

# Dell EMC VEP4600 BMC

## User Guide

### **Abstract**

This guide provides information for using the Dell EMC VEP4600 .

## Notes, cautions, and warnings

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

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

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

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# About this guide

This guide provides information for using the Dell EMC BMC configuration.

**CAUTION:** To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.

**NOTE:** Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.

**NOTE:** This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.



Figure 1. Class 1 laser product tag

**NOTE:** When no cable is connected, visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports. Avoid exposure to laser radiation. Do not stare into open apertures.

## Topics:

- [Information symbols](#)
- [Document revision history](#)

## Information symbols

This book uses the following information symbols:

**NOTE:** The **Note** icon signals important operational information.

**CAUTION:** The **Caution** icon signals information about situations that could result in equipment damage or loss of data.

**NOTE:** The **Warning** icon signals information about hardware handling that could result in injury.

**NOTE:** The **ESD Warning** icon requires that you take electrostatic precautions when handling the device.

## Document revision history

Table 1. Revision history

Revision	Date	Description
A07	2021-10	Updated the <i>SNMP and email</i> section.
A06	2021-01	Password variants for BMC web GUI

**Table 1. Revision history (continued)**

<b>Revision</b>	<b>Date</b>	<b>Description</b>
A05	2019-09	BMC network configuration screen update.
A04	2019-05	BMC web GUI.
A03	2019-02	Firmware requirements, Remote power cycle system.
A02	2019-01	WiFi/LTE firmware updates.
A01	2018-08	Updated the <i>Hardware and software support</i> , <i>BMC access</i> , <i>LAN configuration</i> , <i>LAN destinations</i> , <i>Add and delete users</i> , <i>Reserve SEL command</i> , <i>Default configuration restore</i> , <i>Access system health sensors</i> , and <i>Access FRU data</i> sections. Added the <i>ipmiutil package</i> chapter.
A00	2018-05	Initial release

## New in this release

Features and updates for the baseboard management controller (BMC).

### BMC

Version 2.20

Updates:

1. [BMC user password variants.](#)

# Hardware and software support

For the most current BMC update information, see the *VEP4600 Release Notes*.

For more information about the intelligent platform management interface (IPMI), see the IPMI resources that are hosted by Intel at <https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html>.

## Required drivers

In Linux, the baseboard management controller (BMC) uses the `ipmitool` open-source tool during testing. To configure or get data from the BMC, `ipmitool` sends `ipmi` commands to the BMC. You must have the IPMI driver that is installed to use `ipmitool`.

To access `ipmitools`, go to <https://sourceforge.net>, search for `ipmitools`, and then select the **See Project** button.

**NOTE:** Although there are newer versions available, the `ipmitool` and driver versions that are used during testing the BMC are:

- Linux version: 4.9.30
- `ipmitool` version: 1.8.18
- `ipmi` driver that the `ipmitool` uses is built with kernel 4.9.30.

## BMC access

Access BMC through the network interface from a remote machine. Use `ipmitool` for host and remote access.

- LAN interface—`ipmitool` is the standard tool to access BMC over the network. A dummy static IP address is preprogrammed in the BMC. You can change this dummy static IP address of the network interface using `ipmitool` from the microprocessor console:
  - `# ipmitool lan set 1 ipaddr <x.x.x.x>`



# BMC web GUI

GUI interface for BMC functionality.

The intuitive BMC web browser base GUI permits users to access BMC functionality with the following menus:

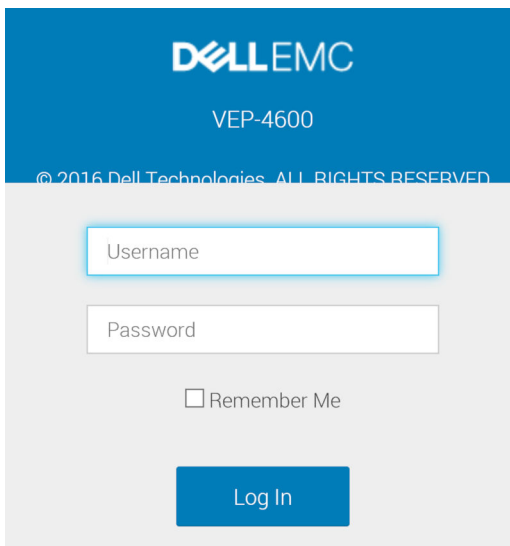
- Sensor
- FRU Information
- Logs & Reports
- Settings
- Power Control
- Maintenance
- Sign Out

## Topics:

- [Login](#)
- [Dashboard](#)
- [FRU information](#)
- [Logs & Reports](#)
- [Settings](#)
- [Power control](#)
- [Maintenance](#)

## Login

There are two types of logins for the BMC web user interface.



1. admin
2. sysadmin

**i** **NOTE:** admin and sysadmin password variants depend on the unit manufacturing date.

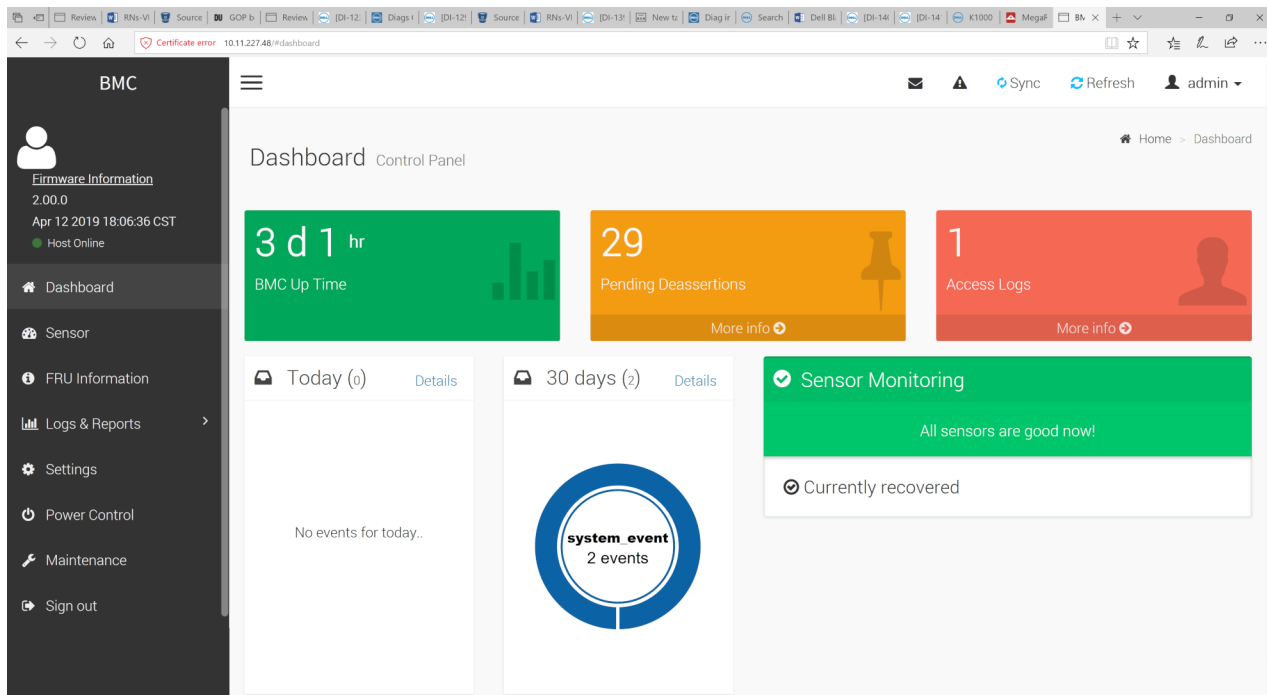
**Table 2. BMC user password variants**

BMC password variants.
<p>admin user password variants:                      Username:                      admin                      Password:                      admin                      (lowercase) or                      &lt;servicetag&gt;!</p> <p><b>NOTE:</b> The password is case sensitive. The password <b>must match servicetag exactly.</b></p> <p><b>NOTE:</b> For example if the service tag is: GWGRG02 then the password is GWGRG02!</p>
<p>sysadmin user password variants:                      Username:                      sysadmin                      Password:                      superuser                      (lowercase) or                      &lt;servicetag&gt;!</p>
<p><b>NOTE:</b> Customer updated firmware maintains prior password.</p>

## Dashboard

### BMC dashboard control panel

Top level monitoring.



BMC dashboard control panel

# FRU information

## FRU (Field Replacement Units) sections

The FRU panel contains the following sections:

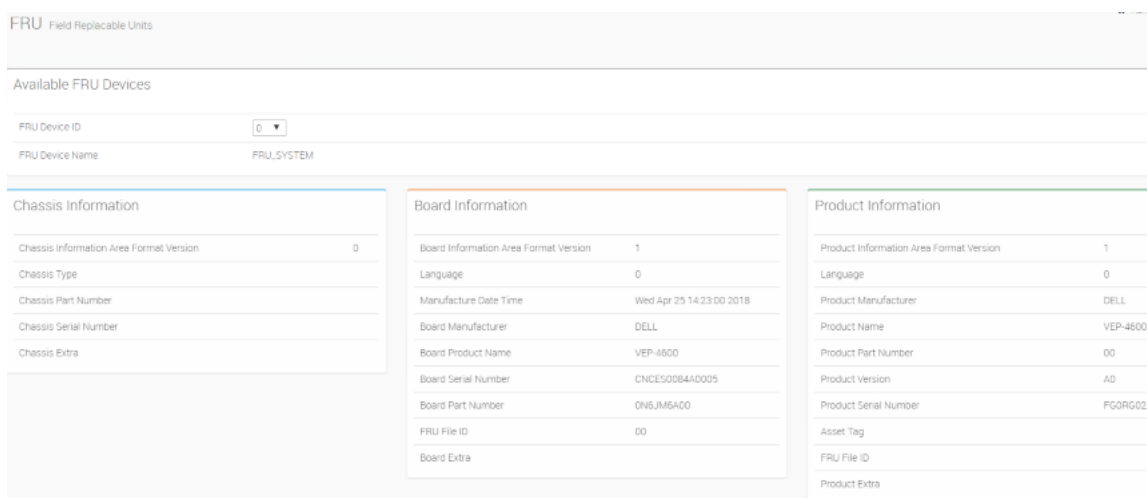
- Available FRU devices
- Chassis information
- Board information
- Product information

### FRU Device ID

Select a FRU Device ID from the drop-down lists to view the details of the selected device.

### FRU Device Name

The device name of the selected FRU device will be displayed.



FRU screen

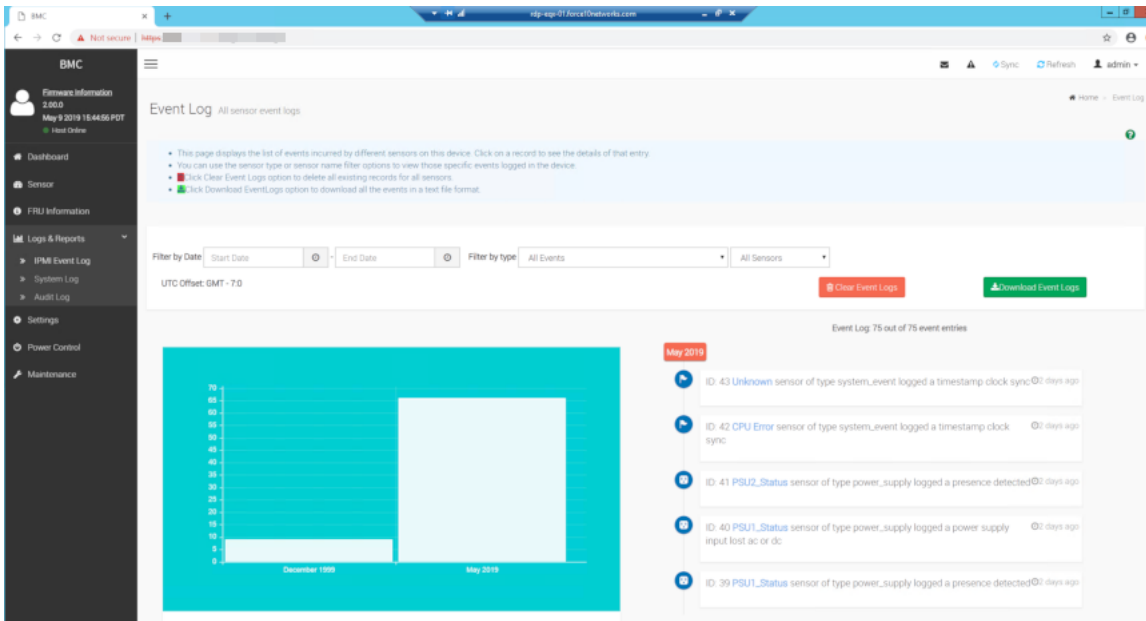
## Logs & Reports

Contains IPMI event log, System log, and Audit log screens.

### IPMI Event Log

#### IPMI Event Log sections:

- This page displays the list of events incurred by different sensors on this device. Click on a record to see the details of that entry.
- You can use the sensor type or sensor name filter options to view those specific events logged in the device.
- Click `Clear Event Logs` option to delete all existing records for all sensors.
- Click `Download EventLogs` option to download all the events in a text file format.

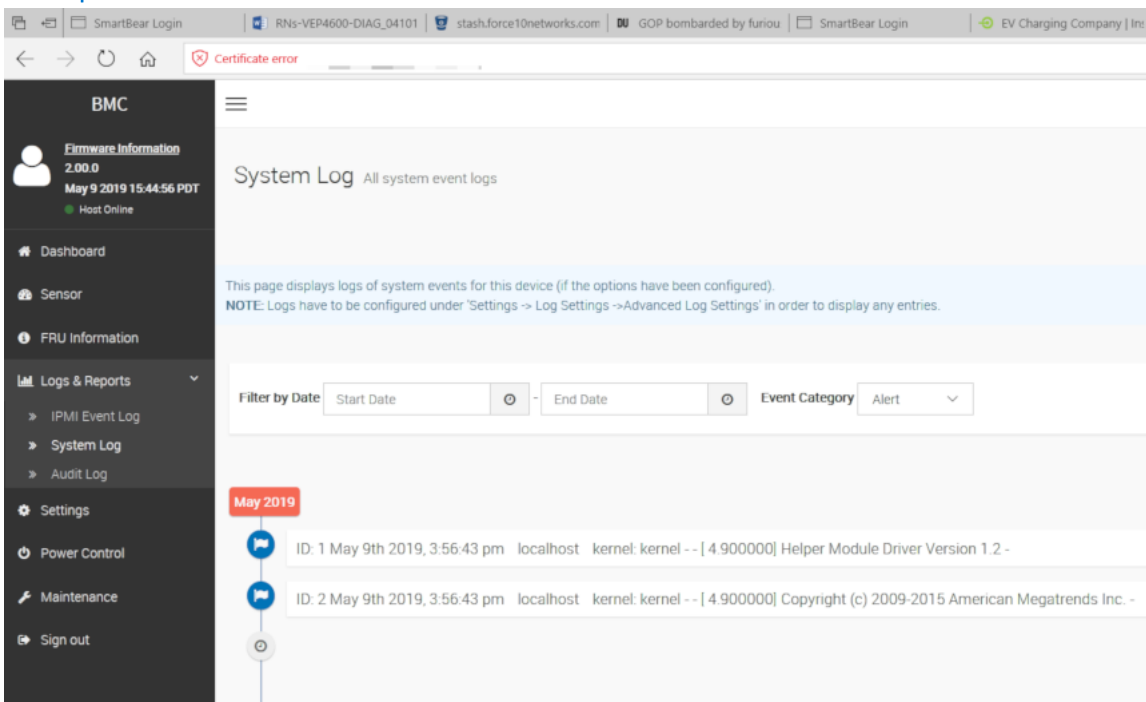


IPMI Event Log screen

## System Log

System log sections:

- This page displays logs of system events for this device (if the options have been configured).  
i **NOTE:** Logs have to be configured under Settings -> Log Settings ->Advanced Log Settings in order to display any entries.

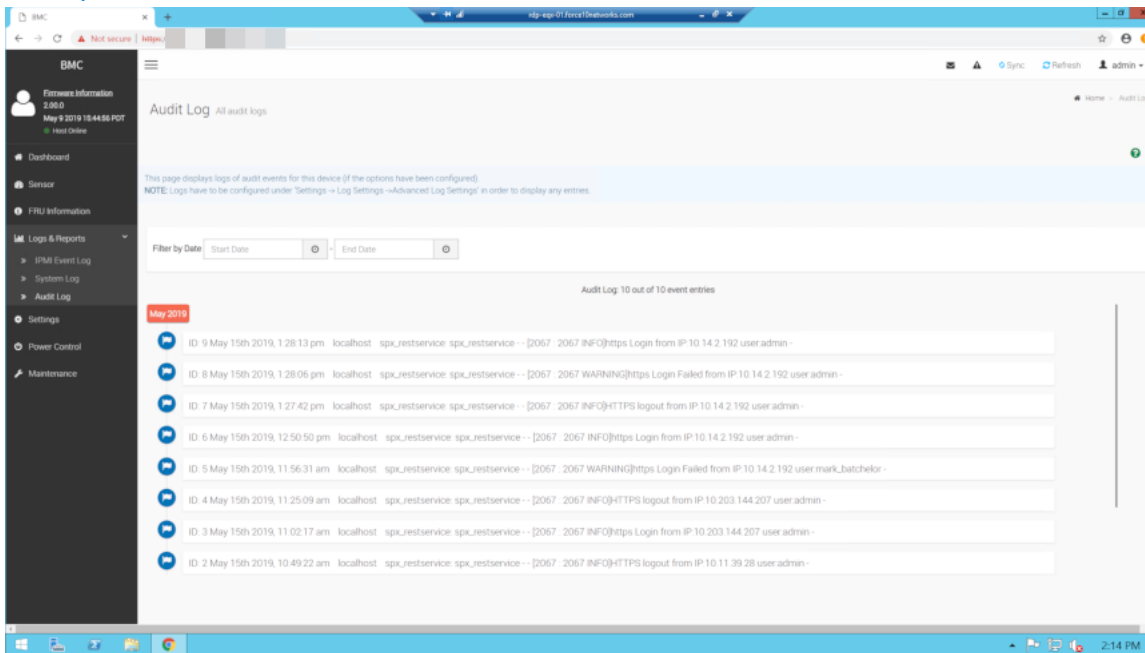


System log screen

# Audit Log

## Audit log sections:

- This page displays logs of system events for this device (if the options have been configured).  
**NOTE:** Logs have to be configured under Settings -> Log Settings ->Advanced Log Settings in order to display any entries.

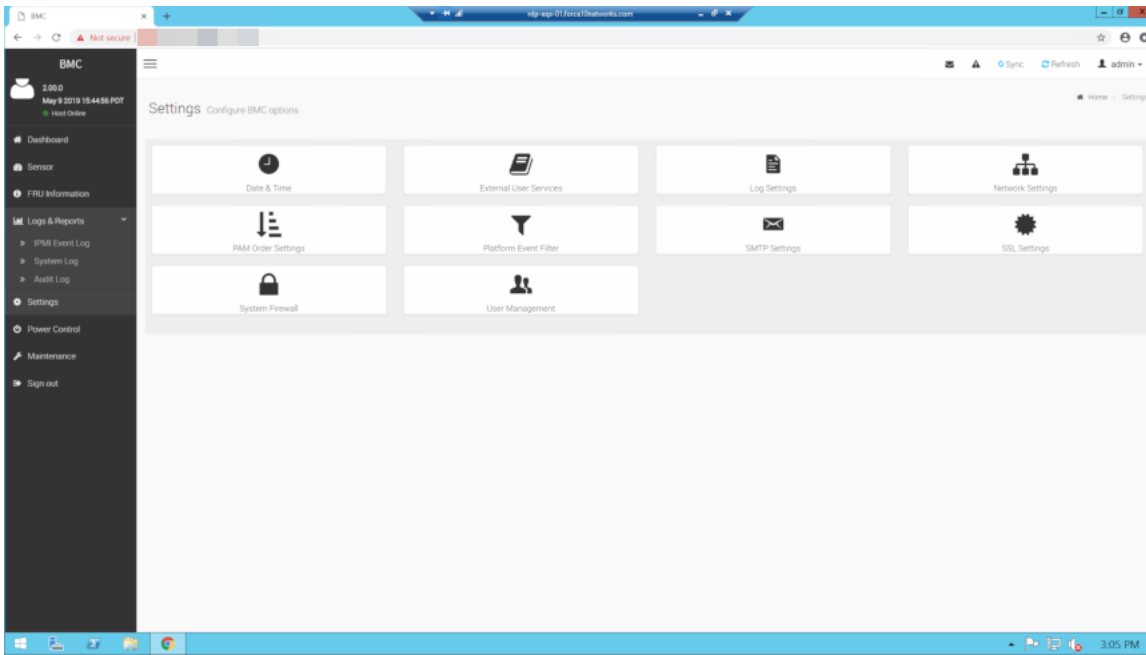


Audit log screen

# Settings

The Settings screen include the following sections:

- Date & Time
- External User Services
- Log settings
- Network settings
- PAM order settings
- Platform event filter
- SMTP settings
- SSL settings
- System firewall
- User mnagement



Settings screen

## Date & time

Date & time sections:

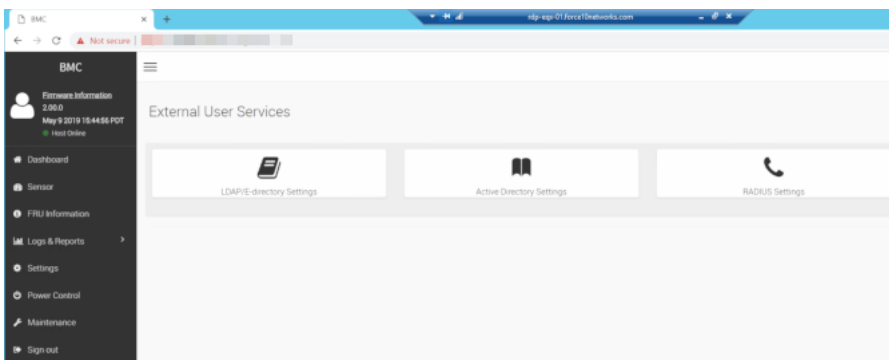
- i **NOTE:** If the timezone is selected from the group of manual offset(GMT/ETC timezones), the map selection will be disabled. The TimeZone settings will be reflected only after saving the settings.

## External user services

External user services sections:

- LDAP/E-directory settings
- Active directory settings
- RADIUS settings

Setup each External user service using the options supplied.



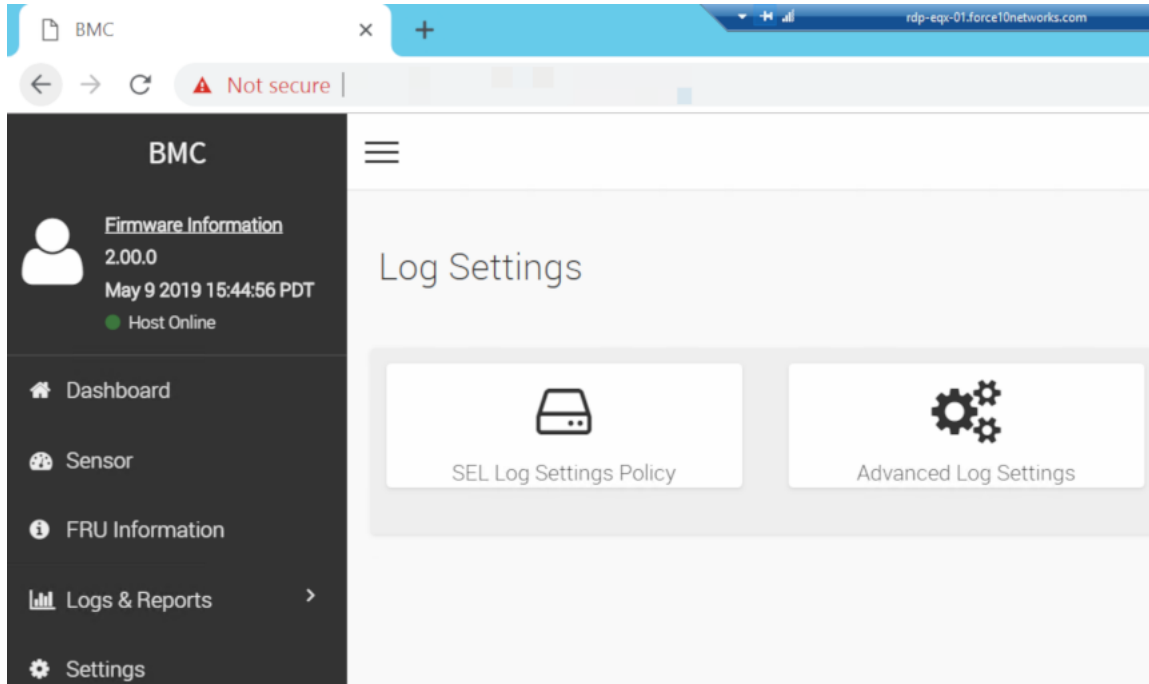
External user services screen

# Log settings

## Log settings sections:

- SEL Log settings policy
- Advanced log settings

Setup each Log settings section using the options supplied.

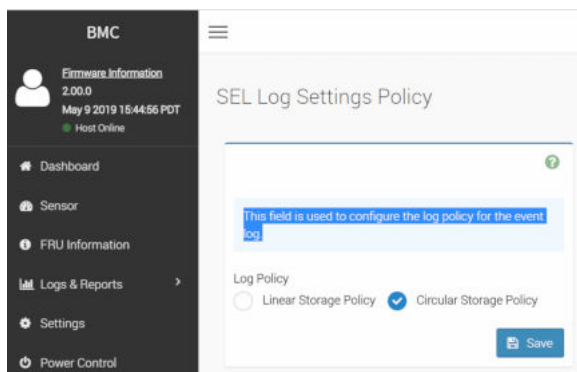


Log settings screen

# SEL Log settings

## SEL settings:

This field is used to configure the log policy for the event log.



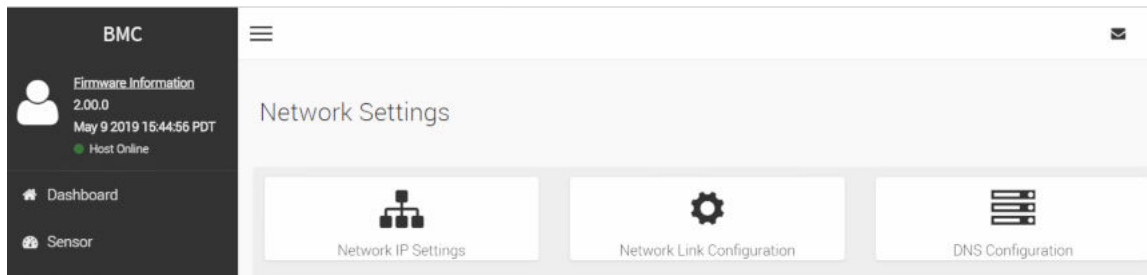
SEL log settings screen

# Network settings

## Network sections:

- Network IP settings
- Network link configuration
- DNS configuration

Setup each Log settings section using the options supplied.



Network settings screen

## Network IP settings

### Enable LAN

Check this option to enable LAN support for the selected interface.

### LAN interface

Select the LAN interface to be configured.

### MAC address

This field displays the MAC address of the selected interface (read only).

### Enable IPv4

Check this option to enable IPv4 support for the selected interface.

### Enable IPv4 DHCP

Check this option to enable IPv4 DHCP support to dynamically configure IPv4 address using Dynamic Host Configuration Protocol (DHCP).

### IPv4 Address

If DHCP is disabled, specify a static Subnet Mask to be configured for the selected interface.

- IP Address consists of four sets of numbers separated by dots as in 'xxx.xxx.xxx.xxx'.
- Each set ranges from 0 to 255.
- First Number must not be 0.

### IPv4 Subnet

If DHCP is disabled, specify a static Default Gateway to be configured for the selected interface.

- IP Address consists of four sets of numbers separated by dots as in 'xxx.xxx.xxx.xxx'.
- Each set ranges from 0 to 255.
- First Number must not be 0.

### IPv4 Gateway

If DHCP is disabled, specify a static Default Gateway to be configured for the selected interface.

- IP Address consists of four sets of numbers separated by dots as in 'xxx.xxx.xxx.xxx'.
- Each set ranges from 0 to 255.
- First Number must not be 0.

### Enable IPv6



Check this option to enable IPv6 support for the selected interface.

#### **Enable IPv6 DHCP**

Check this option to enable IPv6 DHCP to dynamically configure IPv6 address using Dynamic Host Configuration v6 Protocol (DHCPv6).

#### **IPv6 Index**

Choose the IPv6 Index.

#### **IPv6 Address**

Specify a static IPv6 address to be configured for the selected interface.

#### **Subnet Prefix Length**

Specify a static IPv6 address to be configured for the selected interface.

- Value ranges from 0 to 128.

#### **Enable VLAN**

Check this option to enable VLAN support for the selected interface.

#### **VLAN ID**

Specify the Identification for VLAN configuration.


- Value ranges from 1 to 4094.

 **NOTE:** VLAN ID cannot be changed without resetting the VLAN configuration. VLAN ID 0, 4095 are reserved VLAN ID's.

#### **VLAN Priority**

Specify the priority for VLAN configuration.

- Value ranges from 0 to 7.

 **NOTE:** 7 is the highest priority for VLAN.

Network IP Settings

Enable LAN

LAN Interface  
eth0

MAC Address  
54:BF:64:AA:27:49

Enable IPv4

Enable IPv4 DHCP

IPv4 Address  
10.11.227.48

IPv4 Subnet  
255.255.252.0

IPv4 Gateway  
10.11.227.254

Enable IPv6

Enable IPv6 DHCP

IPv6 Index  
0

IPv6 Address  
-

Subnet Prefix Length  
0

Enable VLAN

VLAN ID  
0

VLAN Priority  
0

Save

Network IP settings screen

Network IP settings screen

## PAM order settings

- PAM authentication order

This page is used to configure the PAM order for user authentication into the BMC. It shows the list of available PAM modules supported in the BMC. Click and Drag the required PAM module to change its order.

# PAM Order



This page is used to configure the PAM order for user authentication into the BMC. It shows the list of available PAM modules supported in the BMC. Click and Drag the required PAM module to change its order.

## PAM Authentication Order

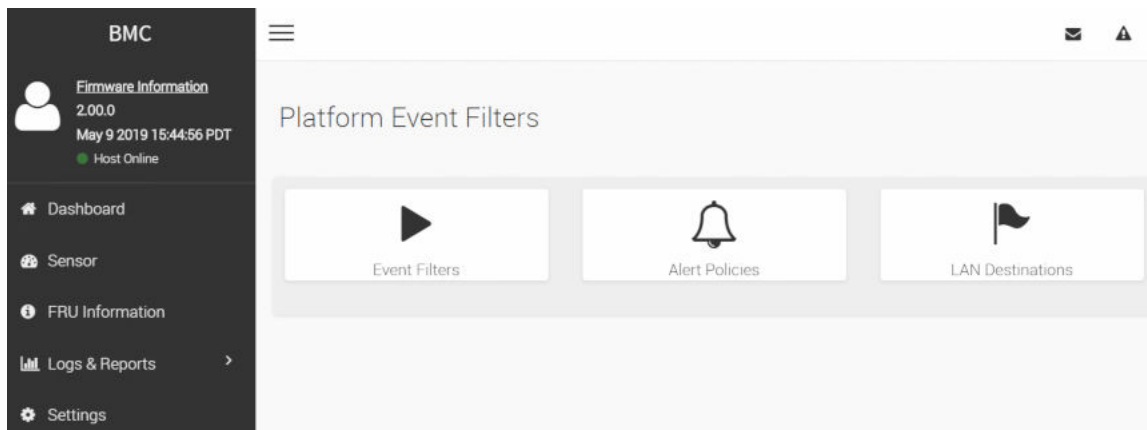
IPMI
LDAP
ACTIVE DIRECTORY
RADIUS

Save

PAM authentication order screen

## Platform event filters

- Event filters
- Alert policies
- LAN destinations



Setup each Platform event filters section using the options supplied.

Platform event filters screen

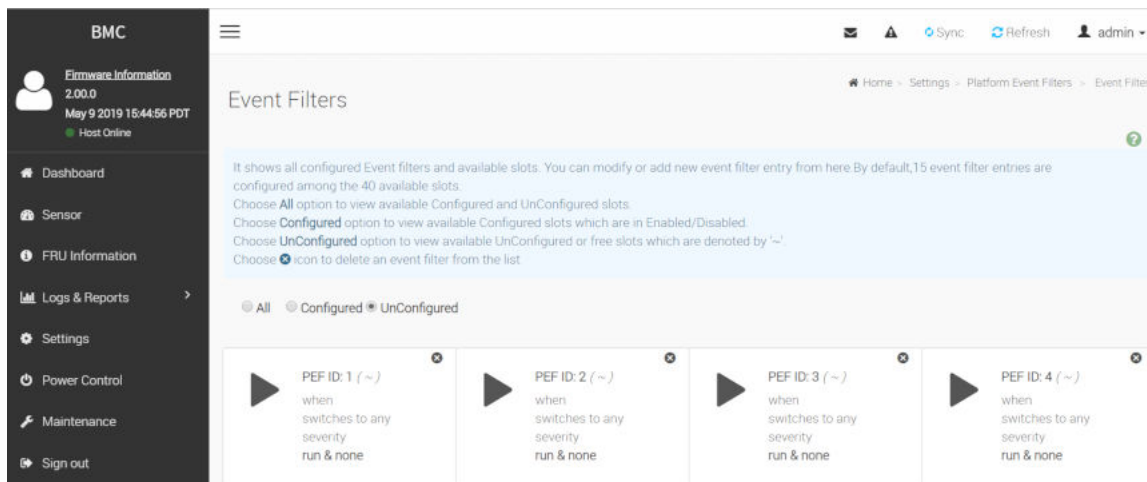
## Event filters

Event filters options:

- All
- Configured
- Unconfigured

Displays all configured Event filters and available slots. You can modify or add new event filter entry. By default, 15 Event filter entries are configured among the 40 available slots.

1. Choose **All** option to view available configured and unconfigured slots.
2. Choose **Configured** option to view available Configured slots which are in Enabled/Disabled.
3. Choose **Unconfigured** option to view available Unconfigured or free slots which are denoted by the tilde symbol '~'.
4. Choose **X** icon to delete an event filter from the list.



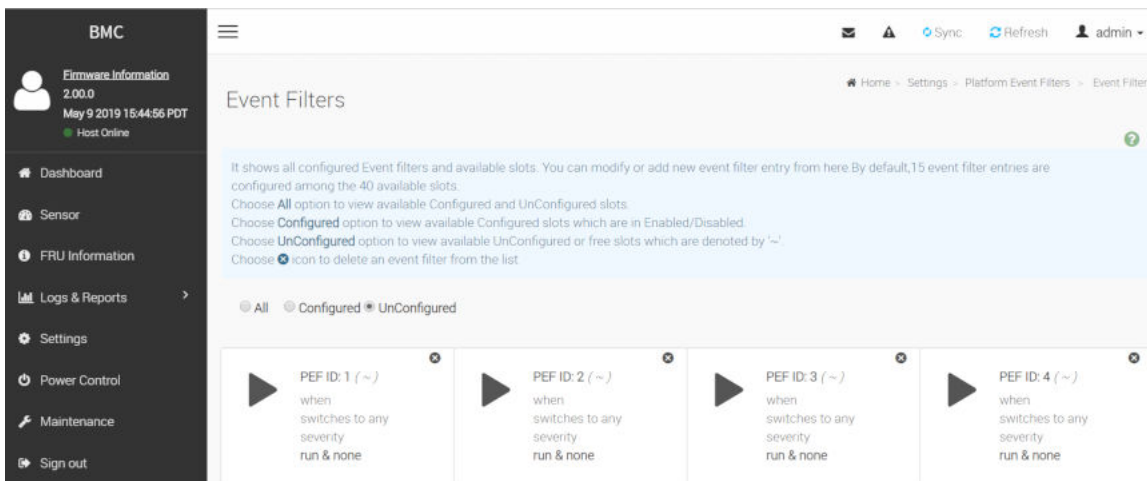
Event filters screen

## Event filters

- All
- Configured
- Unconfigured

Displays all configured Event filters and available slots. You can modify or add new event filter entry. By default, fifteen Event filter entries are configured among the 40 available slots.

1. Choose **All** option to view available configured and unconfigured slots.
2. Choose **Configured** option to view available Configured slots which are in Enabled/Disabled.
3. Choose **Unconfigured** option to view available Unconfigured or free slots which are denoted by the tilde symbol '~'.
4. Choose **X** icon to delete an event filter from the list.



Event filters screen

## Alert policies settings

Alert policies settings options:

### Policy Group Number

select from the drop-down menu a policy number that was configured in Event filter table.

### Enable this alert

Check the option `Enable` to enable the policy settings.

### Policy action

Choose from the drop-down menu a Policy set value.

- Always send alert to this destination.
- If alert to previous destination was successful, do not send alert to this destination. Proceed to next entry in this policy set.
- If alert to previous destination was successful, do not send alert to this destination. Do not process any more entries in this policy set.
- If alert to previous destination was successful, do not send alert to this destination. Proceed to next entry in this policy set that is to a different channel.
- If alert to previous destination was successful, do not send alert to this destination. Proceed to next entry in this policy set that is to a different destination type.

### LAN Channel

Choose a particular destination from the configured destination drop-down menu list.

### Destination Selector

Select a destination from the drop-down menu.

**NOTE:** LAN Destination have to be configured - under `Configuration->PEF->LAN Destination`.

### Event Specific Alert String

Check the box to specify an event-specific Alert String.

### Alert String Key

Select from the drop-down menu a set of values, all linked to strings kept in the PEF configuration parameters, to specify which string is to be sent for this Alert Policy entry.

## Alert Policies

### Alert Policies ?

Policy Group Number

Enable this alert

Policy Action

LAN Channel

Destination Selector

Event Specific Alert String

Alert String Key

Alert policies settings screen

## LAN destinations

### LAN destinations sections:

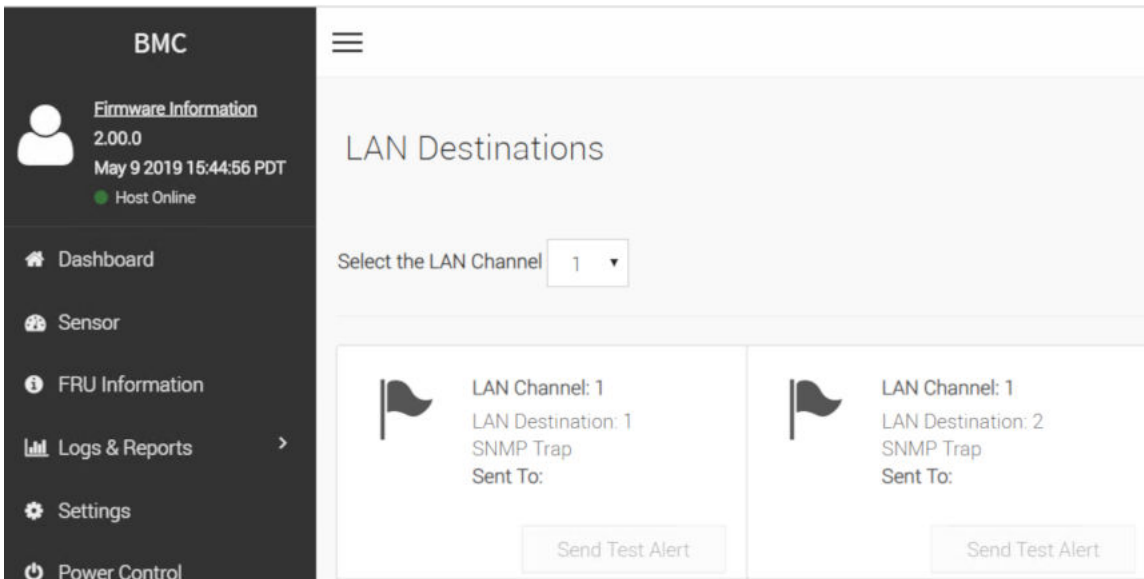
Displays configured LAN destinations and available slots. You can modify or add new LAN destination entry from here.

Click **x** icon to delete the LAN destination entry from the list.

A maximum of 15 slots are available.

1. Select the LAN Channel: Select the LAN Channel from the list to be configured.
2. Send Test Alert: Select a configured slot and click **Send Test Alert** to send sample alert to configured destination.

**i** **NOTE:** Test alert can be sent only when SMTP configuration is enabled. SMTP support can be enabled under **Settings->SMTP**. Also make sure that SMTP server address and port numbers are configured properly.



LAN destinations screen

## LAN destinations configuration

### LAN Channel

Displays LAN Channel Number of the selected slot (read-only).

### Destination Type

- SNMP Trap
- E-Mail

### SNMP Destination Address

If Destination type is SNMP Trap, then give the IP address of the system that will receive the alert. Destination address will support the following:

- IPv4 address format.
- IPv6 address format.

### BMC Username

If Destination type is Email Alert, then choose the user to whom the email alert has to be sent. NOTE: Email address for the user has to be configured under Settings->Users Management.

### Email Subject

These fields must be configured if email alert is chosen as destination type. An email will be sent to the configured email address of the user in case of any severity events with a subject specified in subject field and will contain the message field's content as the email body.

### Email Message

These fields must be configured if email alert is chosen as destination type. An email will be sent to the configured email address of the user in case of any severity events with a subject specified in subject field and will contain the message field's content as the email body.

 **NOTE:** These fields are not applicable for AMI-Format email users.

## LAN Destination Configuration

LAN Channel  
1

LAN Destination  
1

Destination Type  
 SNMP Trap  E-Mail

SNMP Destination Address

BMC Username

Email Subject

Email Message

LAN destinations configuration screen

## SMTP settings

### LAN Interface

Select the LAN interface to be configured.

### Sender Email ID

Enter the valid `Sender Email ID` on the SMTP Server. Maximum allowed size for Email ID is 64 bytes which includes username and domain name.

### Primary SMTP Support

Check this option to enable SMTP support for the BMC.

### Primary Server Name

Enter the 'Machine Name' of the SMTP Server. This field is for Information Purpose Only.

- Machine Name is a string of maximum 25 alpha-numeric characters.
- Space, special characters are not allowed.

### Primary Server IP

Enter the Server Address for the SMTP Server. It is a mandatory field.

- IP Address made of 4 numbers separated by dots as in `xxx.xxx.xxx.xxx`.
- Each Number ranges from 0 to 255.



- First Number must not be 0.

Server address will support the following:

- IPv4/IPV6 Address format.
- ost name format.

#### **Primary SMTP port**

Specify the SMTP Port. It is a mandatory field.

- Default port is 25.
- Port value ranges from 1 to 65535.


#### **Primary Secure SMTP port**

Specify the SMTP Secure port.

- Default Port is 465.
- Port value ranges from 1 to 65535.

#### **Primary SMTP Authentication**

Check the option `Enable` to enable SMTP Authentication.

 **NOTE:** SMTP Server Authentication types supported are:

- CRAM-MD5
- LOGIN
- PLAIN

#### **Primary Username**


Enter the username to access SMTP Accounts.

- User Name can be of length 4 to 64 alpha-numeric characters, dot(.), hyphen(-), and underscore(\_).
- It must start with an alphabet.
- Other special characters are not allowed.

#### **Primary password**

Enter the password for the SMTP User Account.

- Password must be at least 4 characters long.
- White space is not allowed.

 **NOTE:** This field will not allow more than 64 characters.

#### **Primary SMTP SSLTLS Enable**

Check the option `Enable` to enable SMTP SSLTLS protocol.

#### **Primary SMTP STARTTLS Enable**

Check the option `Enable` to enable SMTP STARTTLS protocol.

#### **Secondary SMTP Support**

Check this option to enable Secondary SMTP support for the BMC.

### SMTP Settings

LAN Interface  
eth0

Sender Email ID

Primary SMTP Support

Primary Server Name

Primary Server IP

Primary SMTP port  
25

Primary Secure SMTP port  
465

Primary SMTP Authentication

Primary Username

Primary Password

Primary SMTP SSLTLS Enable

Primary SMTP STARTTLS Enable

Secondary SMTP Support

Save

SMTP settings screen

## SSL settings

### SSL sections:

- View SSL certificate
- Generate SSL certificate
- Upload SSL certificate

Setup each SSL settings section using the options supplied.

### SSL Settings

View SSL certificate

Generate SSL certificate

Upload SSL certificate

SSL settings screen

## View SSL Certificate

### Current Certificate Information

Displays basic information about the uploaded SSL certificate with the following fields:

- Version- Serial Number
- Signature Algorithm
- Public Key

It displays the basic information about the uploaded SSL certificate. It displays the following fields.

### Issued from

Contains the following information about the Certificate Issuer:

- Common Name(CN)
- Organization(O)
- Organization Unit(OU)
- City or Locality(L)
- State or Province(ST)
- Country(C)
- Email Address

### Validity Information

Displays the validity period of the uploaded certificate.

- Valid From
- Valid To

### Issued to

It displays about the information to whom the certificate is issued:

- Common Name(CN)
- Organization(O)
- Organization Unit(OU)
- City or Locality(L)
- State or Province(ST)
- Country(C)
- Email Address

## View SSL Certificate

### Current Certificate Information

**Certificate Version**

3

**Serial Number**

92046422C980E206

**Signature Algorithm**

sha256WithRSAEncryption

**Public Key**

(2048 bit)

**Issuer Common Name (CN)**

AMI

**Issuer Organization (O)**

American Megatrends Inc

**Issuer Organization Unit (OU)**

Service Processors

**Issuer City or Locality (L)**

Atlanta

**Issuer State or Province (ST)**

Georgia

**Issuer Country (C)**

US

**Issuer Email Address**

support@ami.com

---

**Valid From**

Jun 1 07:01:56 2016 GMT

**Valid Till**

May 30 07:01:56 2026 GMT

---

**Issued to Common Name (CN)**

AMI

**Issued to Organization (O)**

American Megatrends Inc

**Issued to Organization Unit (OU)**

Service Processors

**Issued to City or Locality (L)**

Atlanta

**Issued to State or Province (ST)**

Georgia

**Issued to Country (C)**

US

**Issued to Email Address**

support@ami.com

SSL Certificate screen

## Generate SSL certificate

### Common Name (CN)

Common name for which the generated certificate:

- Maximum length of 64 characters.
- It is a string of alpha-numeric characters.
- Special characters '#' and '\$' are not allowed.

It displays the basic information about the uploaded SSL certificate. It displays the following fields.

### Organization (O)

Organization name for which certificate to be generated:

- Maximum length of 64 characters.
- It is a string of alpha-numeric characters.
- Special characters '#' and '\$' are not allowed.

### Organization Unit (OU)

Over all organization section unit name for which certificate to be generated.

- Maximum length of 64 characters.
- It is a string of alpha-numeric characters.
- Special characters '#' and '\$' are not allowed.

**City or Locality (L)**

City or Locality (L):

- Maximum length of 128 characters.
- It is a string of alpha-numeric characters.
- Special characters '#' and '\$' are not allowed.

**State or Province (ST)**

Over all organization section unit name for which certificate to be generated.

- Maximum length of 128 characters.
- It is a string of alpha-numeric characters.
- Special characters '#' and '\$' are not allowed.

**Country (C)**

Country code has to be given:

- Only two characters are allowed.
- Special characters are not allowed.

**Email Address**

Email Address of the organization has to be given.

**Valid for**

Number of days the certificate to be validated.

- Value ranges from 1 to 3650 days.

**Key Length**

Choose the key length bit value of the certificate.

## Generate SSL Certificate

Common Name (CN)

Organization (O)

Organization Unit (OU)

City or Locality (L)


State or Province (ST)

Country (C)

Email Address

Valid for

Key Length

 Save

Generate SSL certificate screen

## Upload SSL certificate

### Current certificate

The information as Current certificate and uploaded date/time will be displayed (read-only).

### New certificate

Browse and navigate to the certificate file:

- Certificate file should be of pem type.

### Current private key

The information as current private key and uploaded date/time will be displayed (read-only).

### New private key

Browse and navigate to the private key file:

## Upload SSL Certificate

Current Certificate  
Thu May 9 17:29:26 2019

New Certificate

Current Private Key  
Thu May 9 17:29:26 2019

New Private Key

Save

Upload SSL certificate screen

## System firewall

- System firewall order

This page is used to configure the System firewall order for user authentication into the BMC. It shows the list of available System firewall modules supported in the BMC.



System firewall screen

## General firewall settings

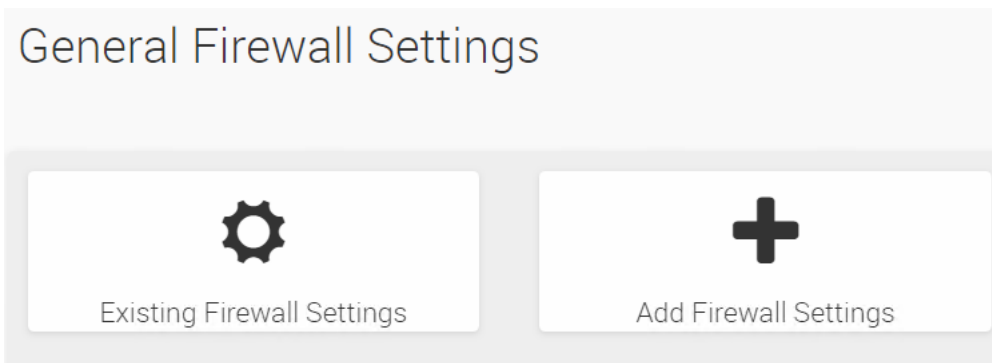
General firewall settings screen

The Settings screen include the following sections:

- Existing firewall settings



- Add firewall settings



General firewall settings screen

## Existing firewall settings

This page displays list of general firewall configurations.

Click x icon to delete an item from the list.

To view the page, user must at least be an Operator. To add or delete a firewall, user must be an Administrator.

## Add firewall settings

### Block all

This option will block all incoming IPs and Ports.

### Flush all

This is used to flush all the system firewall rules.

### Timeout

This option is used to enable or disable firewall rules with timeout.

### Start Date

The respective firewall rule effect will start from this date.

### Start Time

The respective firewall rule effect will start from this time.

### End Date

The respective firewall rule effect will end from this date.

### End Time

The respective firewall rule effect will end from this time.

## Add Firewall Settings

Block All

IPv4

Flush All

Timeout

Start Date

YYYY/MM/DD

Start Time

End Date

YYYY/MM/DD

End Time

Save

Add firewall settings screen

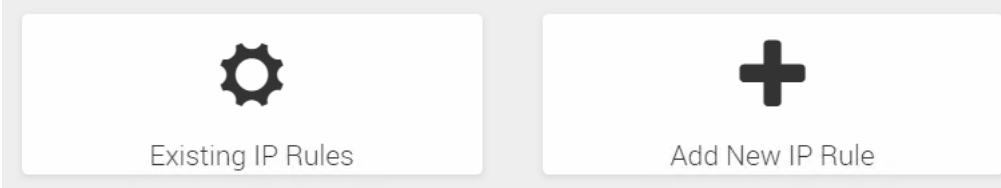
## IP address firewall rules

IP address firewall rules screen

The IP address firewall rules screen include the following sections:

- Existing IP rules
- Add new IP rule

## IP Firewall Rules



IP address firewall rules screen

## Existing IP Rules

This page displays list of Existing IP firewall rules.

Click x icon to delete an item from the list.

To view the page, user must at least be an Operator. To add or delete a firewall, user must be an Administrator.

## Add IP Rule

### IP Single (or) Range Start

This field is used to configured the IP address or Range of IP addresses. An IP address will support IPv4 address format only:

- IPv4 Address made of 4 numbers separated bydots as in xxx.xxx.xxx.xxx.
- Each number ranges from 0 to 255.
- First number must not be 0.

### IP Range End

This field is used to configured the IP address or Range of IP addresses. An IP address will support IPv4 address format only:

- IPv4 Address made of 4 numbers separated bydots as in xxx.xxx.xxx.xxx.
- Each number ranges from 0 to 255.
- First number must not be 0.

### Enable Timeout

This option used to enable or disable firewall rules with timeout.

### Start Date

The respective firewall rule effect will start from this date.

### Start Time

The respective firewall rule effect will start from this time.

### End Date

The respective firewall rule effect will end from this date.

### End Time

The respective firewall rule effect will end from this time.

## Add IP Rule


?

IP Single (or) Range Start


IP Range End

Enable Timeout


Start Date


Start Time


End Date


 

End Time

Rule

 Save

Add IP rule screen

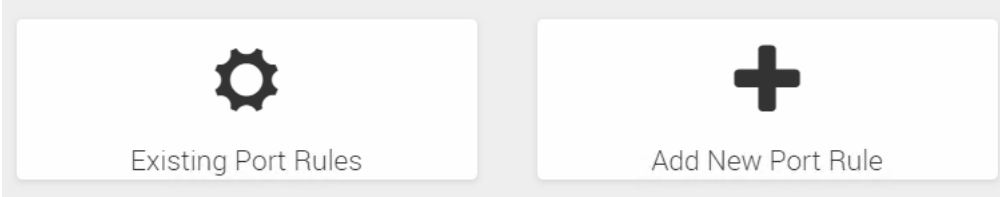
## Port firewall rules

Port firewall rules screen

The port firewall rules screen include the following sections:

- Existing port rules
- Add new port rule

## Port Firewall Rules



Port firewall rules screen

## Existing port Rules

This page displays list of Existing port firewall rules.

Click x icon to delete an item from the list.

To view the page, user must at least be an Operator. To add or delete a firewall, user must be an Administrator.

## Add port rule

### Port Single (or) Range Start

This field is used to configure the port address or range of port addresses. A port address will support portv4 address format only:

- Port value ranges from 1 to 65535.

 **NOTE:** Port 80 is blocked for TCP/UDP protocols.

### Port Range End

This field is used to configure the port address or range of port addresses. A port address will support portv4 address format only:

- Port value ranges from 1 to 65535.

 **NOTE:** Port 80 is blocked for TCP/UDP protocols.

### Enable Timeout

This option used to enable or disable firewall rules with timeout.

### Start Date

The respective firewall rule effect will start from this date.

### Start Time

The respective firewall rule effect will start from this time.

### End Date

The respective firewall rule effect will end from this date.

### End Time

The respective firewall rule effect will end from this time.

### Add Port Rule

?

Port Single (or) Range Start

Port Range End

Protocol

Network Type

Enable Timeout

Start Date

Start Time

End Date

End Time

Rule

Save

Add port rule screen

## User management

- User management order

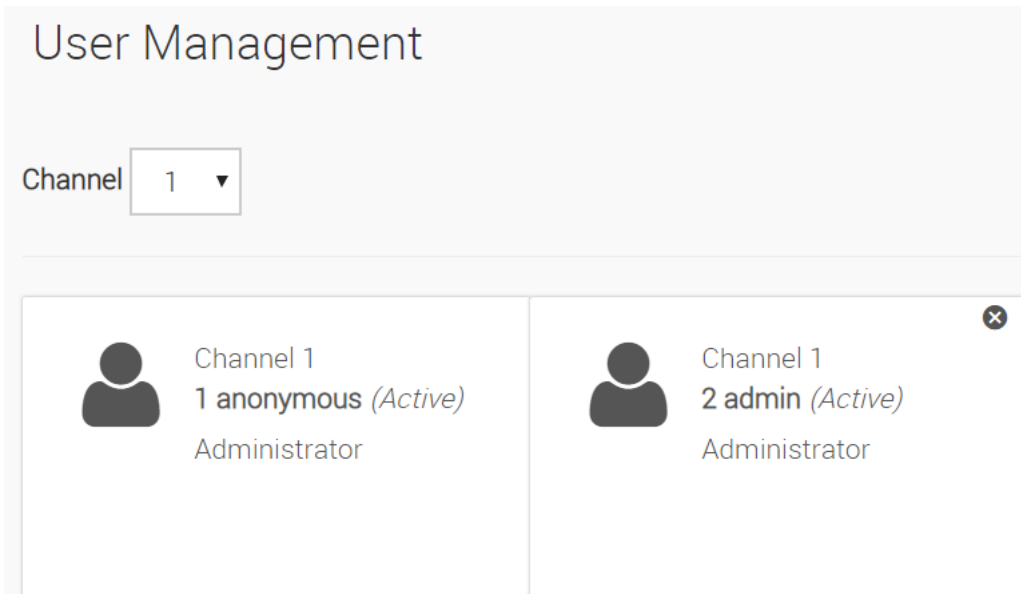
This page is used to configure the User management order for user authentication into the BMC. It shows the list of available User management modules supported in the BMC.

The list below shows the current list of available users by channel. To Add or Edit a user, click on icon.

To Delete a particular user from the list, click icon.

A maximum of 10 slots are available and include the default of admin and anonymous.

It is advised that the anonymous user's privilege and password should be modified as a security measure. To view the page, you must have Operator privileges. To modify or add a user, You must have Administrator privileges.



User management screen

## User management configuration

### Username

Enter the name of the new user:

- IP Address consists of four sets of numbers separated by dots as in 'xxx.xxx.xxx.xxx'.
- Each set ranges from 0 to 255.
- First Number must not be 0.

### Change Password

Select this option to change the password.

### Password Size

Select the Size of the password.

### Password

Enter a strong password which consist of atleast one upper case letter, alphanumeric and special characters.

**NOTE:** Password is mandatory to be entered while enabling SNMP Access and should have minimum 8 characters when SNMP status is enabled.

### Enable User Access

Check the box to enable user access for the user. Upon enabling the user Access, the IPMI messaging privilege will be assigned to user.

**NOTE:** It is recommended that the IPMI messaging option should be enabled for the user to choose the User Access option, while creating User through IPMI.

### Privilege

Select the privilege level assigned to this user when the user accesses BMC through network interface.

There are four levels of Network Privileges:

- User
- Administrator
- Operator
- None

### SNMP Access

Check the box to enable SNMP access for the user.

### SNMP Authentication Protocol

Choose an Authentication Protocol for SNMP settings. NOTE: Password field is mandatory, if Authentication protocol is changed.

### SNMP Privacy Protocol

Choose the Encryption algorithm to use for SNMP settings.

### Email Format

Check this option to enable IPv6 DHCP to dynamically configure IPv6 address using Dynamic HostConfiguration v6 Protocol (DHCPv6).

- AMI-Format: The subject of this mail format is `Alert from (your Hostname)`. The mail content shows sensor information, for example: `Sensor type and Description`.
- FixedSubject-Format: This format displays the message according to user's setting. You must set the subject and message for email alert.

### Email ID

Enter the email ID for the user. If user forgets the password, new password will be mailed to the configured email ID.

**NOTE:** SMTP Server must be configured to send the email. Maximum allowed size for Email ID is 64 bytes which includes username and domain name.

### Existing SSH Key

The uploaded SSH key information will be displayed (read-only).

### Upload SSH Key

Use Browse button to navigate to the public SSH key file.

- SSH key file should be of pub type.

The screenshot shows the 'User Management Configuration' interface. The user name is 'anonymous'. There is a 'Change Password' checkbox which is unchecked. The 'Password Size' is set to '16 bytes'. The 'Password' and 'Confirm Password' fields are empty. The 'Enable User Access' checkbox is checked. The 'Privilege' is set to 'Administrator'. There are checkboxes for 'VMedia Access' and 'SNMP Access', both of which are unchecked. The 'SNMP Access level' is set to a default value. The 'SNMP Authentication Protocol' and 'SNMP Privacy Protocol' are set to default values. The 'Email Format' is set to 'AMI Format'. The 'Email ID' field is empty. The 'Existing SSH Key' field shows 'Not Available'. The 'Upload SSH Key' field has a 'Browse' button. At the bottom, there are 'Delete' and 'Save' buttons.

User management configuration screen



# Power control

## Power off

Select this option to immediately power off the server.

## Power on

Select this option to power on the server.

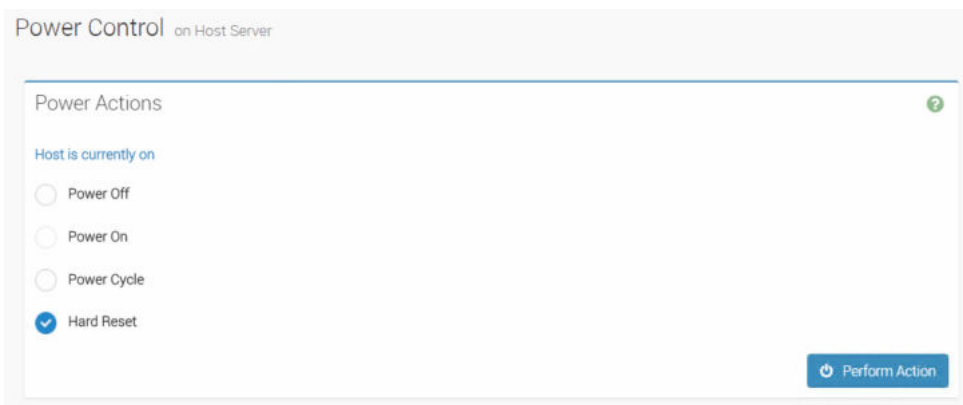
## Power Cycle

Select this option to first power off, and then reboot the system (cold boot).

## Hard reset

Select this option to reboot the system without powering off (warm boot).

Select this option to initiate operating system shutdown prior to the shutdown..



Power control screen

# Maintenance

The Maintenance screen include the following sections:

- Backup configuration
- Dual image configuration
- Firmware image location
- Firmware information
- Preserve configuration
- Restore configuration
- Restore factory defaults
- System administrator

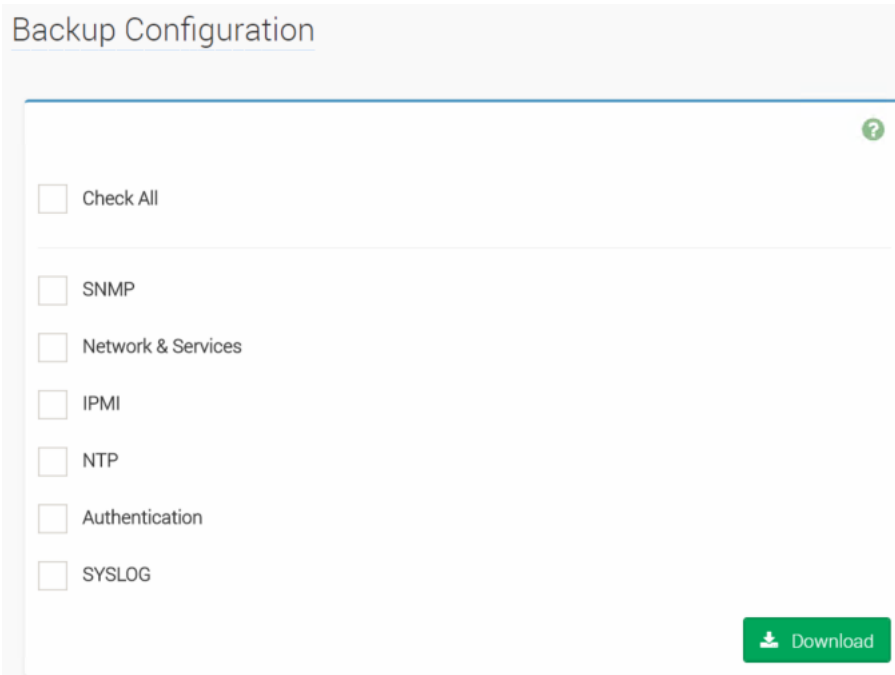


Maintenance screen

# Backup configuration

Check the configuration that needs to be backed up. Use the downloaded to restore the configuration.

**NOTE:** Network configurations are inter-related to IPMI, and hence by default IPMI configurations will be selected automatically when you select `Network` and `Services` to be backed up.

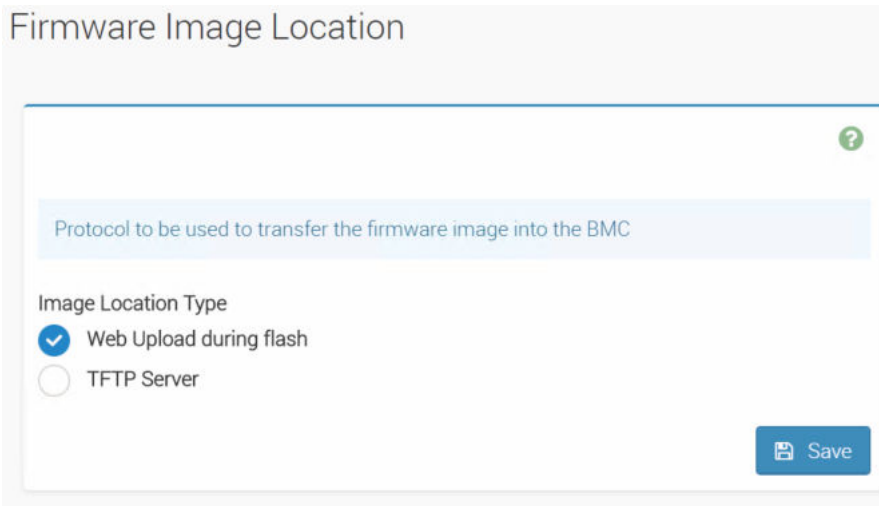


Backup configuration screen

## Firmware image location

### Image location type

Protocol to be used to transfer the firmware image into the BMC.



Firmware image location screen

## Firmware information

### Active firmware

Describes the BMC Active Image ID.

### Active image ID

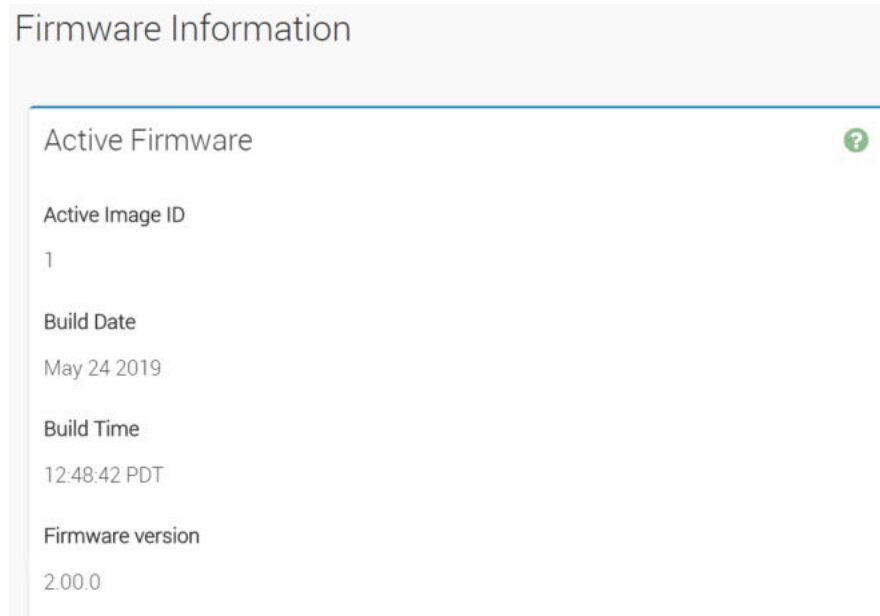
Describes the Build Date of the active BMC image

**Build Time**

Describes the Build Time of the active BMC image

**Firmware version**

Describes the Firmware version of the active BMC image



Firmware information screen

## Preserve configuration

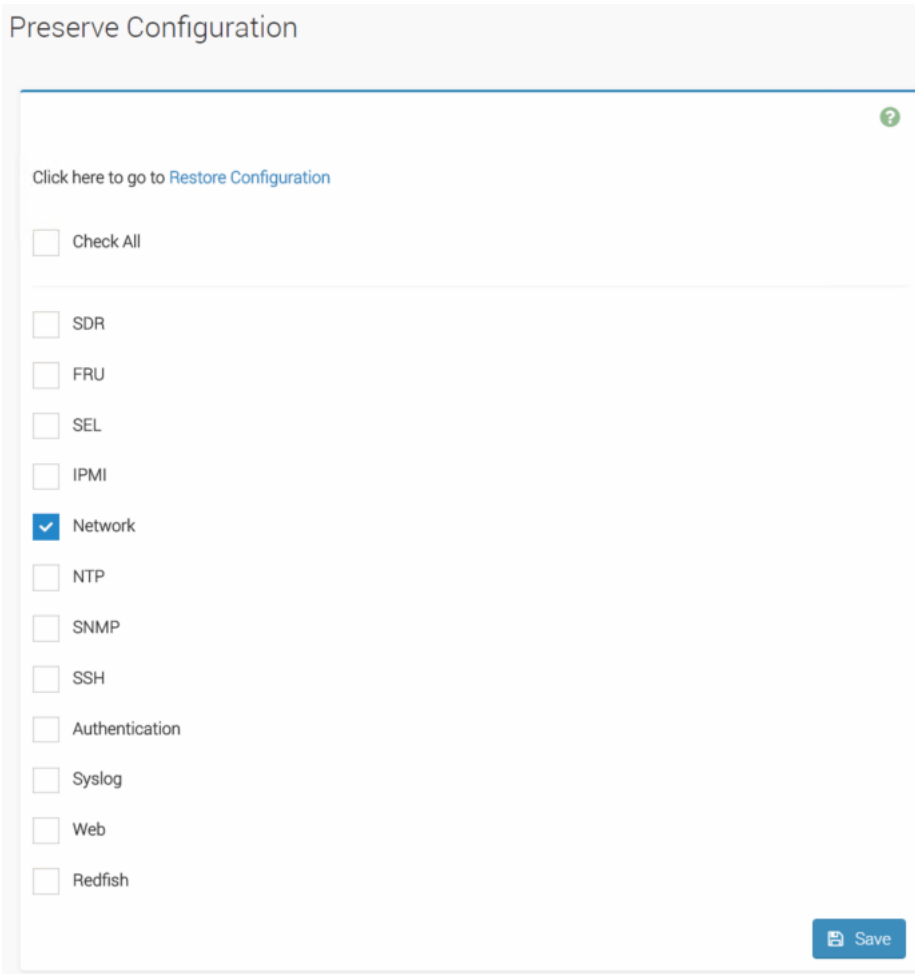
**Restore Configuration**

Check the configuration that needs to be preserved, while the Restore Configuration is done.

**Check All**

Select this option to check all the configuration list.

You can either check/uncheck a check box to preserve/overwrite the configuration for your system.

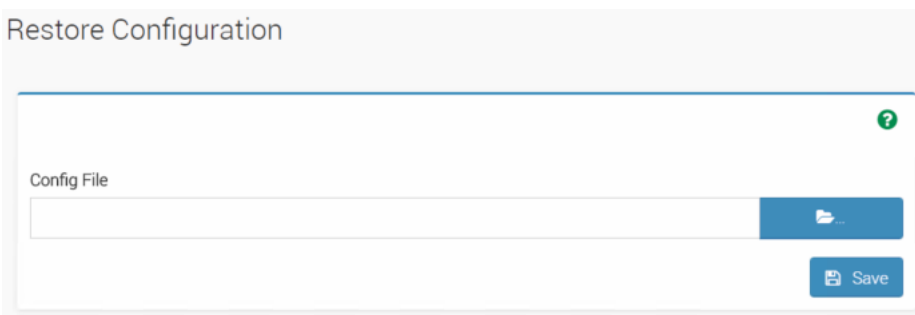


Preserve configuration screen

## Restore configuration

### Config file

Use Browse button to navigate to the Configuration file.



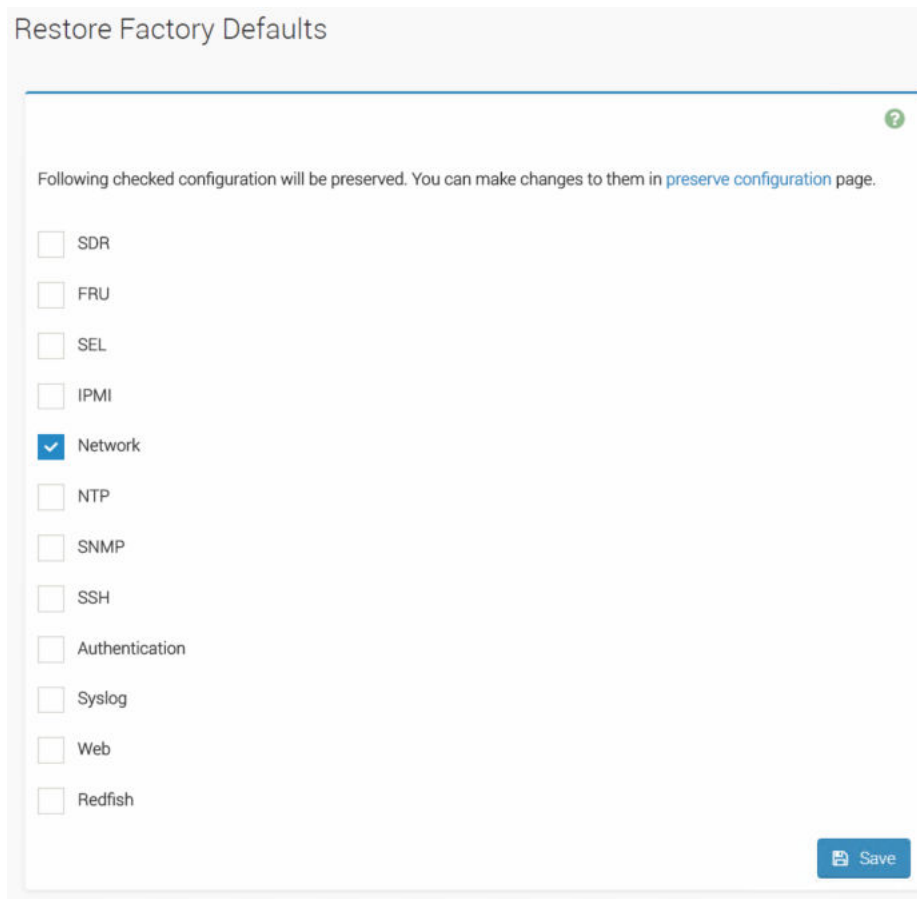
Restore configuration screen

## Restore factory defaults

### Preserve configuration page

Use Browse button to navigate to the Configuration file.

To preserve any existing configuration data, goto preserve configuration page and select them.



Restore factory defaults screen

## System Administrator

### Username

Username of System Administrator is displayed (read only).

### Enable User Access

Check this option to enable user access for system administrator.


### Change Password

Check this option to change the existing password. This will enable the password fields.

### Password

Enter the new password here.


- Password must be at least 8 characters long.
- White space is not allowed.

 **NOTE:** This field will not allow more than 64 characters.

### Confirm Password

Enter the same password which you have entered in the Password field to confirm the Password.

- Password must be at least 8 characters long.
- White space is not allowed.

 **NOTE:** This field will not allow more than 64 characters.

## System Administrator



Username

sysadmin

Enable User Access

Change Password

Password

Confirm Password

Save

System Administrators screen

# Configuration methods

The diagnostic operating software (DIAG OS) running on the local processor has `ipmitool` installed by default. You can use the `ipmitool` both at the switch and remotely.

## About this task

**NOTE:** The information in the following chapter is intended for developers and system administrators. Users are recommended to use the Web GUI as described [BMC web GUI](#) chapter.

Accessing BMC from the host does not require user name or password. The general syntax for using `ipmitool` is:

**NOTE:** `-l [-I <interface>]` and `-H [-H <address>]` are optional.

```
ipmitool [-c|-h|-v|-V] -l lanplus -H <hostname> [-p <port>]
[-U <username>]
[-L <privlvl>]
[-a|-E|-P|-f <password>]
[-o <oemtype>]
[-O <sel oem>]
[-C <ciphersuite>]
[-Y|[-K|-k <kg_key>]
[-y <hex_kg_key>]
[-e <esc_char>]
[-N <sec>]
[-R <count>]
< command>
```

For example, to list sensors from the host use the following command from the host:

```
root@dellemc-diag-os:/opt/dellemc/diag/bin# ipmitool sensor
XP12R0V      | 12.160      | Volts      | ok      | 8.512      | 9.792      | 10.944    | 13.440    |
14.656      | 15.872
VNN_AUX_PCH  | 0.903       | Volts      | ok      | 0.539      | 0.630      | 0.721     | 1.197     |
1.169       | 1.260
XP2R5V_VPPB  | 2.548       | Volts      | ok      | 1.750      | 2.002      | 2.254     | 2.758     |
2.996       | 3.248
XP1R2V_VDDR  | 1.190       | Volts      | ok      | 0.840      | 0.959      | 1.078     | 1.316     |
1.442       | 1.561
XP0R6V_VTTB  | 0.595       | Volts      | ok      | 0.420      | 0.476      | 0.539     | 0.658     |
0.721       | 0.784
XP5R0V       | 5.177       | Volts      | ok      | 3.627      | 4.123      | 4.650     | 5.673     |
6.200       | 6.727
XP3R3V_AUX_CP | 3.325      | Volts      | ok      | 2.310      | 2.643      | 2.975     | 3.623     |
3.955       | 4.288
XP3R3V_AUX_PCH | 3.308      | Volts      | ok      | 2.310      | 2.643      | 2.975     | 3.623     |
3.955       | 4.288
XP1R8V_AUX_PCH | 1.785      | Volts      | ok      | 1.265      | 1.438      | 1.622     | 1.979     |
2.162       | 2.336
XP1R05V_PCH  | 1.050       | Volts      | ok      | 0.735      | 0.840      | 0.945     | 1.155     |
1.260       | 1.365
XP2R5V_VPPA  | 2.548       | Volts      | ok      | 1.750      | 2.002      | 2.254     | 2.758     |
2.996       | 3.248
XP1R2V_VDDRA | 1.204       | Volts      | ok      | 0.840      | 0.959      | 1.078     | 1.316     |
1.442       | 1.561
XP0R6V_VTTA  | 0.602       | Volts      | ok      | 0.420      | 0.476      | 0.539     | 0.658     |
0.721       | 0.784
VCCIO_CP     | 1.001       | Volts      | ok      | 0.504      | 0.602      | 0.700     | 1.197     |
1.302       | 1.400
VCCIN_CP     | 1.775       | Volts      | ok      | 0.898      | 1.081      | 1.265     | 2.162     |
2.336       | 2.519
VCCSA_CP     | 0.854       | Volts      | ok      | 0.259      | 0.343      | 0.427     | 1.190     |
1.274       | 1.358
```

Power_Status	0x0	discrete	0x0180	na	na	na	na	
na	na							
Watchdog2	0x0	discrete	0x0080	na	na	na	na	
na	na							
SEL	0x0	discrete	0x0080	na	na	na	na	
na	na							
BMC boot	0x0	discrete	0x0180	na	na	na	na	
na	na							
Outlet_Temp	31.000	degrees C	ok	na	na	na	na	
na	na							
Inlet1_Temp	25.000	degrees C	ok	na	na	na	na	
na	na							
Inlet2_Temp	23.000	degrees C	ok	na	na	na	na	
na	na							
Inlet3_Temp	22.000	degrees C	ok	na	na	na	na	
62.000	na							59.000
Inlet4_Temp	29.000	degrees C	ok	na	na	na	na	
na	na							
Fan1	11400.000	RPM	ok	na	1080.000	na	na	
na	na							
Fan2	11400.000	RPM	ok	na	1080.000	na	na	
na	na							
Fan3	11640.000	RPM	ok	na	1080.000	na	na	
na	na							

The command parameters change slightly when using ipmitool over LAN:

```

$/ipmitool -U admin -P admin -l lanplus -H 10.11.227.53 sensor
XP12R0V      | 12.160      | Volts      | ok      | 8.512      | 9.792      | 10.944      | 13.440      |
14.656      | 15.872
VNN_AUX_PCH  | 0.910      | Volts      | ok      | 0.539      | 0.630      | 0.721      | 1.197      |
1.169      | 1.260
XP2R5V_VPPB  | 2.548      | Volts      | ok      | 1.750      | 2.002      | 2.254      | 2.758      |
2.996      | 3.248
XP1R2V_VDDR  | 1.190      | Volts      | ok      | 0.840      | 0.959      | 1.078      | 1.316      |
1.442      | 1.561
XP0R6V_VTTB  | 0.595      | Volts      | ok      | 0.420      | 0.476      | 0.539      | 0.658      |
0.721      | 0.784
XP5R0V      | 5.177      | Volts      | ok      | 3.627      | 4.123      | 4.650      | 5.673      |
6.200      | 6.727
XP3R3V_AUX_CP | 3.325      | Volts      | ok      | 2.310      | 2.643      | 2.975      | 3.623      |
3.955      | 4.288
XP3R3V_AUX_PCH | 3.308      | Volts      | ok      | 2.310      | 2.643      | 2.975      | 3.623      |
3.955      | 4.288
XP1R8V_AUX_PCH | 1.775      | Volts      | ok      | 1.265      | 1.438      | 1.622      | 1.979      |
2.162      | 2.336
XP1R05V_PCH  | 1.050      | Volts      | ok      | 0.735      | 0.840      | 0.945      | 1.155      |
1.260      | 1.365
XP2R5V_VPPA  | 2.548      | Volts      | ok      | 1.750      | 2.002      | 2.254      | 2.758      |
2.996      | 3.248
XP1R2V_VDDRA | 1.204      | Volts      | ok      | 0.840      | 0.959      | 1.078      | 1.316      |
1.442      | 1.561
XP0R6V_VTTA  | 0.602      | Volts      | ok      | 0.420      | 0.476      | 0.539      | 0.658      |
0.721      | 0.784
VCCIO_CP     | 1.001      | Volts      | ok      | 0.504      | 0.602      | 0.700      | 1.197      |
1.302      | 1.400
VCCIN_CP     | 1.775      | Volts      | ok      | 0.898      | 1.081      | 1.265      | 2.162      |
2.336      | 2.519
VCCSA_CP     | 0.847      | Volts      | ok      | 0.259      | 0.343      | 0.427      | 1.190      |
1.274      | 1.358
Power_Status | 0x0        | discrete   | 0x0180| na      | na      | na      | na      |
na          | na
Watchdog2    | 0x0        | discrete   | 0x0080| na      | na      | na      | na      |
na          | na
SEL          | 0x0        | discrete   | 0x0080| na      | na      | na      | na      |
na          | na
BMC boot     | 0x0        | discrete   | 0x0180| na      | na      | na      | na      |
na          | na
Outlet_Temp  | 30.000     | degrees C  | ok      | na      | na      | na      | na      |
na          | na
Inlet1_Temp  | 26.000     | degrees C  | ok      | na      | na      | na      | na      |
na          | na
Inlet2_Temp  | 22.000     | degrees C  | ok      | na      | na      | na      | na      |

```



na	na								
Inlet3_Temp	22.000	degrees C	ok	na	na	na	59.000		
62.000	na								
Inlet4_Temp	29.000	degrees C	ok	na	na	na	na		
na	na								
Fan1	11280.000	RPM	ok	na	1080.000	na	na		
na	na								
Fan2	11160.000	RPM	ok	na	1080.000	na	na		
na	na								
Fan3	11040.000	RPM	ok	na	1080.000	na	na		
na	na								
Fan4	11280.000	RPM	ok	na	1080.000	na	na		
na	na								
Fan5	11040.000	RPM	ok	na	1080.000	na	na		
na	na								
Fan1_Status	0x0	discrete	0x0280	na	na	na	na		
na	na								
Fan2_Status	0x0	discrete	0x0280	na	na	na	na		
na	na								
Fan3_Status	0x0	discrete	0x0280	na	na	na	na		
na	na								
Fan4_Status	0x0	discrete	0x0280	na	na	na	na		
na	na								
Fan5_Status	0x0	discrete	0x0280	na	na	na	na		
na	na								

To access BMC over a LAN, use the following `ipmitool` command: `ipmitool [-c|-h|-v|-V] -I lanplus -H <hostname> [-p <port>] [-U <username>] [-L <privlvl>] [-a|-E|-P]-f <password> [-o <oemtype>] [-O <sel oem>] [-C <ciphersuite>] [-Y|[-K]-<kg_key>] [-y <hex_kg_key>] [-e <esc_char>] [-N <sec>] [-R <count>] <command>`

If needed, you can download `ipmitool` from the <https://sourceforge.net/projects/ipmitool> website. The commands to install `ipmitool` on Ubuntu or Fedora versions are as follows:

### Steps

1. Install `ipmitool` on Ubuntu versions.  
# `apt-get install ipmitool`
2. Install `ipmitool` on Fedora versions.  
# `yum install ipmitool`

### Next steps

Run standard IPMI commands from `ipmitool`. For the command format, see *Intelligent Platform Management Interface Specification Second Generation v2.0.pdf*. For more documentation, see <https://linux.die.net/man/1/ipmitool>.

**i** **NOTE:** Throughout this user guide, *Intelligent Platform Management Interface Specification Second Generation v2.0.pdf* is known as *IPMI Specification v2.0*. For more information about IPMI, see the IPMI resources that is hosted by Intel at <https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html>.

### Topics:

- [Configurations](#)
- [Date and time](#)
- [SNMP and email alerts](#)
- [Add and delete users](#)
- [Firewall](#)
- [Event log](#)
- [Default configuration restore](#)

# Configurations

## LAN configurations

For network settings, see the *IPMI Specification v2.0* chapter 23.1 *Set LAN Configuration Parameters Command* and Table 23-4 *LAN Configuration Parameters*.

In addition to setting IP addresses, use `ipmitool` to set the network mask, MAC address, default gateway IP and MAC addresses, and so forth.

`ipmitool` commands:

```
root@dellemc-diag-os:~# ipmitool lan set 1
```

```
usage: lan set <channel> <command> <parameter>
```

```
LAN set command/parameter options:
```

```
ipaddr <x.x.x.x>           Set channel IP address
netmask <x.x.x.x>          Set channel IP netmask
macaddr <x:x:x:x:x:x>      Set channel MAC address
defgw ipaddr <x.x.x.x>     Set default gateway IP address
defgw macaddr <x:x:x:x:x:x> Set default gateway MAC address
bakgw ipaddr <x.x.x.x>     Set backup gateway IP address
bakgw macaddr <x:x:x:x:x:x> Set backup gateway MAC address
password <password>       Set session password for this channel
snmp <community string>   Set SNMP public community string
user                       Enable default user for this channel
access <on|off>           Enable or disable access to this channel
alert <on|off>            Enable or disable PEF alerting for this channel
arp respond <on|off>      Enable or disable BMC ARP responding
arp generate <on|off>     Enable or disable BMC gratuitous ARP generation
arp interval <seconds>    Set gratuitous ARP generation interval
vlan id <off|<id>>        Disable or enable VLAN and set ID (1-4094)
vlan priority <priority>  Set vlan priority (0-7)
auth <level> <type,..>   Set channel authentication types
    level = CALLBACK, USER, OPERATOR, ADMIN
    type  = NONE, MD2, MD5, PASSWORD, OEM
ipsrc <source>            Set IP Address source
    none   = unspecified source
    static = address manually configured to be static
    dhcp   = address obtained by BMC running DHCP
    bios   = address loaded by BIOS or system software
cipher_privs XXXXXXXXXXXXXXX Set RMCP+ cipher suite privilege levels
X = Cipher Suite Unused
c = CALLBACK
u = USER
o = OPERATOR
a = ADMIN
O = OEM

bad_pass_thresh <thresh_num> <1|0> <reset_interval> <lockout_interval>
Set bad password threshold
```

**NOTE:** Dell EMC recommends setting LAN parameters from the host microprocessor. You can run all other `ipmitool` options from a remote machine after the BMC has the correct IP address and LAN settings. When running `ipmitool` from a remote machine, the command prefix is `ipmitool -H <ip address of BMC> -I lanplus -U <user_name> -P <password> ..."`

The `<channel>` number refers to the LAN channel, which is 1 in this BMC implementation.

Dell EMC recommends executing the LAN settings command from a system-side machine rather than from a remote machine. To set a dynamic host configuration protocol (DHCP) IP address, use the following command:

```
# ipmitool lan set 1 ipsrc dhcp
```

To set a static IP address:

```
# ipmitool lan set 1 ipsrc static
# ipmitool lan set 1 ipaddr <x.x.x.x>
```

You can also add the BMC IP address from the BIOS. For more information, see the BIOS manual at <https://www.dell.com/support>.

## DNS configuration

Use these commands to set and get domain name server (DNS)-related settings, for example hostname, domain setting, and DNS server settings. BMC supports only three DNS server IP addresses. These IP addresses can be either IPv4 or IPv6.

To set DNS configuration details, use the DNS configuration command. The DNS configuration is buffered and applies only after you set a DNS Restart—parameter #7.

## Date and time

BIOS sets the date and time during boot up. Use the `iselttime` tool that is part of the `ipmiutil` package. Use the `ipmiutil` command only on the local processor. For more information about the `ipmiutil` command, see [ipmiutil package](#).

Install the `ipmiutil` package and use the `iselttime` command.

To override the date and time used in the system event log (SEL) log, use the following command:

```
root@dellemc-diag-os:~# ipmitool sel time get
08/01/2018 15:10:46
root@dellemc-diag-os:~# ipmitool sel time set
usage: sel time set "mm/dd/yyyy hh:mm:ss"
root@dellemc-diag-os:~#
```

For `ipmiutil/iselttime`, download and install the binaries and documentation from <https://sourceforge.net/>. Also, various Linux distributions have binary packages prebuilt and available for download.

For Fedora, to download the utilities, use <https://pkgs.org/download/ipmiutil>

## SNMP and email alerts

### Event filters

To set the platform event filters, use the `raw` command format. To configure an entry in the filter table:

```
# ipmitool raw 0x04 0x12 0x6 0x2 0xc0 0x1 0x2 0x2 0xff 0xff 0xff 0xff 0xff 0x01 0x0 0x0 0x0 0x0 0x0 0x0
0x0 0x0 0x0
Byte 3 (0x60) - event filter table cmd
Byte 4(0x2) - filter number
Byte 5(0xc0) - filter config(enable)
Byte 6(0x1) - action(alert)
Byte 7(0x2) - policy number
Byte 8(0x2) - event severity(information)
Byte 9(0xff) - child address
Byte 10 (0xff) - channel number(any)
Byte 11(0xff) - sensor number(any)
Byte 12(0x01) - event trigger(threshold)
```

The entry 2 is changed after the command, as shown:

```
# ipmitool pef filter list
1 | enabled, configurable | Any | Any | None | OEM | Any | Alert,OEM-defined | 1
2 | enabled, pre-configured | Any | Any | Information | OEM | Any | Alert | 2
```

For more information, see the *IPMI Specification v2.0* chapter 17.7 *Event Filter Table* and chapter 30.3 *Set PEF Configuration Parameters Command*.

## Alert policies and destinations

For more information, see the *IPMI Specification v2.0* chapter 17.11 *Alert Policy Table* and chapter 30.3 *Set PEF Configuration Parameters Command (parameter 9)*.

## LAN destinations

BMC supports SNMP alert destinations. These are SNMP traps. When you set a LAN destination for alerts, the BMC sends an SNMP trap to the set a destination whenever BMC detects alert conditions. You can setup the SNMP management application on the destination to receive these SNMP traps; however, setting up the SNMP management station is beyond the scope of this document.

```
# ipmitool lan alert print
Alert Destination      : 0
Alert Acknowledge     : Unacknowledged
Destination Type      : PET Trap
Retry Interval        : 0
Number of Retries     : 0
Alert Gateway         : Default
Alert IP Address      : 0.0.0.0
Alert MAC Address     : 00:00:00:00:00:00

Alert Destination      : 1
Alert Acknowledge     : Unacknowledged
Destination Type      : PET Trap
Retry Interval        : 0
Number of Retries     : 0
Alert Gateway         : Default
Alert IP Address      : 0.0.0.0
Alert MAC Address     : 00:00:00:00:00:00
..
Alert Destination      : 15
Alert Acknowledge     : Unacknowledged
Destination Type      : PET Trap
Retry Interval        : 0
Number of Retries     : 0
Alert Gateway         : Default
Alert IP Address      : 0.0.0.0
Alert MAC Address     : 00:00:00:00:00:00
```

You can configure up to 15 destinations. To configure destination 1 to send an alert to a machine with IP address 10.11.227.180:

```
# ipmitool lan alert set 1 1 ipaddr 10.11.227.180
Setting LAN Alert 1 IP Address to 10.11.227.180
```

The following output using the `ipmitool lan alert print` command shows the configuration was successful:

```
root@dellemc-diag-os:/opt/dellemc/diag/bin# ipmitool lan alert print 1 1
Alert Destination      : 1
Alert Acknowledge     : Unacknowledged
Destination Type      : OEM 1
Retry Interval        : 3
Number of Retries     : 3
Alert Gateway         : Default
Alert IP Address      : 10.11.227.180
Alert MAC Address     : 00:00:00:00:00:00
```

## Alert policy setup

To setup the alert policy, you must use the `ipmitool raw` command.

To view the current policy table, use the `ipmitool pef policy list` command.

```
# ipmitool pef policy list
 1 | 1 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 2 | 2 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 3 | 3 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 4 | 4 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 5 | 5 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 6 | 6 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
 ..
60 | 15 | disabled | Match-always | 1 | 802.3 LAN | PET | AMI | 0 | 0 | 0.0.0.0 |
00:00:00:00:00:00
```

There are 60 entries available for a policy table. The following example shows setting a policy entry. For a detailed description of the table entries, see the *IPMI Specification v2.0 Alert policy table entry*.

```
# ipmitool raw 0x4 0x12 0x9 0x2 0x28 0x11 0x00
Byte 3 (0x9) - Alert policy table entry command
Byte 4 (02) - table entry number
Byte 5 (0x28) - policy number and enable bit
Byte 6 (0x11) - channel and destination
Byte 7 (0x00) - String
The 2nd entry after the command execution is show below

# ipmitool pef policy list
 1 | 1 | enabled | Match-always | true | 1 | 802.3 LAN | PET | AMI | 3 | 3 |
10.11.227.180 | 00:00:00:00:00:00
 2 | 2 | enabled | Match-always | 1 | 802.3 LAN | PET | AMI | 3 | 3 | 10.11.227.180 | 00:00:00:00:00:00
```

## Event ID details

To get event details from the MIB file using the event ID from SNMP messages, find the event ID:

The following is the SNMP trap message:

```
2021-03-01 17:34:59 172.17.108.87(via UDP: [172.17.108.87]:36138->[172.17.108.69]:162)
TRAP, SNMP v1, community AMISNMPv2-SMI::enterprises.3183.1.1 Enterprise Specific Trap
(552707) Uptime: 2:12:05.00SNMPv2-SMI::enterprises.3183.1.1.1 = Hex-STRING: 54 BF 64 AA
B8 49 B4 03 00 10 DE BF 00 53 99 6800 06 60 3D 16 40 FF FF20 20 00 20 71 00 00 03FF FF00
00 00 00 00 19 00 00 00 00 00 00 C1
```

Find **552707** in the MIB file:

```
AC Lost
trapPowerSupplyACLost TRAP-TYPE
ENTERPRISE pET-version-1
DESCRIPTION
  "Power Supply AC Lost"
--#TYPE          "Power Supply Event"
--#SUMMARY       "Power Supply AC Lost"
--#ARGUMENTS     {}
--#SEVERITY      CRITICAL

::= 552707
```

## Add and delete users

The following describes adding and deleting users:

There are 10 entries for a user list.

1. Add a new user by modifying one of the empty entries in the user list using the following:

```
$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -U admin -P admin user set name 3 <name>
$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -U admin -P admin user set password 3
Password for user 3:
Password for user 3:
Set User Password command successful (user 3)
```

Step 1 creates a user with no access.

2. Set the privilege level for the user in Step 1 using the following:

```
$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -U admin -P admin user priv 3
User Commands:
summary      [<channel number>]
list         [<channel number>]
set name     <user id> <username>
set password <user id> [<password> <16|20>]
disable     <user id>
enable      <user id>
priv        <user id> <privilege level> [<channel number>]
    Privilege levels:
    * 0x1 - Callback
    * 0x2 - User
    * 0x3 - Operator
    * 0x4 - Administrator
    * 0x5 - OEM Proprietary
    * 0xF - No Access

test        <user id> <16|20> [<password>]

$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -U admin -P admin user priv 3 2
Set Privilege Level command successful (user 3)
$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -U admin -P admin user list
ID  Name      Callin  Link Auth  IPMI Msg  Channel Priv Limit
1   Name      false  false     true      ADMINISTRATOR
2   admin     true   true      true      ADMINISTRATOR
3   <name>    true   true      true      USER
4   Name      true   false     false     NO ACCESS
5   Name      true   false     false     NO ACCESS
6   Name      true   false     false     NO ACCESS
7   Name      true   false     false     NO ACCESS
8   Name      true   false     false     NO ACCESS
9   Name      true   false     false     NO ACCESS
10  Name      true   false     false     NO ACCESS
```

You can individually enable channels for a certain privilege level access. For example, to place the LAN channel accessible for "USER" level access, use the following:

```
$ ./ipmitool -H xx.xx.xxx.xxx -I lanplus -U admin -P admin channel setaccess 1 3 callin=off link=off ipmi=on privilege=1
Set User Access (channel 1 id 3) successful.
$ ./ipmitool -H xx.xx.xxx.xxx -I lanplus -L USER -U <name> -P <name> fru
Get Device ID command failed: 0xd4 Insufficient privilege level
FRU Device Description : Builtin FRU Device (ID 0)
Get Device ID command failed: Insufficient privilege level
$ ./ipmitool -H xx.xx.xxx.xxx -I lanplus -U admin -P admin channel setaccess 1 3 callin=off link=off ipmi=on privilege=2
Set User Access (channel 1 id 3) successful.
$ ./ipmitool -H xx.xx.xxx.xx -I lanplus -L USER -U <name> -P <name> fru
FRU Device Description : Builtin FRU Device (ID 0)
Board Mfg Date       : Mon Feb 12 08:00:00 2018
Board Mfg            : Dell
Board Product        : <platform>
Board Serial         : CNCES0082C0002
Board Part Number    : 0G1T60X01
Product Manufacturer : Dell
Product Name         : <platform>
Product Version      : 00
Product Serial       : X1
```

```

Product Asset Tag      : D4SSG02

FRU Device Description : FRU_PSU1 (ID 1)
Unknown FRU header version 0x00

FRU Device Description : FRU_PSU2 (ID 2)
Board Mfg Date        : Fri Jan 12 18:47:00 2018
Board Mfg             : DELL
Board Product         : PWR_SPLY,495W,RDNT,DELTA
Board Serial          : CNDED0081G01GL
Board Part Number     : 0GRTNKA02

FRU Device Description : FRU_FAN1 (ID 3)
Unknown FRU header version 0x00

FRU Device Description : FRU_FAN2 (ID 4)
Board Mfg Date        : Mon Feb 12 08:01:00 2018
Board Mfg             : Dell
Board Product         : <platform>
Board Serial          : CNCES008260036
Board Part Number     : 07CRC9X01
Product Manufacturer  : Dell
Product Name          : <platform>
Product Version       :
Product Serial        :
Product Asset Tag     : D4SSG02

```

For more information, see the *IPMI Specification v2.0* chapter 22.26 *Set User Access Command*, 22.28 *Set User Name Command*, and 22.30 *Set User Password Command*.

- Request data byte 1—[7]
  - 0b-Do not change the following bits in this byte
  - 1b-Enable changing bits in this byte
- Request data byte 1—[6] User restricted to callback
  - 0b-User Privilege Limit is determined by the User Privilege Limit parameter for both callback and non-callback connections.
  - 1b-User Privilege Limit is determined by the User Privilege Limit parameter for callback connections, but is restricted to Callback level for non-callback connections. A user can only initiate a callback when he/she 'calls in' to the BMC, but after the callback connect is made, the user could potentially establish a session as an Operator.
- Request data byte 1—[5] User link authentication enable/disable. This is used to enable/disable a user's name and password information for link authentication. Link authentication itself is a global setting for the channel and is enabled/disabled via the serial or modem configuration parameters.
  - 0b-disable user for link authentication
  - 1b-enable user for link authentication
- Request data byte 1—User IPMI Messaging enable/disable. This is used to enable/disable a user's name and password information for IPMI messaging. In this case, *IPMI Messaging* means the ability to execute generic IPMI commands that are not associated with a particular payload type. For example, if you disable IPMI Messaging for a user, but that user is enabled for activating the SOL payload type, IPMI commands associated with SOL and session management, such as *Get SOL Configuration parameters* and *Close Session* are available, but generic IPMI commands such as *Get SEL Time* are not.
  - 0b-disable user for link authentication
  - 1b-enable user for link authentication
- Request data byte 2—User ID
  - [7:6] reserved
  - [5:0] User ID. 00000b = reserved
- Request data byte 3—User limits
  - [7:6] reserved
  - [3:0] User Privilege Limit. This determines the maximum privilege level that the user can switch to on the specified channel.
    - 0h-reserved
    - 1h-Callback
    - 2h-User
    - 3h-Operator
    - 4h-Administrator
    - 5h-OEM Proprietary

- Fh-NO ACCESS
- Request data byte (4)—User Session Limit. Optional—Sets how many simultaneous sessions are activated with the username associated with the user. If not supported, the username activates as many simultaneous sessions as the implementation supports. If an attempt is made to set a non-zero value, a CCh "invalid data field" error returns.
  - [7:4]-Reserved
  - [3:0]-User simultaneous session limit. 1-based. oh=only limited by the implementations support for simultaneous sessions.
- Response data byte 1—Completion code
  - ① **NOTE:** If the user access level is set higher than the privilege limit for a given channel, the implementation does not return an error completion code. If required, it is up to the software to check the channel privilege limits set using the `Set Channel Access` command and provide notification of any mismatch.

## Set User Name Command

- Request data byte 1—User ID
  - [7:6]-reserved
  - [5:0]-User ID. 000000b-reserved. User ID 1 is permanently associated with User 1, the null user name.
- Request data byte 2:17—User Name String in ASCII, 16 bytes maximum. Strings with fewer than 16 characters terminate with a null (00h) character. The 00h character is padded to 16 bytes. When the string is read back using the `Get User Name` command, those bytes return as 0s.
- Response data byte 1—Completion code

## Set User Password Command

- Request data byte 1—User ID. For IPMI v20, the BMC supports 20-byte passwords (keys) for all user IDs that have configurable passwords. The BMC maintains an internal tag indicating if the password is set as a 16-byte or 20-byte password.
 

Use a 16-byte password in algorithms that require a 20-byte password. The 16-byte password is padded with 0s to create 20-bytes.

If an attempt is made to test a password that is stored as a 20-byte password as a 16-byte password, and vice versa, the `test password` operation returns a `test failed` error completion code.

You cannot use a password stored as a 20-byte password to establish an IPMI v1.5 session. You must set the password as a 16-byte password to configure the same password for both IPMI v20 and IPMI v1.5 access. The password is padded with 0s as necessary.

Use the `test password` operation to determine if a password is stored as 16-bytes or 20-bytes.
- Request data byte 2—
  - [7:2] Reserved
  - [1:0] Operation
    - 00b-disable user
    - 01b-enable user-10b-set password
    - 11b-test password. This compares the password data given in the request with the presently stored password and returns an OK completion code if it matches. Otherwise, an error completion code returns.
- Request data byte 3:18—For 16-byte passwords. Password data. This is a fixed-length required field used for setting and testing password operations. If the user enters the password as an ASCII string, it must be null (00h) terminated 00h padded if the string is shorter than 16 bytes. This field is not needed for the `disable user` or `enable user` operation. If the field is present, the BMC ignores the data.
- Request data byte 3:22—For 20-byte passwords. This is a fixed-length required field used for setting and testing password operations. If the user enters the password as an ASCII string, it must be null (00h) terminated 00h padded if the string is shorter than 20 bytes. This field is not needed for the `disable user` or `enable user` operation. If the field is present, the BMC ignores the data.
- Response data byte 1—Completion code. Generic plus the following command-specific completion codes:
  - 80h-mandatory password test failed. Password size is correct but the password data does not match the stored value.
  - 81h-mandatory password test failed. Wrong password size.



# Firewall

To set a firewall, use the `set firewall configuration` command. Use parameters 0–3 to add the iptables rules and 4–7 to remove the iptables rules.

- NetFN—0x32
- Command—0x76
- Request data Byte 1—parameter selector
- Request data Byte 2—State selector
- Request data Byte 3:N—Configuration parameter data
- Response data Byte 1—Completion code
  - 80h—Parameter not supported
  - 81h—Invalid time (start/stop time)
  - 82h—Attempt to write read-only parameter
  - 83h—Attempt to access HTTP Port 80

To set the firewall configuration state, use the following:

**Table 3. Firewall set parameters**

Type specific param	#	Parameter data
To set the command to DROP	00	Parameter to drop packets. Parameter 0–3 uses this state to add the rules to drop the packets based on the IP address/port number or ange of IP addresses/port numbers. Use parameter 4–7 to remove the rule.
To set the command to ACCEPT	01	Parameter to accept packets. Parameter 0–3 uses this state to add the rules to accept the packets based on the IP address/port number or ange of IP addresses/port numbers. Use parameter 4–7 to remove the rule.

To set the firewall parameters, use the following:

**Table 4. Firewall set parameters**

Type specific param	#	Parameter data
Add the IPv4 address rule	0	Data 1:4—IP address MS-byte first. This is an IPv4 address that is blocked or unblocked based on the state.
Add the range of IPv4 addresses rule	1	Data 1:8—IP address range [1:4]—Starting IP address from which IPs are blocked or unblocked based on the state. [ 5:8]—Ending IP address until IPs are blocked or unblocked based on the state. For example, if the IP address is x1.x2.x3.x4, the format is: 1st byte = x1 2nd byte = x2 3rd byte = x3 4th byte = x4

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
Add the IPv4 port number rule	2	Data 1:—Protocol TCP/UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—MX byte first. Port number blocked or unblocked based on the state.
Add the Pv4 port number range rule	3	Data 1:—Protocol TCP/UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port range [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till ports are blocked or unblocked based on the state.
Remove the IPv4 address rule	4	Data 1:4—IP address MS-byte first. This is the IPv4 address type that is blocked or unblocked based on state.
Remove the range of IPv4 addresses rule	5	Data 1:8—IP address range [1:4]—Starting IP address that is blocked or unblocked based on the state. [5:8]—Ending IP address that is blocked or unblocked based on the state. For example, if the IP address is x1.x2.x3.x4, the format is: 1st byte = x1 2nd byte = x2 3rd byte = x3 4th byte = x4
Remove the IPv4 port number rule	6	Data 1:—Protocol TCP/UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state.
Remove the IPv4 port range rule	7	Data 1:—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port range [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till ports are blocked or unblocked based on the state.
Flush IPv4 and IPv6 iptable	8	Flush all the rules set using iptables and ip6tables.
Drop all	9	Add iptables rules to block IPv4 and IPv6 traffic to the BMC. The state selector is

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		not used. Data1: Protocol Bit 7:2—Reserved Bit 1—IPv6 Bit 0—IPv4
Remove drop all rule	10	Remove iptables rules to block IPv4 and IPv6 traffic to the BMC. The state selector is not used. Data1: Protocol Bit 7:2—Reserved Bit 1—IPv6 Bit 0—IPv4
Add IPv4 address with timeout rule	11	Data 1:4—IP address MS-byte first. The IPv4 address type blocked or unblocked based on the state. Date 5:10—Start time [5:6]—Year LS-byte first if little endian system. Two-byte data required to form year. 7—month 8—date 9—hour 10—minute Date 11-16—stop time [11:12]—Year LS-byte first if little endian system. Two-byte data required to form year. 13—month 14—date 15—hour 16—minute
Add IPv4 range of addresses with timeout rule	12	Data 1:8—IP address [1:4]—Starting IP address blocked or unblocked based on the state. [5:8]—Ending IP address till IPs are blocked or unblocked based on the state. Date 9:14—Start time [9:10]—Year LS-byte first if little endian system. Two-byte data required to form year. 11—month 12—date 13—hour 14—minute Date 15-20—Stop time [15:16]—Year LS-byte first if little endian system. Two-byte data required to form year.
Add the IPv4 port number with timeout rule	13	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		blocked or unblocked based on the state. Date 4:9—Start time [4:5]—Year LS-byte first if little endian system. Two-byte data required to form year. 6—month 7—date 8—hour 9—minute Date 10-15—stop time [10:11]—Year LS-byte first if little endian system. Two-byte data required to form year. 12—month 13—date 14—hour 15—minute
Add the IPv4 port range with timeout rule	14	Data 1:—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till the ports blocked or unblocked based on the state. Date 6:11Start time [6:7]—Year LS-byte first if little endian system. Two-byte data required to form year. 8—month 9—date 10—hour 11—minute Date 12-17—stop time [12:13]—Year LS-byte first if little endian system. Two-byte data required to form year. 14—month 15—date 16—hour 17—minute
Remove the IPv4 address with timeout rule	15	Data 1:4—IP address MS-byte first. The IPv4 address type blocked or unblocked based on the state. Date 5:10—Start time [5:6]—Year LS-byte first if little endian system. Two-byte data required to form year. 7—month 8—date 9—hour 10—minute Date 11-16—stop time [11:12]—Year LS-byte first if little endian system. Two-byte data required to form year.

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		13—month 14—date 15—hour 16—minute
Remove the range IPv4 address with timeout rule	16	Data 1:8—IP address [1:4]—Starting IP address blocked or unblocked based on the state. [5:8]—Ending IP address till IPs are blocked or unblocked based on the state. Date 9:14—Start time [9:10]—Year LS-byte first if little endian system. Two-byte data required to form year. 11—month 12—date 13—hour 14—minute Date 15-20—Stop time [15:16]—Year LS-byte first if little endian system. Two-byte data required to form year. 17—month 18—date 19—hour 20—minute
Remove the IPv4 port number with timeout rule	17	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state. Date 4:9—Start time [4:5]—Year LS-byte first if little endian system. Two-byte data required to form year. 6—month 7—date 8—hour 9—minute Date 10-15—stop time [10:11]—Year LS-byte first if little endian system. Two-byte data required to form year. 12—month 13—date 14—hour 15—minute
Remove the IPv4 port number range with timeout rule	18	Data 1:—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till the ports blocked

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		or unblocked based on the state. Date 6:11—Start time [6:7]—Year LS-byte first if little endian system. Two-byte data required to form year. 8—month 9—date 10—hour 11—minute Date 12-17—stop time [12:13]—Year LS-byte first if little endian system. Two-byte data required to form year. 14—month 15—date 16—hour 17—minute
Drop all IPv4 or IPv6 with timeout rule	19	Add iptables rules to block IPv4 and IPv6 traffic to the BMC. The state selector is not used. Data1: Protocol Bit 7:2—Reserved Bit 1—IPv6 Bit 0—IPv4 Date 2:7—Start time [2:3]—Year LS-byte first if little endian system. Two-byte data required to form year. 4—month 5—date 6—hour 7—minute Date 8:13—Stop time [8:9]—Year LS-byte first if little endian system. Two-byte data required to form year. 10—month 11—date 12—hour 13—minute
Remove drop all lpv4 or IPv6 with timeout rule	20	Add iptables rules to block IPv4 and IPv6 traffic to the BMC. The state selector is not used. Data1: Protocol Bit 7:2—Reserved Bit 1—IPv6 Bit 0—IPv4 Date 2:7—Start time [2:3]—Year LS-byte first if little endian system. Two-byte data required to form year. 4—month 5—date 6—hour 7—minute Date 8:13—Stop time [8:9]—Year

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		LS-byte first if little endian system. Two-byte data required to form year. 10—month 11—date 12—hour 13—minute
Add IPv6 address with timeout rule	21	Data 1:16—IPv6 address MS-byte first. The IPv6 address type blocked or unblocked based on the state. Date 7:22—Start time [17:18]—Year LS-byte first if little endian system. Two-byte data required to form year. 19—month 20—date 21—hour 22—minute Date 23-28—stop time [23:24]—Year LS-byte first if little endian system. Two-byte data required to form year. 25—month 26—date 27—hour 28—minute
Add IPv6 address range with timeout rule	22	Data 1:16—IPv6 address range [1:16]—Port number from the ports blocked or unblocked based on the state. [17:32]—Port number till the ports blocked or unblocked based on the state. Date 33:38—Start time [33:34]—Year LS-byte first if little endian system. Two-byte data required to form year. 35—month 36—date 37—hour 38—minute Date 39:44—stop time [39:40]—Year LS-byte first if little endian system. Two-byte data required to form year. 41—month 42—date 43—hour 44—minute
Remove the IPv6 address with timeout rule	23	Data 1:16—IPv6 address MS-byte first. The IPv4 address type blocked or unblocked based on the state. Date 17:22—Start time [17:18]—Year LS-byte first if little endian system. Two-byte data required to form year. 19—month 20—date 21—hour 22—minute

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		Date 23-28—stop time [23:24]—Year LS-byte first if little endian system. Two-byte data required to form year. 25—month 26—date 27—hour 28—minute
Remove the Ipv6 address range with timeout rule	24	Data 1:16—IPv6 address range [1:16]—Port number from the ports blocked or unblocked based on the state. [17:32]—Port number till the ports blocked or unblocked based on the state. Date 33:38—Start time [33:34]—Year LS-byte first if little endian system. Two-byte data required to form year. 35—month 36—date 37—hour 38—minute Date 39:44—stop time [39:40]—Year LS-byte first if little endian system. Two-byte data required to form year. 41—month 42—date 43—hour 44—minute
Add the IPv6 port number with timeout rule	25	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state. Date 4:9—Start time [4:5]—Year LS-byte first if little endian system. Two-byte data required to form year. 6—month 7—date 8—hour 9—minute Date 10-15—stop time [10:11]—Year LS-byte first if little endian system. Two-byte data required to form year. 12—month 13—date 14—hour 15—minute
Add the IPv6 port number range with timeout rule	26	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP



**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Year Date 6:11—Start time [6:7]—Year LS-byte first if little endian system. Two-byte data required to form year. 8—month 9—date 10—hour 11—minute Date 12-17—stop time [12:13]—Year LS-byte first if little endian system. Two-byte data required to form year. 14—month 15—date 16—hour 17—minute
Remove the IPv6 port number with timeout rule	27	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:9]—Year Date 4:9—Start time [4:5]—Year LS-byte first if little endian system. Two-byte data required to form year. 6—month 7—date 8—hour 9—minute Date 10-15—stop time [10:11]—Year LS-byte first if little endian system. Two-byte data required to form year. 12—month 12—date 14—hour 15—minute
Remove the IPv6 port range with timeout rule	28	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Year Date 6:11—Start time [6:7]—Year LS-byte first if little endian system. Two-byte data required to form year. 8—month

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		9—date 10—hour 11—minute Date 12-17—stop time [12:13]—Year LS-byte first if little endian system. Two-byte data required to form year. 14—month 15—date 16—hour 17—minute
Add the IPv6 address rule	29	Data 1:16—IPv6 address MS-byte first. This is an IPv6 address that is blocked or unblocked based on state.
Add the IPv6 address range rule	30	Data 1:16—IPv6 address range [1:16]—Starting IP address from which IPs are blocked or unblocked based on the state. [17:32]—Ending IP address until IPs are blocked or unblocked based on the state.
Remove the IPv6 address rule	31	Data 1:16—IPv6 address MS-byte first. This is an IPv6 address that is blocked or unblocked based on state.
Remove the IPv6 address range rule	32	Data 1:16—IPv6 address range 1:16]—Starting IP address from which IPs are blocked or unblocked based on the state. [17:32]—Ending IP address until IPs are blocked or unblocked based on the state.
Add the IPv6 port number rule	33	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state.
Add the IPv6 port number range rule	34	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till the ports are blocked or unblocked based on the state.
Remove the IPv6 port number rule	35	Data 1—Protocol TCP and UDP 0 = TCP

**Table 4. Firewall set parameters (continued)**

Type specific param	#	Parameter data
		1 = UDP 2 = both TCP and UDP Data 2:3—port number [2:3]—Port number from the ports blocked or unblocked based on the state.
Remove the IPv6 port number range rule	36	Data 1—Protocol TCP and UDP 0 = TCP 1 = UDP 2 = both TCP and UDP Data 2:5—port number [2:3]—Port number from the ports blocked or unblocked based on the state. [4:5]—Port number till the ports are blocked or unblocked based on the state.

## Event log

To get the IPMI event log, use the `ipmitool sel list` command.

To clear the event log, use the `ipmitool sel clear` command.


For IPMI event log settings, see the *IPMI Specification v2.0* chapter 31.4 *Reserve SEL Command* and 31.5 *Get SEL Entry Command*.

## Reserve SEL command

Use reserve system event log (SEL) to set the present owner of the SEL. This reservation provides a limited amount of protection on repository access from the IPMB when you delete or incrementally read records. Use `get SEL` to read the SEL repository.

- Response data byte 1—Completion code
  - 81h—cannot execute the command, SEL erase in progress
- Response data byte 2—Reservation ID, LS byte 0000h reserved.
- Response data byte 3—Reservation ID, SM byte

## Get SEL command


- Request data byte 1:2—Reservation ID, LS byte first. Only required for a partial get. Otherwise use 0000h.
- Request data byte 3:4—SEL record ID, LS byte first.
  - 0000h=GET FIRST ENTRY
  - FFFFh=GET LAST ENTRY
- Request data byte 5—Offset into record
- Request data byte 6—Bytes to read. FFh means read entire record.
- Response data byte 1—Completion code. Returns an error completion code if the SEL is empty.
  - 81h=cannot execute the command, SEL erase in progress.
- Response data byte 2:3—Next SEL record ID. LS byte first (returns FFFFh if the record just returned is the last record).
  -  **NOTE:** FFFFh is not allowed as the record ID of an actual record. For example, the record ID in Record Data for the last record cannot be FFFFh.
- Response data byte 4:N—Record data, 16 bytes for the entire record.

## Set LOG configuration command

To set the system or audit log configuration, use the `set LOG configuration` command.

- Netfn—0x32
- Command—0x68

## Audit log configuration

- Request data byte 1—Cmd
  - [7:2] Reserved
  - [1:0] 01h—Audit log
- Request data byte 1—Status
  - [7:2] Reserved
  - [1:0] 01h—Disabled
  - 01h—Enable local
- Response data byte 1—00h-success
  - CCh=invalid data field
  - FFh=unspecified error
- Response data byte 1—Cmd
  - [7:2] Reserved
  - [1:0] 00h—system log
- Response data byte 2—Status
  - [7:2] Reserved
  - [1:0] 01h—Disabled
  - 01h—Enable local
- Response data byte 3-70 for REMOTE (68 bytes) or 3-7 for LOCAL (5 bytes)—ENABLED REMOTE
  -  **NOTE:** These request data bytes are required only when you enable either the local or remote system log.

```
64bytes : Hostname (ASCII)
Remote syslog server
4bytes : port number
```

To set the remote server ip address to 10.0.124.22 and port to 770:

```
ipmitool -I lanplus -H xx.xx.xx.xx -U xxx -P xxx raw 0x32 0x68 0x00
0x02 0x31 0x30 0x2e 0x30 0x2e 0x31 0x32 0x34 0x2e 0x32 0x32 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x02 0x03 0x00 0x00
ENABLED LOCAL
4bytes : Size (LSB first)
size of each file to rotate (file size is from 3 to 65535 KB)
1bytes : Rotate
Number of back-up files after logrotate (maximum 1 file)
```

To set the file size to 100 bytes, use the IPMI command:

```
ipmitool -I lanplus -H xx.xx.xx.xx -U xxx -P xxx raw 0x32 0x68 0x00
0x01 0x64 0x00 0x00 0x00 0x01
```

# Default configuration restore

Use configuration restore to start the configuration from scratch. For example, use configuration restore to remove the old configuration and start over if you reinstall the system or move the system to a new location.

## Restore default configuration command

- NetFn—0x32
- Command—0x66
- Response byte 1—Completion code

## Set backup configuration flag

To set the backup flags for the `manage BMC configuration` command, use the `set backup configuration flag` command.

- NetFN—0x32
- Command—0xF3
- Request data byte 1:2—Byte 1 is the value specifies to back up a configuration feature or not.
  - [7]—Reserved
  - [6]—1b: Backup SNMP. 0b: Do not backup the simple network management protocol (SNMP)
  - [5]—1b: Backup SYSLOG. 0b: Do not backup SYSLOG
  - [4]—1b: Backup KVM. 0b: Do not backup keyboard, video, and mouse (KVM)
  - [3]—1b: Backup NTP. 0b: Do not backup network time protocol (NTP)
  - [2]—1b: Backup IPMI. 0b: Do not backup IPMI
  - [1]—1b: Backup NETWORK And SERVICES. 0b: Do not backup NETWORK And SERVICES
  - [0]—1b: Backup AUTHENTICATION. 0b: Do not backup AUTHENTICATION
- Response data byte 1—Completion code
  - 0x83—Authentication feature is not enabled
  - 0x84—NTP feature is not enabled
  - 0x85—KVM feature is not enabled
  - 0x86—SNMP feature is not enabled



**NOTE:** Reserved bits may be updated further based on the requirement.

## Current released firmware

These software versions apply to the VEP4600

**Table 5. Current firmware**

Device	Firmware	Current version
VEP4600	BMC	2.20
	BIOS	3.41.0.9-18
VEP4600	CPLD	v10 (0x10)
VEP4600	Unified firmware updater	v3.2
rNDC	CPLD	0x02
rNDC	nvm	DUP package – 19.05.12
x722	nvm	3.33

**NOTE:** If BMC version is less than 1.23, CPLD versions will not be shown correctly.

### Topics:

- [Minimum firmware upgrades](#)
- [USB based firmware update](#)
- [Remote firmware update](#)

## Minimum firmware upgrades

Manual or automatic BMC, BIOS, and CPLD firmware upgrades is **required before** VEP4600 Expansion Card installation.

**NOTE:** Minimum firmware requirements

**Table 6. Required firmware minimum release requirements.**

Device	Firmware	Minimum firmware release required when installing an rNDC Card
VEP4600	BMC	v1.22
	BIOS	v3.41.0.9-10
VEP4600	CPLD	V0C
Expansion Card - rNDC x710	CPLD	v02

## USB based firmware update

Update your BMC, BIOS, and CPLD firmware with the following commands.

**NOTE:** DIAG OS version 6 is the minimum configuration to install VEP4600 Expansion Cards.

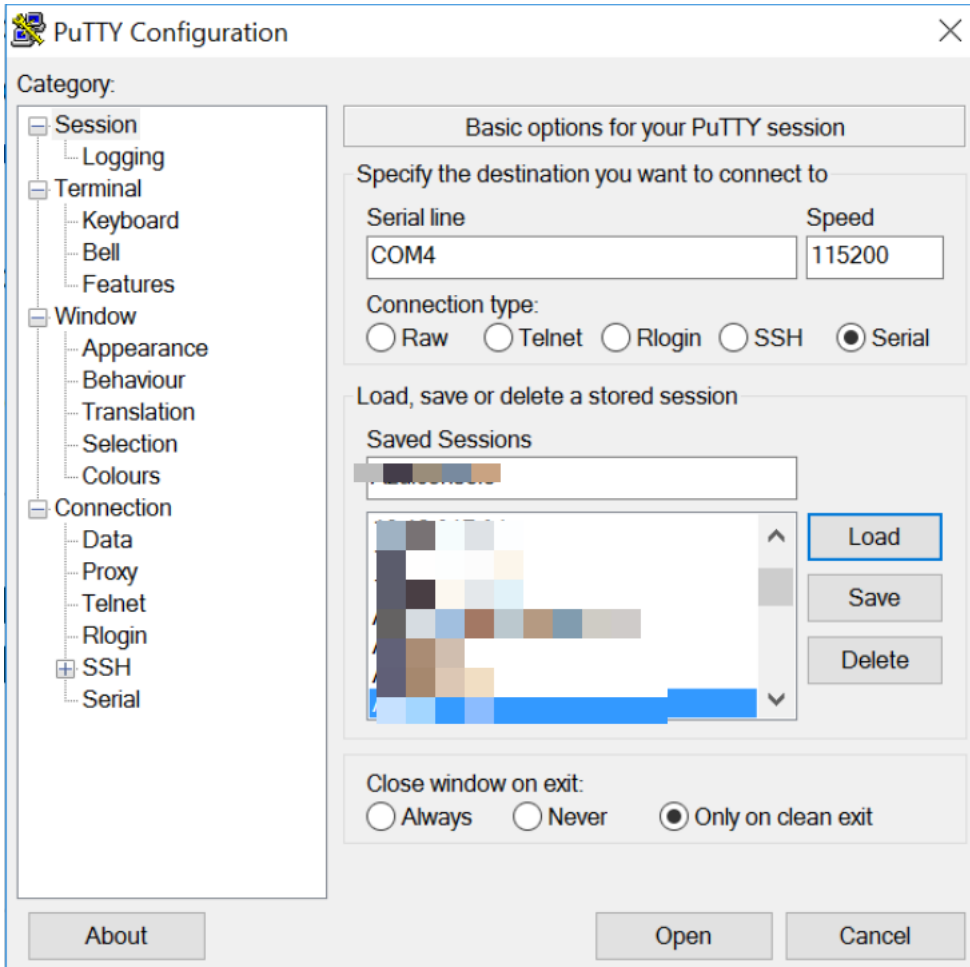
## Power on VEP4600

Plug in a power cord to the back of VEP4600 platform. The platform starts to power up immediately.

## Create a serial console connection

To establish a console connection use a universal serial bus (USB)-to-RS-232 connection from a USB port to a VEP4600 console port.

**NOTE:** Use a 115200 baud rate.



puTTY 115200 baud rate setup

## BIOS access process

1. Press the **delete** button after the POST Lower DRAM Memory test appears on the screen. Continue pressing the **delete** button to progress to the BIOS setup and configuration screen.

**NOTE:** If the BIOS setup and configuration screen window passes, power off and power on the platform again to restart the boot up process.

CPLD Reset Source=0x44

POST Configuration

CPU Signature 50654  
CPU FamilyID=6, Model=55, SteppingId=4, Processor=0  
Microcode Revision 2000043  
Platform ID: 0x1000000000000000  
PKG\_CST\_CFG\_CTL: 0x3  
Misc EN: 0x4000840088  
Gen PM Con1: 0x0  
Therm Status: 0x8000000  
POST Control=0xEA000303, Status=0xE6008500

BIOS initializations...

POST:

RTC Battery OK at last cold boot  
RTC date 5/4/2018 3:02:03

POST SPD test ..... PASS

POST Lower DRAM Memory test

...

Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.  
BIOS Date: 04/11/2018 02:44:05 Ver: 0ACJF020  
Press <DEL> or <F2> to enter setup.

Initial boot up screen



```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Main Advanced Platform Configuration Socket Configuration Server Mgmt >
-----+-----
| BIOS Information                                ^|Choose the system
| BIOS Vendor      American Megatrends          *|default language
| Core Version     5.14                          *|
| Compliancy       UEFI 2.6; PI 1.4             *|
| Project Version  0ACJF 0.20 x64              *|
| Build Date and Time 04/11/2018 02:44:05      *|
| Access Level      Administrator              *|
|                                                         *|
| Platform Information                            *|
| Platform          TypeYubaCityRP             *|-----+-----
| Processor         50654 - SKX M0             *|><: Select Screen
| PCH               - B2-D                     *|^v: Select Item
| RC Revision       05D81                      *|Enter: Select
|                                                         *|+/-: Change Opt.
| Memory Information                               *|F1: General Help
| Total Memory     16384 MB                    +|F2: Previous Values
|                                                         +|F3: Optimized Defaults
| System Language  [English]                   v|F4: Save & Exit
|                                                         |ESC: Exit
|                                                         +|-----+-----
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

```

BIOS setup and configuration screen

- Grab the scrollbar on the right side of the console window and scroll it up to display BIOS and CPLD versions.

```

BIOS Boot Selector for VEP4600
Primary BIOS Version 3.41.0.9-8

CPLD Version:0.7
CPLD Reset Source=0x44

POST Configuration
CPU Signature 50654
CPU FamilyID=6, Model=55, SteppingId=4, Processor=0
Microcode Revision 2000043
Platform ID: 0x1000000000000000
PKG_CST_CFG_CTL: 0x3
Misc EN: 0x4000840088
Gen PM Conl: 0x0
Therm Status: 0x8000000
POST Control=0xEA000301, Status=0xE6009D00

BIOS initializations...

POST:
RTC Battery OK at last cold boot
RTC date 9/27/2018 4:55:38

```

Display BIOS and CPLD versions

## Configure BIOS and boot into DIAG OS

### Steps

- Boot into BIOS setting and select **Boot Option #1** to boot from the hard disk.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
< Security Boot Save & Exit
-----+-----
| Boot Configuration                ^|Sets the system boot
| Setup Prompt Timeout              *|order
| Bootup NumLock State              *|
| Quiet Boot                        *|
|                                  *|
| Boot Option Priorities            *|
| Boot Option #1                    *|
|                                  *|
| Boot Option #2                    *|
|                                  *|
| Boot Option #3                    *|-----+-----
|                                  *|><: Select Screen
|                                  *|^v: Select Item
|                                  *|Enter: Select
| Boot Option #4                    *|+/-: Change Opt.
|                                  *|F1: General Help
| Boot Option #5                    *|F2: Previous Values
|                                  +|F3: Optimized Defaults
|                                  v|F4: Save & Exit
|                                  |ESC: Exit
-----+-----
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

```

Select boot from hard disk

2. Select **Save & Exit setup** and select **Yes**.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
< Security Boot Save & Exit
-----+-----
| Save Options                      ^|Exit system setup after
| Save Changes and Exit              *|saving the changes.
| Discard Changes and Exit          *|
|                                  *|
| Save Changes and Reset             *|
| Discard Changes and R/----- Save & Exit Setup -----\
| Save Changes                       | Save configuration and exit? |
| Discard Changes                     |                               |
|                                  |-----+-----|
| Default Options                     | Yes           No           | Select Screen
| Restore Defaults                    \-----+-----/ Select Item
| Save as User Defaults                |                               |
| Restore User Defaults                *|^v: Select
|                                  *|+/-: Change Opt.
|                                  *|F1: General Help
| Boot Override                       +|F2: Previous Values
| UEFI: Built-in EFI Shell            +|F3: Optimized Defaults
| UEFI: Generic Flash Disk 8.07      v|F4: Save & Exit
|                                  |ESC: Exit
-----+-----
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

```

Save and exit

3. Type root/calvin to login.

```

Starting Getty on tty2...
[ OK ] Started Getty on tty2.
Starting Getty on tty1...
[ OK ] Started Getty on tty1.
Starting Serial Getty on ttyS0...
[ OK ] Started Serial Getty on ttyS0.
Starting Getty on tty3...
[ OK ] Started Getty on tty3.
Starting Getty on tty4...
[ OK ] Started Getty on tty4.
Starting Getty on tty5...
[ OK ] Started Getty on tty5.
Starting Getty on tty6...
[ OK ] Started Getty on tty6.
[ OK ] Started getty on tty2-tty6 if dbus and logind are not available.
[ OK ] Reached target Login Prompts.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target Graphical Interface.
Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.

```

Debian GNU/Linux 8 dellemc-diag-os ttyS0

dellemc-diag-os login: █


Type root/calvin to login

## Update BMC in DIAG OS

### About this task

### Steps

Use this command to update BMC:

 **NOTE:** This `<BMC_update_filename>` is the file from the USB drive that is mounted.

```
#updatetool -D BMC -U -e <BMC_update_filename>
```

You are prompted for confirmation. Press `y` and `enter` to continue. When the update is complete, you must powercycle the system.

```

root@dellemc-diag-os:~# cd /mnt/usb/
root@dellemc-diag-os:/mnt/usb# updatetool -D BMC -U -e
<BMC_update_filename>
disable preserve BIOS configuration
00
Disable device protect

Disable BMC protect operation success, wait HW reset
Write image to BMC
INFO: Yafu INI Configuration File not found... Default options will not be applied...

Creating IPMI session via USB...Done

-----
YAFUFlash - Firmware Upgrade Utility (Version 4.112.0)
-----
(C)Copyright 2016, American Megatrends Inc.
Image To be updated is (Image-1)
=====
                          Firmware Details
=====

```

```

RomImage      Image 1      Image 2
  ModuleName  Description  Version      Version      Version
1. boot       BootLoader  0.2.000000  0.2.000000  0.2.000000
2. conf       ConfigParams 0.20.000000 0.20.000000 0.20.000000
3. root       Root         0.20.000000 0.20.000000 0.20.000000
4. osimage    Linux OS     0.20.000000 0.20.000000 0.20.000000
5. www        Web Pages    0.20.000000 0.20.000000 0.20.000000
6. testapps   0.20.000000 0.20.000000 0.20.000000
7. ast2500e   1.0.000000 1.0.000000 0.20.0
Existing Image and Current Image are Same
So,Type (Y/y) to do Full Firmware Upgrade or (N/n) to exit
Enter your Option : y

*****
WARNING!
FIRMWARE UPGRADE MUST NOT BE INTERRUPTED ONCE IT IS STARTED.
PLEASE DO NOT USE THIS FLASH TOOL FROM THE REDIRECTION CONSOLE.
*****
Uploading Firmware Image : 100%... done
Skipping [boot] Module ....
Flashing [conf] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [root] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [osimage] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [www] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [testapps] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Flashing [ast2500e] Module ....
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
Resetting the firmware.....
write BMC image success
Enable device protect

Update BMC image success
root@dellemc-diag-os:~#

```

**i** **NOTE:** Switch to BMC console to monitor the BMC update status. Confirm BMC updates. Reboot the system. Proceed to BIOS update.

## Update BIOS in DIAG OS

Manual or automatic BMC, BIOS, and CPLD firmware upgrades is **required before** VEP4600 Expansion Card installation.

Use the following DIAG OS command to update BIOS:

**i** **NOTE:** For updating BIOS use the following command:

```
updatetool -D BIOS -U -e VEP4600-BIOS-x.xx.x.x-xx.BIN
```

## Update CPLD in DIAG OS

### About this task

#### Steps

1. Use the following DIAG OS command to update CPLD:

**NOTE:** "x" indicates current version of file.

```
root@dellemc-diag-os:~# updatetool -D CPLD --index=1 -U -e xxxx_CPLD_Vxx.vme
00
Disable device protect

Disable CPLD protect operation success, wait HW reset
Write image to CPLD
INFO: Yafu INI Configuration File not found... Default options will not be applied...

Creating IPMI session via USB...Done

-----
YAFUFlash - Firmware Upgrade Utility (Version 5.0.0)
-----

(C)Copyright 2016, American Megatrends Inc.
Beginning CPLD Update...
Uploading Image : 100%... done
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
write CPLD image success
Enable device protect

Update CPLD image success
```

2. When all of the firmware updating completes **you must either** unplug and replug power cables, or power-down and power-up using the remote power cycle command of the system.  
The new CPLD updates will take effect only after the system is power-cycled.

## Remote firmware update

Update your BMC, BIOS, and CPLD firmware with the following commands.

**NOTE:** DIAG OS version 6 is the minimum configuration to install VEP4600 Expansion Cards.

## Boot into BIOS settings

### Steps

1. Press the **delete** button after the POST Lower DRAM Memory test appears on the screen. Continue pressing the **delete** button to progress to the BIOS setup and configuration screen.  
**NOTE:** If the BIOS setup and configuration screen window passes, power-off, and power-on the unit. Either turn off the processor using the software console or hold the processor power on/off button down for five seconds.
2. Boot into BIOS settings.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Main Advanced Platform Configuration Socket Configuration Server Mgmt >
-----+-----
| BMC Device ID          32          ^|Configure BMC network
| BMC Device Revision    1          *|parameters
| BMC Firmware Revision  1.01       *|
| IPMI Version           2.0        *|
| BMC Interface(s)       KCS, USB    *|
|                       *|
| BMC Support            [Enabled]   *|
| Wait For BMC           [Disabled]  *|
| FRB-2 Timer           [Enabled]   *|
| FRB-2 Timer timeout    [6 minutes] *|
| FRB-2 Timer Policy     [Do Nothing] *|-----+-----
| OS Watchdog Timer      [Disabled]  *|><: Select Screen
| OS Wtd Timer Timeout   [10 minutes] *|^v: Select Item
| OS Wtd Timer Policy    [Reset]     *|Enter: Select
| Serial Mux             [Disabled]  *|+/-: Change Opt.
|> System Event Log      +|F1: General Help
|> BMC self test log     +|F2: Previous Values
|> BMC network configuration v|F3: Optimized Defaults
|                       +|F4: Save & Exit
|                       |ESC: Exit
-----+-----

```

3. Go to Server Mgmt->BMC network configuration.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Server Mgmt
-----+-----
| --BMC network configuration--    ^|Select to configure LAN
| *****                          *|channel parameters
| Configure IPV4 support           *|statically or
| *****                          *|dynamically(by BIOS or
|                                  *|BMC). Unspecified
| Lan channel 1                   *|option will not modify
| Configuration Address [Unspecified] *|any BMC network
| source                          *|parameters during BIOS
| Current Configuration StaticAddress +|
| Address source                  +|-----+-----
| Station IP address             172.17.108.29 +|><: Select Screen
| Subnet mask                    255.255.255.0 +|^v: Select Item
| Station MAC address            54-BF-64-A9-E7-C9 +|Enter: Select
| Router IP address              172.17.108.254 +|+/-: Change Opt.
| Router MAC address             00-13-5F-B0-14-00 +|F1: General Help
|                               +|F2: Previous Values
| *****                          +|F3: Optimized Defaults
| Configure IPV6 support         v|F4: Save & Exit
|                               |ESC: Exit
|                               █
-----+-----

```

4. Select **Lan channel 1** and configure IP address.

Noticed when entering IP address in the text field, use `ctrl-h` to erase the characters entered by mistake.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Server Mgmt

--BMC network configuration--
*****
Configure IPV4 support
*****

Lan channel 1
Configuration Address      [Static]
source
Station IP address        172.17.108.29
Subnet mask                255.255.255.0
Station MAC address       54-BF-64-A9-E7-C9
Router IP address         172.17.108.254
Router MAC address        00-00-00-00-00-00

*****
Configure IPV6 support
*****

^|Select to configure LAN
*|channel parameters
*|statically or
*|dynamically(by BIOS or
*|BMC). Unspecified
*|option will not modify
*|any BMC network
*|parameters during BIOS
*|
+|-----
+|>: Select Screen
+|^v: Select Item
+|Enter: Select
+|+/-: Change Opt.
+|F1: General Help
+|F2: Previous Values
+|F3: Optimized Defaults
v|F4: Save & Exit
|ESC: Exit

```

5. Select **Save & Exit Setup** and choose **Yes**.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
< Security Boot Save & Exit

Save Options
Save Changes and Exit
Discard Changes and Exit

Save Changes and Reset
Discard Changes and R/

Save Changes
Discard Changes

Default Options
Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override
DiagOs (P3: M.2 (S80) 3MG2-P)
UEFI: Built-in EFI Shell

|Exit system setup after
|saving the changes.

----- Save & Exit Setup -----
| Save configuration and exit?
|
| Yes No
|-----

Select Screen
Select Item
|: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

```

## Network interface settings

### Steps

1. After booting up, go to BMC console to check the network interface settings.

```

ifconfig
eth0      Link encap:Ethernet  HWaddr 54:BF:64:A9:E7:C9
          inet addr:xxx.xx.xxx.xx  Bcast:xxx.xx.xxx.xxx  Mask:255.255.255.0
          inet6 addr: fe80::56bf:64ff:fea9:e7c9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2495 errors:1 dropped:837 overruns:0 frame:1
          TX packets:442 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000

```

```
RX bytes:494108 (482.5 KiB) TX bytes:60152 (58.7 KiB)
Interrupt:2
```

2. Ping gateway to make sure the link is up and running:

```
ping xxx.xx.xxx.xxx
PING xxx.xx.xxx.xxx (xxx.xx.xxx.xxx): 56 data bytes
64 bytes from xxx.xx.xxx.xxx: seq=0 ttl=255 time=10.000 ms
64 bytes from xxx.xx.xxx.xxx: seq=1 ttl=255 time=0.000 ms
64 bytes from xxx.xx.xxx.xxx: seq=2 ttl=255 time=0.000 ms
```

## Configure BMC network manually

### Steps

1. To configure BMC network manually. Log into BMC/IPMI console with sysadmin/superuser credential, and edit the /etc/network/interfaces file as the following:

```
auto lo
iface lo inet loopback
auto eth0
    iface eth0 inet static
        address xxx.xx.xxx.xx
        netmask 255.255.255.0
        broadcast xxx.xx.xxx.xxx
        gateway xxx.xx.xxx.xxx
```

2. Replace the IP network info with yours, then run the following command to restart network service:

```
/etc/init.d/networking restart
```

3. If you reboot BMC, you may lose the network info and need to start all over again. That's because since you don't have BIOS configured and every time you reboot BMC, it fetches the information from BIOS configuration and refreshes the interfaces file.

## Check BIOS, BMC, CPLD versions

### Steps

1. After booting up the system, check BIOS and CPLD by scroll up the vertical scroll bar on the right in putty session:

```
BIOS Boot Selector for VEP-4600
Primary BIOS Version x.xx.x.x-xx

CPLD Version:x.x
CPLD Reset Source=0x44
```

2. Check the BMC version in BIOS settings:



BMC Self Test Status	PASSED	^ Enable/Disable
BMC Device ID	32	* interfaces to
BMC Device Revision	1	* communicate with BMC
BMC Firmware Revision	1.20	*
IPMI Version	2.0	*
BMC Interface(s)	KCS, USB	*
		*
BMC Support	[Enabled]	*
Wait For BMC	[Disabled]	*
FRB-2 Timer	[Enabled]	* -----
FRB-2 Timer timeout	[6 minutes]	* ><: Select Screen
FRB-2 Timer Policy	[Do Nothing]	* ^v: Select Item
OS Watchdog Timer	[Disabled]	* Enter: Select
OS Wtd Timer Timeout	[10 minutes]	* +/-: Change Opt.
OS Wtd Timer Policy	[Reset]	+ F1: General Help
Serial Mux	[Disabled]	+ F2: Previous Values
> System Event Log		+ F3: Optimized Defaults
> BMC self test log		v F4: Save & Exit
		ESC: Exit

# Remote power cycle system

Reboot the VEP4600 using `ipmitool` from BMC, DIAG OS, or a remote IPMI server network.

## Topics:

- [From BMC console DIAG OS power cycle](#)
- [Remote ipmitool DIAG OS power management](#)

## From BMC console DIAG OS power cycle

### About this task

#### Steps

Run `ipmitool` from the BMC serial console command prompt.

- Use this command to power cycle a local system.

```
# ipmitool -H 127.0.0.1 -U admin -P admin power cycle
```

If BMC has a different administrator configured, replace the `-u` and `-p` parameters with `admin\admin`

**NOTE:** Username and password **must be** `admin\admin`

- `-u—admin`
- `-p—admin`

```
~ # ipmitool -H 127.0.0.1 -U admin -P admin power status
Chassis Power is on
~ # ipmitool -H 127.0.0.1 -U admin -P admin power cycle
Chassis Power Control: Cycle
~ # POWER CYCLE CHASSIS
POWER OFF CHASSIS
POWER ON CHASSIS
[22313.320000] LPC RESET
PDK LPC Reset is invoked
Current fan number: 5
[22318.510000] LPC RESET
PDK LPC Reset is invoked
Current fan number: 5
[610 : 685 INFO]Power Consumption Mode Change Cmd:2147440117

[610 : 685 INFO]Power Consumption Mode Value Updated (0):

OEM storage.get_SEL_Timezone
[22370.210000] UsbConfigureHS(): USB Device 0 is running in High Speed
[22370.320000] HUB port 0 reset
[22370.320000] UsbConfigureHS(): USB Device 0 is running in High Speed
Starting to Read Current PostCode buffer...
Current Post Codes are ...
0x01 0x02 0x03 0x04 0x05 0x06 0x19 0xa1 0xa3 0xa3 0xa7 0xa9 0xa7 0xa7 0xa7 0xa8 0xa9
0xa9 0xaa 0xae 0xaf 0xe0 0xe1 0xe4 0xe3 0xe5 0xb0 0xb0 0xb1 0xb1 0xb4 0xb2 0xb3 0xb3
0xb3 0xb6 0xb6 0xb6 0xb6 0xb6 0xb6 0xb7 0xb7 0xbe 0xb7 0xb7 0xb7 0xb8 0xb8 0xb8 0xb8
0xb8 0xb8 0xb9 0xb9 0xba 0xb9 0xbb 0xbb 0xbb 0xbb 0xbb 0xbb 0xbb 0xbb 0xbb 0xb7
0xbc 0xbc 0xbc 0xbc 0xbc 0xbf 0xe6 0xe7 0xe8 0xe9 0xeb 0xec 0xed 0xee 0x4f 0x61 0x9a
0x78 0x68 0x70 0x79 0xd1 0xd2 0xd4 0x91 0x92 0x94 0x94 0x94 0x94 0x94 0x94 0x94 0x94
0x94 0x94 0x94 0x94 0x94 0x94 0x95 0x96 0xef 0x92 0x92 0x92 0x99 0x91 0xd5 0x92 0x92
0x92 0x92 0x97 0x98 0x9d 0x9c 0xb4 0xb4 0xb4 0xb4 0xb4 0x92 0xa0 0xa2 0xa2 0xa2 0x99
0x92 0x92 0x92
[610 : 685 INFO]Power Consumption Mode Change Cmd:2147440116
```

## Remote ipmitool DIAG OS power management

### About this task

Use `ipmitool` to reboot and power-off from the BMC serial console command prompt.

**i** **NOTE:** When building the kernel for VEP4600, the kernel flag `CONFIG_IPMI_POWEROFF` should be set to `n`. Having this flag turned on will cause the kernel to send the `ipmi` command to power down the chassis when the CPU is powered-off. For example, pressing the push button for five seconds will power down the CPU.

Pressing the push button for 5 secs with this flag set to `n` in the kernel will power down the chassis (standby mode). The only way to power-up the chassis will be to issue the `ipmi` command from remote station to the BMC to power-on the VEP4600.

### Steps

1. Run `ipmitool` from the BMC serial console command prompt.
  - a. Use this command to reboot the remote system.

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin power reset
```
  - b. Use this command to power-off the remote system.

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin power off
```
  - c. Use this command to power-on the remote system.

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin power on
```
  - d. Use this command to cold reboot the remote system.

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin power cycle
```
2. Use this command to boot into BIOS settings.

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin chassis bootparam set bootflag force_bios
```

```
ipmitool -I lanplus -H 127.0.0.1 -U admin -P admin power reset
```

## Access system health sensors

To check sensor information, use the following command:

```
root@dell EMC-diag-os:~# ipmitool sensor list
```

To change the sensor threshold, see the *IPMI Specification v2.0* chapter 35.8 *Set Sensor Thresholds Command*.

- Request data byte 1—Sensor number, FFH=reserved
- Request data byte 2—
  - [7:6] - reserved. Write as 00b
  - [5] - 1b=set upper non-recoverable threshold
  - [4] - 1b=set upper critical threshold
  - [3] - 1b=set upper non-critical threshold
  - [2] - 1b=set lower non-recoverable threshold
  - [1] - 1b=set lower critical threshold
  - [0] - 1b=set lower non-critical threshold
- Request data byte 3—lower non-critical threshold. Ignored if bit 0 of byte 2 = 0
- Request data byte 4—lower critical threshold. Ignored if bit 1 of byte 2 = 0
- Request data byte 5—lower non-recoverable threshold. Ignored if bit 2 of byte 2 = 0
- Request data byte 6—upper non-critical threshold. Ignored if bit 3 of byte 2 = 0
- Request data byte 7—upper critical threshold value. Ignored if bit 4 of byte 2 = 0
- Request data byte 8—upper non-recoverable threshold value. Ignored if bit 5 of byte 2 = 0
- Response data byte 1—Completion code

### ipmitool sensors

```

-root@dell EMC-diag-os:~# ipmitool sensor list
PSU1_Status | 0x0 | discrete | 0x0980 | na | na | na |
na | na | na |
PSU2_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
AC_Status | 0x0 | discrete | 0x0080 | na | na | na |
na | na | na |
Watchdog2 | 0x0 | discrete | 0x0080 | na | na | na |
na | na | na |
SEL | 0x0 | discrete | 0x0080 | na | na | na |
na | na | na |
Power_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
Fan1_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
Fan2_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
Fan3_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
Fan4_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
Fan5_Status | 0x0 | discrete | 0x0180 | na | na | na |
na | na | na |
CPU_Temp | 41.000 | degrees C | ok | na | na | na |
92.000 | 93.000 | na |
DIMM1_Temp | 33.000 | degrees C | ok | na | na | na |
92.000 | 95.000 | na |
DIMM2_Temp | 32.000 | degrees C | ok | na | na | na |
92.000 | 95.000 | na |
DIMM3_Temp | na | na | na | na | na | na |
na | na | na |

```

DIMM4_Temp	na	na		na	na	na	na	
na	na	na						
Inlet1_Temp		31.000	degrees C	ok	na	na	na	
na	na	na						
Inlet2_Temp		29.000	degrees C	ok	na	na	na	
na	na	na						
Inlet3_Temp		26.000	degrees C	ok	na	na	na	
59.000	62.000	na						
Inlet4_Temp		35.000	degrees C	ok	na	na	na	
na	na	na						
Outlet_Temp		38.000	degrees C	ok	na	na	na	
na	na	na						
PCH_Temp		44.000	degrees C	ok	na	na	na	
na	na	na						
MC1_Temp		31.000	degrees C	ok	na	na	na	
59.000	62.000	na						
MC2_Temp		31.000	degrees C	ok	na	na	na	
59.000	62.000	na						
rDNC1_Temp		27.000	degrees C	ok	na	na	na	
na	na	na						
rDNC2_Temp		29.000	degrees C	ok	na	na	na	
na	na	na						
Fan1		8640.000	RPM	ok	na	1080.000	na	
na	na	na						
Fan2		8640.000	RPM	ok	na	1080.000	na	
na	na	na						
Fan3		8640.000	RPM	ok	na	1080.000	na	
na	na	na						
Fan4		8880.000	RPM	ok	na	1080.000	na	
na	na	na						
Fan5		8520.000	RPM	ok	na	1080.000	na	
na	na	na						
PSU1_FAN		na	RPM	na	na	1000.000	na	
na	na	na						
PSU2_FAN		4800.000	RPM	ok	na	1000.000	na	
na	na	na						
PSU1_VIN		na	Volts	na	na	89.100	na	
na	264.000	na						
PSU1_CIN		na	Amps	na	na	na	na	
na	6.000	na						
PSU1_PIN		na	Watts	na	na	na	na	
na	590.000	na						
PSU1_VOUT		na	Volts	na	na	na	na	
na	12.800	na						
PSU1_COUT		na	Amps	na	na	na	na	
na	40.000	na						
PSU1_POUT		na	Watts	na	na	na	na	
na	490.000	na						
PSU1_Temp1		na	degrees C	na	na	na	na	
na	na	na						
PSU1_Temp2		na	degrees C	na	na	na	na	
na	na	na						
PSU2_VIN		209.000	Volts	ok	na	89.100	na	
na	264.000	na						
PSU2_CIN		0.000	Amps	ok	na	na	na	
na	3.000	na						
PSU2_PIN		80.000	Watts	ok	na	na	na	
na	590.000	na						
PSU2_VOUT		12.400	Volts	ok	na	na	na	
na	12.800	na						
PSU2_COUT		5.000	Amps	ok	na	na	na	
na	40.000	na						
PSU2_POUT		60.000	Watts	ok	na	na	na	
na	490.000	na						
PSU2_Temp1		38.000	degrees C	ok	na	na	na	
na	na	na						
PSU2_Temp2		25.000	degrees C	ok	na	na	na	
na	na	na						
XP12R0V		12.160	Volts	ok	8.512	9.792	10.944	
13.440	14.656	15.872						
VNN_AUX_PCH		0.903	Volts	ok	0.539	0.630	0.721	
1.197	1.169	1.260						
XP2R5V_VPPB		2.548	Volts	ok	1.750	2.002	2.254	

```

2.758      | 2.996      | 3.248
XP1R2V_VDDRB | 1.190      | Volts      | ok      | 0.840      | 0.959      | 1.078      |
1.316      | 1.442      | 1.561
XP0R6V_VTTB  | 0.588      | Volts      | ok      | 0.420      | 0.476      | 0.539      |
0.658      | 0.721      | 0.784
XP5R0V       | 5.177      | Volts      | ok      | 3.627      | 4.123      | 4.650      |
5.673      | 6.200      | 6.727
XP3R3V_AUX_CP | 3.325      | Volts      | ok      | 2.310      | 2.643      | 2.975      |
3.623      | 3.955      | 4.288
XP3R3V_AUX_PCH | 3.308      | Volts      | ok      | 2.310      | 2.643      | 2.975      |
3.623      | 3.955      | 4.288
XP1R8V_AUX_PCH | 1.765      | Volts      | ok      | 1.265      | 1.438      | 1.622      |
1.979      | 2.162      | 2.336
XP1R05V_PCH  | 1.050      | Volts      | ok      | 0.735      | 0.840      | 0.945      |
1.155      | 1.260      | 1.365
XP2R5V_VPPA  | 2.548      | Volts      | ok      | 1.750      | 2.002      | 2.254      |
2.758      | 2.996      | 3.248
XP1R2V_VDDRA | 1.204      | Volts      | ok      | 0.840      | 0.959      | 1.078      |
1.316      | 1.442      | 1.561
XP0R6V_VTTA  | 0.595      | Volts      | ok      | 0.420      | 0.476      | 0.539      |
0.658      | 0.721      | 0.784
VCCIO_CP     | 1.001      | Volts      | ok      | 0.504      | 0.602      | 0.700      |
1.197      | 1.302      | 1.400
VCCIN_CP     | 1.775      | Volts      | ok      | 0.898      | 1.081      | 1.265      |
2.162      | 2.336      | 2.519
VCCSA_CP     | 0.833      | Volts      | ok      | 0.259      | 0.343      | 0.427      |
1.190      | 1.274      | 1.358
root@dellemc-diag-os:~#

```

## Access FRU data

To check field replacement unit (FRU) data, use the following command:

```
root@dellemc-diag-os:~# ipmitool fru print
```

For more FRU information, see the *IPMI Specification v2.0* chapter 34.2 *Read FRU Data Command*.

- Request data 1—FRU device ID. FFh=reserved
- Request data 2—FRU inventory offset to read, LS byte
- Request data 3—FRU inventory offset to read, LS byte
  - Offset is in bytes or words-per-device. Access type returned in the `Get FRU Inventory Area Info` command output.
- Request data 4—Count to read. Count is '1' based.
- Response data 1—Completion code. Generic, plus the command specifics:
  - 81h=FRU device busy. The requested cannot be completed because the logical FRU device is in a state where FRU information is temporarily unavailable. This state is possibly due to a loss of arbitration if the FRU implements as a device on a shared bus.
  - Software can elect to retry the operation after a minimum of 30 milliseconds if the code returns. Dell EMC recommends that the management controllers incorporate built-in retry mechanisms. Generic IPMI does not take advantage of this completion code.
- Response data 2—Count returned. Count is '1' based.
- Response data 3:2=N—Requested data

### ipmitool FRUs

```
root@dellemc-diag-os:~# ipmitool fru print
FRU Device Description : Builtin FRU Device (ID 0)
Board Mfg Date       : Mon May 14 13:44:00 2018
Board Mfg           : DELL Board
Product            : Z9264F-ON
Board Serial       : TW0DYJR5DNT0085E0052
Board Part Number  : 0DYJR5
Product Manufacturer : DELL Product
Name              : Z9264F-ON
Product Version   : X1
Product Serial    : 9WJFXC2
Product Asset Tag :
FRU Device Description : FRU_FAN1 (ID 1)
Board Mfg Date       : Mon May 14 13:44:00 2018
Board Mfg           : DELL
Board Product      :
Board Serial       : TW0M6X8JDNT008570205
Board Part Number  : 0M6X8JX01FRU Device
Description : FRU_FAN2 (ID 2)
Board Mfg Date       : Mon May 14 13:44:00 2018
Board Mfg           : DELL
Board Product      :
Board Serial       : TW0M6X8JDNT008570206
Board Part Number  : 0M6X8JX01FRU
Device Description : FRU_FAN3 (ID 3)
Board Mfg Date       : Mon May 14 13:44:00 2018
Board Mfg           : DELL
Board Product      :
Board Serial       : TW0M6X8JDNT008570207
Board Part Number  : 0M6X8JX01FRU
Device Description : FRU_FAN4 (ID 4)
Board Mfg Date       : Mon May 14 13:44:00 2018
Board Mfg           : DELL
Board Product      :
```

```
Board Serial      : TW0M6X8JDNT008570208
Board Part Number : 0M6X8JX01FRU
Device Description : FRU_PSU1 (ID 6)
Board Mfg Date   : Fri Jan 5 20:43:00 2018
Board Mfg        : DELL
Board Product    : PWR SPLY,1600W,RDNT,DELTA
Board Serial     : CNDED0081500XQ
Board Part Number : 095HR5A04FRU
Device Description : FRU_PSU2 (ID 7)
Board Mfg Date   : Fri Jan 5 20:51:00 2018
Board Mfg        : DELL
Board Product    : PWR SPLY,1600W,RDNT,DELTA
Board Serial     : CNDED0081506H8
Board Part Number : 095HR5A04
root@dellemc-diag-os:~# root@dellemc-diag-os:/mnt/nfs/users/<name>/<program>#
```



## ipmiutil package

**NOTE:** All commands are subject to change as the `ipmiutil` package evolves over time. For more information about the IPMI utility, use cases, and the newest list of subcommands, see the IPMI website that is hosted by Intel at <https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-technical-resources.html>.

- `ipmiutil`—a metacommmand to invoke each of the following functions:
  - `ipmiutil alarms (ialarms)`—show and set the front panel alarms, including light emitting diodes (LEDs) and relays.
  - `ipmiutil config (iconfig)`—list, save, or restore the BMC configuration parameters.
  - `ipmiutil cmd (icmd)`—send specific IPMI commands to the BMC for testing and debug purposes.
  - `ipmiutil discover (idiscover)`—discover the available IPMI LAN nodes on a subnet.
  - `ipmiutil events (ievents)`—a stand-alone utility to decode IPMI events and platform event trap (PET) data.
  - `ipmiutil firewall (ifirewall)`—discover the available IPMI LAN nodes on a subnet.
  - `ipmiutil fru (ifru)`—show decoded field replaceable units (FRU) board/product inventory data and write FRU asset tags.
  - `ifruset`—show decoded FRU inventory data and set a FRU product area.
  - `iseltime`—show and set the IPMI system event log (SEL) time according to the system time.
  - `ipmiutil fwum (ifwum)`—OEM firmware update manager extensions
  - `ipmiutil getevt (igetevent)`—receive any IPMI events and display them.
  - `ipmiutil health (ihealth)`—check and report the basic health of the IPMI BMC.
  - `ipmiutil hpm (ihpm)`—hardware platform management (HPM) firmware update manager extensions
  - `ipmiutil lan (ilan)`—show and configure the local area network (LAN) port and platform event filter (PEF) table to generate BMC LAN alerts using the firmware events.
  - `ipmiutil picmg (ipicmg)`—discover the available IPMI LAN nodes on a subnet.
  - `ipmiutil reset (ireset)`—cause the BMC to hard reset or power down the system.
  - `ipmiutil sel (isel)`—a tool to show the firmware system event log (SEL) records.
  - `ipmiutil sensor (isensor)`—show the sensor data records (SDR), readings, and thresholds.
  - `ipmiutil serial (iserial)`—a tool to show and configure the BMC serial port for various modes, for example, Terminal mode.
  - `ipmiutil sol (isol)`—start or stop an IPMI serial-over-LAN console session.
  - `ipmiutil sunoem (isunoem)`—Sun OEM functions.
  - `ipmiutil wdt (iwdt)`—show and set the watchdog timer.
  - `checksel`—cron script using `ipmiutil sel` to check the SEL, write new events to the OS system log, and clear the SEL if nearly full.
  - `ipmi_port`—daemon to bind the remote management control protocol (RMCP) port and sleep to prevent Linux portmap from stealing the RMCP port.
  - `ipmi_wdt`—initial script to restart the watchdog timer every 60 seconds using the cron.
  - `ipmi_asy`—initial script that runs the `ipmiutil getevt -a` command for a remote shutdown.
  - `ipmi_evt`—initial script the runs the `ipmiutil getevt -s` command for monitoring events.
  - `hpiutil/*`—parallel hardware platform interface (HPI) utilities that conform to the SA Forum Hardware Platform Interface. Also a basis of the `openhpi/clients/`
  - `bmc_panic`—a kernel patch to save information if the system panics. The command is found in the OpenIPMI driver in kernels 2.6 and greater and in the Intel IMB driver in version 28 and greater

## Dell EMC support

The Dell EMC support site provides documents and tools to help you effectively use Dell EMC equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The Dell EMC support site provides integrated, secure access to these services.

To access the Dell EMC support site, go to [www.dell.com/support/](http://www.dell.com/support/). To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag, known as a luggage tag, or 11-digit express service code of your switch and click **Submit**.
- To view the platform service tag or express service code, pull out the luggage tag on the upper-right side of the platform or retrieve it remotely using the `ipmitool -H <bmc ip address> -I lanplus -U <user name> -P <password> fru` command
- To receive more technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access switch documentation, go to [www.dell.com/manuals/](http://www.dell.com/manuals/).

To search for drivers and downloads, go to [www.dell.com/drivers/](http://www.dell.com/drivers/).

To participate in Dell EMC community blogs and forums, go to [www.dell.com/community](http://www.dell.com/community).