pre>racadm config -g cfgIpmiPet -o cfgIpmiPetAlertDestIpAddr -i 1 192.168.0.110</pre>
View the current test trap settings	<pre>racadm getconfig -g cfgIpmiPet -i <index></pre> <p>where <index> is a number from 1 to 4</p>

Input

Table A-37 describes the `testtrap` subcommand options.

Table A-37. testtrap Subcommand Options

Option	Description
-i	Specifies the index of the trap configuration to use for the test Valid values are from 1 to 4.

Supported Interfaces

- Local RACADM

vmdisconnect

Synopsis

```
racadm vmdisconnect
```

Description

The `vmdisconnect` subcommand disconnects any virtual media connections.

clrasrscreen

Synopsis

```
racadm clrasrscreen
```

Description

Clear the last crash (ASR) screen

localconredirdisable

Synopsis

```
racadm localconredirdisable [0, 1]
```

Description

Perform local kVM disable from the local system

Legal Values

0 = Enable

1 = Disable

vmkey

Synopsis

```
racadm vmkey [ reset ]
```

Description

The **vmkey** subcommand resets the virtual media key to the default size of 256MB.

Legal Values

reset = Resets the key to the default size (256 MB)

version

Synopsis

```
racadm version
```

Description

Display the RACADM version

iDRAC6 Enterprise Property Database Group and Object Definitions

The iDRAC6 property database contains the configuration information for iDRAC6. Data is organized by associated object, and objects are organized by object group. The IDs for the groups and objects that the property database supports are listed in this section.

Use the group and object IDs with the RACADM utility to configure iDRAC6. The following sections describe each object and indicate whether the object is readable, writable, or both.

All string values are limited to displayable ASCII characters, except where otherwise noted.

Displayable Characters

Displayable characters include the following set:

abcdefghijklmnopqrstuvwxwz

ABCDEFGHIJKLMNPOQRSTUVWXYZ

0123456789~`!@#\$%^&* ()_+ -= { } [] | \ : " ; ' < > , . ? /

idRacInfo

This group contains display parameters to provide information about the specifics of the iDRAC6 being queried.

One instance of the group is allowed. The following subsections describe the objects in this group.

idRacProductInfo (Read Only)

Legal Values

String of up to 63 ASCII characters

Default

Integrated Dell Remote Access Controller

Description

A text string that identifies the product

idRacDescriptionInfo (Read Only)

Legal Values

String of up to 255 ASCII characters

Default

This system component provides a complete set of remote management functions for Dell PowerEdge servers.

Description

A text description of the RAC type

idRacVersionInfo (Read Only)

Legal Values

String of up to 63 ASCII characters

Default

1

Description

A string containing the current product firmware version

idRacBuildInfo (Read Only)

Legal Values

String of up to 16 ASCII characters

Default

The current RAC firmware build version. For example, 05.12.06.

Description

A string containing the current product build version

idRacName (Read Only)

Legal Values

String of up to 15 ASCII characters

Default

iDRAC

Description

A user assigned name to identify this controller

idRacType (Read Only)

Legal Values

Product ID

Default

8

Description

Identifies the remote access controller type as iDRAC6

cfgOobSnpmp

This group contains parameters to configure the SNMP agent and trap capabilities of the iDRAC.

One instance of the group is allowed. The following subsections describe the objects in this group.

cfgOobSnpmpAgentCommunity (Read/Write)

Legal Values

String. Maximum length = 31

Default

public

Description

Specifies the SNMP Community Name used for SNMP traps

cfgOobSnpmpAgentEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the SNMP agent in the RAC

cfgLanNetworking

This group contains parameters to configure the iDRAC6 NIC.

One instance of the group is allowed. All objects in this group will require the iDRAC6 NIC to be reset, which may cause a brief loss in connectivity. Objects that change the iDRAC6 NIC IP address settings will close all active user sessions and require users to reconnect using the updated IP address settings.

cfgDNSDomainNameFromDHCP (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Specifies that the iDRAC6 DNS domain name should be assigned from the network DHCP server

cfgDNSDomainName (Read/Write)

Legal Values

String of up to 254 ASCII characters. At least one of the characters must be alphabetic. Characters are restricted to alphanumeric, hyphens and periods.



NOTE: Microsoft® Active Directory® only supports Fully Qualified Domain Names (FQDN) of 64 bytes or fewer.

Default

(blank)

Description

The DNS domain name. This parameter is only valid if `cfgDNSDomainNameFromDHCP` is set to 0 (FALSE).

cfgDNSRacName (Read/Write)

Legal Values

String of up to 63 ASCII characters. At least one character must be alphabetic.



NOTE: Some DNS servers only register names of 31 characters or fewer.

Default

idrac-service tag

Description

Displays the RAC name, which is *idrac-service tag* by default. This parameter is only valid if **cfgDNSRegisterRac** is set to 1 (TRUE).

cfgDNSRegisterRac (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Registers the iDRAC6 name on the DNS server

cfgDNSServersFromDHCP (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Specifies that the DNS server IP addresses should be assigned from the DHCP server on the network

cfgDNSServer1 (Read/Write)**Legal Values**

A string representing a valid IP address. For example: 192.168.0.20.

Default

0.0.0.0

Description

Specifies the IP address for DNS server 1. This property is only valid if `cfgDNSServersFromDHCP` is set to 0 (FALSE).



NOTE: `cfgDNSServer1` and `cfgDNSServer2` may be set to identical values while swapping addresses.

cfgDNSServer2 (Read/Write)**Legal Values**

A string representing a valid IP address. For example: 192.168.0.20.

Default

0.0.0.0

Description

Retrieves the IP address for DNS server 2. This parameter is only valid if `cfgDNSServersFromDHCP` is set to 0 (FALSE).



NOTE: `cfgDNSServer1` and `cfgDNSServer2` may be set to identical values while swapping addresses.

cfgNicEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the iDRAC6 network interface controller. If the NIC is disabled, the remote network interfaces to iDRAC6 will no longer be accessible, and iDRAC6 will only be available through the local RACADM interface.

cfgNicIpAddress (Read/Write)



NOTE: This parameter is only configurable if the `cfgNicUseDhcp` parameter is set to 0 (FALSE).

Legal Values

A string representing a valid IP address. For example: 192.168.0.20.

Default

192.168.0.*n*

where *n* is 120 plus the server slot number

Description

Specifies the static IP address to assign to the RAC. This property is only valid if `cfgNicUseDhcp` is set to 0 (FALSE).

cfgNicNetmask (Read/Write)



NOTE: This parameter is only configurable if the `cfgNicUseDhcp` parameter is set to 0 (FALSE).

Legal Values

A string representing a valid subnet mask. For example: 255.255.255.0.

Default

255.255.255.0

Description

The subnet mask used for static assignment of the iDRAC6 IP address. This property is only valid if **cfgNicUseDhcp** is set to 0 (FALSE).

cfgNicGateway (Read/Write)

NOTE: This parameter is only configurable if the **cfgNicUseDhcp** parameter is set to 0 (FALSE).

Legal Values

A string representing a valid gateway IP address. For example: 192.168.0.1.

Default

192.168.0.1

Description

The gateway IP address used for static assignment of the RAC IP address. This property is only valid if **cfgNicUseDhcp** is set to 0 (FALSE).

cfgNicUseDhcp (Read/Write)**Legal Values**

1 (TRUE)

0 (FALSE)

Default

0

Description

Specifies whether DHCP is used to assign the iDRAC6 IP address. If this property is set to 1 (TRUE), then the iDRAC6 IP address, subnet mask, and gateway are assigned from the DHCP server on the network. If this property is set to 0 (FALSE), the static IP address, subnet mask, and gateway is assigned from the `cfgNicIpAddress`, `cfgNicNetmask`, and `cfgNicGateway` properties.

cfgNicMacAddress (Read Only)**Legal Values**

A string representing the RAC NIC MAC address

Default

The current MAC address of the iDRAC6 NIC. For example, 00:12:67:52:51:A3.

Description

The iDRAC6 NIC MAC address

cfgUserAdmin

This group provides configuration information about the users who are allowed to access the RAC through the available remote interfaces.

Up to 16 instances of the user group are allowed. Each instance represents the configuration for an individual user.

cfgUserAdminIndex (Read Only)**Legal Values**

This parameter is populated based on the existing instances

Default

1 – 16

Description

The unique index of a user

cfgUserAdminIpmiLanPrivilege (Read/Write)

Legal Values

- 2 (User)
- 3 (Operator)
- 4 (Administrator)
- 15 (No access)

Default

- 4 (User 2)
- 15 (All others)

Description

The maximum privilege on the IPMI LAN channel

cfgUserAdminPrivilege (Read/Write)

Legal Values

0x00000000 to 0x000001ff, and 0x0

Default

0x00000000

Description

This property specifies the role-based authority privileges allowed for the user. The value is represented as a bit mask that allows for any combination of privilege values. Table B-1 describes the user privilege bit values that can be combined to create bit masks.

Table B-1. Bit Masks for User Privileges

User Privilege	Privilege Bit Mask
Login to iDRAC6	0x00000001
Configure iDRAC6	0x00000002
Configure Users	0x00000004

Table B-1. Bit Masks for User Privileges (continued)

User Privilege	Privilege Bit Mask
Clear Logs	0x0000008
Execute Server Control Commands	0x0000010
Access Console Redirection	0x0000020
Access Virtual Media	0x0000040
Test Alerts	0x0000080
Execute Debug Commands	0x0000100

Examples

Table B-2 provides sample privilege bit masks for users with one or more privileges.

Table B-2. Sample Bit Masks for User Privileges

User Privilege(s)	Privilege Bit Mask
The user is not allowed to access iDRAC6.	0x00000000
The user may only login to iDRAC6 and view iDRAC6 and server configuration information.	0x00000001
The user may login to iDRAC6 and change configuration.	$0x00000001 + 0x00000002 = 0x00000003$
The user may login to RAC, access virtual media, and access console redirection.	$0x00000001 + 0x00000040 + 0x00000080 = 0x000000C1$

cfgUserAdminUserName (Read/Write)

Legal Values

String. Maximum length = 16

Default

(blank)

Description

The name of the user for this index. The user index is created by writing a string into this name field if the index is empty. Writing a string of double quotes ("") deletes the user at that index. You cannot change the name. You must delete and then recreate the name. The string must not contain / (forward slash), \ (backslash), . (period), @ (at symbol) or quotation marks.



NOTE: This property value must be unique among user names.

cfgUserAdminPassword (Write Only)**Legal Values**

A string of up to 20 ASCII characters

Default

(blank)

Description

The password for this user. User passwords are encrypted and cannot be seen or displayed after the property is written.

cfgUserAdminEnable**Legal Values**

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables an individual user

cfgUserAdminSolEnable

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables Serial Over LAN (SOL) user access

cfgEmailAlert

This group contains parameters to configure the RAC e-mail alerting capabilities.

The following subsections describe the objects in this group. Up to four instances of this group are allowed.

cfgEmailAlertIndex (Read Only)

Legal Values

1-4

Default

This parameter is populated based on the existing instances.

Description

The unique index of an alert instance

cfgEmailAlertEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Specifies the destination email address for email alerts. For example, user1@company.com.

cfgEmailAlertAddress**Legal Values**

E-mail address format, with a maximum length of 64 ASCII characters

Default

(blank)

Description

The e-mail address of the alert source

cfgEmailAlertCustomMsg**Legal Values**

A string of up to 32 characters

Default

(blank)

Description

Specifies a custom message that is sent with the alert

cfgSessionManagement

This group contains parameters to configure the number of sessions that can connect to iDRAC6.

One instance of the group is allowed. The following subsections describe the objects in this group.

cfgSsnMgtConsRedirMaxSessions (Read/Write)

Legal Values

1 – 4

Default

4

Description

Specifies the maximum number of console redirection sessions allowed on iDRAC6

cfgSsnMgtWebserverTimeout (Read/Write)

Legal Values

60 – 10800

Default

1800

Description

Defines the Web server time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached.

Changes to this setting do not affect the current session; you must log out and log in again to make the new settings effective.

An expired Web server session logs out the current session.

cfgSsnMgtSshIdleTimeout (Read/Write)

Legal Values

0 (No time-out)

60 – 10800

Default

1800

Description

Defines the secure shell idle time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached.

Changes to this setting do not affect the current session; you must log out and log in again to make the new settings effective.

An expired secure shell session displays the following error message only after you press <Enter>:

```
Warning: Session no longer valid, may have timed out
```

After the message appears, the system returns you to the shell that generated the Secure Shell session.

cfgSsnMgtTelnetIdleTimeout (Read/Write)**Legal Values**

0 (No timeout)

60 – 10800

Default

1800

Description

Defines the telnet idle time-out. This property sets the amount of time in seconds that a connection is allowed to remain idle (there is no user input). The session is cancelled if the time limit set by this property is reached.

Changes to this setting do not affect the current session (you must log out and log in again to make the new settings effective).

An expired telnet session displays the following error message only after you press <Enter>:

```
Warning: Session no longer valid, may have timed out
```

After the message appears, the system returns you to the shell that generated the telnet session.

cfgSerial

This group contains configuration parameters for iDRAC6 services.

One instance of the group is allowed. The following subsections describe the objects in this group.

cfgSerialSshEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

1

Description

Enables or disables the secure shell (SSH) interface on iDRAC6

cfgSerialTelnetEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the telnet console interface on iDRAC6

cfgRemoteHosts

This group provides properties that allow configuration of the SMTP server for e-mail alerts.

cfgRhostsSmtplibServerIpAddr (Read/Write)

Legal Values

A string representing a valid SMTP server IP address. For example:
192.168.0.56.

Default

0.0.0.0

Description

The IP address of the network SMTP server. The SMTP server transmits e-mail alerts from the RAC if the alerts are configured and enabled.

cfgUserDomain

This group is used to configure the Active Directory user domain names. A maximum of 40 domain names can be configured at any given time.

cfgUserDomainIndex (Read Only)

Legal Values

1 – 40

Default

<instance>

Description

Represents a specific domain

cfgUserDomainName (Read/Write)

Legal Values

A string of up to 255 characters

Default

(blank)

Description

Specifies the Active Directory user domain name

cfgServerPower

This group provides several power management features.

cfgServerPowerStatus (Read Only)

Legal Values

1 = TRUE

0 = FALSE

Default

0

Description

Represents the server power state, either ON or OFF

cfgServerPowerServerAllocation (Read Only)

Legal Values

String of up to 32 characters

Default

(blank)

Description

Represents the available power supply for server usage

cfgServerPowerActualPowerConsumption (Read Only)

Legal Values

String of up to 32 characters

Default

(blank)

Description

Represents the power consumed by the server at the current time

cfgServerPowerPeakPowerConsumption (Read Only)**Legal Values**

String of up to 32 characters

Default

(blank)

Description

Represents the maximum power consumed by the server until the current time

cfgServerPowerPeakPowerTimestamp (Read Only)**Legal Values**

String of up to 32 characters

Default

(blank)

Description

Time when the maximum power consumption was recorded

cfgServerPowerConsumptionClear (Write Only)**Legal Values**

0, 1

Default

0

Description

Resets the `cfgServerPeakPowerConsumption` property to 0 and the `cfgServerPeakPowerConsumptionTimestamp` property to the current iDRAC6 time

cfgServerPowerCapWatts (Read Only)**Legal Values**

String of up to 32 characters

Default

(blank)

Description

Represents the server power threshold in Watts

cfgServerPowerCapBtuhr (Read Only)**Legal Values**

String of up to 32 characters

Default

(blank)

Description

Represents the server power threshold in BTU/hr

cfgServerPowerCapPercent (Read Only)**Legal Values**

String of up to 32 characters

Default

(blank)

Description

Represents the server power threshold in percentage

cfgRacTuning

This group is used to configure various iDRAC6 configuration properties, such as valid ports and security port restrictions.

cfgRacTuneHttpPort (Read/Write)**Legal Values**

10 – 65535

Default

80

Description

Specifies the port number to use for HTTP network communication with the RAC

cfgRacTuneHttpsPort (Read/Write)**Legal Values**

10 – 65535

Default

443

Description

Specifies the port number to use for HTTPS network communication with iDRAC6

cfgRacTuneIpRangeEnable

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the IP Address Range validation feature of iDRAC6

cfgRacTuneIpRangeAddr

Legal Values

An IP address-formatted string. For example, 192.168.0.44.

Default

192.168.1.1

Description

Specifies the acceptable IP address bit pattern in positions determined by the 1's in the range mask property (**cfgRacTuneIpRangeMask**)

cfgRacTuneIpRangeMask

Legal Values

Standard IP mask values with left-justified bits

Default

255.255.255.0

Description

An IP address-formatted string. For example, 255.255.255.0.

cfgRacTuneIpBlkEnable

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the IP address blocking feature of the RAC

cfgRacTuneIpBlkFailCount

Legal Values

2 – 16

Default

5

Description

The maximum number of login failures to occur within the window (cfgRacTuneIpBlkFailWindow) before login attempts from the IP address are rejected

cfgRacTuneIpBlkFailWindow

Legal Values

10 – 65535

Default

60

Description

Defines the time span in seconds that the failed attempts are counted. When failure attempts age beyond this limit, they are dropped from the count.

cfgRacTuneIpBlkPenaltyTime**Legal Values**

10 – 65535

Default

300

Description

Defines the time span in seconds that session requests from an IP address with excessive failures are rejected

cfgRacTuneSshPort (Read/Write)**Legal Values**

1 – 65535

Default

22

Description

Specifies the port number used for the iDRAC6 SSH interface

cfgRacTuneConRedirEnable (Read/Write)**Legal Values**

1 (TRUE)

0 (FALSE)

Default

1

Description

Enables or disables console redirection

cfgRacTuneTelnetPort (Read/Write)**Legal Values**

1 – 65535

Default

23

Description

Specifies the port number used for the iDRAC6 telnet interface

cfgRacTuneConRedirEncryptEnable (Read/Write)**Legal Values**

1 (TRUE)

0 (FALSE)

Default

1

Description

Encrypts the video in a console redirection session

cfgRacTuneConRedirPort (Read/Write)**Legal Values**

1 – 65535

Default

5900

Description

Specifies the port to be used for keyboard and mouse traffic during console redirection activity with iDRAC6

cfgRacTuneConRedirVideoPort (Read/Write)**Legal Values**

1 – 65535

Default

5901

Description

Specifies the port to be used for video traffic during console redirection activity with iDRAC6



NOTE: This object requires an iDRAC6 reset before it becomes active.

cfgRacTuneAsrEnable (Read/Write)**Legal Values**

0 (FALSE)

1 (TRUE)

Default

1

Description

Enables or disables the iDRAC6 last-crash-screen capture feature



NOTE: This object requires an iDRAC6 reset before it becomes active.

cfgRacTuneWebserverEnable (Read/Write)**Legal Values**

0 (FALSE)

1 (TRUE)

Default

1

Description

Enables and disables the iDRAC6 Web server. If this property is disabled, iDRAC6 will not be accessible using client Web browsers. This property has no effect on the telnet/SSH or local RACADM interfaces.

cfgRacTuneLocalServerVideo (Read/Write)**Legal Values**

1 (Enables)

0 (Disables)

Default

1

Description

Enables (switches ON) or disables (switches OFF) the local server video

cfgRacTuneLocalConfigDisable (Read/Write)**Legal Values**

0 (Enables)

1 (Disables)

Default

0

Description

Disables write access to iDRAC6 configuration data. The default is for access to be enabled.



NOTE: Access can be disabled using the Local RACADM or the iDRAC6 Web interface; however, once disabled, access can be re-enabled only through the iDRAC6 Web interface.

ifcRacManagedNodeOs

This group contains properties that describe the Managed Server operating system.

One instance of the group is allowed. The following subsections describe the objects in this group.

ifcRacMnOsHostname (Read Only)

Legal Values

A string of up to 255 characters

Default

(blank)

Description

The host name of the managed server

ifcRacMnOsOsName (Read Only)

Legal Values

A string of up to 255 characters

Default

(blank)

Description

The operating system name of the managed server

cfgRacSecurity

This group is used to configure settings related to the iDRAC6 SSL certificate signing request (CSR) feature. The properties in this group must be configured before generating a CSR from iDRAC6.

See the RACADM `sslcsrgen` subcommand details for more information on generating certificate signing requests.

cfgSecCsrCommonName (Read/Write)

Legal Values

A string of up to 254 characters

Default

Description

Specifies the CSR Common Name (CN)

cfgSecCsrOrganizationName (Read/Write)

Legal Values

A string of up to 254 characters

Default

(blank)

Description

Specifies the CSR Organization Name (O)

cfgSecCsrOrganizationUnit (Read/Write)

Legal Values

A string of up to 254 characters

Default

(blank)

Description

Specifies the CSR Organization Unit (OU)

cfgSecCsrLocalityName (Read/Write)

Legal Values

A string of up to 254 characters

Default

(blank)

Description

Specifies the CSR Locality (L)

cfgSecCsrStateName (Read/Write)**Legal Values**

A string of up to 254 characters

Default

(blank)

Description

Specifies the CSR State Name (S)

cfgSecCsrCountryCode (Read/Write)**Legal Values**

A two-character string

Default

(blank)

Description

Specifies the CSR Country Code (CC)

cfgSecCsrEmailAddr (Read/Write)**Legal Values**

A string of up to 254 characters

Default

(blank)

Description

Specifies the CSR Email Address.

cfgSecCsrKeySize (Read/Write)**Legal Values**

512

1024

2048

Default

1024

Description

Specifies the SSL asymmetric key size for the CSR

cfgRacVirtual

This group contains parameters to configure the iDRAC6 virtual media feature. One instance of the group is allowed. The following subsections describe the objects in this group.

cfgVirMediaAttached (Read/Write)**Legal Values**

0 = Detach

1 = Attach

2 = Auto Attach

Default

0

Description

This object is used to attach virtual devices to the system via the USB bus. When the devices are attached the server will recognize valid USB mass storage devices attached to the system. This is equivalent to attaching a local USB CDROM/floppy drive to a USB port on the system. When the devices are attached you then can connect to the virtual devices remotely using the iDRAC6 Web interface or the CLI. Setting this object to 0 will cause the devices to detach from the USB bus.



NOTE: You must restart your system to enable all changes.

cfgVirMediaBootOnce (Read/Write)

Legal Values

1 (Enabled)

0 (Disabled)

Default

0

Description

Enables or disables the virtual media boot-once feature of iDRAC6. If this property is enabled when the host server is rebooted, this feature will attempt to boot from the virtual media devices—if the appropriate media is installed in the device.

cfgVirMediaKeyEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables the virtual media key feature of the iDRAC

cfgFloppyEmulation (Read/Write)**Legal Values**

1 (TRUE)

0 (FALSE)

Default

0

Description

When set to 0, the virtual floppy drive is recognized as a removable disk by Windows operating systems. Windows operating systems will assign a drive letter that is C: or higher during enumeration. When set to 1, the Virtual Floppy drive will be seen as a floppy drive by Windows operating systems. Windows operating systems will assign a drive letter of A: or B:.

cfgActiveDirectory

This group contains parameters to configure the iDRAC6 Active Directory feature.

cfgADracDomain (Read/Write)**Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

Default

(blank)

Description

Active Directory Domain in which the DRAC resides

cfgAD RacName (Read/Write)

Legal Values

Any printable text string with no white space. Length is limited to 254 characters.

Default

(blank)

Description

Name of iDRAC6 as recorded in the Active Directory forest

cfgAD Enable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

0

Description

Enables or disables Active Directory user authentication on iDRAC6. If this property is disabled, local iDRAC6 authentication is used for user logins instead.

cfgAD AuthTimeout (Read/Write)

NOTE: To modify this property, you must have **Configure iDRAC** permission.

Legal Values

15 – 300

Default

120

Description

Specifies the number of seconds to wait for Active Directory authentication requests to complete before timing out.

cfgADDomainController1 (Read/Write)**Legal Values**

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the LDAP server for user names.

cfgADDomainController2 (Read/Write)

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the LDAP server for user names.

cfgADDomainController3 (Read/Write)

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the LDAP server for user names.

cfgADGlobalCatalog1 (Read/Write)

Legal Values

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

cfgADGlobalCatalog2 (Read/Write)

Legal Values

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

cfgADGlobalCatalog3 (Read/Write)

Legal Values

Valid IP address or a fully qualified domain name (FQDN)

Default

No default value

Description

iDRAC6 uses the value you specify to search the Global Catalog server for user names.

cfgADType (Read/Write)

Legal Values

1 = Enables Active Directory with the extended schema

2 = Enables Active Directory with the standard schema

Default

1

Description

Determines the schema type to use with Active Directory

cfgADCertValidationEnable (Read/Write)

Legal Values

1 (TRUE)

0 (FALSE)

Default

1

Description

Enables or disables Active Directory certificate validation

cfgStandardSchema

This group contains parameters to configure the Active Directory standard schema settings.

cfgSSADRoleGroupIndex (Read Only)

Legal Values

1 – 5

Description

Index of the Role Group as recorded in the Active Directory

cfgSSADRoleGroupName (Read/Write)**Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

Default

(blank)

Description

Name of the Role Group as recorded in the Active Directory forest

cfgSSADRoleGroupDomain (Read/Write)**Legal Values**

Any printable text string with no white space. Length is limited to 254 characters.

Default

(blank)

Description

Active Directory Domain in which the Role Group resides

cfgSSADRoleGroupPrivilege (Read/Write)**Legal Values**

0x00000000 to 0x000001ff

Default

(blank)

Description

Use the bit mask numbers in Table B-3 to set role-based authority privileges for a Role Group.

Table B-3. Bit Masks for Role Group Privileges

Role Group Privilege	Bit Mask
Login to iDRAC6	0x00000001
Configure iDRAC6	0x00000002
Configure Users	0x00000004
Clear Logs	0x00000008
Execute Server Control Commands	0x00000010
Access Console Redirection	0x00000020
Access Virtual Media	0x00000040
Test Alerts	0x00000080
Execute Debug Commands	0x00000100

cfglpmiSol

This group is used to configure the Serial Over LAN (SOL) capabilities of the system.

cfglpmiSolEnable (Read/Write)

Legal Values

0 (FALSE)

1 (TRUE)

Default

1

Description

Enables or disables SOL

cfgIpmiSolBaudRate (Read/Write)

Legal Values

9600, 19200, 57600, 115200

Default

115200

Description

The baud rate for serial communication over LAN

cfgIpmiSolMinPrivilege (Read/Write)

Legal Values

2 (User)

3 (Operator)

4 (Administrator)

Default

4

Description

Specifies the minimum privilege level required for SOL access

cfgIpmiSolAccumulateInterval (Read/Write)

Legal Values

1 – 255

Default

10

Description

Specifies the typical amount of time that iDRAC6 waits before transmitting a partial SOL character data packet. This value is 1-based 5ms increments.

cfgIpmiSolSendThreshold (Read/Write)

Legal Values

1 – 255

Default

255

Description

The SOL threshold limit value. Specifies the maximum number of bytes to buffer before sending an SOL data packet.

cfgIpmiLan

This group is used to configure the IPMI over LAN capabilities of the system.

cfgIpmiLanEnable (Read/Write)

Legal Values

0 (FALSE)

1 (TRUE)

Default

0

Description

Enables or disables the IPMI over LAN interface

cfgIpmiLanPrivLimit (Read/Write)

Legal Values

2 (User)

3 (Operator)

4 (Administrator)

Default

4

Description

Specifies the maximum privilege level allowed for IPMI over LAN access

cfgIpmiLanAlertEnable (Read/Write)**Legal Values**

0 (FALSE)

1 (TRUE)

Default

0

Description

Enables or disables global e-mail alerting. This property overrides all individual e-mail alerting enable/disable properties.

cfgIpmiEncryptionKey (Read/Write)**Legal Values**

A string of hexadecimal digits from 0 to 40 characters with no spaces

Default

000

Description

The IPMI encryption key

cfgIpmiPetCommunityName (Read/Write)**Legal Values**

A string up to 18 characters

Default

public

Description

The SNMP community name for traps

cfglpmiPef

This group is used to configure the platform event filters available on the managed server.

The event filters can be used to control policy related to actions that are triggered when critical events occur on the managed server.

cfglpmiPefName (Read Only)**Legal Values**

A string up to 255 characters

Default

The name of the index filter

Description

Specifies the name of the platform event filter

cfglpmiPefIndex (Read Only)**Legal Values**

1 – 17

Default

The index value of a platform event filter object

Description

Specifies the index of a specific platform event filter

cfgIpmiPefAction (Read/Write)

Legal Values

- 0 (None)
- 1 (Power Down)
- 2 (Reset)
- 3 (Power Cycle)

Default

0

Description

Specifies the action that is performed on the managed server when the alert is triggered

cfgIpmiPefEnable (Read/Write)

Legal Values

- 0 (FALSE)
- 1 (TRUE)

Default

1

Description

Enables or disables a specific platform event filter.

cfgIpmiPet

This group is used to configure platform event traps on the managed server.

cfgIpmiPetIndex (Read/Write)

Legal Values

1 – 4

Default

The appropriate index value

Description

Unique identifier for the index corresponding to the trap

cfgIpmiPetAlertDestIpAddr (Read/Write)**Legal Values**

String representing a valid IP address. For example, 192.168.0.67.

Default

0.0.0.0

Description

Specifies the destination IP address for the trap receiver on the network. The trap receiver receives an SNMP trap when an event is triggered on the managed server.

cfgIpmiPetAlertEnable (Read/Write)**Legal Values**

0 (FALSE)

1 (TRUE)

Default

1

Description

Enables or disables a specific trap

C

iDRAC6 SM-CLP Property Database

/system1/sp1/account<1-16>

This target provides configuration information about the local users who are allowed to access the RAC through available remote interfaces. Up to 16 instances of the user group are allowed. Each instance <1-16> represents the configuration for an individual local user.

userid (Read Only)

Legal values

1-16

Default

Depends on the account instance being accessed.

Description

Specifies the instance ID or the local user ID.

username (Read/Write)

Legal values

String. Maximum length = 16

Default

""

Description

A text string that contains the name of the local user for this account. The string must not contain a forward slash (/), period (.), at symbol (@), or quotation marks ("). Deleting the user is done by deleting the account. (delete account<1-16>).



NOTE: This property value must be unique among usernames.

oem dell_ipmilanprivileges (Read/Write)

Legal Values

- 2 (User)
- 3 (Operator)
- 4 (Administrator)
- 15 (No access)

Default

- 4 (User 2)
- 15 (All others)

Description

The maximum privilege on the IPMI LAN channel.

password (Write Only)

Legal Values

A text string between 4 and 20 characters in length.

Default

""

Description

Holds the password for this local user. User passwords are encrypted and cannot be seen or displayed after the property is written.

enabledstate (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Helps enable or disable an individual user.

solenabled (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Enables or disables Serial Over LAN (SOL) user access.

oem dell_extendedprivileges (Read/Write)

Legal Values

0x00000000 to 0x000001ff

Default

0x00000000

Description

Specifies the role-based authority privileges allowed for the user. The value is represented as a bit mask that allows for any combination of privilege values. Table C-1 describes the user privilege bit values that can be combined to create bit masks.

Table C-1. Bit Masks for User Privileges

User Privilege	Privilege Bit Mask
Login to iDRAC6	0x0000001
Configure iDRAC6	0x0000002
Configure Users	0x0000004
Clear Logs	0x0000008
Execute Server Control Commands	0x0000010
Access Console Redirection	0x0000020
Access Virtual Media	0x0000040
Test Alerts	0x0000080
Execute Debug Commands	0x0000100

Examples

Table C-2 provides sample privilege bit masks for users with one or more privileges.

Table C-2. Sample Bit Masks for User Privileges

User Privilege(s)	Privilege Bit Mask
The user is not allowed to access iDRAC6.	0x00000000
The user may only login to iDRAC6 and view iDRAC6 and server configuration information.	0x00000001
The user may login to iDRAC6 and change configuration.	$0x00000001 + 0x00000002 = 0x00000003$
The user may login to RAC, access virtual media, and access console redirection.	$0x00000001 + 0x00000040 + 0x00000080 = 0x000000C1$

/system1/sp1/enetport1/*

This group contains parameters to configure the iDRAC6 NIC. One instance of the group is allowed. All objects in this group require the iDRAC6 NIC to be reset, which may cause a brief loss in connectivity. Objects that change the iDRAC6 NIC IP address settings close all active user sessions and require users to reconnect using the updated IP address settings.

macaddress (Read Only)

Legal Values

A string representing the RAC NIC MAC address.

Default

The current MAC address of the iDRAC6 NIC. For example, 00:12:67:52:51:A3.

Description

Holds the iDRAC6 NIC MAC address.

/system1/sp1/enetport1/lanendpt1/ipendpt1

oem Dell_nicenable (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Enables or disables the iDRAC6 NIC. If the NIC is disabled, the remote network interfaces to iDRAC6 become inaccessible, rendering iDRAC6 available only through the local RACADM interface.

ipaddress (Read/Write)

Legal Values

A string representing a valid IP address. For example: 192.168.0.20.

Default

192.168.0.n (where n is 120 plus the server slot number)

Description

Specifies the static IP address to assign to the RAC. This property is only valid if oem dell_ usedhcp is set to 0 (Disabled).

subnetmask (Read/Write)

Legal Values

A string representing a valid subnet mask. For example: 255.255.255.0.

Default

255.255.255.0

Description

The subnet mask used for static assignment of the iDRAC6 IP address. This property is only valid if oem dell_ usedhcp is set to 0 (Disabled).

oem dell_ usedhcp (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Specifies whether DHCP is used to assign the iDRAC6 IP address. If this property is set to 1 (Enabled), the iDRAC6 IP address, subnet mask, and gateway are assigned from the DHCP server on the network. If this property is set to 0 (Disabled), the static IP address, subnet mask, and gateway gain values inserted manually by the user.

committed (Read/Write)**Legal Values**

0 (Pending commit)

1 (Committed)

Default

1

Description

Enables the user to change the IP address and/or subnet mask without terminating the current session. If this property is set to 1 (Committed), the IP address and subnet mask are valid. A change in either the IP address or the subnet mask automatically converts this property to 0 (Pending commit). For the network settings to take effect, the property must be set back to 1.

/system1/sp1/enetport1/lanendpt1/ipendpt1/dnsendpt1

oem dell_domainnamefromdhcp (Read/Write)**Legal Values**

0 (Disabled)

1 (Enabled)

Default

0

Description

Specifies that the iDRAC6 DNS domain name should be assigned from the network DHCP server.

oem Dell_dnsdomainname (Read/Write)**Legal Values**

A string of up to 254 ASCII characters. At least one of the characters must be alphabetic.

Default

""

Description

Holds the DNS domain name. This parameter is only valid if oem Dell_domainnamefromdhcp is set to 0 (Disabled).

oem Dell_dnsregisterrac (Read/Write)**Legal Values**

0 (Unregistered)

1 (Registered)

Default

0

Description

Registers the iDRAC6 name on the DNS server.

oem Dell_dnsracname (Read/Write)**Legal Values**

A string of up to 63 ASCII characters. At least one character must be alphabetic.



NOTE: Some DNS servers only register names of up to 31 characters.

Default

rac-service tag

Description

Displays the RAC name, which is the RAC service tag by default. This parameter is only valid if oem Dell_dnsregisterrac is set to 1 (Registered).

oem Dell_serversfromdhcp (Read/Write)**Legal Values**

0 (Disabled)

1 (Enabled)

Default

0

Description

Specifies that the DNS server IP addresses should be assigned from the DHCP server on the network.

/system1/sp1/enetport1/lanendpt1/ipendpt1/dnsendpt1/remotesap1**dnsserveraddress (Read/Write)****Legal Values**

A string representing a valid IP address. For example: 192.168.0.20.

Default

0.0.0.0

Description

Specifies the IP address for DNS Server 1. This property is only valid if oem Dell_serversfromdhcp is set to 0 (Disabled).

/system1/sp1/enetport1/lanendpt1/ipendpt1/dnsendpt1/remotesap2

dnserveraddress (Read/Write)

Legal Values

A string representing a valid IP address. For example: 192.168.0.20.

Default

0.0.0.0

Description

Specifies the IP address for DNS Server 2. This property is only valid if oem Dell_serversfromdhcp is set to 0 (Disabled).

/system1/sp1/enetport1/lanendpt1/ipendpt1/remotesap1

defaultgatewayaddress (Read/Write)

Legal Values

A string representing a valid gateway IP address. For example: 192.168.0.1.

Default

192.168.0.1

Description

The gateway IP address used for static assignment of the RAC IP address. This property is only valid if oem Dell_usedhcp is set to 0 (Disabled).

/system1/sp1/group<1-5>

These groups contain parameters to configure the Active Directory standard schema settings.

oemdll_groupname (Read/Write)

Legal Values

Any printable text string up to 254 characters with no blank spaces.

Default

“”

Description

Holds the name of the Role Group as recorded in the Active Directory forest.

oemdll_groupdomain (Read/Write)

Legal Values

Any printable text string up to 254 characters with no blank spaces.

Default

“”

Description

Holds the Active Directory domain in which the Role Group resides.

oemdll_groupprivilege (Read/Write)

Legal Values

0x00000000 to 0x000001ff

Default

“”

Description

Use the bit mask numbers in Table B-3 to set role-based authority privileges for a Role Group.

Table C-3. Bit Masks for Role Group Privileges

Role Group	Privilege Bit Mask
Login to iDRAC6	0x00000001
Configure iDRAC6	0x00000002
Configure Users	0x00000004
Clear Logs	0x00000008
Execute Server Control Commands	0x00000010
Access Console Redirection	0x00000020
Access Virtual Media	0x00000040
Test Alerts	0x00000080
Execute Debug Commands	0x00000100

/system1/sp1/oem Dell_adservice1

This group contains parameters to configure the iDRAC6 Active Directory feature.

enabledstate (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Enables or disables Active Directory user authentication on iDRAC6. If this property is disabled, only local iDRAC6 authentication is used for user logins.

oem Dell_adracname (Read/Write)

Legal Values

Any printable text string up to 254 characters with no blank spaces.

Default

""

Description

Name of iDRAC6 as recorded in the Active Directory forest.

oem Dell_adracdomain (Read/Write)

Legal Values

Any printable text string up to 254 characters with no blank spaces.

Default

""

Description

The Active Directory Domain in which iDRAC6 resides.

oem Dell_adrootdomain (Read/Write)

Legal Values

Any printable text string up to 254 characters with no blank spaces.

Default

""

Description

The root domain of the Domain Forest.

oem Dell_timeout (Read/Write)

Legal Values

15 – 300

Default

120

Description

Specifies the number of seconds to wait for Active Directory authentication requests to complete before timing out.

oem Dell_schematype (Read/Write)

Legal Values

1 (Extended schema)

2 (Standard schema)

Default

1

Description

Determines the schema type to use with Active Directory.

oem Dell_adspecifyserverenable (Read/Write)

Legal Values

0 (Disabled)

1 (Enabled)

Default

0

Description

Enables the user to specify an LDAP or a Global Catalog server.

oem Dell_addomaincontroller (Read/Write)

Legal Values

A valid IP address or a fully qualified domain name (FQDN).

Default

“”

Description

Value specified by the user that iDRAC6 uses to search the LDAP server for usernames.

oem Dell_adglobalcatalog (Read/Write)

Legal Values

A valid IP address or an FQDN.

Default

No default value

Description

Value specified by the user that iDRAC6 uses to search the Global Catalog server for usernames.

/system1/sp1/oem Dell_racsecurity1

This group is used to configure settings related to the iDRAC6 SSL certificate signing request (CSR) feature. All of the properties in this group must be configured before generating a CSR from iDRAC6.

commonname (Read/Write)

Legal Values

A string of up to 254 characters.

Default

""

Description

Specifies the CSR Common Name.

organizationname (Read/Write)**Legal Values**

A string of up to 254 characters.

Default

""

Description

Specifies the CSR Organization Name.

oem Dell_organizationunit (Read/Write)**Legal Values**

A string of up to 254 characters.

Default

""

Description

Specifies the CSR Organization Unit.

oem Dell_localityname (Read/Write)**Legal Values**

A string of up to 254 characters.

Default

""

Description

Specifies the CSR Locality.

oemdll_statename (Read/Write)**Legal Values**

A string of up to 254 characters.

Default

""

Description

Specifies the CSR State Name.

oemdll_countrycode (Read/Write)**Legal Values**

A string of up to 2 characters.

Default

""

Description

Specifies the CSR Country Code.

oemdll_emailaddress (Read/Write)**Legal Values**

A string of up to 254 characters.

Default

""

Description

Specifies the CSR Email Address.

oem Dell_keysize (Read/Write)

Legal Values

1024

2048

4096

Default

1024

Description

Specifies the SSL asymmetric key size for the CSR.

/system1/sp1/oem Dell_ssl1

Contains parameters necessary to generate Certificate Signing Requests (CSRs) and view certificates.

generate (Read/Write)

Legal Values

0 (Do not generate)

1 (Generate)

Default

0

Description

Generates a CSR when set to 1. Set the properties in the oem Dell_racecurity1 target before generating a CSR.

oem Dell_status (Read Only)

Legal values

CSR not found

CSR generated

Default

CSR not found

Description

Shows the status of the previous generate command issued, if any, during the current session.

oem Dell_certtype (Read / Write)**Legal values**

SSL

AD

CSR

Default

SSL

Description

Specifies the type of certificate to be viewed (AD or SSL) and helps generate a CSR with the help of the **generate** property.

/system1/sp1/oem Dell_vm service1

This group contains parameters to configure the iDRAC6 virtual media feature.

enabledstate (Read/Write)**Legal Values**

VMEDIA_DETACH

VMEDIA_ATTACH

VMEDIA_AUTO_ATTACH

Default

VMEDIA_ATTACH

Description

Used to attach virtual devices to the system via the USB bus, allowing the server to recognize valid USB mass storage devices attached to the system. This is equivalent to attaching a local USB CDROM/floppy drive to a USB port on the system. When the devices are attached, you then can connect to the virtual devices remotely using the iDRAC6 Web interface or the CLI. Setting this property to 0 causes the devices to detach from the USB bus.

oem Dell_singleboot (Read/Write)**Legal Values**

0 (Disabled)

1 (Enabled)

Default

0

Description

Enables or disables the virtual media boot-once feature of iDRAC6. If this property is enabled when the host server is rebooted, the server attempts to boot from the virtual media devices.

oem Dell_floppyemulation (Read/Write)**Legal Values**

0 (Disabled)

1 (Enabled)

Default

0

Description

When set to 0, the virtual floppy drive is recognized as a removable disk by Windows operating systems. Windows operating systems will assign a drive letter that is C: or higher during enumeration. When set to 1, the Virtual Floppy drive will be seen as a floppy drive by Windows operating systems. Windows operating systems will assign a drive letter of A: or B:

/system1/sp1/oem Dell_vm service1/tcp endpt1

portnumber (Read/Write)**Legal Values**

1 – 65535

Default

3668

Description

Specifies the port number used for encrypted virtual media connections to iDRAC6.

oem Dell_ ssl enabled (Read Only)**Legal Value**

FALSE

Default

FALSE

Description

Indicates that the port has SSL disabled.

portnumber (Read/Write)

Legal Values

1 – 65535

Default

3670

Description

Specifies the port number used for encrypted virtual media connections to iDRAC6.

oem Dell_sslenabled (Read Only)

Legal Value

TRUE

Default

TRUE

Description

Indicates that the port has SSL enabled.

D

RACADM and SM-CLP Equivalencies

Table D-1 lists the RACADM groups and objects and, where they exist, SM-SLP equivalent locations in the SM-CLP MAP.

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies

RACADM Groups/Objects	SM-CLP	Description
idRacInfo		
idRacName		String of up to 15 ASCII characters. Default: iDRAC .
idRacProductInfo		String of up to 63 ASCII characters. Default: Integrated Dell Remote Access Controller .
idRacDescriptionInfo		String of up to 255 ASCII characters. Default: This system component provides a complete set of remote management functions for Dell PowerEdge servers
idRacVersionInfo		String of up to 63 ASCII characters. Default: 1
idRacBuildInfo		String of up to 16 ASCII characters.
idRacType		Default: 8

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgActiveDirectory	/system1/sp1/ oemdelld_adservice1	
cfgADEnable	enablestate	0 to disable, 1 to enable Default: 0
cfgADRacName	oemdelld_adracname	String of up to 254 characters.
cfgADRacDomain	oemdelld_adracdomain	String of up to 254 characters.
cfgADAuthTimeout	oemdelld_timeout	15 to 300 seconds Default: 120
cfgADType	oemdelld_schematype	1 for standard schema, 2 for extended schema Default: 1
cfgADDomainController	oemdelld_addomaincontroller	DNS name or the IP address of the Domain Controller used in the LDAP search
cfgADGlobalCatalog	oemdelld_adglobalcatalog	DNS name or the IP address of the global catalog server used in the LDAP search
cfgStandardSchema		
cfgSSADRoleGroupIndex	/system1/sp1/group1 through /system1/sp1/group5	RACADM — group index ID (1-5) SM-CLP — selected with address path
cfgSSADRoleGroupName	oemdelld_groupname	String of up to 254 characters
cfgSSADRoleGroupDomain	oemdelld_groupdomain	String of up to 254 characters
cfgSSADRoleGroupPrivilege	oemdelld_groupprivilege	Bit mask with values between 0x00000000 and 0x000001ff

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (*continued*)

RACADM Groups/Objects	SM-CLP	Description
cfgLanNetworking	/system1/sp1/enetport1	
cfgNicMacAddress	macaddress	The MAC address of the interface. Not editable
	/system1/sp1/enetport1/ lanendpt1/ipendpt1	
cfgNicEnable	oemdell_nicenable	0 to disable NIC, 1 to enable NIC Default: 0
cfgNicUseDHCP	oemdell_usedhcp	0 to configure static network addresses, 1 to use DHCP Default: 0
cfgNicIpAddress	ipaddress	The iDRAC6 IP address Default: 192.168.0.120 plus the server slot number.
cfgNicNetmask	subnetmask	Subnet mask for the iDRAC6 network Default: 255.255.255.0
	committed	When group values change, committed is set to 0 to indicate that the new values have not been saved. Set the value to 1 to save the new configuration. Default: 1
	/system1/sp1/enetport1/lanendpt1/ ipendpt1/dnsendpt1	
cfgDNSDomainName	oemdell_dnsdomainname	String of up to 250 ASCII characters. At least one character must be alphabetic.
cfgDNSDomainNameFromDHCP	oemdell_domainnamefromdhcp	Set to 1 to get domain name from DHCP Default: 0

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgDNSRacName	oemdelldnsracname	String of up to 63 ASCII characters. At least one character must be alphabetic. Default: iDRAC- plus the Dell service tag.
cfgDNSRegisterRac	oemdelldnsregisterrac	Set to 1 to register iDRAC6 name in DNS Default: 0
cfgDNSServersFromDHCP	oemdelldnsserversfromdhcp	Set to 1 to get DNS server addresses from DHCP Default: 0
	/system1/sp1/enetport1/lanendpt1/ ipendpt1/dnsendpt1/remotesap1	
cfgDNSServer1	dnsserveraddresses1	A string representing the IP address of a DNS Server
	/system1/sp1/enetport1/lanendpt1/ ipendpt1/dnsendpt1/remotesap2	
cfgDNSServer2	dnsserveraddresses2	A string representing the IP address of a DNS Server
	/system1/sp1/enetport1/lanendpt1/ ipendpt1/remotesap1	
cfgNicGateway	defaultgatewayaddress	A string representing the IP address of the default gateway Default: 192.168.0.1
cfgRacVirtual	/system1/sp1/oemdelldnsservice1	
cfgFloppyEmulation	oemdelldnsservice1	Set to 1 to enable floppy disk emulation Default: 0

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgVirMediaAttached	enabledstate	Set to 1 (RACADM)/VMEDIA_ATTACH (SM-CLP) to attach media. Default: 1 (RACADM)/VMEDIA_ATTACH (SM-CLP)
cfgVirMediaBootOnce	oemhell_singleboot	Set to 1 to perform next boot from selected media Default 0.
	/system1/sp1/oemhell_vmsservice1/ tcpndpt1	
	oemhell_sslenabled	Set to 1 if SSL is enabled for first virtual media device, 0 if not. Not editable
cfgVirAtapiSvrPort	portnumber	Port to use for first virtual media device Default: 3668
	/system1/sp1/oemhell_vmsservice1/ tcpndpt2	
	oemhell_sslenabled	Set to 1 if SSL is enabled for second virtual media device, 0 if not. Not editable
cfgVirAtapiSvrPortSsl	portnumber	Port to use for second virtual media device Default: 3670
cfgUserAdmin	/system1/sp1/account1 through / system1/sp1/account16	
cfgUserAdminEnable	enabledstate	Set to 1 to enable user Default: 0
cfgUserAdminIndex	userid	User index, from 1 to 16

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgUserAdminIpmiLanPrivilege	oemdelldell_ipmilanprivileges	2 (user), 3 (operator), 4 (administrator), or 15 (No access) Default: 4
cfgUserAdminPassword	password	A string of up to 20 ASCII characters
cfgUserAdminPrivilege	oemdelldell_extendedprivileges	Bit mask value between 0x00000000 and 0x000001ff Default: 0x00000000
cfgUserAdminSolEnable	solenabled	Set to 1 to allow user to use Serial over LAN Default: 0
cfgUserAdminUserName	username	String of up to 16 characters
cfgEmailAlert		
cfgEmailAlertAddress		E-mail destination address, up to 64 characters
cfgEmailAlertCustomMsg		Message to send in e-mail, up to 32 characters
cfgEmailAlertEnable		Set to 1 to enable the e-mail alert Default: 0
cfgEmailAlertIndex		Index of the e-mail alert instance. Number from 1 to 4
cfgSessionManagement		
cfgSsnMgtConsRedirMaxSessions		Number of concurrent console redirection sessions allowed (1 or 2) Default: 2

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgSsnMgtSshIdleTimeout		Number of seconds idle before a SSH session times out. 0 to disable timeout or 60-1920 seconds Default: 300
cfgSsnMgtTelnetIdleTimeout		Number of seconds idle before a telnet session times out. 0 to disable timeout or 60-1920 seconds Default: 300
cfgSsnMgtWebserverTimeout		Number of seconds idle before a Web interface session times out. 60-1920 seconds Default: 300
cfgRacTuning		
cfgRacTuneConRedirEnable		Set to 1 to enable console redirection, 0 to disable Default: 1
cfgRacTuneConRedirEncrypt Enable		Set to 1 to enable encryption of console redirection network traffic, 0 to disable Default: 1
cfgRacTuneConRedirPort		Port to use for console redirection Default: 5900
cfgRacTuneConRedirVideoPort		Port to use for console video redirection Default: 5901
cfgRacTuneHttpPort		Port to use for Web interface HTTP Default: 80

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgRacTuneHttpsPort		Port to use for secure Web interface HTTPS Default: 443
cfgRacTuneIpBlkEnable		Set to 1 to enable IP blocking Default: 0
cfgRacTuneIPBlkFailCount		Number of failed login attempts to count before blocking IP (2 to 16) Default: 5
cfgRacTuneIpBlkFailWindow		Time span in seconds during which to count failed login attempts (10 to 65535) Default: 60
cfgRacTuneIpBlkPenaltyTime		Time span in seconds that a blocked IP remains blocked (10 to 65535) Default: 300
cfgRacTuneIpRangeAddr		Base IP address for IP range filter Default: 192.168.0.1
cfgRacTuneIpRangeEnable		Set to 1 to allow IP range filtering Default: 0
cfgRacTuneIpRangeMask		Bit mask applied to the base address to select valid IP addresses Default: 255.255.255.0
cfgRacTuneLocalServerVideo		Set to 1 to enable local iKVM console Default: 1
cfgRacTuneSshPort		Port to use for the SSH service Default: 22

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgRacTuneTelnetPort		Port to use for the telnet service Default: 23
cfgRacTuneWebserverEnable		Set to 1 to enable the iDRAC6 Web interface Default: 1
ifcRacManagedNodeOS		
ifcRacMnOsHostname		Host name of the managed server. String of up to 255 characters
ifcRacMnOsOsName		Name of the managed server operating system. A string of up to 255 characters
cfgRacSecurity	/system1/sp1/oemhell_racecurity1	
cfgRacSecCsrCommonName	commonname	Active Directory common name. String of up to 254 characters
cfgRacSecCsrCountryCode	oemhell_countrycode	Active Directory country code. Two characters
cfgRacSecCsrEmailAddr	oemhell_emailaddress	E-mail address to use for Certificate Signing Request. String of up to 254 characters
cfgRacSecCsrKeySize	oemhell_keysize	Length of encryption key (512, 1024, or 2048) Default: 1024
cfgRacSecCsrLocalityName	oemhell_localityname	Active Directory locality name. String of up to 254 characters
cfgRacSecCsrOrganizationName	organizationname	Active Directory organization name. String of up to 254 characters

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgRacSecCsrOrganizationUnit	oemhell_organizationunit	Active Directory organization unit name. String of up to 254 characters
cfgRacSecCsrStateName	oemhell_statename	Activity Directory state name. String of up to 254 characters
cfgIpmiSol		
cfgIpmiSolAccumulateInterval		Maximum number of milliseconds to wait before sending a partial Serial over LAN packet (1 to 255) Default: 10
cfgIpmiSolBaudRate		Baud rate to use for Serial over LAN (19200, 57600, 115200) Default: 115200
cfgIpmiSolEnable		Set to 1 to enable Serial over LAN feature Default: 0
cfgIpmiSolSendThreshold		Maximum number of characters to collect before sending SOL data (1 to 255) Default: 255
cfgIpmiSolMinPrivilege		Minimum privilege required to use SOL. 2 (user), 3 (operator), or 4 (administrator) Default: 4
cfgIpmiLan		
cfgIpmiEncryptionKey		A string of 0 to 40 hexadecimal digits Default: 00000000000000000000 00000000000000000000

Table D-1. RACADM Groups/Objects and SM-CLP Equivalencies (continued)

RACADM Groups/Objects	SM-CLP	Description
cfgIpmiLanAlertEnable		Set to 1 to enable IPMI LAN alerts Default: 0
cfgIpmiLanEnable		Set to 1 to enable the IPMI over LAN interface Default: 0
cfgIpmiPetCommunityName		A string of up to 18 characters Default: public
cfgIpmiPef		
cfgIpmiPefAction		The action to take when event is detected. 0 (none), 1 (power down), 2 (reset), 3 (power cycle) Default: 0
cfgIpmiPefEnable		Set to 1 to enable platform event filtering Default: 0
cfgIpmiPefIndex		The index number of the platform event filter. (1 - 17)
cfgIpmiPefName		The name of the platform event, a string of up to 254 characters. Not editable
cfgIpmiPet		
cfgIpmiPetAlertDestIpAddr		IP address of the platform event trap receiver. Default: 0.0.0.0
cfgIpmiPetAlertEnable		Set to 1 to enable the platform event trap Default: 1
cfgIpmiPetIndex		Index number (1-4) of the platform event trap

Table D-2. RACADM Subcommands and SM-CLP Equivalencies

RACADM Subcommand	SM-CLP	Description
sslcsrgen -g	set /system1/sp1/oemdelldell_ssl1 oemdelldell_certtype=CSR set /system1/sp1/oemdelldell_ssl1 generate=1 dump -destination <iDRAC- CertificateSigningRequest- TFTP-URI> /system1/sp1/ oemdelldell_ssl1	Generates and downloads an SSL Certificate Signing Request (CSR)
sslcsrgen -s	show /system1/sp1/oemdelldell_ssl1 oemdelldell_status	Returns the status of a CSR generation process
sslcertupload -t 1	set /system1/sp1/oemdelldell_ssl1 oemdelldell_certtype=SSL load -source <iDRAC-server- certificate-TFTP-URI> / system1/sp1/oemdelldell_ssl1	Uploads the iDRAC6 Server Certificate onto iDRAC6
sslcertupload -t 2	set /system1/sp1/oemdelldell_ssl1 oemdelldell_certtype=AD load -source <ActiveDirectory- certificate-TFTP-URI> / system1/sp1/oemdelldell_ssl1	Uploads the Active Directory Certificate onto iDRAC6
sslcertdownload -t 1	set /system1/sp1/oemdelldell_ssl1 oemdelldell_certtype=SSL load -source <iDRAC-server- certificate-TFTP-URI> / system1/sp1/oemdelldell_ssl1	Downloads the iDRAC6 Sever Certificate from iDRAC6
sslcertdownload -t 2	set /system1/sp1/oemdelldell_ssl1 oemdelldell_certtype=AD load -source <ActiveDirectory- certificate-TFTP-URI> / system1/sp1/oemdelldell_ssl1	Downloads the Active Directory Certificate from iDRAC6

Glossary

Active Directory

Active Directory is a centralized and standardized system that automates network management of user data, security, and distributed resources, and enables interoperation with other directories. Active Directory is designed especially for distributed networking environments.

AGP

Abbreviation for accelerated graphics port, which is a bus specification that allows graphics cards faster access to main system memory.

ARP

Acronym for Address Resolution Protocol, which is a method for finding a host's Ethernet address from its Internet address.

ASCII

Acronym for American Standard Code for Information Interchange, which is a code representation used for displaying or printing letters, numbers, and other characters.

BIOS

Acronym for basic input/output system, which is the part of system software that provides the lowest-level interface to peripheral devices and which controls the first stage of the system boot process, including installation of the operating system into memory.

CMC

Abbreviation for enclosure Management Controller, which is the controller interface between iDRAC6 and the managed system's CMC.

bus

A set of conductors connecting the various functional units in a computer. Busses are named by the type of data they carry, such as data bus, address bus, or PCI bus.

CA

A certificate authority is a business entity that is recognized in the IT industry for meeting high standards of reliable screening, identification, and other important security criteria. Examples of CAs include Thawte and VeriSign. After the CA receives your CSR, they review and verify the information the CSR contains. If the applicant meets the CA's security standards, the CA issues a certificate to the applicant that uniquely identifies that applicant for transactions over networks and on the Internet.

CD

Abbreviation for compact disc.

CHAP

Acronym for Challenge-Handshake Authentication Protocol, which is an authentication method used by PPP servers to validate the identity of the originator of the connection.

CIM

Acronym for Common Information Model, which is a protocol designed for managing systems on a network.

CLI

Abbreviation for command-line interface.

CLP

Abbreviation for command-line protocol.

console redirection

Console redirection is a function that directs a managed server's display screen, mouse functions, and keyboard functions to the corresponding devices on a management station. You may then use the management station's system console to control the managed server.

CSR

Abbreviation for Certificate Signing Request.

DHCP

Abbreviation for Dynamic Host Configuration Protocol, which is a protocol that provides a means to dynamically allocate IP addresses to computers on a local area network.

DLL

Abbreviation for Dynamic Link Library, which is a library of small programs, any of which can be called when needed by a larger program that is running in the system. The small program that lets the larger program communicate with a specific device such as a printer or scanner is often packaged as a DLL program (or file).

DDNS

Abbreviation for Dynamic Domain Name System.

DMTF

Abbreviation for Distributed Management Task Force.

DNS

Abbreviation for Domain Name System.

iDRAC6

Abbreviation for Dell Remote Access Controller 6 Enterprise.

DSU

Abbreviation for disk storage unit.

extended schema

A solution used with Active Directory to determine user access to iDRAC6; uses Dell-defined Active Directory objects.

FQDN

Acronym for Fully Qualified Domain Names. Microsoft® Active Directory® only supports FQDN of 64 bytes or fewer.

FSMO

Flexible Single Master Operation. It is Microsoft's way of guaranteeing atomicity of the extension operation.

GMT

Abbreviation for Greenwich Mean Time, which is the standard time common to every place in the world. GMT nominally reflects the mean solar time along the prime meridian (0 longitude) that runs through the Greenwich Observatory outside of London, UK.

GPIO

Abbreviation for general purpose input/output.

GRUB

Acronym for GRand Unified Bootloader, a new and commonly-used Linux loader.

GUI

Abbreviation for graphical user interface, which refers to a computer display interface that uses elements such as windows, dialog boxes, and buttons as opposed to a command prompt interface, in which all user interaction is displayed and entered in text.

hardware log

Records events generated by iDRAC6 and the CMC.

iAMT

Intel® Active Management Technology — Delivers more secure systems management capabilities whether or not the computer is powered up or turned off, or the operating system is not responding.

ICMB

Abbreviation for Intelligent enclosure Management Bus.

ICMP

Abbreviation for Internet control message protocol.

ID

Abbreviation for identifier, commonly used when referring to a user identifier (user ID) or object identifier (object ID).

iDRAC6

Acronym for integrated Dell Remote Access Controller 6, the integrated System-on-Chip monitor/control system for the Dell 10G PowerEdge servers.

IP

Abbreviation for Internet Protocol, which is the network layer for TCP/IP. IP provides packet routing, fragmentation, and reassembly.

IPMB

Abbreviation for intelligent platform management bus, which is a bus used in systems management technology.

IPMI

Abbreviation for Intelligent Platform Management Interface, which is a part of systems management technology.

Kbps

Abbreviation for kilobits per second, which is a data transfer rate.

LAN

Abbreviation for local area network.

LDAP

Abbreviation for Lightweight Directory Access Protocol.

LED

Abbreviation for light-emitting diode.

LOM

Abbreviation for Local area network On Motherboard.

MAC

Acronym for media access control, which is a network sublayer between a network node and the network physical layer.

MAC address

Acronym for media access control address, which is a unique address embedded in the physical components of a NIC.

managed server

The managed server is the system in which iDRAC6 is embedded.

management station

The management station is a system that remotely accesses iDRAC6.

MAP

Abbreviation for Manageability Access Point.

Mbps

Abbreviation for megabits per second, which is a data transfer rate.

MIB

Abbreviation for management information base.

MII

Abbreviation for Media Independent Interface.

NAS

Abbreviation for network attached storage.

NIC

Abbreviation for network interface card. An adapter circuit board installed in a computer to provide a physical connection to a network.

OID

Abbreviation for Object Identifiers.

OSCAR

Acronym for On Screen Configuration and Reporting. OSCAR is the menu displayed by the Avocent iKVM when you press <Print Screen>. It allows you to select the CMC console or the iDRAC6 console for a server installed in the CMC.

PCI

Abbreviation for Peripheral Component Interconnect, which is a standard interface and bus technology for connecting peripherals to a system and for communicating with those peripherals.

POST

Acronym for power-on self-test, which is a sequence of diagnostic tests that are run automatically by a system when it is powered on.

PPP

Abbreviation for Point-to-Point Protocol, which is the Internet standard protocol for transmitting network layer datagrams (such as IP packets) over serial point-to-point links.

RAM

Acronym for random-access memory. RAM is general-purpose readable and writable memory on systems and iDRAC6.

RAM disk

A memory-resident program which emulates a hard drive. iDRAC6 maintains a RAM disk in its memory.

RAC

Abbreviation for remote access controller.

ROM

Acronym for read-only memory, which is memory from which data may be read, but to which data cannot be written.

RPM

Abbreviation for Red Hat® Package Manager, which is a package-management system for the Red Hat Enterprise Linux® operating system that helps installation of software packages. It is similar to an installation program.

SAC

Acronym for Microsoft's Special Administration Console.

SAP

Abbreviation for Service Access Point.

SEL

Acronym for system event log.

SMI

Abbreviation for systems management interrupt.

SMTP

Abbreviation for Simple Mail Transfer Protocol, which is a protocol used to transfer electronic mail between systems, usually over an Ethernet.

SMWG

Abbreviation for Systems Management Working Group.

SNMP trap

A notification (event) generated by iDRAC6 or the CMC that contains information about state changes on the managed server or about potential hardware problems.

SSH

Abbreviation for Secure Shell.

SSL

Abbreviation for secure sockets layer.

standard schema

A solution used with Active Directory to determine user access to iDRAC6; uses Active Directory group objects only.

TAP

Abbreviation for Telelocator Alphanumeric Protocol, which is a protocol used for submitting requests to a pager service.

TCP/IP

Abbreviation for Transmission Control Protocol/Internet Protocol, which represents the set of standard Ethernet protocols that includes the network layer and transport layer protocols.

TFTP

Abbreviation for Trivial File Transfer Protocol, which is a simple file transfer protocol used for downloading boot code to diskless devices or systems.

UPS

Abbreviation for uninterruptible power supply.

USB

Abbreviation for Universal Serial Bus.

UTC

Abbreviation for Universal Coordinated Time. *See* GMT.

VLAN

Abbreviation for Virtual Local Area Network.

VNC

Abbreviation for virtual network computing.

VT-100

Abbreviation for Video Terminal 100, which is used by the most common terminal emulation programs.

WAN

Abbreviation for wide area network.

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