

Dell™ PowerEdge™ Systems

# Using the Baseboard Management Controller

# Notes, Cautions, and Warnings



**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.

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## Introduction

This section introduces the A BMC and includes the requirements for web-based graphical user interface (GUI), keyboard, video, and mouse (KVM), and virtual media.

## BMC Key Features and Functions

The following lists the supported features of the BMC:

- IPMI v1.5 and v2.0
- Out-of-band monitoring and control for server management over LAN
- Dedicated 10/100 NIC for remote management over a network
- Information report includes main board part number, product name, manufacturer, etc.
- Health status/hardware monitoring report
- Events log, view, and clear
- Event notification using chassis LED indicator and Platform Event Trap (PET)
- Platform Event Filtering (PEF) to take selected action for selected events, including NMI and SMI
- Chassis management including power control and status report, front panel buttons, LED control, Secure Mode, and Boot Option
- Watchdog and auto server re-start and recovery
- Multi-session user and alert destination for LAN channel
- IPMB connector to enable advanced server management communication with BMC

## Using the Web UI

The BMC firmware features an embedded web server, enabling users to connect to the BMC using an Internet browser (Microsoft® 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 and 7
- Mozilla® Firefox® 2.0 or later

### Linux:

Mozilla Firefox 2.0 or later



**NOTE:** Before using the web user interface, ensure that the firewall settings are configured to enable access to the following ports: 8890 (KVM), 9000 (storage), 9001, 9002, and 9003.

## Logging into the Web User Interface

Enter the BMC-embedded server IP address or URL into the address bar of the web browser. The BMC interface has a default of (DHCP\Static). Enter the system BIOS setup with <F2> to change these settings.

When connecting to the BMC, the login screen prompts for the username and password. This authentication with Secure Sockets Layer (SSL) protection prevents unauthorized intruders from gaining access to the BMC web server. Once authentication is passed, you can manage the server by privilege. At the same time, the PHP Hypertext Preprocessor (PHP) records all user information, including user ID and privilege.

## System Features

### System Summary

The **System Summary** tab enables you to view the firmware version, hardware version, and IPv4 information. Click the **System** tab to view the Remote Management Controller.

**Table 1-1. BMC Information**

BMC Information	Description
Date/Time	Current time in the form: Day MMM DD HH:MM:SS:HH YYYY
Firmware Version	Dell Remote Management Controller firmware version.
Firmware Updated	Date the firmware was last flashed in the form: Day MMM DD HH:MM:SS:HH YYYY
MAC Address	MAC address for the Baseboard Management Controller.

**Table 1-2. IPv4 Information**

IPv4 Information	Description
Enabled	Yes or No
IP Address	The 32-bit address that identifies the NIC to a host. The value is in the dot separated format, such as 143.166.154.127.
Gateway	The address of a router or a switch. The value is in the dot separated format, such as 143.166.154.1.
Subnet Mask	The Subnet Mask identifies the parts of the IP Address that are the Extended Network Prefix and the Host Number. The value is in the dot separated format, such as 255.255.0.0.

## Component Information

### Server Board Information

Including Serial Number, BIOS Version, Product ID, Manufacturer and Manufacture Date.

### CPU Information

Including CPU ID, Status, Socket, Manufacturer, Model and Frequency.

### Memory Information

Including Memory ID, Status, Socket, Module Size, Model and Frequency.

## Power Management

This feature enables the administrator to power on or power down the system remotely.

**Table 1-3. Power Status**

Power Status	Description
Power Status	Yes or No

Select a Power Control Operation.

**Table 1-4. Power Control Operation Options**

Power Control Operation	Description
Power On System	Powers on the system.
Power Off System	Powers off the system.
Reset System	Reboots system without powering off (warm boot).
Power Cycle System	Powers off, then reboots system (cold boot).
NMI	Sends Non-Masking Interrupt to halt system operation.
Soft Shutdown	Shuts down system.

Click **Apply** to enable the selected Power Control Operation.





## System Event Log

The System Event Log (SEL) page displays system events that occur on the managed system. The SEL is generated by the Baseboard Management Controller (iBMC) or BIOS on the managed system.

The SEL lists the following information about system events: severity, a date/time stamp, and a short description. The list can be sorted by clicking any column heading in the SEL. Subsequent clicks on the column headings reverse the sort order.

Table 1-5 describes the severity conditions by icon.

**Table 1-5. Severity Condition Icons**

Icon	Description
	Normal event
	Non-critical event
	Critical event
	Unknown

Click **System Event Log** to view specific event information. Table 1-6 shows the available functions located at the top right corner of the screen.

**Table 1-6. System Event Log Functions**


Function	Description
Print	Prints the SEL in the sort order that appears on screen.
Clear Log	Clears the SEL. <b>NOTE:</b> The <b>Clear Log</b> button only appears if you have permission.
Save As	Opens a pop-up window that enables you to save the SEL to a directory of your choice. The severity of the condition is indicated and saved in the log file.  The Date/Time is stored in ascending order. Blank dates from the screen are saved as <System Boot> in the file.
Refresh	Reloads the SEL page




## Firmware Update

Use the Firmware Update feature to upgrade to the latest firmware version. The following data is included in the iBMC firmware package:

- Compiled iBMC 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 iBMC settings.

### Updating the iBMC Firmware

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

- 1 Browse to, or Enter the path on your system where the firmware image file resides.

Example:

```
C:\Updates\v1.0\_name>
```

The default firmware image name is `firmimg.ast2050.dcs`.

- 2 Select the **Update Type** as **Normal** or **Forced** (The default value is **Normal**).

**Normal:** An update operation will occur only when the BMC validates the target board, target product and version number.

**Forced:** Forced update makes the BMC update the image without validating target board, target product and version number.

- 3 Click **Update**.

The update might take several minutes. When the update is completed, a dialog box appears.

- 4 Click **OK** to close the session and automatically log out.
- 5 After the iBMC resets, click **Log In** to log in to the iBMC again.




## Sensors

The **Sensor** menu provides information about system hardware such as the fan speed, internal temperature, and voltage.

## Fan Probes Information

Table 1-7 shows the icons for the fan probes.

**Table 1-7. Fan Probe Status Icons**

Icon	Description
	OK
	Warning alert issued
	Failure alert issued

View the status and readings of the fan probes. There might be one or more fans, numbered [1 through  $n$ ], measured in revolutions per minute (RPM).



**Table 1-8. Fan Probe Status Icons**

Item	Description
Status	See Table 1-7.
Probe Name	Name of the sensor.
Reading	The number of revolutions per minute (RPM).
Warning Threshold	Minimum and maximum threshold, measured in RPM, at which a warning alert is issued.
Failure Threshold	Minimum and maximum threshold, measured in RPM, at which a failure alert is issued.


## Temperature Probes

Table 1-9 shows the icons for the temperature probes.

**Table 1-9. Temperature Probe Status Icons**

Icon	Description
	OK
	Warning alert issued

**Table 1-9. Temperature Probe Status Icons**

Icon	Description
	Failure alert issued

View the status and readings of the temperature probes. The temperature probes might be implementation dependent.




**Table 1-10. Probe List Table**

Item	Description
Status	See Table 1-9.
Probe Name	Name of the sensor.
Reading	The current temperature, measured in degrees centigrade.
Warning Threshold	Minimum and maximum threshold, measured in degrees centigrade, at which a warning alert is issued.
Failure Threshold	Minimum and maximum threshold, measured in degrees centigrade, at which a failure alert is issued.

## Voltage Probes

Table 1-11 shows the icons for the voltage probes.

**Table 1-11. Voltage Probe Status Icons**

Icon	Description
	OK
	Warning alert issued
	Failure alert issued

View the status and readings of the voltage probes. The configuration of the probes might be implementation dependent. There might be one or more processors, numbered [1 through n], measured in volts.

The following are typical voltage probes. Your system might have these and/or others present.

- CPU [n] VCORE
- System Board 0.9V PG

- System Board 1.5V ESB2 PG
- System Board 1.5V PG
- System Board 1.8V PG
- System Board 3.3V PG
- System Board 5V PG
- System Board Backplane PG
- System Board CPU VTT
- System Board Linear PG


**Table 1-12. Voltage Probe List**


Item	Description
Status	See Table 1-11.
Probe Name	Name of the sensor.
Reading	Good indicates that the current voltage is between the minimum and maximum warning thresholds.


## Console

### Console Redirection and Virtual Media

The **Console Redirection** page enables you to use the display, mouse, and keyboard on the local management station to control the corresponding devices on a remote managed system. You can run a maximum of four simultaneous console redirection sessions.

 **NOTE:** Before you can use the console redirection feature, your browser must have the Java Video Viewer installed. This feature needs Java 1.5.15 or later installed on the host system. If the iBMC detects that the Java Video Viewer is not installed, you are prompted to install it.

 **NOTE:** Sometimes the Console is referred to as the Session Viewer.

 **NOTE:** The recommended display resolution on the management station (or client) is at least 1280 x 1024 pixels at 60 Hz with 32 bit color. You cannot view the console in full screen mode if your monitor resolution is less than this minimum.

**Table 1-13. Console Redirection Descriptions**

Item	Description
Console Redirection Enabled	Yes indicates that Console Redirection is enabled.
Video Encryption Enabled	Yes indicates that Video Encryption is enabled.
Max Sessions	Displays the maximum number of console redirection sessions that are possible.

The **Virtual Media** page allows you to virtualize a diskette image or drive. Virtual media enables a floppy image, floppy drive or CD/DVD drive on your system to be available on the managed system's console as if the floppy image or drive were present on the local system.

The **Virtual Media** page displays the floppy image, floppy drive, CD/DVD drive, or ISO image on the management console that is currently virtualized.

**Table 1-14. Virtual Media Descriptions**

<b>Item</b>	<b>Description</b>
Max Sessions	Specify a number of sessions to support simultaneously.
Active Sessions	The current number of console redirection sessions.
Virtual Media Encryption	Enable and disable Video Encryption.

## **iBMC KVM**

The iBMC KVM client's main menu consist of five menu options which are used to provide access to functions available through the viewer: **File**, **View**, **Macros**, **Tools**, and **Help**. To launch a KVM session, click **Launch KVM**.

### **File**

To capture an image, click **Capture to File** from the **File** menu. A dialog box is displayed that enables you to save the file to a specified location.

### **Exit**

To close the Java Video Viewer, select **Exit** from the **File** menu.

### **View**

The **View** menu contains the following options: **Refresh**, **Full Screen Mode/Windowed Mode**, and **Fit**.

### **Refresh**

To refresh the view of the Java Video Viewer, click **Refresh** from the **View** menu. This results in the Java Video Viewer requesting a reference video frame from the server.

### **Full Screen/Windowed**

To enable full screen mode for the Java Video Viewer, select **Full Screen** from the **View** menu. To exit full screen mode, select **Windowed** from the **View** menu.

## Fit

To resize the Java Video Viewer window to the minimum size that is need to display the server's video, select the **Fit** menu item from the **View** menu. This menu item is not available in full screen mode.

## Macros

The **Macros** menu, consists of a drop-down list of the various keyboard shortcuts available on the remote system. When you select the macro or the hotkey specified for the macro, the macro is executed on the remote system. The Java Video Viewer creates the following macros the first time the session is launched:

- <Ctrl><Alt><Delete>
- <Alt><Tab>
- <Alt><Esc>
- <Ctrl><Esc>
- <Alt><Space>
- <Alt><Enter>
- <Alt><Hyphen>
- <Alt><F4>
- <PrtScn>
- <Alt><PrtScn>
- <F1>
- <Pause>
- <Tab>
- <Cntrl-Enter>
- <SysReq>
- <Alt-SysReq>
- <Alt-L Shift-RShift-Esc>
- <Ctrl><Alt><Backspace>
- <Alt-Fn> (Where F represents the keys F1 to F12)
- <Ctrl-Alt-Fn> (Where F represents the keys F1 to F12)

## Tools

### Session Options

The Sessions Options window provides additional session viewer control adjustments for the following: Video Quality, General, and Mouse.

### Video Quality

#### **Compression Mode**

You can select two levels of video quality.

- YUV420 – lower quality and higher compression
- YUV444 – higher quality and lower compression

#### **Network Statistics**

This menu option will launch a dialog which displays performance statistics for the viewer. The values displayed are: **Frame Rate** and **Bandwidth**.

### General

You can control the following features from the **General** tab.

#### **Keyboard Pass Through Mode**

Select **Pass all keystrokes to target** to pass the management station's keystrokes to the remote system.



**NOTE:** Some keystrokes are intercepted by the management station operating system and will not be passed on.

### Mouse

#### **Mouse Acceleration**


Perform the steps below to optimize mouse performance depending upon your operating system:

- 1 In the Sessions Options window, click the **Mouse** tab.
- 2 Depending on the operating system, select the **Mouse Acceleration** option.
- 3 Click **Apply**.
- 4 Click **OK** to close the **Session Options** window.

## iBMC Virtual Media

The **Virtual Media** page displays the floppy image, floppy drive, CD/DVD drive, or ISO image on the management console that is currently virtualized.

 **NOTE:** You must have **Access Virtual Media** permission to virtualize or disconnect a drive.

 **NOTE:** You can enable virtual media for one floppy/drive image and one CD/DVD drive/image. Only one drive/image for each media type can be virtualized at a time. A USB key/flash drive is treated as a floppy drive.

## Virtualizing Devices


The **Virtual Media** client displays the list of devices available for mapping in the main window. To virtualize a device click in the checkbox in the **Mapped** column of the table. The device maps to the server at this point. To unmap, deactivate the checkbox. With writable devices you also have the option of mapping them as read only. To do this, select the **Read Only** checkbox for the device before it is mapped. ISO and floppy images can be added by clicking **Add Image...** and then selecting the image file with the dialog that is displayed. The image is added to the list of available devices. The **Details** button displays a panel that list the virtual devices and also displays read/write activity for each device.

## Mapping a Virtual Media Drive


You can select a drive to become a virtual media drive by clicking on the **Mapped** check box for a particular drive. Mapped drives can be limited to read only capability by checking the **Read Only** checkbox for that mapped drive before the drive is mapped. After the drive is mapped, the **Read Only** checkbox is not available. CD/DVD Drives and ISO images are always read only which cannot be changed.

## Unmapping a Virtual Media Drive


To unmap a virtual media drive, click on the **Mapped** check box for a particular drive. Because some interaction might be going on with the drive, you must confirm the action before the drive is unmapped.

 **NOTE:** The assigned virtual drive letter (Microsoft® Windows®) or device special file (Red Hat® Enterprise Linux®) may not be the same as the drive letter on this system (management console).

## Console Redirect Configuration

 **NOTE:** Before you can use the console redirection feature, your browser must have the Java Video Viewer installed. This feature needs Java 1.5.15 or later installed on the host system. If the iBMC detects that the Java Video Viewer is not installed, you are prompted to install it.

The **Console Redirection** page allows you to use the display, mouse, and keyboard on the local management station to control the corresponding devices on a remotely managed system. You can run a maximum of four simultaneous console redirection sessions.

 **NOTE:** The recommended display resolution on the managed system is at least 1280 x 1024 pixels at 60 Hz with 32 bit color. You may not view the console in full screen mode if your monitor resolution is less than the minimum.



View the following information provided on the **Console Redirection** page to ensure that a console redirection session is available.

**Table 1-15. Console Redirection Configuration**

<b>Item</b>	<b>Description</b>
Enabled	Checked indicates enabled; unchecked indicates disabled.
Max Sessions	View the maximum number of console redirection sessions that are possible.
Active Sessions	View the number of active console sessions.
Video Encryption Enabled	Checked indicates enabled; unchecked indicates disabled.

### **Email Alert Destination**

When the Dell Remote Management Controller senses a platform event, such as an environmental warning or a component failure, an alert message can be sent to one or more email addresses. The **Email Alert Destination** window enables you to enter email addresses, IP addresses, and to activate the alerts for each address.

**Table 1-16. Destination Email Address**

<b>Item</b>	<b>Description</b>
Email Alert Number	You can set up to four email destinations to receive alerts.
State	<b>Enabled</b> indicates that the email address settings are active. <b>Disabled</b> indicates that the email address settings are not active.
Destination Email Address	The email address that receives the alert messages.

To set up a destination to receive alerts, perform the following steps:

- 1** Click an **Email Alert Number**.  
The **Set Email Alert** window displays.
- 2** Enable/Disable the alert email address, enter the destination email address, and enter a brief description for the **Subject** of the email.
- 3** Click **Apply Changes**.
- 4** Click **Go Back To the Email Alert Destination Page**.
- 5** Enter the **SMTP (e-mail) Server IP Address** settings.
- 6** Click **Apply Changes**.

## Network Configuration


 **NOTE:** To change any of the settings on the **Network Configuration** page, you must have permission to configure iBMC.

**Table 1-17. Common Settings**

Settings	Description
Register iBMC on DNS	When checked, register this address with the Domain Name Server (DNS).
DNS iBMC Name	Name to use when registering with DNS.
Use DHCP for DNS Domain Name	Enable / disable acquisition of DNS from DHCP.
DNS Domain Name	Domain name to be used if it was not acquired from DHCP.

**Table 1-18. IPv4 Settings**

Settings	Description
IPv4 Enabled	If NIC enabled, this selects IPv4 protocol support, and the other fields in this section to be enabled.
DHCP Enabled	Enable / disable using DHCP for this function.
IP Address	Use this IP address.
Gateway	Setup the gateway of the iBMC.
Subnet Mask	Subnet mask
Use DHCP to obtain DNS server addresses	Enable / disable using DHCP for this function.
Preferred DNS Server	Specify the IP address of the preferred DNS server.
Alternate DNS Server	Specify the alternative IP address to be used when the preferred DNS server is not available.

 **NOTE:** The Dell Remote Management Controller is fully IPMI 2.0 compliant. You can configure the Dell Remote Management Controller IPMI using your browser or by using an open source utility, such as ipmitool.

**Table 1-19. IPMI Settings**

<b>Settings</b>	<b>Description</b>
Enable IPMI Over LAN	Enable IPMI LAN Channel
Channel Privilege Level Limit	The maximum privilege level that can be accepted on the LAN Channel.
Encryption Key	Format: 0 to 20 bytes (even number of hexadecimal characters, no blank spaces are allowed).

**Table 1-20. VLAN Settings**

<b>Settings</b>	<b>Description</b>
Enable VLAN ID	If enabled, only matched VLAN ID traffic is accepted.
VLAN ID	VLAN ID field of 802.1g fields. Enter a valid value for Virtual LAN ID (must be a number from 1 to 4094).
Priority	Priority field of 802.1g fields. Enter a number from 0 to 7 to set the Priority of the Virtual LAN ID.

## **Platform Events**

All alert settings can be enabled or disabled. To change the setting for all alerts, perform the following steps:

- 1** Enter all event actions and alerts.
- 2** To activate all alert settings that have been defined in the **Set Platform Events** window, mark the **Enable Platform Event Filter** alerts checkbox.
- 3** To deactivate all alert settings that have been defined in the **Set Platform Events** window, clear the **Enable Platform Event Filter** alerts checkbox.
- 4** Click **Apply Changes**.

The **Platform Event Filters List** displays the actions that execute when an event occurs. An event occurs when the status of a system element is outside a set limit. The event list also indicates if an alert is enabled or disabled for each event.

Table 1-21 provides the Actions and Alerts that can occur when an event is out of bounds. Only one action can be set for each event.

**Table 1-21. Platform Event Filters List**

Action	Description
Reboot System	When an event occurs, the system restarts (a warm boot).
Power Cycle System	When an event occurs, the system shuts down, powers off, and restarts (a cold boot).
Power Off System	When an event occurs, the system shuts down and powers off.
Generate Alert	An alert or platform event trap is sent when the event occurs. The email server and address to which the alert is sent, can be set in the <b>Configuration→ Email Alert Settings</b> window. Event trap destinations can be set in the <b>Configuration→ Trap Settings</b> window.

To set up the actions and alerts, perform the following steps:

- 1 Click the **Event** name in the **Platform Event Filters List**. The **Set Platform Events** window for that event opens.
- 2 Set the **Shutdown Action** and **Alert Setting** for the event.
- 3 Repeat steps 1 and 2 for each event.
- 4 To enable the settings, see the platform event filters configuration procedure.

### Serial Over LAN Configuration

To configure the **Serial Over LAN Configuration Advanced Settings**, select values for each attribute in Table 1-22, and click **Apply Changes**.

To enable and configure the **Serial Over LAN Configuration**, click **Return to Serial Over LAN Configuration Page** at the bottom of the window.

**Table 1-22. Serial Over LAN configuration**


Item	Description
Enable Serial Over LAN	Checked indicates enabled; Unchecked indicates disabled
Baud rate	Select a IPMI data speed of 9600 bps, 19.2 kbps, 38.4 kbps, 57.6 kbps, or 115.2 kbps
Privilege level	Select the IPMI Serial Over LAN minimum user privilege: <b>Administrator</b> , <b>Operator</b> , or <b>User</b> .

## Services

The Services page enables you to view and change the interface. After entering the attribute's values, click **Apply Changes** at the bottom of the page.

## Web Server

The web server support four simultaneous sessions.

 **NOTE:** To modify these settings, you must have permission to configure iBMC.

**Table 1-23. Web Server Settings**

Settings	Description
Max Sessions	Maximum number of simultaneous sessions allowed for this system.
Active Sessions	Number of current sessions on the system, less than or equal to the Max Sessions.
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 do not affect the current session. When you change the timeout setting, you must log out and log in again to make the new setting effective. Timeout range is 60 to 3600 seconds.

## SSL Main Menu

Use this page to generate a certificate signing request (CSR), upload a server certificate to the iBMC firmware, or view an existing server certificate.

 **NOTE:** You must have **Configure iBMC** permission to generate or upload a server certificate.

Use the **Certificate Management** page to generate a certificate signing request (CSR) to send to a certificate authority (CA). The CSR information is stored on the iBMC firmware.

A CSR is a digital request to a CA for a secure server certificate. 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. To ensure the security for your Dell Remote Management Controller, it is strongly recommended that you generate a CSR, submit the CSR to a CA, and upload the certificate returned from the CA.

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

**Table 1-24. Certification Management Page Options**

Settings	Description
Generate a New Certificate Signing Request (CSR)	Select the option and click Next to open the <b>CSR</b> page that enables you to generate a CSR to send to a CA to request a secure Web certificate.  <b>NOTE:</b> 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 <b>Certificate Upload</b> page where you can upload an existing certificate that your company has title to, and uses to control access to the iBMC.  <b>NOTE:</b> Only X509, Base 64 encoded certificates are accepted by the iBMC. DER encoded certificates are not. Uploading a new certificate replaces the default certificate you received with your Dell Remote Management Controller.
View Server Certificate	Select the option and click Next to open the <b>View Server Certificate</b> page where you can view the current server certificate.

To generate a CSR, enter a value in the field for each CSR attribute and click **Generate**.



**NOTE:** Each new CSR overwrites any previous CSR on the firmware. For a certificate authority to accept your CSR, the CSR in the firmware must match the certificate returned from the CA.

**Table 1-25. Certification Attributes**

Attributes	Description
Common Name	The exact name being certified (usually the Web server's domain name, for example, <a href="http://www.xyzcompany.com/">http://www.xyzcompany.com/</a> ). Only alphanumeric characters, hyphens, underscores, and periods are valid. Spaces are not valid.
Organization Name	The name associated with this organization. Only alphanumeric characters, hyphens, underscores, periods, and spaces are valid.
Organization Unit	The name associated with an organizational unit, such as a department. Only alphanumeric characters, hyphens, underscores, periods, and spaces are valid.
Locality	The city or other location of the entity being certified. Only alphanumeric characters and spaces are valid. Do not separate words using an underscore or some other character.
State Name	The state or province where the entity that is applying for a certification is located. Only alphanumeric characters and spaces are valid. Do not use abbreviations.

**Table 1-25. Certification Attributes**

Attributes	Description
Country Code	The name of the country where the entity applying for certification is located.
Email (optional)	Your company's email address. You can enter any email address you want to have associated with the CSR.

**Table 1-26. Certification Attribute Options**

Options	Description
Print	Prints the contents of the window's data area using your system's Print manager.
Go Back to the SSL Main Menu	Returns to the <b>SSL Main Menu</b> page.
Generate	Generates a CSR and then prompts you to either open it or save it in the directory you specify.

The **Certificate Upload** page enables you to upload a server certificate to the iBMC.

To upload a server certificate:

- 1 Click **Browse**, select the file.
- 2 Click **Apply**.
- 3 Click **Go Back** to the **SSL Main Menu**.

## Platform Event Alerts

The **Set Platform Events** window enables you to specify a **Shutdown Action** to occur when an event reaches a critical level. There can be different severities of an event. For instance, you could specify no shutdown action and issue an email alert if a temperature probe warning occurs, or you could specify a **Power Off System** and issue an email alert if a temperature probe failure occurs.

The current event settings can be viewed on the **Platform Events** window by clicking **System**→**Alert Management**→**Platform Event Filters List**. To set a shutdown action or generate alerts, click the event in the **Platform Events** window.



**NOTE:** Alert Management on platform event **Automatic System Recovery** does not support any of the options under **Shutdown Action**.

**Table 1-27. Platform Event - Shutdown Actions**

Shutdown Actions	Description
None	No action for this event.
Reboot System	When an event occurs, the system restarts (a warm boot).
Power Cycle System	When an event occurs, the system shuts down, powers off, and restarts (a cold boot).
Power Off System	When an event occurs, the system shuts down and powers off.

Use a shutdown action to protect your system if a condition exists on the server beyond a specified threshold. To specify a shutdown action for the current event, perform the following steps:

- 1 Select a shutdown action that occurs when the current event occurs.
- 2 Enable or disable alerts using the **Generate Alert** option. To set the mail server IP address and Email address for alerts, click the **Email Alert Settings** option in the **Alerts** page.
- 3 Click **Apply Changes**.
- 4 Click **Go Back To Platform Events Page** to continue setting up event alerts.

The alert setting for the current event can be enabled or disabled. The alert can be an email, an SNMP trap, or both. To change the setting for this alert, do the following:

- 1 Select the **Shutdown Action** for this event.
- 2 Set the alert for the event.
  - a To issue an alert for this event, select the **Enable** checkbox in the **Generate Alert** area.
  - b To turn off the alert for this event, clear the **Enable** checkbox in the **Generate Alert** area.
- 3 Click **Apply Changes**.

## Users

The **Users** page enables you to view information and configure existing iBMC users. To change the settings for a user, click their user ID number, in the **Users** list.


 **NOTE:** You must have **Configure Users** permission to configure a iBMC user; otherwise these options are not available

Table 1-28 displays the **Users** list for existing iBMC users.



**Table 1-28. iBMC User Information**

Information	Description
User ID	Displays a sequential user ID number.
State	Displays the login state of the user. <b>Enabled</b> or <b>Disabled</b> (Default).
User Name	Displays the login name of the user.
iBMC Privilege	Displays the group (privilege level) to which the user is assigned ( <b>Administrator</b> , <b>Operator</b> , <b>User</b> , <b>Custom</b> , or <b>None</b> ).
IPMI LAN Privilege	Displays the IPMI LAN privilege level to which the user is assigned ( <b>Administrator</b> , <b>Operator</b> , <b>User</b> , or <b>None</b> ).
Serial Over LAN	<b>Allow/Disallow</b> the user to use IPMI Serial over LAN.

## IPMI 1.5 / 2.0 Command Support List

Table 1-29 shows the IPMI commands.

**Table 1-29. IPMI Device Global Commands**

Commands	NetFn	CMD	O/M	Supported
Get Device ID	App	01h	M	Yes
Cold Reset	App	02h	O	Yes
Warm Reset	App	03h	O	No
Get Self Test Results	App	04h	M	Yes
Manufacture Test On	App	05h	O	Yes
Set ACPI Power State	App	06h	O	Yes
Get ACPI Power State	App	07h	O	Yes
Get Device GUID	App	08h	O	Yes
<b>Broadcast Commands:</b>				
Broadcast 'Get Device ID'	App	01h	M	Yes

Table 1-30 shows the BMC commands.

**Table 1-30. BMC Device and Messaging Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
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
Get Channel Authentication Capabilities	App	38h	M	Yes
Get Session Challenge	App	39h	M	Yes
Activate Session Command	App	3Ah	M	Yes
Set Session Privilege Level Command	App	3Bh	M	Yes
Close Session	App	3Ch	M	Yes
Get Session Information	App	3Dh	M	Yes
Get Authentication Code Command	App	3Fh	O	Yes
Set Channel Access Commands	App	40h	M	Yes
Get Channel Access Commands	App	41h	M	Yes
Get Channel Info Command	App	42h	M	Yes
Set User Access Commands	App	43h	M	Yes
Get User Access Commands	App	44h	M	Yes
Set User Name Commands	App	45h	M	Yes
Get User Name Commands	App	46h	M	Yes
Set User Password Commands	App	47h	M	Yes
Active Payload Command	App	48h	M	Yes

**Table 1-30. BMC Device and Messaging Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
Deactivate Payload Command	App	49h	M	Yes
Get Payload Activation Status	App	4Ah	M	Yes
Get Payload Instance Info Command	App	4Bh	M	Yes
Set User Payload Access	App	4Ch	M	Yes
Get User Payload Access	App	4Eh	M	Yes
Get Channel Payload Support	App	4Fh	M	Yes
Get Channel Payload Version	App	50h	M	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 1-31 shows the BMC watchdog timer commands.

**Table 1-31. BMC Watchdog Timer Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
Reset Watchdog Timer	App	22h	M	Yes
Set Watchdog Timer	App	24h	M	Yes
Get Watchdog Timer	App	25h	M	Yes

Table 1-32 shows the chassis commands.

**Table 1-32. Chassis Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
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 Reset Cause	Chassis	07h	M	Yes
Set System Boot Options	Chassis	08h	M	Yes
Get System Boot Options	Chassis	09h	M	Yes
Set Front Panel Button Enable	Chassis	0Ah	M	Yes
Set Power Cycle Interval	Chassis	0Bh	M	Yes
Get POH Counter	Chassis	0Fh	O	No

Table 1-33 shows the event commands.

**Table 1-33. Event Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
Set Event Receiver	S/E	00h	M	M
Get Event Receiver	S/E	01h	M	M
Platform Event	S/E	02h	M	M

Table 1-34 shows the SEL commands.

**Table 1-34. SEL Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
Get SEL Info	Storage	40h	M	Yes
Get SEL Allocation Info	Storage	41h	O	No
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


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

Table 1-35 shows the SDR repository commands.

**Table 1-35. SDR Repository Commands**

<b>Commands</b>	<b>NetFn</b>	<b>CMD</b>	<b>O/M</b>	<b>Supported</b>
Get SDR Repository Info	Storage	20h	M	Yes
Get SDR Repository Allocation Info	Storage	21h	O	No
Reserve SDR Repository	Storage	22h	M	Yes
Get SDR	Storage	23h	M	Yes
Add SDR	Storage	24h	M	No
Partial ADD SDR	Storage	25h	O	Yes
Delete SDR	Storage	26h	O	No
Clear SDR Repository	Storage	27h	M	Yes
Get SDR Repository Time	Storage	28h	O	Yes
Set SDR Repository Time	Storage	29h	O	Yes

**Table 1-35. SDR Repository Commands**

Commands	NetFn	CMD	O/M	Supported
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 1-36 shows the FRU inventory device commands.

**Table 1-36. FRU Inventory Device Commands**

Commands	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 1-37 shows the sensory device commands.

**Table 1-37. Sensory Device Commands**

Commands	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
Re-arm Sensor Events	S/E	2Ah	O	Yes
Get Sensor Event Status	S/E	2Bh	O	Yes
Get Sensor Reading	S/E	2Ch	M	Yes
Set Sensor Type	S/E	2Dh	O	No

**Table 1-37. Sensory Device Commands**

Commands	NetFn	CMD	O/M	Supported
Get Sensor Type	S/E	2Eh	O	No
Set Sensor Reading and Event Status	S/E	2Fh	M	Yes

Table 1-38 shows the LAN commands.

**Table 1-38. LAN Commands**

Commands	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	No
Get IP/UDP/RMCP Statistics	Transport	04h	O	No

Table 1-39 shows the PEF/PET alerting commands.

**Table 1-39. PEF/PET Alerting Commands**

Commands	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	M	Yes
PET Acknowledge	S/E	17h	M	Yes

