Dell PowerEdge
C8220/C8220X/C8000/C6220

Using the Baseboard Management Controller

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.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

2013 - 06 Rev. A04

Contents

Intelligent Platform Management Interface

The Intelligent Platform Management Interface (IPMI) defines a set of standardized, message-based interfaces that monitor system hardware health (fan speed, temperature, voltage, power supply, and so on.), control system components, and store data about important system events in a system event log (SEL) for later examination. IPMI provides the foundation for remote platform management.

NOTE: To learn more about IPMI, see intel.com/design/servers/ipmi/.

Baseboard Management Controller

The key component in the IPMI system is the baseboard management controller (BMC), a microcontroller located on the server's system board. BMC is the "intelligence" within the IPMI architecture, responsible for monitoring and controlling the server's manageable devices.

BMC is connected to the various sensors through the Intelligent Platform Management Bus (IPMB), a subset of the I2C bus. System software communicates with BMC using a keyboard controller style (KCS) interface.

Supported Platform

PowerEdge C8220 and C8220X

BMC Key Features and Functions

The features supported by BMC are as follows:

- Support for IPMI v1.5 and v2.0
- Out-of-band monitoring and control for server management over LAN
- Dedicated NIC for remote management via network
- FRU information report, which includes system board part number, product name, and manufacturer.
- Health status/hardware monitoring report
- View and clear events log
- Event notification by lighting chassis LED indicator and Platform Event Trap (PET)

- Platform Event Filtering (PEF) to take selected action for selected events
- Chassis management, which includes power control, status report, front panel buttons, and LEDs control
- PowerEdge C8220X compute sled management, which includes Xeon Phi 5110P/7110P MIC card and NPDB board

NOTE: Make sure all cables are properly attached to the 5110/7110P MIC card and NPDB board. See the *PowerEdge C8220X Hardware Owner's Manual* for more information. This document is available at dell.com/support/manuals.

- Watchdog and auto server re-start and recovery
- Multi-session user and alert destination for LAN channel

Using the Web User Interface

The BMC firmware features an embedded web server, enabling users to connect to the BMC using an Internet browser (Windows Internet Explorer) without needing to install KVM and virtual storage software on a remote console.

Web-based GUI is supported on the following browsers:

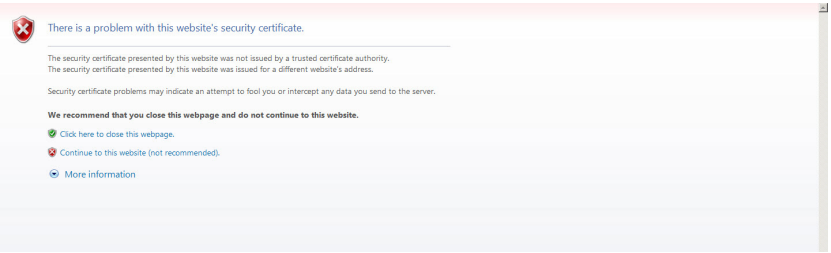
- Microsoft Windows:
  - Internet Explorer 6, 7, 8, 9
  - Mozilla Firefox 7, 8, 9
  - Google Chrome 3.0 (optional)
- Linux:
  - Mozilla Firefox 7, 8, 9
- Mac OS:
  - Safari V5.X

Logging in to the Web User Interface

Users must enter the PowerEdge C8220 and C8220X embedded server IP address or URL (default DHCP\static IP address) into the address bar of the web browser.

When connecting to the PowerEdge C8220 and C8220X using a web browser, Secure Sockets Layer (SSL) is automatically activated and the display user login form is displayed prompting for the username and password. This authentication with SSL protection prevents unauthorized intruders from gaining access to the PowerEdge C8220 and C8220X web server. If authentication is passed, you can manage the server by privilege.

A security certificate warning displays, choose **Continue to this website (not recommended)** to continue.



The user authentication web page is displayed. Enter the default user name and password, and click **OK**.

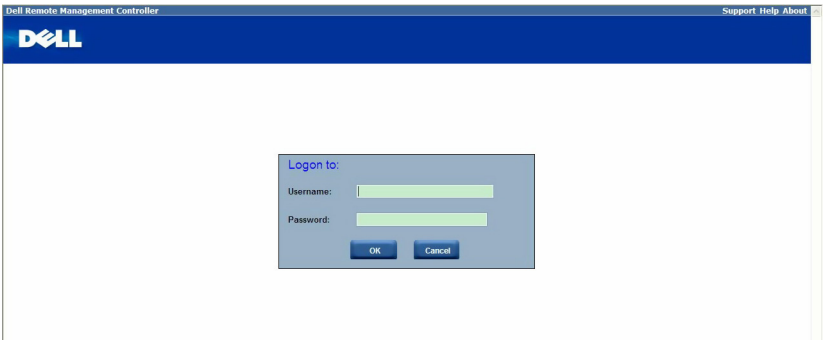
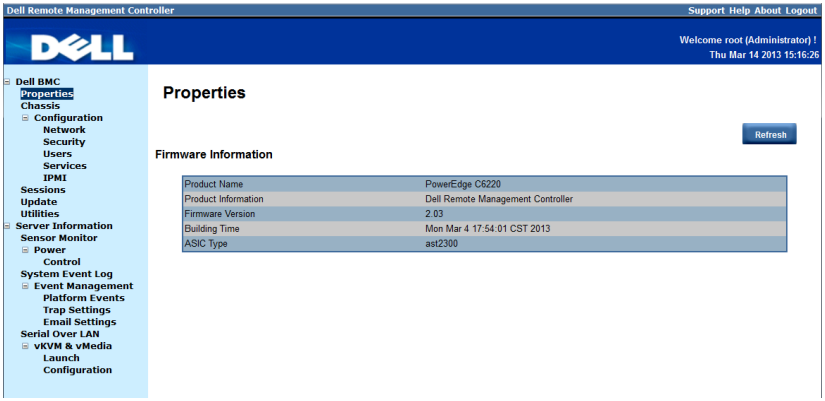


Table 1-1. Default User Name and Password

Field	Default
User Name	root
Password	root

NOTE: The default username and password are in lowercase characters. It is advised to change the root password once you have logged in.

Click the **Help** button on the top right corner for assistance. Click **Logout** to exit.



The Remote Management Controller's web UI is divided into two areas. On the left is the multi-level navigation menu bar, which is divided into four categories and each category is subdivided into several submenus. On the right is the information pane, which displays a list of information, commands or configuration options that are associated with the category selected from the navigation menu bar.

Remote Management Controller

The Remote Management Controller menu provides general information about the server including the BMC firmware and network information. Administrators and operators can use this menu to check the sled server health and access all network configuration options. It also provides options for managing security, user access, session status, updating the BMC firmware, and performing remote system shutdown or reboot.

The remote management controller menu provides access to the following configuration options:

- Properties
- Chassis
- Configuration
- Sessions
- Update
- Utilities

Properties

The **Properties** option enables you to view the remote sled server BMC firmware information.

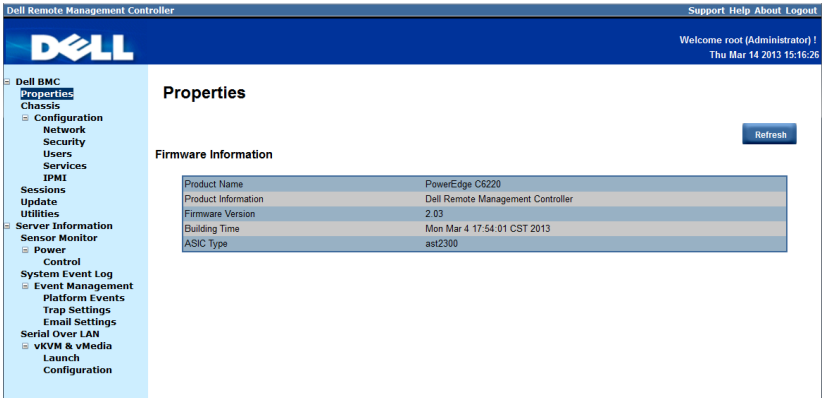


Table 1-2. Firmware Summary

Item	Description
Product Name	Sled server system board model name
Product Information	Remote Management Controller firmware
Firmware Version	Remote Management Controller firmware version
Building Time	Date the firmware was last flashed in the following format: MM DD YYYY HH: MM: SS
ASIC Type	Application-specific integrated circuit (ASIC) type
Refresh Button	Use this button to refresh the firmware information

Chassis

The **Chassis** option enables you to view a summary chassis information including LEDs and power supply status.

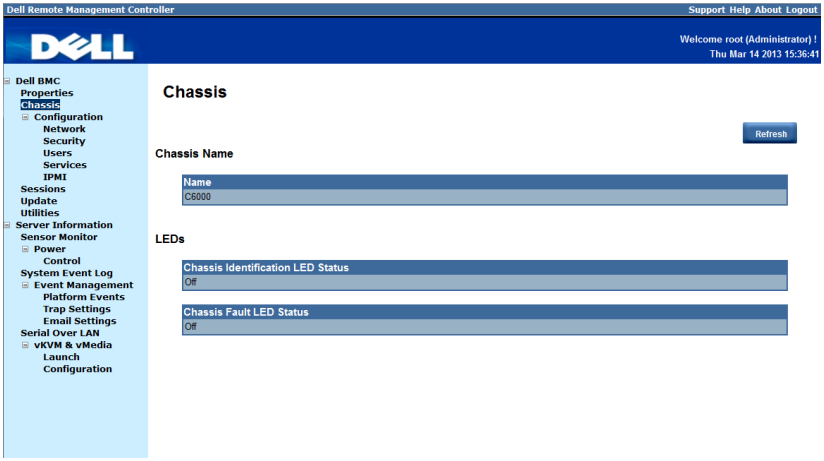


Table 1-3. Chassis Summary

Item	Description
Chassis Name	Server chassis product model name
LEDs	Server chassis identification and fault LED status
Refresh Button	Use this button to refresh the chassis information

Configuration

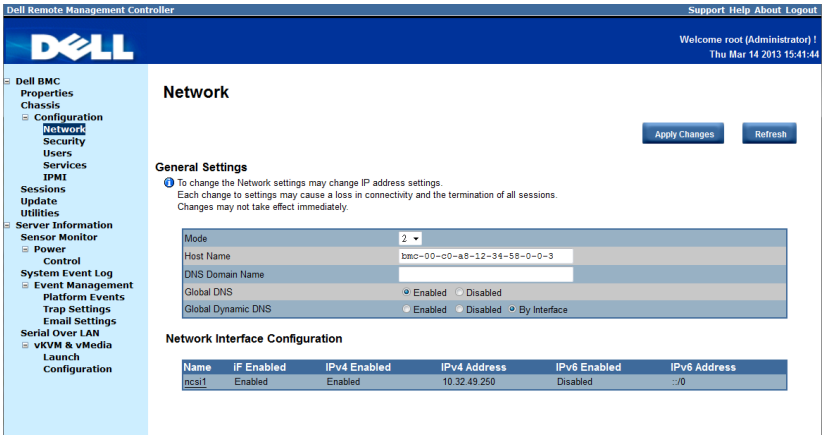
The **Configuration** option enables you to view and set values for various system functions.

Click on the **Configuration** option to expand the submenu items.

- Network
- Security
- Users
- Services
- IPMI

Network

Select the **Network** submenu to view and configure the network setting parameters.



NOTE: To change any network setting parameters, you must have permission to configure the BMC.

Table 1-4. Network

Item	Description
General Settings	
Mode	Select a network connectivity mode.
Host Name	Type the name of the BMC host server in this field.
DNS Domain Name	Type the domain name of the DNS server in this field.
Network Interface Configuration	
Name Column	Indicates the network interface name.
iF Enabled Column	Indicates the operational status of the NIC.
IPv4 Enabled Column	Indicates the operational status of the Internet Protocol version 4 (IPv4).
IPv4 Address Column	Indicates the IPv4 IP address.
IPv6 Enabled Column	Indicates the operational status of the IPv6 protocol.
IPv6 Address Column	Indicates the IPv6 IP address.
Apply Changes Button	Use this button to apply the changes.
Refresh Button	Use this button to refresh the network information.

Security

Select the **Security** submenu to view server certificate information. Secure server certificates ensure the identity of a remote system and ensure that information exchanged with the remote system cannot be viewed or changed by others. Users with administrator or operator privileges can create a Certificate Signing Request (CSR) and upload the file to a certifying authority.

Table 1-5. Security

Options	Description
Serial Number	Server certificate serial number
Subject Information:	
Country Code (CC)	Name of the country where the entity applying for the certification is located
State (S)	State or province where the entity applying for the certification is located
Locality (L)	City or location of the entity being certified
Organization (O)	Legal name of the company or institution
Organizational Unit (OU)	Name associated with the organizational unit
Common Name (CN)	DNS host name

Table 1-5. Security

Options	Description
Issuer Information:	
Country Code (CC)	Country that issued the certificate
State (S)	State that issued the certificate
Locality (L)	City or location that issued the certificate
Organization (O)	Name of the institution that issued the certificate
Organizational Unit (OU)	Unit that issued the certificate
Common Name (CN)	Certification authority
Valid From	Server certificate effective date
Valid Until	Server certificate expiration date
Generate Certificate Button	Use this button to create a Certificate Signing Request (CSR)
Upload Certificate Button	Use this button to upload the CSR file to a certifying authority

Users

Select the **Users** submenu to view the list of users authorized to access the system. Administrators can grant any user permission privileges by clicking a user ID number.

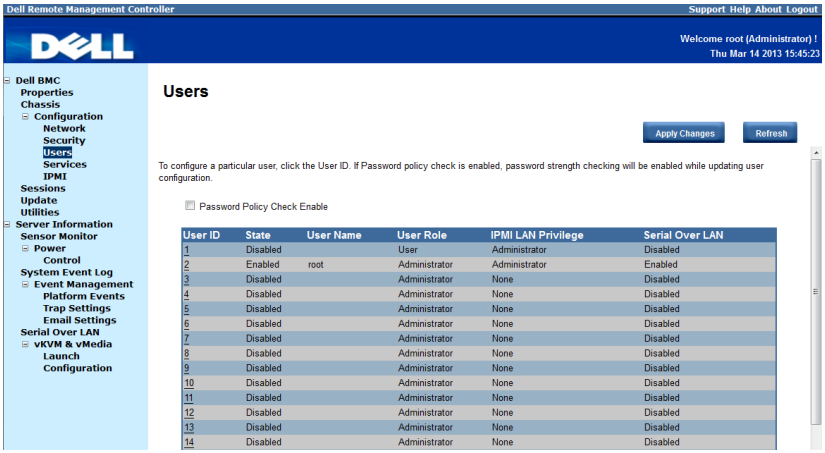


Table 1-6. Users

Item	Description
Password Policy Check Enable Checkbox	Enables you to improve the security of your passwords by enforcing strong password security policies. If enabled, BMC will perform a password check each time the user configuration is updated. The user password must have the following requirements: • Cannot contain the user's account name or full name. • Must have a minimum of 8 and a maximum of 14 alphanumeric characters. • Can contain numbers (0-9), upper and lower case letters (A-Z, a-z), special characters (for example, !, $, #, %). • Can contain a catch-all category of any Unicode character that does not fall under the previous three categories. This category can be regionally specific. • Cannot contain or be similar to the last 5 passwords.

Table 1-6. Users

Item	Description
User ID Column	Displays a list of users who can access this BMC If a privilege is assigned to a user, the user ID appears as a hyperlink.
State Column	Shows the status of each user
User Name Column	Shows the login name of the user
User Role Column	Shows user defined roles
IPMI LAN Privilege Column	Displays the IPMI LAN privilege level
IPMI Serial Privilege Column	Displays the IPMI serial privilege level
Serial Over LAN Column	Indicates whether permission for configuring the serial over LAN connection is enabled or disabled SOL provides serial access over the NIC interface. The server's integrated BMC redirects data information from the serial port (UART), and packs the data and transfers the UART data to the NIC interface.
Apply Changes Button	Use this button to apply the changes
Refresh Button	Use this button to refresh the user list

Services

Select the **Services** submenu to view the communication service parameters. Users with administrator or operator privileges can set up this service.

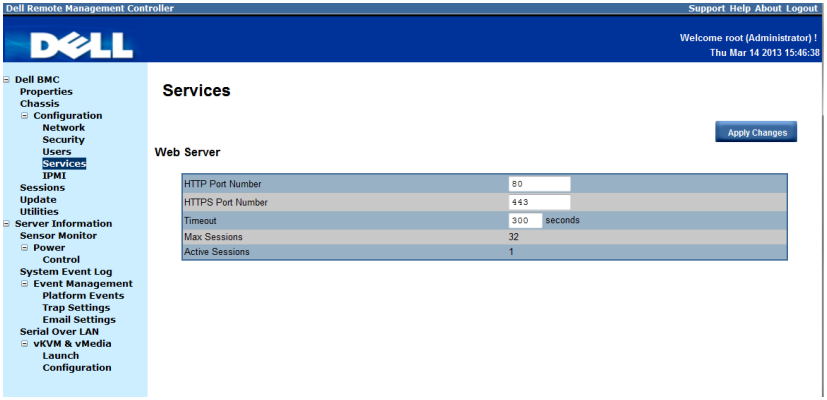


Table 1-7. Services

Item	Description
HTTP Port Number	Port to use for HTTP-based communication. The default HTTP port number is 80.
HTTPS Port Number	Port to use for HTTPS-based communication. The default HTTPS port number is 443.
Timeout	Specify the timeout value. The timeout value can range from 60 to 10800 seconds.
Max Sessions	Indicates the number of simultaneous sessions allowed for the system.
Active Sessions	Indicates the number of sessions currently running on the system.
Apply Changes Button	Use this button to apply the changes and restart the web server.

IPMI

Select the **IPMI** submenu to view the IPMI-based communication service parameters. Users with administrator or operator privileges can configure the IPMI settings.

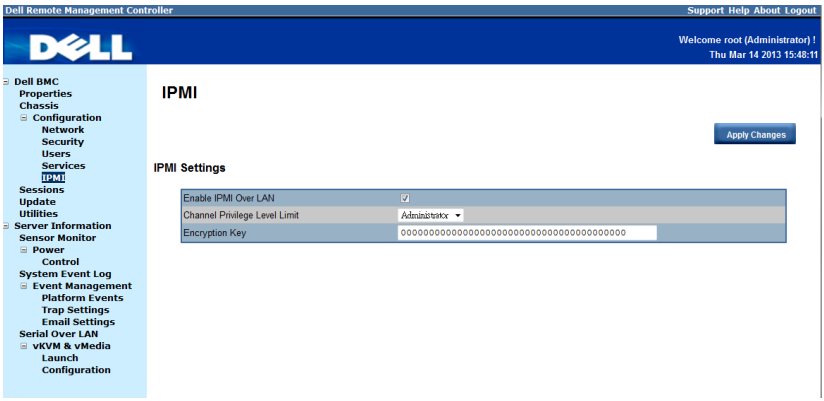


Table 1-8. IPMI

Item	Description
IPMI Settings	
Enable IPMI Over LAN	Enables or disables IPMI over LAN access.
Channel Privilege Level Limit	Select a user privilege level for IPMI over LAN access.
Encryption Key	Type the IPMI LAN channel encryption key. **NOTE:** The encryption key must consist of an even number of hexadecimal characters with a maximum of 20 ASCII hex pairs with no spaces between the pairs.
Apply Changes Button	Use this button to apply the changes.

Sessions

The **Sessions** option enables you to view sessions currently running on the system.

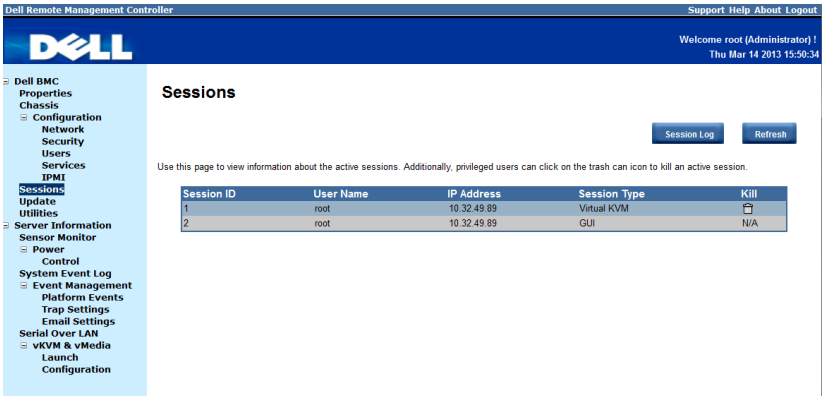


Table 1-9. Sessions

Item	Description
Session ID Column	Shows the number of active sessions or session ID numbers.
User Name Column	Shows the login name of the user.
IP Address Column	Shows the IP address of the user.
Session Type Column	Indicates media session type — Virtual KVM, Virtual Media, or GUI.
Kill	This column includes a Trash icon that enables users with administrator or operator privilege to end an associated session.
Refresh Button	Use this button to refresh the session information.

Update

The **Update** option enables users with administrator or operator privileges to update the sled server's BMC firmware. The following data is included in the BMC firmware package:

- Compiled BMC firmware code and data
- Web-based user interface, JPEG, and other user interface data files
- Default configuration files

NOTE: The firmware update retains the current BMC settings.

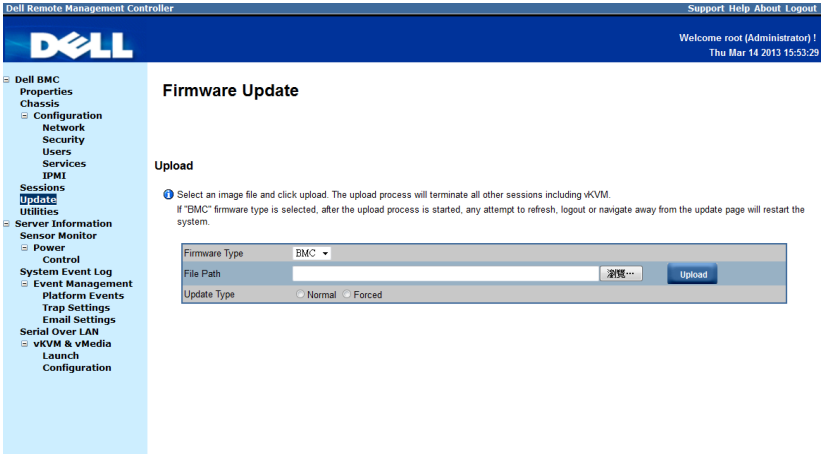


Table 1-10. Update

Item	Description
Firmware Type	Select the firmware type (BMC/BIOS/FC) that you want to upgrade. **NOTE:** If a fan controller board (FCB) firmware update type is selected, the sled(s) in the server chassis that are not performing the update request or action will consider the FCB firmware offline after 10 seconds.
File Path	Enter the complete path and file name for the firmware file.

Table 1-10. Update

Item	Description
Browse Button	Use this button to navigate to the firmware file saved onto a media.
Update Type	Select a firmware update type. • Normal (default): Updates the firmware only when the BMC validates the target board, target product, and version number. • Forced: This forces the BMC to update the image without first validating the target board, target product and version number. **CAUTION: Do not attempt a forced firmware upgrade without assistance from Dell Technical Support.**
Upload Button	Use this button to initialize the update process.

Updating the BMC Firmware

CAUTION: Before beginning the firmware update, download the latest firmware version and save it on your local system. During the process of a firmware update, the AC power of the managed system should not be unplugged and the Web GUI should not be closed.

NOTE: You will not be able to perform any task during the firmware upgrade process. Wait for the upgrade to be completed before attempting any task.

1. Click the **Update** menu to access the Firmware Update page.
2. Click **Browse** to locate the firmware file. Or, enter the path on your system where the firmware image file resides. For example: C:\Updates\V1.0\<image_name>
3. Select firmware update type. If a BMC firmware update type is selected, after the upload process is started, any attempt to refresh, logout or navigate away from the update page will restart the remote system.

   When you choose to force a firmware update, BMC will update the image without first validating the target board, target product and version number.
4. Click **Upload** to initialize the update process.

NOTE: The upload process terminates all other sessions including KVM.

5 Click **Update**. When the update is completed, the remote system will reboots automatically.

NOTE: When the firmware update is in process, the system will not be available to other users.

Utilities

The **Utilities** option enables users with administrator and operator privileges to remotely reboot or reset the BMC firmware.

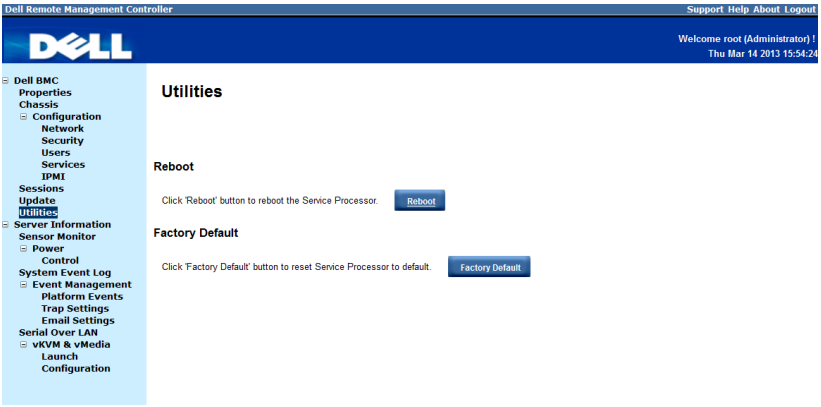


Table 1-11. Utilities

Item	Description
Reboot Button	Use this button to remotely reboot this BMC firmware. BMC initialization time is up to 120 seconds. BMC cannot accept any command request before initialization has been performed.
Factory Default Button	Use this button to reset the BMC configuration values back to default values. **CAUTION: This will reset all BMC settings back to default setting.**

Server Information

The **Server Information** menu enables users with administrator and operator privileges to remotely perform a power control operation on the server.

The **Server Information** menu provides access to the following configuration options.

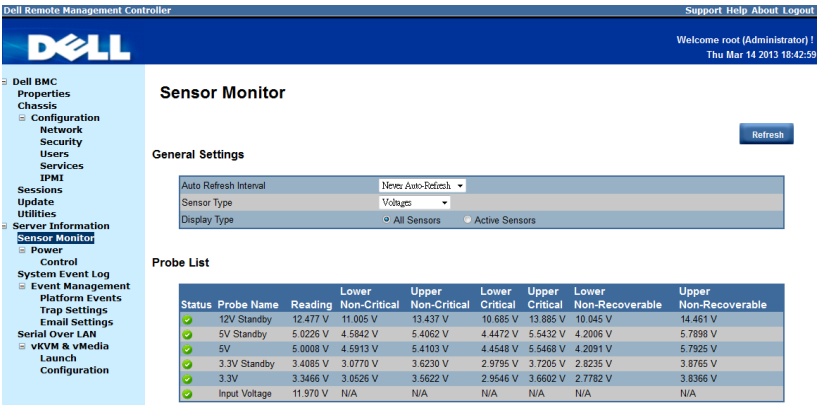
- Sensor Monitor
- Power

Sensor Monitor

The **Sensor Monitor** option enables users with administrator and operator privileges to remotely monitor the server's voltage, power supplies, batteries, fan sensors and temperature sensors.

If the server power is off, the following message appears on the screen:

```
The System is powered off. Unable to retrieve the sensor
information.
```



NOTE: Remote Management Controller does not store configuration settings in the Sensor Monitor page.

Table 1-12. Sensor Monitor

Item	Description
General Settings	
Auto Refresh Interval	Select a time interval (Never Auto-Refresh, Every 1 Minute, Every 5 Minutes) to automatically reload the page.
Sensor Type	Select a sensor type. • Voltages • Power supplies • Batteries • Fans • Temperatures
Display Type	Select the sensor display type. • All sensors • Active sensors
Refresh Button	Use this button to refresh the session information.

Voltages

Select **Voltages** from the Sensor Type drop-down menu to view server's voltage sensor readings data as well as event log items. For more information on voltage threshold settings and the conversion equation for the voltage readings, see "Threshold Settings and Converting Formulas" on page 77.

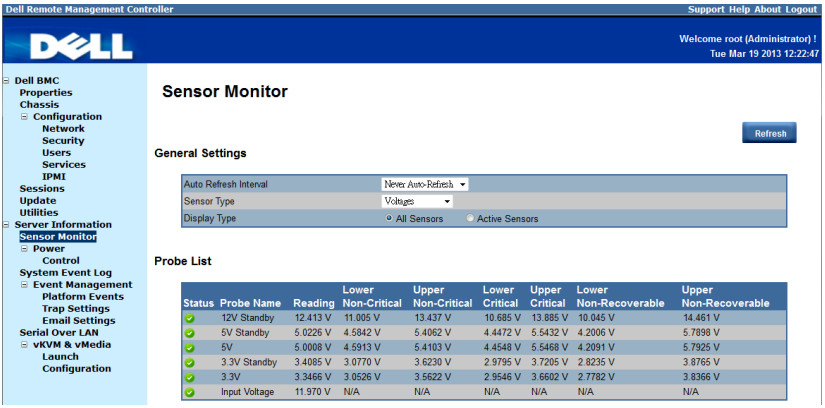


Table 1-13. Voltages Sensor Readings

Items	Description
General Settings	For more information on this option, see Table 1-12.
Probe List	
Status Column	Indicates the voltage sensor status.
Probe Name Column	Shows the name of the voltage sensor. Typical voltage probes: • 12 V standby • 5 V standby • 5 V • 3.3 V standby • 3.3 V **NOTE:** The 5 V and 3 V sensors are unavailable when powered off.
Reading Column	Shows the voltage sensor reading.
Lower Non-Recoverable Column	Shows the system board lower non-recoverable threshold voltage.
Lower Critical Column	Shows the system board lower critical threshold.
Lower Non-Critical Column	Shows the system board lower non-critical threshold.
Upper Non-Critical Column	Shows the system board upper non-critical threshold.
Upper Critical Column	Shows the system board upper critical threshold.
Upper Non-Recoverable Column	Shows the system board upper non-recoverable threshold.
Refresh Button	Use this button to refresh the voltage information.

Power Supplies

Select **Power Supplies** from the Sensor Type drop-down menu to view the status of the server chassis's power supply. The power supplies are shared among all the sled servers in the server chassis. Click the **Chassis** option on the menu bar to view detailed information about the server chassis power supply.

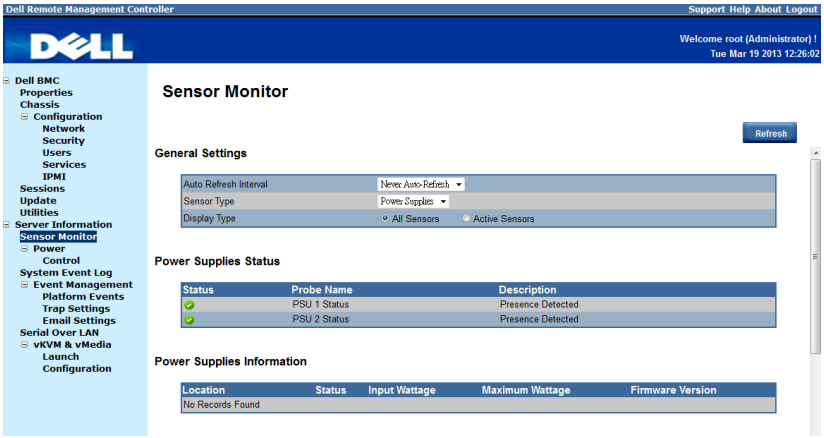


Table 1-14. Power Supplies Sensor Readings

Item	Description
General Settings	For more information on this option, see Table 1-12.
Power Supplies Status	
NOTE: The sled server does not have its own power supply, power is supplied by the server chassis. The Power Supplies Status table appears as blank. To view detailed information about the server chassis power supply, see "Chassis" on page 11.	
Status Column	Shows the power supply status.
Probe Name Column	Shows the name of the power supply sensor.
Description Column	Shows the presence of power supply module.
Power Supplies Information	
Location Column	Shows the location of the power supply module.
Status Column	Shows the status of the power supply.

Table 1-14. Power Supplies Sensor Readings

Item	Description
Input Wattage Column	Shows the power supply peak watt.
Maximum Wattage Column	Shows the power supply maximum watt.
Firmware Version Column	Shows the firmware version.
Refresh Button	Use this button to refresh the power supply information.

Power Units

Select **Power Units** from the Sensor Type drop-down menu to view the status of the server chassis's power units. The power units are shared among all the sled servers in the server chassis. Click the **Chassis** option on the menu bar to view detailed information about the server chassis power units.

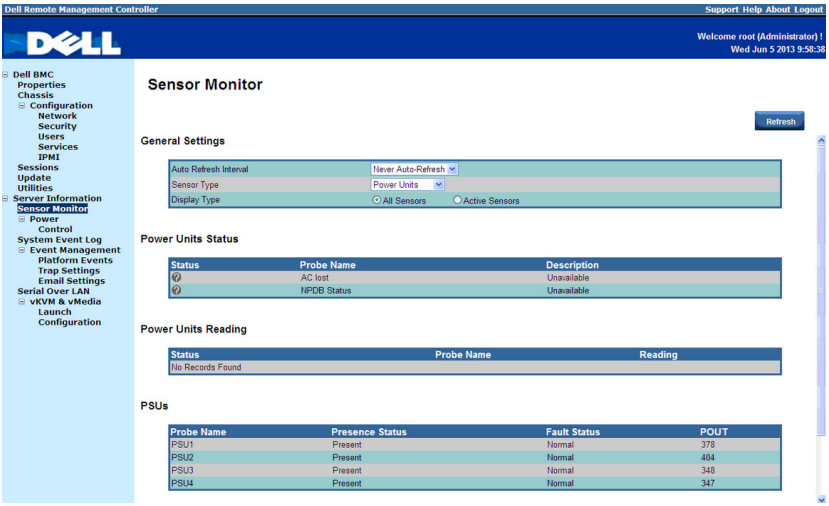


Table 1-15. Power Units Sensor Readings

Item	Description
General Settings	For more information on this option, see Table 1-12.

Table 1-15. Power Units Sensor Readings

Item	Description
Power Units Status	
NOTE: The two power units sensors can be used to analyze and convert SELs to human readable format. The description column will display them as **Unavailable**.	
Status Column	Shows the power unit status.
Probe Name Column	Shows the name of the power unit sensor.
Description Column	Shows the presence of the power unit module.
Power Units Readings	
Status Column	Shows the power unit status.
Probe Name Column	Shows the name of the power unit sensor.
Reading Column	Shows the reading of the power unit sensor.
PSUs	
Probe Name Column	Shows the name of the PSU sensor.
Presence Status Column	Shows the presence status of the PSU sensor.
Fault Status Column	Shows the fault status of the PSU sensor.
POUT Column	Shows the power consumption of the PSU sensor.
Redundancy Status	
Status Column	Shows the redundancy sensor status.
Probe Name Column	Shows the name of the redundancy sensor.
Description Column	Shows the presence of the redundancy module.
Refresh Button	Use this button to refresh the power units information.

Batteries

Select **Batteries** from the Sensor Type drop-down menu to view the status of the server system board battery.

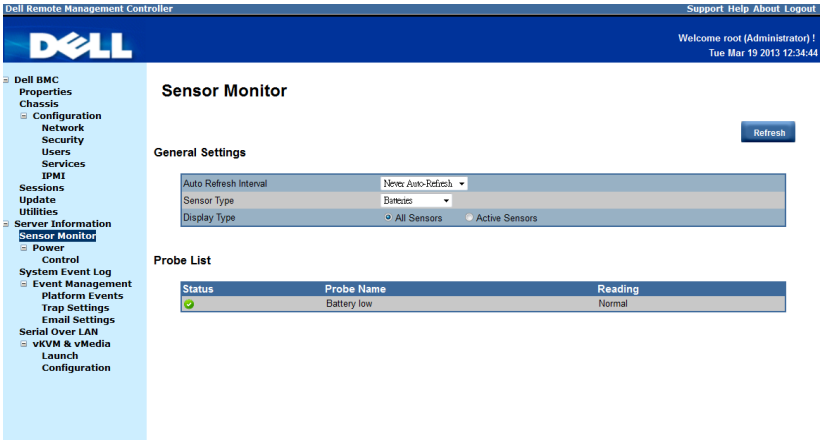


Table 1-16. Batteries Sensor Readings

Item	Description
General Settings	For more information on this option, see Table 1-12.
Probe List	
Status Column	Shows the system board CMOS coin-cell battery status.
Probe Name Column	Shows the name of the battery sensor.
Reading Column	Shows the battery sensor reading.
Refresh Button	Use this button to refresh the battery information.

Fans

Select **Fans** from the Sensor Type drop-down menu to view the status and readings of the server fan sensors.

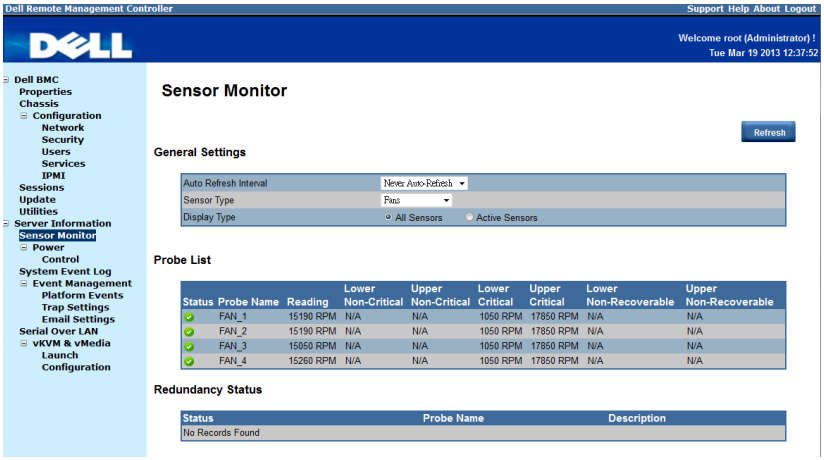


Table 1-17. Fans Sensor Readings

Items	Description
General Settings	For more information on this option, see Table 1-12.
Probe List	
Status Column	Shows fan sensor status.
Probe Name Column	Shows the fan sensor number.
Reading Column	Shows the fan sensor revolutions per minute (RPM) reading.
Lower Non-Recoverable Column	Shows the fan lower non-recoverable threshold.
Lower Critical Column	Shows the fan lower critical threshold.
Lower Non-Critical Column	Shows the fan lower non-critical threshold.
Upper Non-Critical Column	Shows the fan upper non-critical threshold.

Table 1-17. Fans Sensor Readings

Items	Description
Upper Critical Column	Shows the fan upper critical threshold.
Upper Non-Recoverable Column	Shows the fan upper non-recoverable threshold.
Redundancy Status	
Status Column	Shows the fan sensor status.
Probe Name Column	Shows the fan sensor number.
Description Column	Shows the presence of fan module.
Refresh Button	Use this button to refresh the fan sensor reading.

Temperatures

Select **Temperatures** from the Sensor Type drop-down menu to view the status and readings of the server temperature sensors. For more information on temperature threshold settings and the conversion equation for the temperature readings, see "Threshold Settings and Converting Formulas" on page 77.

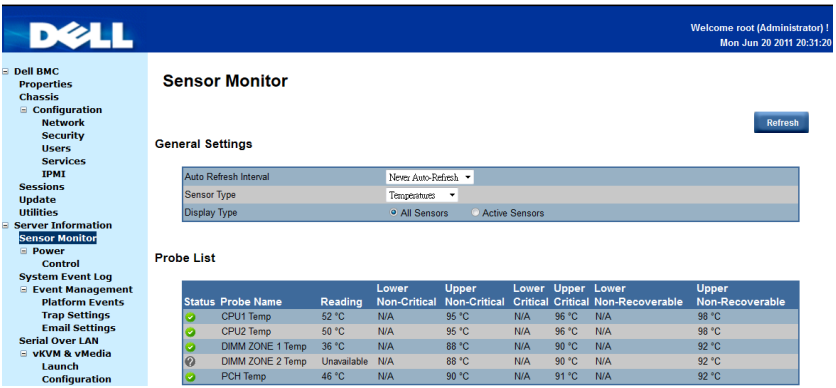


Table 1-18. Temperature Sensor Readings

Items	Description
General Settings	For more information on this option, see Table 1-12.

Table 1-18. Temperature Sensor Readings

Items	Description
Probe List	
Status Column	Displays the status of the temperature sensor.
Probe Name Column	Displays the temperature sensor name. Typical temperature probes: • MEZZ1 Temp • CPU1 Temp • CPU2 Temp • DIMM ZONE 1 Temp • DIMM ZONE 2 Temp • PCH Temp • Inlet Temp If there are GPGPU(s) installed in the system, then one or more (according to the GPGPU card number) of the following temperature probes will display: • MIC Temp # • K10 Temp # • K20 Temp # • M2090 Temp # **NOTE:** The # will appear between 1 to 4. If a dual-core GPGPU card is installed (e.g. nVidia TESLA K10), two temperature probes will display for each dual-core GPGPU card.
Reading Column	Displays the temperature sensor reading.
Lower Non-Recoverable Column	Displays the temperature sensor lower non-recoverable threshold.
Lower Critical Column	Displays the temperature sensor lower critical threshold.
Lower Non-Critical Column	Displays the temperature sensor lower non-critical threshold.

Table 1-18. Temperature Sensor Readings

Items	Description
Upper Non-Critical Column	Displays the temperature sensor upper non-critical threshold.
Upper Critical Column	Displays the temperature sensor upper critical threshold.
Upper Non-Recoverable Column	Displays the temperature sensor upper non-recoverable threshold.
Refresh Button	Use this button to refresh the temperature sensor reading.

Power

The Power option enables you to view the server's power status. Click on the **Power** option to view the Control submenu.

Control

The **Control** submenu lets you view the server's power status. Users with administrator and operator privilege can perform a power control operation on the server.

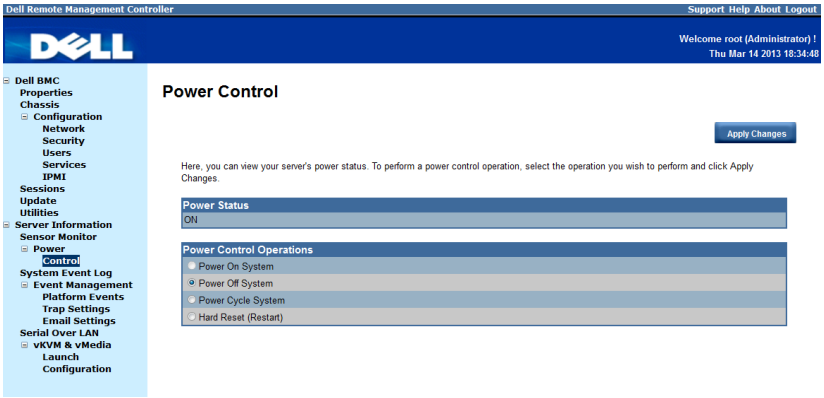


Table 1-19. Power Control

Item	Description
Power Status	
Power Status	Displays the server power status.
Power Control Operations	
Power On System Option	Select this option to power up the server.
Power Off System Option	Select this option to perform an immediate shutdown of the server.
Power Cycle System Option	Select this option to perform a graceful shutdown before power to the sled is turned off.
Hard Reset (Restart)	Select this option to remotely reset the server without powering off (warm boot).
Apply Changes Button	Use this button to apply the changes.

System Event Log

The **System Event Log** menu enables users with administrator and operator privileges to view system event information such as event ID, time stamp, sensor name, sensor type, and description (Event Log button).

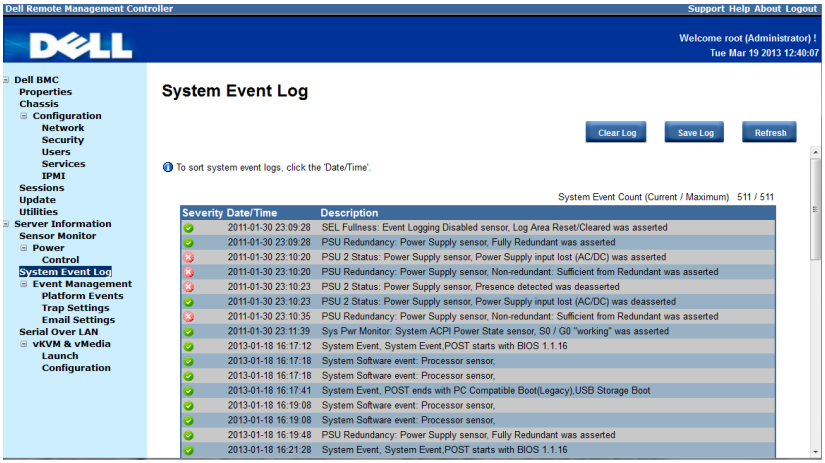


Table 1-20. System Event Log

Items	Description
Severity Column	Indicates the severity level of the log entry. • Normal event • Non-critical event • Critical event
Date/Time Column	Displays the date and time the event occurred. If the system time is not set or is undetermined, the time will show as [System Boot]. Events are listed in order of their occurrence.
Description Column	This column shows a brief description of the event.
Clear Log Button	Use this button to clear the event logs.

Table 1-20. System Event Log

Items	Description
Save Log Button	Use this button to save system event logs.
Refresh Button	Use this button to refresh the system event log.

Event Management

The **Event Management** option enables users with administrator or operator privilege to configure the Platform Event Filter (PEF) filters, SNMP trap settings, and email notifications.

Click on the **Event Management** option to expand the submenu items.

- Platform Events
- Trap Settings
- Email Settings

Platform Events

Select the **Platform Events** submenu to configure the PEF parameters and alert destinations.

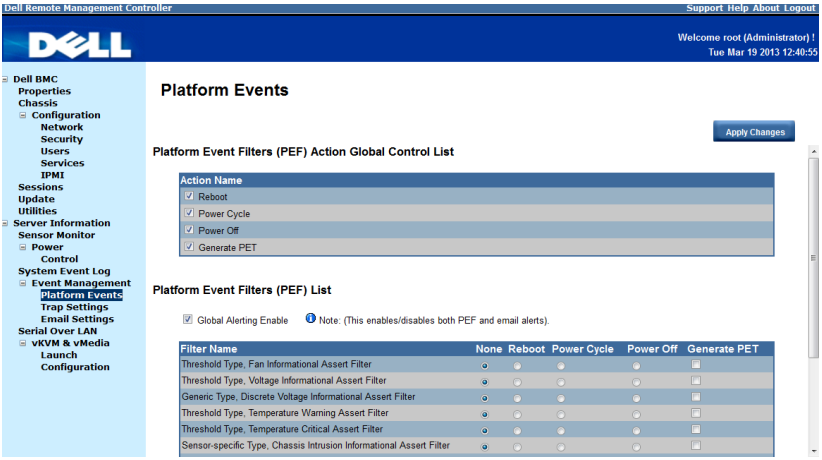


Table 1-21. Platform Event Filters

Items	Description
Platform Event Filters (PEF) Action Global Control List	
Action Name	Specify a PEF action with the occurrence of a specific event. • Reboot • Power Cycle • Power Off • Generate PET
Platform Event Filters (PEF) List	
Global Alerting Enable	Select to enable all PEF and email notification alerts.
Filter Name Column	This column lists the platform event filters. • Fan Critical Assert filter • Battery Warning Assert filter • Battery Critical Assert filter • Discrete Voltage Critical Assert filter • Temperature Warning Assert filter • Temperature Critical Assert filter • Intrusion Critical Assert filter • Redundancy Degraded filter • Redundancy Lost filter • Processor Warning Assert filter • Processor Critical Assert filter • Processor Absent filter You can specify the following action(s) to be taken in response to a PEF. • None • Reboot • Power Cycle • Power Off • Generate Platform Event Trap (PET)

Table 1-21. Platform Event Filters

Items	Description
Apply Changes Button	Use this button to apply the changes.

NOTE: BMC event log "Processor #0x1c" or "Processor #0x1d" clarification: This event is generated from Intel CPU ME (Management Engine). There are two factors that can cause this event to be triggered, one is the processor is hot and the second is the system board has received a power throttling signal from the chassis controller. You can check the throttling settings if you do not want to do power throttling.

Trap Settings

Select the **Trap Settings** submenu to view and manage the Simple Network Management Protocol (SNMP) trap events.

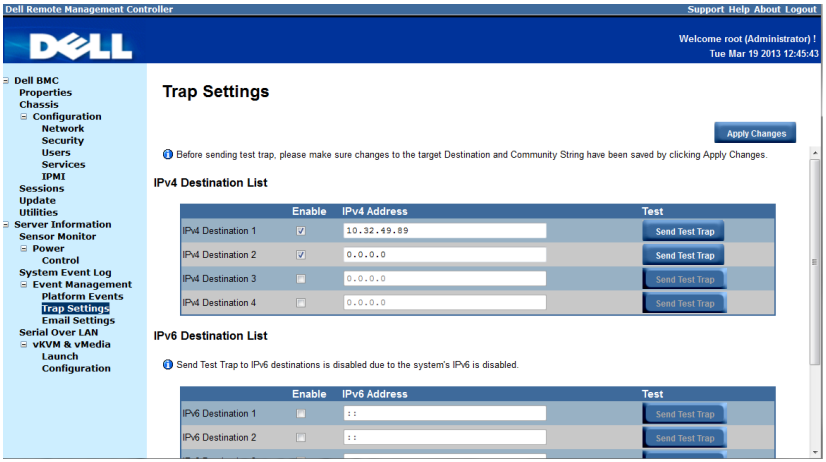


Table 1-22. Trap Settings

Items	Description
IPv4 Destination List	
Enable Checkbox	Enables or disables an IPv4 destination address. You can enable up to four IPv4 destination addresses.
IPv4 Address	Configure up to four IPv4 addresses.

Table 1-22. Trap Settings

Items	Description
Send Test Trap Button	Use this button to send a test trap to a corresponding email address.
IPv6 Destination List	
Enable Checkbox	Enables or disables an IPv6 destination address. You can enable up to four IPv6 destination addresses.
IPv6 Address	Configure up to four IPv6 addresses.
Send Test Trap Button	Use this button to send a test trap to a corresponding email address.
Community String	
Community Name	View or modify the SNMP community name.
Apply Changes Button	Use this button to apply the changes.

Email Settings

Select the **Email Settings** submenu to view email settings. Users with administrator or operator privileges can set email addresses for sending alert notifications.

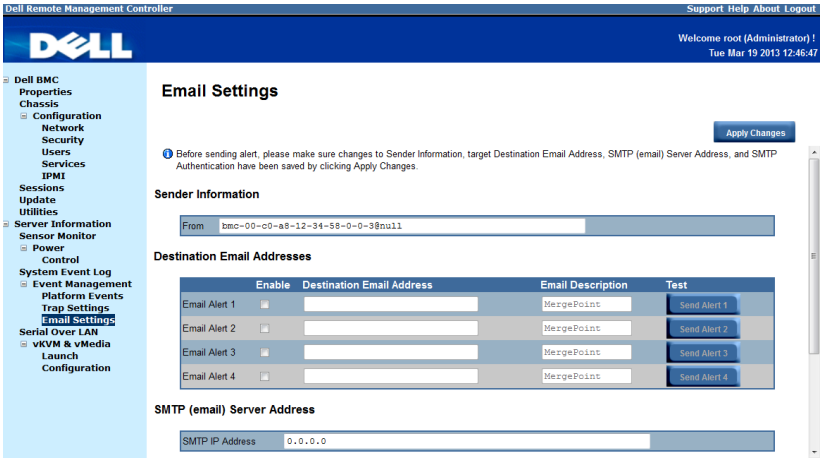


Table 1-23. Email Settings

Items	Description
Sender Information	

From	Specifies the sender's address.
	The sender's address must have the following requirements:
	• Can contain a combination of the following characters:
	  • Upper and lowercase letters (A-Z, a-z)
	  • Numbers (0-9)
	  • Special characters (for example, /, =, -, _, +, !, #, $, %, etc.).
	• Cannot consist of only blank spaces
	If you leave this field empty, then BMC will fill in the sender address automatically. The sender address may appear as <hostname>@<domain name>.

Destination Email Addresses	
Enable Checkbox	Enables or disables an email alert notification. You can enable up to four email alert notifications.
Destination Email Address	Assign the email address that will receive the alert messages.
Email Description	Enter a short description for the email alert notification.
Send Alert Button	Use this button to send an email alert to a corresponding email address.
SMTP (Email) Server Address	
SMTP IP Address	Specify the IP address of the SMTP mail server.
SMTP Authentication	
Enable Checkbox	Enables or disables the SMTP authentication for the mail server.
Username	Specifies a username for an authenticated sendmail.
Password	Specifies a password for an authenticated sendmail.

Table 1-23. Email Settings

Items	Description
STARTTLS mode	Select a Start Transport Layer Security (StartTLS) mode.
SASL Mode	Select a Simple Authentication and Security Layer (SASL) authentication mode.
Apply Changes Button	Use this button to apply the changes.

Serial Over LAN

The **Serial over LAN** menu enables users with administrator and operator privileges to configure the Serial over LAN settings, select or change pertinent values for each attribute and save any changes.

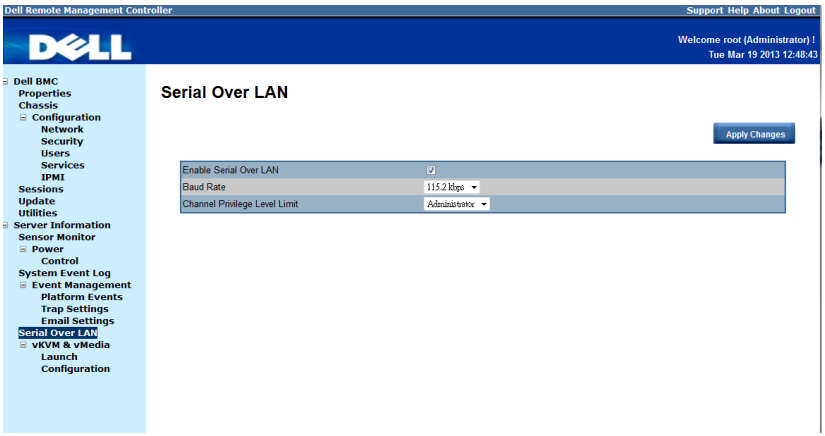


Table 1-24. Serial Over LAN Settings

Items	Description
Enable Serial Over LAN Checkbox	Enables or disables Serial over LAN (SOL) connection.
Baud Rate	Select the IPMI SOL baud rate. • 19.2 kbps • 38.4 kbps • 57.6 kbps • 115.2 kbps
Channel Privilege Level Limit	Specify a privilege level on the LAN channel.
Apply Changes Button	Use this button to apply the changes.

vKVM & vMedia

The **vKVM & vMedia** option enables the administrators to view and configure the virtual KVM and media settings and launch the Java KVM and VM console clients.

Click on the **vKVM & vMedia** option to expand the submenu items.

- Launch
- Configuration

Launch

Select the **Launch** submenu to view and initiate console redirection.

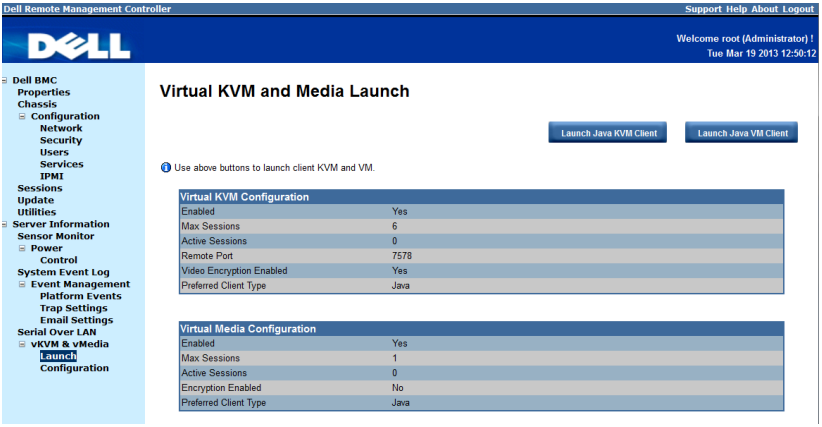


Table 1-25. Virtual KVM and Media Launch Settings

Items	Description
Virtual KVM Configuration	
Enabled	KVM status
Max Sessions	Maximum number of console redirection sessions allowed
Active Sessions	Number of active console sessions
Remote Port	Network port number used for connecting to the KVM client

Table 1-25. Virtual KVM and Media Launch Settings

Items	Description
Video Encryption Enabled	Video encryption status
Preferred Client Type	Client application used for connecting to the KVM client
Virtual Media Configuration	
Max Sessions	Maximum number of console redirection sessions allowed
Active Sessions	Number of active console sessions
Encryption Enabled	Video encryption status
Preferred Client Type	Client application used for connecting to the VM client
Launch Java KVM Client Button	Use this button to launch the Java-based KVM client
Launch Java VM Client	Use this button to launch the Java-based VM client

Console Redirection

The most powerful feature of the Remote Management Controller is the ability to redirect the host system's console, managing the host system as though it were physically in front of you. Note the following about console redirection:

- You can run a maximum of four simultaneous redirection sessions.
- The Java® Video Viewer (version 1.5.15 or later) is required to run the console redirection. If the BMC detects that the video viewer is not installed, you are prompted to install it.
- The recommended display resolution on the management station is at least 1280 x 1024 pixels at 60 Hz with 32 bit color. If the resolution does not meet this minimum requirement, you will not be able to view the console in full screen mode.
- Before using console redirection, verify that the virtual KVM and Media features are enabled. See "Configuration" on page 46".
- Console redirection remains active even after web session timeout.

To start a remote console session from the Virtual KVM and Media Launch window, click the **Launch Java KVM Client** or **Launch Java VM Client button**. This launches the redirection console via the JViewer Java applet. For further information on remote console sessions, see "Using the Video Viewer" on page 48.

Configuration

Select the **Configuration** submenu to configure the virtual KVM and virtual media.

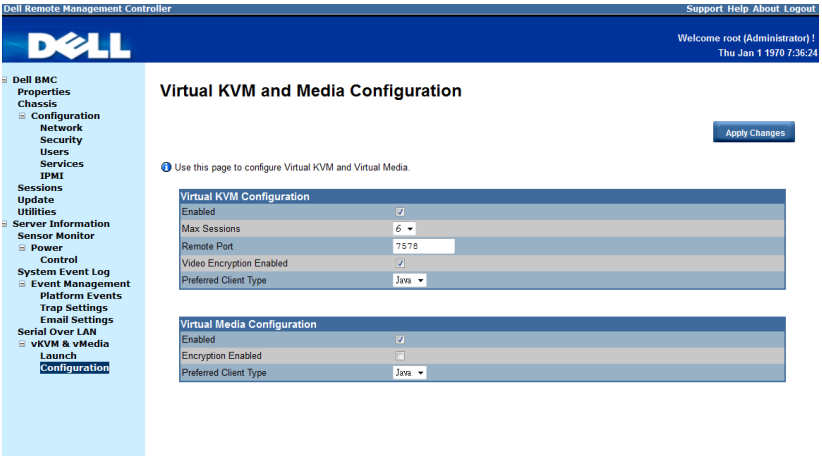


Table 1-26. Virtual KVM and Media Configuration

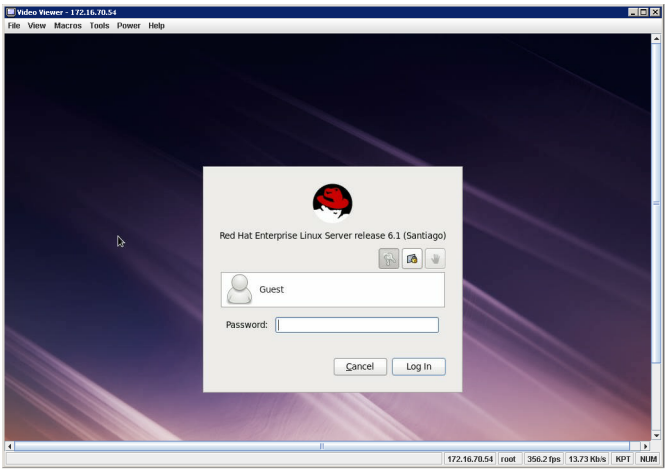
Items	Description
Virtual KVM Configuration	
Enabled	Enables or disables the virtual KVM.
Max Sessions	Sets the maximum number of console redirection sessions allowed.
Remote Port	Select the network port number for connecting to the KVM client.
Video Encryption Enabled	If enabled, the server encrypts all video data prior to transporting to the KVM.

Table 1-26. Virtual KVM and Media Configuration

Items	Description
Preferred Client Type	Select a client application to use for connecting to the KVM client.
Virtual Media Configuration	
Enabled	Enables or disables the virtual media.
Encryption Enabled	Enables or disables the virtual media encryption.
Preferred Client Type	Select a client application to use for connecting to the VM client.

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 login screen prompts for the password.



The Video Viewer provides various control adjustments such as snapshots, keyboard macros, mouse synchronization, power actions, and access to Virtual Media. Click the Help menu for more information on these functions.

When you start a console redirection session and the Video Viewer appears, you may need to adjust the video color mode and synchronize the mouse pointers.

Video Viewer Menu

The **Video Viewer** menu provides access to additional functions, outlined in the following tables.

Table 1-27. File Menu Items

Menu Option	Description
Capture to Clipboard	Captures the current remote system screen to save it to the clipboard.
Exit	Closes the Video Viewer window.

Table 1-28. View Menu Items

Menu Option	Description
Hide Status Bar	Hides or displays the status bar.
Refresh	Redraws the viewer screen image.
Full Screen	Displays the Video Viewer menu in full screen mode.
Fit	Resizes the Video Viewer menu to fit whole monitor screen.

Table 1-29. Macros Menu Items

Menu Option	Description
User Defined Macros	Select a pre-defined command or add your own user-defined commands to send to the server. The Macros menu provides the following keyboard macros: • Ctrl+Alt+Del • Alt+Tab • Alt+Esc • Ctrl+Esc • Alt+Space • Alt+Enter • Alt+Hyphen • Alt+F4 • PrtScrn • Alt+PrtScrn • F1 • Pause • Tab • Ctrl+Enter • Alt+SysRq • Alt+L Shift-RShift-Esc • Ctrl-Alt-Backspace

Table 1-30. Tools Menu Items

Menu Option	Description
Sessions Options	Provides additional session viewer control adjustments. The **General** tab allows you to enable the keyboard pass through mode feature. Select Pass all keystrokes to target to pass your management station's keystrokes to the remote system. The **Mouse** tab enables you to select the operating system you are using to optimize console redirection mouse performance. The **Video Quality** tab provides video adjustments that allow you to optimize the video for the best possible view.
Session User List	Lists the users in the management console.
Single Cursor	Enables or disables the single cursor mode. If this function is disabled, the local and remote operating system will use different mouse accelerating algorithms, which results in offset between the local and remote mouse cursors.
Stats	Displays the performance statistics of the console redirection session.

Table 1-31. Power Menu Items

Menu Option	Description
Power On System	Powers on the server.
Power Off System	Powers off the server.
Graceful Shutdown	Shuts down the server.
Reset System (warm boot)	Reboots the server without powering it off.
Power Cycle System (cold boot)	Powers off and then reboots the server.

Table 1-32. Help Menu Items

Menu Option	Description
Contents and Index	Opens the Video Viewer Help.
About	Displays the Video Viewer version information.

IPMI 1.5/2.0 Commands Support List

The IPMItool program provides a simple command-line interface for managing IPMI-enabled devices. The IPMItool enables you to read the BMC devices, BMC watchdog timer, PEF/PET alerts, SDR, events, SEL, FRU information, serial/modem devices, set LAN configuration parameters, update the BMC firmware remotely and perform remote server chassis or sled server power control.

NOTE: For more information about the standard IPMItool commands, see ipmitool.sourceforge.net/manpage.html.

The following tables include all commands defined in the IPMI v2.0 specifications. All mandatory commands and some optional functions are supported. Special functions beyond the scope of IPMI v2.0 are implemented as original equipment manufacturer (OEM) commands.

In the O/M column:

- M = Mandatory in the IPMI spec and is implemented.
- O = Optional command supported in this implementation.
- N = Not supported in this implementation.

See the Deployment Toolkit Version 1.3 User's Guide for additional information about installing and using the DTK utilities, and the Deployment Toolkit Version 1.3 Command Line Interface Reference Guide for a complete list of all valid options, suboptions, and arguments for using the BMCCFG.EXE to configure and manage your BMC.

NOTE: For a complete list of all valid options, requirements, and commands refer to the *BMC Firmware Requirements for DCS/PE-C 1.02* documentation.

Table 1-33. IPMI Device Global Commands (NetFn: 0x06H)

Command	NetFn	CMD	O/M	Supported
Get Device ID	App	01h	M	Yes
Broadcast Get Device ID	App	02h	M	Yes
Cold Reset	App	03h	O	Yes
Warm Reset	App	04h	O	No
Get Self Test Results	App	05h	M	Yes
Manufacture Test On	App	06h	O	Yes
Get ACPI Power State	App	07h	O	Yes
Get Device GUID	App	08h	O	Yes
Get NetFn Support	App	09h	O	Yes
Get Command Support	App	0Ah	O	Yes
Get Command Sub-function Support	App	0Bh	O	Yes
Get Configurable Commands	App	0C	O	Yes
Get Configurable Command Sub-functions	App	0Dh	O	Yes
Set Command Enables	App	60h	O	Yes
Get Command Enables	App	61h	O	Yes
Set Command Sub-function Enables	App	62h	O	Yes
Get Command Sub-function Enables	App	63h	O	Yes
Get OEM NetFn IANA Support	App	64h	O	Yes

Table 1-34. BMC Device and Messaging Commands (NetFn: 0x06H)

Command	NetFn	CMD	O/M	Supported
Set BMC Global Enables	App	2Eh	M	Yes
Get BMC Global Enables	App	2Fh	M	Yes
Clear Message Buffer Flags	App	30h	M	Yes
Get Message Buffer Flags	App	31h	M	Yes
Enable Message Channel Receive	App	32h	O	Yes
Get Message	App	33h	M	Yes
Send Message	App	34h	M	Yes
Read Event Message Buffer	App	35h	O	Yes
Get BT Interface Capabilities	App	36h	M	No
Get System GUID	App	37h	M	Yes
Set System Info Parameters	App	58h	O	Yes
Get System Info Parameters	App	59h	O	Yes
Get Channel Authentication Capabilities	App	38h	O	Yes
Get Session Challenge	App	39h	O	Yes
Activate Session Command	App	3Ah	O	Yes
Set Session Privilege Level Command	App	3Bh	O	Yes
Close Session	App	3Ch	O	Yes
Get Session Information	App	3Dh	O	Yes
Get Authentication Code Command	App	3Fh	O	Yes
Set Channel Access Commands	App	40h	O	Yes
Get Channel Access Commands	App	41h	O	Yes
Get Channel Info Command	App	42h	O	Yes
Set User Access Commands	App	43h	O	Yes
Get User Access Commands	App	44h	O	Yes
Set User Name Commands	App	45h	O	Yes
Get User Name Commands	App	46h	O	Yes

Table 1-35. BMC Device and Messaging Commands (NetFn: 06H) *(continued)*

Command	NetFn	CMD	O/M	Supported
Set User Password Commands	App	47h	O	Yes
Active Payload Command	App	48h	O	Yes
Deactivate Payload Command	App	49h	O	Yes
Get Payload Activation Status	App	4Ah	O	Yes
Get Payload Instance Info Command	App	4Bh	O	Yes
Set User Payload Access	App	4Ch	O	Yes
Get User Payload Access	App	4Dh	O	Yes
Get Channel Payload Support	App	4Eh	O	Yes
Get Channel Payload Version	App	4Fh	O	Yes
Get Channel OEM Payload Info	App	50h	O	Yes
Master Write-Read I2C	App	52h	M	Yes
Get Channel Cipher Suites	App	54h	O	Yes
Suspend/Resume Payload Encryption	App	55h	O	Yes
Set Channel Security Keys	App	56h	O	Yes
Get System Interface Capabilities	App	57h	O	No

Table 1-36. BMC Watchdog Timer Commands (NetFn: 06H)

Command	NetFn	CMD	O/M	Supported
Reset Watchdog Timer	App	22h	M	Yes
Set Watchdog Timer	App	24h	M	Yes
Get Watchdog Timer	App	25h	M	Yes

Table 1-37. Chassis Device Commands (NetFn: 00H)

Command	NetFn	CMD	O/M	Supported
Get Chassis Capabilities	Chassis	00h	M	Yes
Get Chassis Status	Chassis	01h	M	Yes
Chassis Control	Chassis	02h	M	Yes
Chassis Reset	Chassis	03h	O	No
Chassis Identify	Chassis	04h	O	Yes
Set Chassis Capabilities	Chassis	05h	O	Yes
Set Power Restore Policy	Chassis	06h	O	Yes
Get System Restart Cause	Chassis	07h	O	Yes
Set System Boot Options	Chassis	08h	O	Yes
Get System Boot Options	Chassis	09h	O	Yes
Set Front Panel Button Enable	Chassis	0Ah	O	Yes
Set Power Cycle Interval	Chassis	0Bh	O	Yes
Get POH Counter	Chassis	0Fh	O	No

Table 1-38. PEF/PET Alerting Commands (NetFn: 04H)

Command	NetFn	CMD	O/M	Supported
Get PEF Capabilities	S/E	10h	M	Yes
Arm PEF Postpone Timer	S/E	11h	M	Yes
Set PEF Configuration Parameters	S/E	12h	M	Yes
Get PEF Configuration Parameters	S/E	13h	M	Yes
Set Last Processed Event ID	S/E	14h	M	Yes
Get Last Processed Event ID	S/E	15h	M	Yes
Alert Immediate	S/E	16h	O	Yes
PET Acknowledge	S/E	17h	O	Yes

Table 1-39. Sensory Device Commands (NetFn: 04H)

Command	NetFn	CMD	O/M	Supported
Get Device SDR Info	S/E	20h	O	No
Get Device SDR	S/E	21h	O	No
Reserve Device SDR Repository	S/E	22h	O	No
Get Sensor Reading Factors	S/E	23h	O	Yes
Set Sensor Hysteresis	S/E	24h	O	Yes
Get Sensor Hysteresis	S/E	25h	O	Yes
Set Sensor Threshold	S/E	26h	O	Yes
Get Sensor Threshold	S/E	27h	O	Yes
Set Sensor Event Enable	S/E	28h	O	Yes
Get Sensor Event Enable	S/E	29h	O	Yes
Set Sensor Reading and Event Status	S/E	30h	O	Yes
Re-arm Sensor Events	S/E	2Ah	O	Yes
Get Sensor Event Status	S/E	2Bh	O	Yes
Get Sensor Reading	S/E	2Dh	M	Yes
Set Sensor Type	S/E	2Eh	O	No
Get Sensor Type	S/E	2Fh	O	No

Table 1-40. Event Commands (NetFn: 04H)

Command	NetFn	CMD	O/M	Supported
Set Event Receiver	S/E	00h	M	Yes
Get Event Receiver	S/E	01h	M	Yes
Platform Event	S/E	02h	M	Yes

Table 1-41. SEL Commands (NetFn: 04H)

Command	NetFn	CMD	O/M	Supported
Get SEL Info	Storage	40h	M	Yes
Get SEL Allocation Info	Storage	41h	O	Yes
Reserve SEL	Storage	42h	O	Yes
Get SEL Entry	Storage	43h	M	Yes
Add SEL Entry	Storage	44h	M	Yes
Partial Add SEL Entry	Storage	45h	M	No*
Delete SEL Entry	Storage	46h	O	Yes
Clear SEL	Storage	47h	M	Yes
Get SEL Time	Storage	48h	M	Yes
Set SEL Time	Storage	49h	M	Yes
Get Auxiliary Log Status	Storage	5Ah	O	No
Set Auxiliary Log Status	Storage	5Bh	O	No
Get SEL Time UTC Offset	Storage	5Ch	O	No
Set SEL Time UTC Offset	Storage	5D	O	No

* Support for Partial Add SEL is not required when Add SEL is supported.

Table 1-42. FRU Inventory Device Commands (NetFn: 0AH)

Command	NetFn	CMD	O/M	Supported
Get FRU Inventory Area Info	Storage	10h	M	Yes
Read FRU Inventory Data	Storage	11h	M	Yes
Write FRU Inventory Data	Storage	12h	M	Yes

Table 1-43. SDR Repository Commands (NetFn: 0AH)

Command	NetFn	CMD	O/M	Supported
Get SDR Repository Info	Storage	20h	M	Yes
Get SDR Repository Allocation Info	Storage	21h	O	Yes
Reserve SDR Repository	Storage	22h	M	Yes
Get SDR	Storage	23h	M	Yes
Add SDR	Storage	24h	M	Yes
Partial ADD SDR	Storage	25h	O	Yes
Delete SDR	Storage	26h	O	Yes
Clear SDR Repository	Storage	27h	M	Yes
Get SDR Repository Time	Storage	28h	O	Yes
Set SDR Repository Time	Storage	29h	O	Yes
Enter SDR Repository Update Mode	Storage	2Ah	O	No
Exit SDR Repository Update Mode	Storage	2Bh	O	No
Run Initialization Agent	Storage	2Ch	O	Yes

Table 1-44. LAN Commands (NetFn: 0CH)

Command	NetFn	CMD	O/M	Supported
Set LAN Configuration Parameters (**Note:** Parameter 9 and 25 are not supported.)	Transport	01h	M	Yes
Get LAN Configuration Parameters (**Note:** Parameter 9 and 25 are not supported.)	Transport	02h	M	Yes
Suspend BMC ARP	Transport	03h	O	Yes
Get IP/UDP/RMCP Statistics	Transport	04h	O	No

Table 1-45. Serial/Modem Device Commands (NetFn: 0CH)

Command	NetFn	CMD	O/M	Supported
Set Serial/Modem Configuration	Transport	10h	M	Yes
Get Serial/Modem Configuration	Transport	11h	M	Yes
Set Serial/Modem Mux	Transport	12h	O	Yes
Get TAP Response Codes	Transport	13h	O	No
Set PPP UDP Proxy Transmit Data	Transport	14h	O	No
Get PPP UDP Proxy Transmit Data	Transport	15h	O	No
Send PPP UDP Proxy Packet	Transport	16h	O	No
Get PPP UDP Proxy Receive Data	Transport	17h	O	No
Serial/Modem Connection Active	Transport	18h	M	Yes
Callback	Transport	20h	O	No
SOL Activating	Transport	19h	O	Yes
Set SOL Configuration	Transport	20h	O	Yes
Get SOL Configuration	Transport	21h	O	Yes
Set User Callback Options	Transport	1Ah	O	No
Get User Callback Options	Transport	1Bh	O	No
Set Serial Routing Mux	Transport	1Ch	O	Yes

Table 1-46. Command Forwarding Commands (NetFn: 0CH)

Command	NetFn	CMD	O/M	Supported
Forwarded Command	Transport	30h	O	Yes
Set Forwarded Commands	Transport	31h	O	Yes
Get Forwarded Commands	Transport	32h	O	Yes
Enable Forwarded Commands	Transport	33h	O	Yes

Table 1-47. Firmware Update Commands (NetFn: 08H)

Command	NetFn	CMD	O/M	Supported
Firmware Update Phase 1	Firmware	10h	O	Yes
Firmware Update Phase 2	Firmware	11h	O	Yes
Get Firmware Update Status	Firmware	12h	O	Yes
Get Firmware Version	Firmware	13h	O	Yes
Set Firmware Update Status	Firmware	16h	O	Yes
Firmware Update Phase 3	Firmware	21h	O	Yes

Table 1-48. GPGPU Setting Commands (NetFn: 0x30H)

Command	NetFn	LUN	CMD	Privelege
Set GPGPU ID	0x30h	0h	32h	Admin
Get GPGPU ID	0x30h	0h	33h	Admin

OEM Commands Support List

Extended Configuration Commands

This section includes a brief list of the Extended Configurations Commands in the Dell DCS product specification. See the *BMC Firmware Requirements for DCS/PE-C 1.02* documentation for more details.

Table 1-49. Extended Configuration Commands (NetFn: 0x30H)

Extended Configuration Command	NetFn	CMD	C	U	O	A
Reserved Extended Configuration	0x30h	01h		X		
Get Extended Configuration	0x30h	02h		X		
Set Extended Configuration	0x30h	03h				X
Reset to Defaults	0x30h	04h				X
Get Restore Status	0x30h	05h				X

Reserved Extended Configuration Command

	Byte	Data Field
Request Data	—	—
Response Data	1	Completion code
	2	Reservation ID, 00h is reserved
		The BMC shall automatically cancel the Reservation ID if the value is not used in sub-sequential Get/Set Extended Configuration commands within 60 seconds

Get Extended Configuration Command

	Byte	Data Field
Request Data	1	Reservation ID
	2	Configuration ID
	3	Attribute ID
	4	Index (used by table object only)
	5	Data Offset - LSB

	Byte	Data Field
	6	Data Offset - MSB
	7	Bytes to read. FFh means read entire configuration or attribute
Response Data	1	Completion code • [7:2] - Reserved • [1] - 1b = Set operation in progress 0b = Set complete • [0] - 1b = No more data
	2	Configuration ID
	3	Attribute ID
	4	Index (valid only for table object only)
	5	Number of bytes returned, 1-based Depending on the implementation, the number of bytes returned from BCM might not be the same as the value of the "Bytes to read" parameter passed in the request
	6:N	Data

Set Extended Configuration Command

	Byte	Data Field
Request Data	1	Reservation ID
	2	Configuration ID
	3	Attribute ID
	4	Index (used by table object only)
	5	Data Offset to write - LSB
	6	Data Offset to write - MSB

	Byte	Data Field
	7	In progress • [7:4] - Reserved • [3:0] - In progress 0 = In progress 1 = Last configuration data being transferred in this request
	8:N	Data to be written
Response Data	1	Completion code • [7:2] - Reserved • [1] - 1b = Set operation in progress 0b = Set complete • [0] - 1b = No more data
	2	Bytes written - count is based on 1

Restore to Defaults Command

	Byte	Data Field
Request Data	1	Configuration to be restored to defaults: • [7:5] - 111b = Restore the remaining parameters not included in below lists. 000b = Remaining parameters stay what it is. All other values are reserved. • [4] - 1b = Restore PEFs to defaults. • [3] - 1b = Restore serial configuration parameters to defaults. • [2] - 1b = Restore SOL configuration parameters to defaults. • [1] - 1b = Restore LAN configuration parameters to defaults. • [0] - 1b = Restore user accounts to defaults.

	Byte	Data Field
	2	SC settings to be restored to default. FFh = Restore all SC settings to default. All other values are reserved.
Response Data	1	Completion code. CCh = Restore to one or more of the configuration not supported.
	2	Task ID. Use the Task ID to get the restore status. The Task ID automatically becomes invalid after 120 seconds from the completion of the restore request. 00h reserved.

Get Restore Status Command

	Byte	Data Field
Request Data	1	Task ID, the value returned by previous call to Restore to Defaults command
Response Data	1	Completion code
	2	Default retore status • 00h: Restore in progress • 01h: Restore completed

Extended Configurations

The following tables include the Extended Configuration IDs and commands.

In the R/W column:

- R = Read
- W = Write
- R/W = Read/Write

NOTE: The strings in the table below are in P-String format. P-Strings are preceded by a length identifier.

Table 1-50. Configuration ID = 02h, NIC

Attribute	ID	Size	Description	R/W
NicSelection	1	1	Specifies the current mode of operation for the BMC network interface. • 0: Shared NIC (default) • 1: Dedicated NIC	R/W
SharedNICSelection	2	1	Valid only when the *Attribute ID 1 NICSelection* parameter is set to 0h. • 0h: Reserved (Recommend to set to 0h when NICSelection is set to Dedicated NIC.) • 1h: NIC-1 (default) • 2h: NIC-2 • 3h: NIC-3 • 4h: NIC-4 **NOTE:** According to DCS I/O guide line, RJ45 connectors should be labeled starting from NIC-1. It also requires that Dedicated BMC NIC should always be the largest number (last port number). Therefore this Attribute ID parameter only requires supporting the available Shared NIC numbers according to the labeled numbers, regardless of the NC-SI topology (i.e. Single Channel Dual Package or Dual Channel Single Package). When user attempts to set to a NIC value that is not supported on the platform, a completion code CCh should be returned to indicate an invalid data.	R/W

Table 1-51. Configuration ID = 03h, SOL

Attribute	ID	Size	Description	R/W
SOL Idle Timeout	1	2	• Byte[1:2]: Define the inactivity timeout in minutes, 1-based, LSByte first. This parameter only applies to the IPMI over LAN session with SOL payload activated. • 0h: Session does not timeout and close due to inactivity. Default value is 01h.	R/W
Telnet/SSH Redirect Enable	2	1	• 0h: Disable • 1h: SOL Enabled • 2h: SMASH Enabled • Others: Reserved	R/W

Table 1-52. Configuration ID = 04h, Security

Attribute	ID	Size	Description	R/W
Service Disabled	1	1	Disable or enable services. This attribute takes precedence over the individual feature enabled/disabled. Once one service has been disabled, the BMC will not allow user to enable the corresponding feature and D5h completion code must be returned. For example, if HTTP/HTTPS is disabled, user must not allow enabling the Web Server through Web Server Configuration (Configuration ID 0Ch). In other words, Web can only be disabled or enabled when HTTP/HTTPS is enabled. Default value is 38h. • [0] - All service except IPMI are disabled. This bit takes precedence over other bits. Default is 0. • [1] - KVM/Virtual Storage, enabled by default. • [2] - HTTP/HTTPS, enabled by default. • [3] - SSH, disabled by default. • [4] - SNMP v2c agent, disabled by default. • [5] - Telnet, disabled by default. • [6] - SMASH, disabled by default.	R/W

Table 1-53. Configuration ID = 05h, Account Status

Attribute	ID	Size	Description	R/W
Number of User	1	1	Number of user created, including enabled and disabled users. The count does not include USER ID1. Default value is 01h.	R
Number of Enabled User	2	1	Number of enabled users. This count does not include USER ID1. Default value is 01h.	R
User Name	3	1.. 17	Specify the user name in P-String format. Indexed by user ID.	R
Account Status	4	1	Status of the account. This is the supplement to the byte 3 of response data of Get User Access command. Indexed by user ID. • 00h: Status is unspecified. • 01h: User ID is enabled via Set User Password. • 02h: User ID is disabled via Set User Passwor.d • 03h: User ID is lockout.	R

Table 1-54. Configuration ID = 06h, DNS

Attribute	ID	Size	Description	R/W
DNS DHCP Enable	1	1	Specifies that the DNS server IP addresses should be assigned from the DHCP server. • 0: FALSE (default) • 1: TRUE	R/W
DNS Server1	2	4	Specifies the IP address for DNS server 1. When the *DNS DHCP Enable* and *DHCP* are enabled this parameter is read-only. Default value is 00000000h.	R/W
DNS Server2	3	4	Specifies the IP address for DNS server 2. When the *DNS DHCP Enable* and *DHCP* are enabled this parameter is read-only. Default value is 00000000h.	R/W

Table 1-54. Configuration ID = 06h, DNS

Attribute	ID	Size	Description	R/W
DNS Register BMC	4	1	Enable registering the BMC host name to the DNS server (via DHCP Request Option 81h - FQDN) • 0: FALSE (default) • 1: TRUE	R/W
DNS BMC Host Name	5	1..64	Specifies the DNS BMC host name. When the *DNS Register BMC* is set to TRUE this parameter is read-only. At least one character must be alphabetic. The default name is bmc-<service_tag>-<rack_id>-<chassis_id>-<sled_id>, where service_tag is the service tag number of the Dell server. For example: bmc-XG3487A-00-00-01.	R/W
DNS Domain Name DHCP Enable	6	1	Specifies that the DNS domain name should be assigned from the DHCP server. • 0: FALSE (default) • 1: TRUE	R/W
DNS Domain Name	7	1.256	The DNS domain name string. When the *DNS Domain Name DHCP Enable* is set to TRUE this parameter is read-only. Characters are restricted to alphanumeric, '-' and '.'. Default value is "".	R/W
DNS Registration Delay	8	1	This is the delay that BMC should take 'after' the IPMI process is up and running. This delay will allow SC to dispatch information necessary to compose BMC's host name, i.e. rack ID, chassis ID, and sled ID. Default value is 5 seconds.	R/W

Table 1-55. Configuration ID = 0Ch, WEB Server Configuration

Attribute	ID	Size	Description	R/W
Web Server Enabled	1	1	Disables or enables the BMC Web server. • 0: FALSE • 1: TRUE (default)	R/W
Max Web Sessions	2	1	The maximum number of simultaneous sessions allowed for this system. This field is READ-ONLY.	R
Active Web Sessions	3	1	The number of current session for GUI on the system. This field is READ-ONLY.	R
Web Server Timeout	4	4	The WEB communication idle timeout, in seconds. Timeout range is 60 to 1920 seconds. A 0 value disables the timeout feature. Default value is 300 seconds.	R/W
HTTP Port Num	5	2	Specifies the port number to use for HTTP communication with the BMC. Default value is 80.	R/W
HTTPS Port Num	6	2	Specifies the port number to use for HTTPS communication with the BMC. Default value is 443.	R/W

Table 1-56. Configuration ID = 0Eh, Firmware Log, Indexed Object

Attribute	ID	Size	Description	R/W
Entity	1	1	See the Firmware Information configuration.	R
Firmware Version	2	1..16	See the Firmware Information configuration.	R
Branch	3	1..16	See the Firmware Information configuration.	R
Build Information	4	1..16	See the Firmware Information configuration.	R
Update Date / Time	5	3	Number of minutes from 0:00 hrs 1/1/08. LSbyte first (little endian)	R

Table 1-57. Configuration ID = 0Fh, Firmware Information, Indexed Object

Attribute	ID	Size	Description	R/W
Name	1	1..16	Specifies BMC model name, such as AST2050.	R
Description	2	1..256	A text description of the type controller.	R
Entity	3	1	Specifies the physical controller the image is associated. • 0: BMC • 1: SYSTEM (BIOS) • 2: PDB • 3: FCB	R
Product Info	4	1..64	A text string that identifies the product. Default string is Dell DCS Remote Management Controller.	R

Table 1-57. Configuration ID = 0Fh, Firmware Information, Indexed Object

Attribute	ID	Size	Description	R/W
Firmware Version	5	1..16	A string containing the BMC firmware version. The firmware version is reading from IPMI Get Device ID command. The format of BMC FW Version string is "<major>.<minor>", where major is one character and minor is two characters.	R
Branch	6	1..16	A string containing the firmware branch information.	R
Build Information	7	1..16	A string containing the firmware build number information. The string format is YYMMDD.	R
User Default Setting	8	1	This attribute enables user to customize various BMC settings and store as user default. It also allows user to erase current settings and restore back to previously set user default settings. User default settings include all write-able settings in Extended Configuration Parameters, IPMI User Account Settings, and IPMI LAN Configuration Parameters. • 0h: Set as User Default • 1h: Restore User Default	W

Table 1-58. Configuration ID = 10h, Firmware Update

Attribute	ID	Size	Description	R/W
Remote Update Enable	1	1	Allow firmware update via HTTP/FTP/TFTP server. • 0h: Disable • 1h: Enable (default)	R/W
Protocol	2	1	Specified supported protocols. • [7:3] - Reserved • [2] - HTTP • [1] - FTP • [0] - TFTP Default value is 07h.	R
URI	3	1.. 256	The URI of the image file.	R/W
Connection Retry	4	1	Specify the number of retries for connecting to HTTP/FTP/TFTP server. A 0 value specifies that the BMC will not attempt to retry to connect to the TFTP server. Default value is 01h.	R/W
Retry Interval	5	1	Define the retry interval in 5 seconds increments. Default value is 01h.	R/W
Delay Time	6	1	Define the delay time for connecting to TFTP server. The time is specified in seconds. • 00h: BMC connects to TFTP server immediately. (default) • FFh: Random between 5 and 10 seconds.	R/W

Table 1-59. Configuration ID = 11h, Power Management

Attribute	ID	Size	Description	R/W
Power Staggering AC Recovery	2	1	This parameter is only effective if the Power Policy is not set to always off. • 0x00: Immediate Power On (No Delay) (default) • 0x01: Auto (Random), the auto generated delay time must be in the range of *Minimum Power On Delay* and *Maximum Power On Delay.* • 0x02: User Defined, the user defined delay time must be in the range of *Minimum Power On Delay* and *Maximum Power On Delay.*	R/W
Power On Delay	3	2	Define the time to delay power on the system after AC recovered and BMC firmware ready. Default value is 00h.	R/W
Minimum Power On Delay	4	2	Specify the minimum power on delay in seconds, when AC is restored and BMC firmware ready. This does not include the BMC firmware setup time. Default value is the time in seconds for BMC firmware to boot and ready to accept and perform Power On command.	R
Maximum Power On Delay	5	2	Specify the maximum power on delay in seconds, when AC is restored. The number must be greater than *Minimum Power On Delay.* Default value is the Minimum Power On Delay +1 second.	R/W

Table 1-60. Configuration ID = C0h, IPv6 Setting

Attribute	ID	Size	Description	R/W
IPv6 Enable	1	1	IPv6Enable • 0: FALSE (default) • 1: TRUE	R/W
IPv6 Address	2	1..40	IPv6 Address (Read only if the AutoConfig attribute is set to TRUE.)	R/W
IPv6 Gateway IP Address	3	1..40	IPv6 Gateway IP Address	R/W
IPv6 Prefix Length	4	1	IPv6 Prefix Length	R/W
IPv6 AutoConfig	5	1	IPv6 AutoConfig • 0: FALSE • 1: TRUE (default)	R/W
IPv6 Link Local Address	6	1..40	IPv6 Link Local Address	R
IPv6 Auto DNS	7	1	IPv6 Auto DNS (Cannot be configured to 1 if the IPv6 AutoConfig attribute is set to 0.) • 0: FALSE (default) • 1: TRUE	R/W
IPv6 DNS Server1 Address	8	1..40	IPv6 DNS Server1 Address (Cannot be configured if the Auto DNS attribute is set to TRUE.)	R/W
IPv6 DNS Server2 Address	9	1..40	IPv6 DNS Server2 Address (Cannot be configured if the Auto DNS attribute is set to TRUE.)	R/W

Table 1-61. Configuration ID = C1h, IPv6 Trap Setting, Idexed Object

Attribute	ID	Size	Description	R/W
IPv6 SNMP Trap Destination Setting	1	3	• Byte 1:Destination Type (See the IPMI spec.) • Byte 2: Alert ACK Timeout (See the IPMI spec.) • Byte 3: Retries (See the IPMI spec.)	R/W
IPv6 SNMP Trap Destination Address	2	01: 40	IPv6 address	R/W
Number of IPv6 SNMP Trap Destination	3	1	Number of destinations	R/W

Threshold Settings and Converting Formulas

The following table lists the system sensor's threshold settings and formulas for converting the sensor readings.

Table 1-62. Threshold Settings and Converting Formulas

Sensor Number	Sensor Name	The Converting Formula					
		Upper non-recoverable	Upper critical	Upper non-critical	Lower non-recoverable	Lower critical	Lower non-critical
Voltage							
05h	12 V Standby	Actual_Reading (Volts) = ((Raw_Data x 65) + 60) x 0.001					
		D4	CA	C1	9C	A6	AF
06h	5 V	Actual_Reading (Volts) = ((Raw_Data x276) + 100) x 0.0001					
		D0	C7	BE	9A	A3	AC
07h	5 V Standby	Actual_Reading (Volts) = ((Raw_Data x 277) + 80) x 0.0001					
		D0	C7	BE	9A	A3	AC
08h	3.3 V	Actual_Reading (Volts) = ((Raw_Data x 199) + 70) x 0.0001					
		BF	B7	AE	8D	95	9E
09h	3.3 V Standby	Actual_Reading (Volts) = ((Raw_Data x 197) + 100) x 0.0001					
		C1	B9	B0	8F	97	A0

Table 1-63. Threshold Settings and Converting Formulas *(continued)*

Sensor Number	Sensor Name	The Converting Formula					
		Upper non-recoverable	Upper critical	Upper non-critical	Lower non-recoverable	Lower critical	Lower non-critical
Temperature							
41h	CPU1 Temp	Actual_Reading (degrees C) = Raw_Data					
		5A	50	46	20	25	29
42h	CPU2 Temp	Actual_Reading (degrees C) = Raw_Data					
		5A	50	46	20	25	29
43h	DIMM ZONE 1 Temp	Actual_Reading (degrees C) = Raw_Data					
		3C	32	28	17	1A	1E
44h	DIMM ZONE 2 Temp	Actual_Reading (degrees C) = Raw_Data					
		3C	32	28	17	1A	1E
45h	PCH Temp	Actual_Reading (degrees C) = Raw_Data					
		5A	50	46	17	1A	1E