



J4060-03

12G SAS JBOD Series

User's Manual

Table of Contents

Preface.....	i
Safety Instructions	ii
About This Manual.....	iv
Chapter 1. Product Features	1
1.1 Box Content.....	1
1.2 Specifications.....	2
1.3 Feature	3
Chapter 2. Hardware Setup	10
2.1 Top Cover	10
2.2 Power Supply Unit Module.....	11
2.3 Fan Module.....	12
2.4 Hard Disk Drive.....	13
2.4.1 Install Hard Disk Drive	13
2.4.2 Drive Slot Map.....	14
2.5 HDD Backplane Module	15
2.6 Expander	16
2.7 BMC Module.....	17
2.8 Slide Rail Installation.....	18
Chapter 3. Sub-system Configuration Setup	19
3.1 Supported Configuration and Unsupported Feature.....	19
3.1.1 Supported Configuration.....	19
3.1.2 Unsupported Feature.....	19
3.2 Connect Host to JBOD via RS232.....	20
3.3 Utility Setup on Host.....	21
3.4 Update Firmware and MFG through Console Port	24
3.5 Configure Command Line Interface Operation.....	27
3.5.1 How to enable/disable T10 zoning.....	27
3.5.2 How to configure T10 zoning.....	28
3.5.3 How to get all revisions in AIC SAS 12G Expander	30
3.5.4 How to configure temperature sensor(HUB only).....	31
3.5.5 How to configure enclosure address.....	32
3.5.6 How to configure standby timer for all disk drives(EDGE only)	33
3.5.7 How to configure wide port checker.....	34

3.5.8 How to configure serial number.....	36
3.5.9 How to power off/on all disk drives automatically.....	37
3.5.10 How to configure EDFB (EDGE only).....	38
3.5.11 How to configure power setting (HUB only).....	39
3.5.12 How to configure zone count.....	41
3.5.13 How to configure multiple "up" ports (HUB only)	43
3.6 SES Inband Features.....	44
3.6.1 SES pages supported are listed below	44
3.6.2 SES elements supported are listed below.....	44
3.6.3 Implementation on SES Pages.....	45
3.6.4 Implementation on SES Elements	48
3.6.5 SES Element Control Functions	55
Chapter 4. BIOS Configuration Settings	62
4.1 Login.....	62
4.2 Sensor's :pication for Fan & Temperature.....	63
4.3 Utility Setup on Host.....	64
4.4 Connect Host to BMC by RS232.....	64
4.5 BMC LED Signal.....	67
4.6 Web UI.....	68
4.6.1 Dashboard.....	68
4.6.2 FRU information.....	69
4.6.3 Hard Disk Status.....	70
4.6.4 Storage Health	71
4.6.5 Configuration	73
4.6.6 Remote Control	87
4.7 Firmware Update	89
4.7.1 Requirement.....	89
4.7.2 Web update	89
4.8 Expander Firmware Update	94
4.9 Firmware Safety Mode	98
Chapter 4. Technical Support.....	103



Copyright © 2019 AIC, Inc. All Rights Reserved.

This document contains proprietary information about AIC products and is not to be disclosed or used except in accordance with applicable agreements.

Document Release History

Release Date	Version	Update Content
July 2019	1	User's Manual release to public.
December 2019	1.1	Safety Instruction update.

Preface

Copyright

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photo-static, recording or otherwise, without the prior written consent of the manufacturer.

Trademarks

All products and trade names used in this document are trademarks or registered trademarks of their respective holders.

Changes

The material in this document is for information purposes only and is subject to change without notice.

Warning

1. A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Disclaimer

AIC shall not be liable for technical or editorial errors or omissions contained herein. The information provided is provided "as is" without warranty of any kind. To the extent permitted by law, neither AIC or its affiliates, subcontractors or suppliers will be liable for incidental, special or consequential damages including downtime cost; lost profits; damages relating to the procurement of substitute products or services; or damages for loss of data, or software restoration. The information in this document is subject to change without notice.

Instruction Symbols

Special attention should be given to the instruction symbols below.



NOTE

This symbol indicates that there is an explanatory or supplementary instruction.



CAUTION

This symbol denotes possible hardware impairment. Upmost precaution must be taken to prevent serious hardware damage.



WARNING

This symbol serves as a warning alert for potential body injury. The user may suffer possible injury from disregard or lack of attention.

Safety Instructions

Before getting started, please read the following important cautions:

- All cautions and warnings on the equipment or in the manuals should be noted.
- Most electronic components are sensitive to electrical static discharge. Therefore, be sure to ground yourself at all times when installing the internal components.
- Use a grounding wrist strap and place all electronic components in static-shielded devices. Grounding wrist straps can be purchased in any electronic supply store.
- Be sure to turn off the power and then disconnect the power cords from your system before performing any installation or servicing. A sudden surge of power could damage sensitive electronic components.
- Do not open the system's top cover. If opening the cover for maintenance is a must, only a trained technician should do so. Integrated circuits on computer boards are sensitive to static electricity. Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
- Place this equipment on a stable surface when install. A drop or fall could cause injury.
- Please keep this equipment away from humidity.
- Carefully mount the equipment into the rack, in such manner, that it won't be hazardous due to uneven mechanical loading.
- This equipment is to be installed for operation in an environment with maximum ambient temperature below 35°C.
- The openings on the enclosure are for air convection to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- Never pour any liquid into ventilation openings. This could cause fire or electrical shock.
- Make sure the voltage of the power source is within the specification on the label when connecting the equipment to the power outlet. The current load and output power of loads shall be within the specification.
- This equipment must be connected to reliable grounding before using. Pay special attention to power supplied other than direct connections, e.g. using of power strips.
- Place the power cord out of the way of foot traffic. Do not place anything over the power cord. The power cord must be rated for the product, voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
- If the equipment is not used for a long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

- If one of the following situations arise, the equipment should be checked by service personnel:
 1. The power cord or plug is damaged.
 2. Liquid has penetrated the equipment.
 3. The equipment has been exposed to moisture.
 4. The equipment does not work well or will not work according to its user manual.
 5. The equipment has been dropped and/or damaged.
 6. The equipment has obvious signs of breakage.
 7. Please disconnect this equipment from the AC outlet before cleaning. Do not use liquid or detergent for cleaning. The use of a moisture sheet or cloth is recommended for cleaning.
- Module and drive bays must not be empty! They must have a dummy cover.
- Equipment intended for installed in restricted access location.

CAUTION



The equipment intended for installation should be placed in Restricted Access Location.

CAUTION



This unit may have more than one power supply. Disconnect all power sources before maintenance to avoid electric shock.



CAUTION

Ensure to connect the power cord to a socket-outlet with earthing connection.

About This Manual

Chapter 1 Product Features

J4060-03 is a highly commendable NVMe JBOF that is specifically designed to accommodate diverse corporations and enterprises who pursue flexibility and high speed performance. This product supports hotswap designs and is easily deployed for your benefit.

Chapter 2 Hardware Setup

This chapter displays an easy installation guide for assembling the main components of the JBOF. Utmost caution for proceeding to set up the hardware is highly advised. Do not endanger yourself by placing the device in an unstable environment. The consequences for negligent actions may be extremely severe.

Chapter 3 BMC Configuration Settings

This chapter illustrates the diverse functions of BMC, including the details on logging into the web page and assorted definitions for dashboard, firmware information, and many more.

Chapter 4 Technical Support

For more information or suggestion, please verify and contact the nearest AIC corporation representative in your district or visit the AIC website: <http://www.aicipc.com/en/> . It is our pleasure to provide the best service for our customers.

Chapter 1. Product Features

Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem was purchased for further instructions. Before continuing, first unpack the subsystem and verify that the number of components in the shipping carton is accurate and in good condition.

1.1 Box Content

This product contains the components listed below.

Please confirm the number and the condition of the components before installation.

- Chassis
(includes power supply, fan & hard disk drive tray)
- Power cord (optional)
- Slide rail x 1 set

Product features and specifications are subject to change without notice.

PACKAGE CONTENT MAY VARY PER REGION.

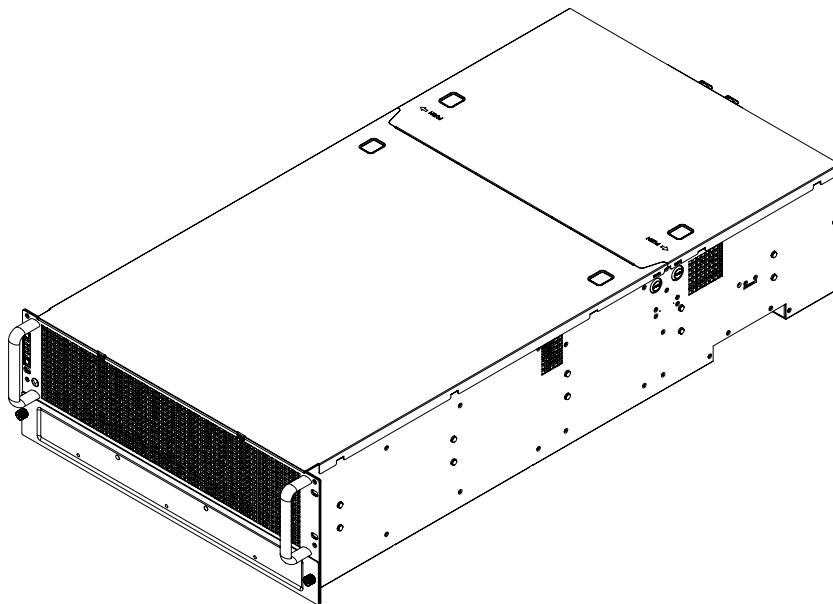
1.2 Specifications

General	Number of Expander	2 x External expanders 6 x Internal expanders
	Expander Chip	Broadcom SAS3x36R + Broadcom SAS3x48
	Host/Expansion Interface	6 x Mini SAS HD (SFF-8644) per expander module
Drives Supported	Drive Interface	12Gb & 6Gb SAS if using dual expanders 12Gb & 6Gb SAS/SATA if using single expander
	Form Factor	3.5"
Administration / Management	Admin/Firmware Upgrade	In-band & Serial port interface IEM port (Optional)
	LED indicators, Audible Alarm	Yes
Hot swap and Redundancy	Drive Bays	60
	Cooling	4 x 8038 hot swap fans
	Power Supply	1200W 1+1 hot swap redundant 80+ Platinum
	Power Entry	Dual AC inlet
	Expander Modules	Dual expanders (Optional)
Electrical and Environmental	Universal A/C Input	100~240V AC full range
	Operating Environment	Temperature : 0°C to 35°C Relative humidity : 20% to 80%
	Non-operating Environment	Temperature : -20°C to 60°C Relative humidity : 10% to 90%
Physical Specification	Dimensions (W x D x H)	mm : 438 x 865.3 x 175.8
		inches : 17.2 x 34 x 6.9
	Gross Weight (w/ PSU & Rail, w/o Disks)	kgs : 52.76
lbs : 116.31		
Packaging Dimensions (W x D x H)	mm : 603 x 1120 x 508	
	inches : 23.7 x 44.1 x 20	
Mounting	Options	<ul style="list-style-type: none"> • Long tool-less slide rail for 1.2m Rack (with CMA support) • Cable management kit • Short tool-less slide rail for 1m Rack (without CMA support)

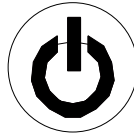
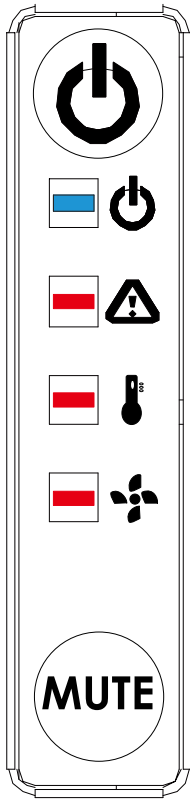
1.3 Feature

J4060-03 is a reliable SAS JBOD with 3.5" x 60 hotswap drives bays. This product is designed to accommodate 2 external expanders and 6 internal expander with 6 Mini SAS HD per expander module. Featuring the expander chip, Broadcom SAS3x36R and SASx48, which is emphasized for its 36 and 48 phy edge expansion and performance of supporting up to 12 Gb/s, this product enhances these features by integrating hotswap designs, redundant fans, and expansion to offer easy control and high performance for our customers.

- Intelligent Enclosure Management
- Individual drive power management
- Cutting edge performance and scalability
- Hot swap design for easy maintenance and management
- Enclosure Cable Management Kit
- Tool-less drive trays



Front Panel



System PWR Switch	
Behavior	Status
Normal	Off
Press	Boot up
Long Press	system shut down



Power LED	
Behavior	LED Status
On	blue
Off	No States



Power Fail LED	
Behavior	LED Status
Normal	Off
Failed	Red



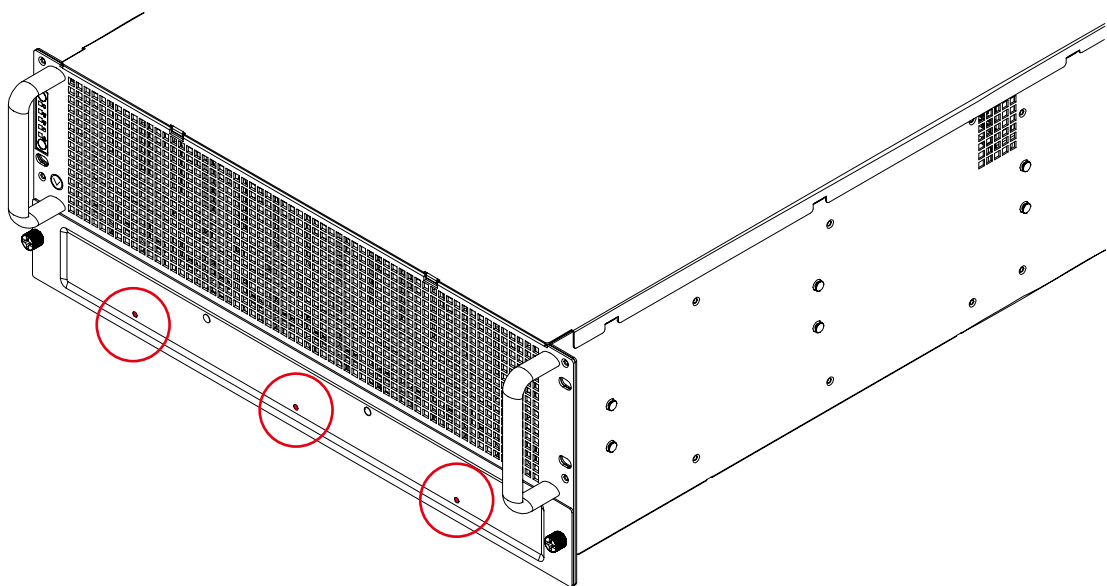
Temperature(Overheat) LED	
Behavior	LED Status
Normal	Off
Failed	Red



Fan fault LED	
Behavior	LED Status
Normal	Off
Failed	Red



System Alert Mute Switch	
Behavior	Status
Normal	Off
Press	Alert mute



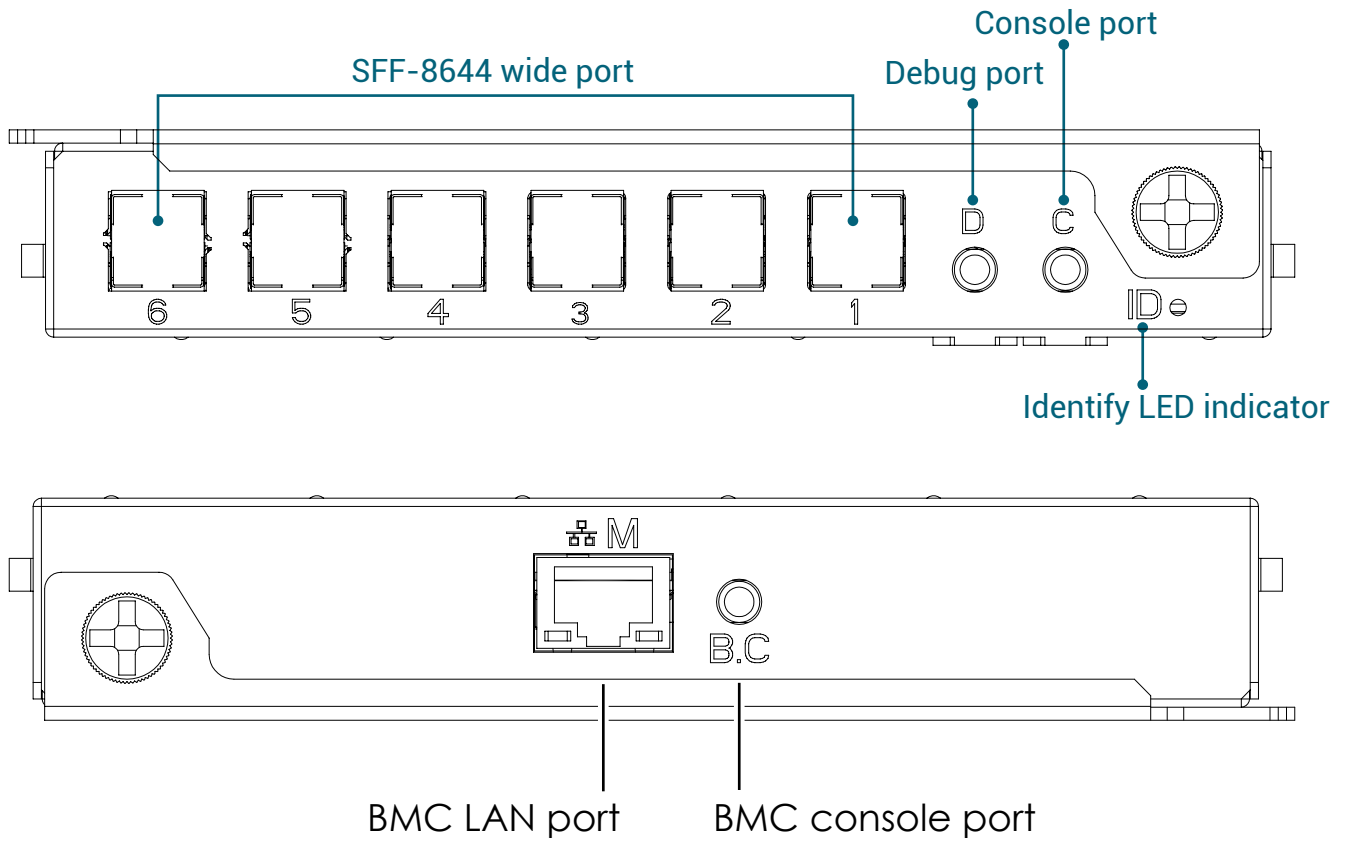
Fault LED (red)

On

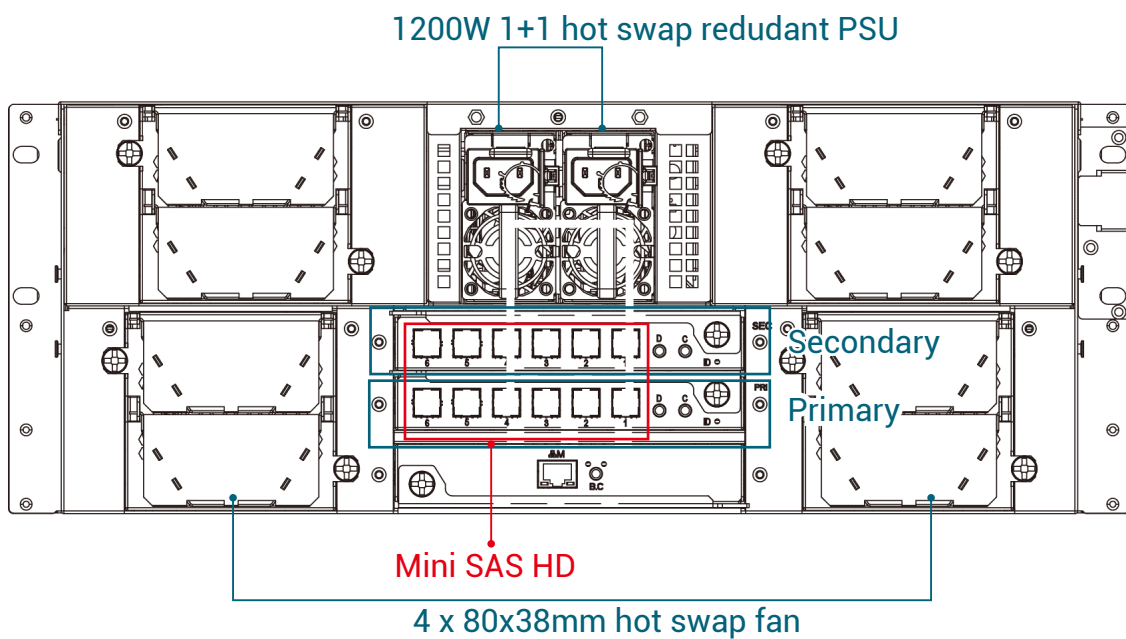
Interpretation

The drives has failed, or a predictive failure alert has been received for the drives.

Rear Expander Panel



Rear Panel



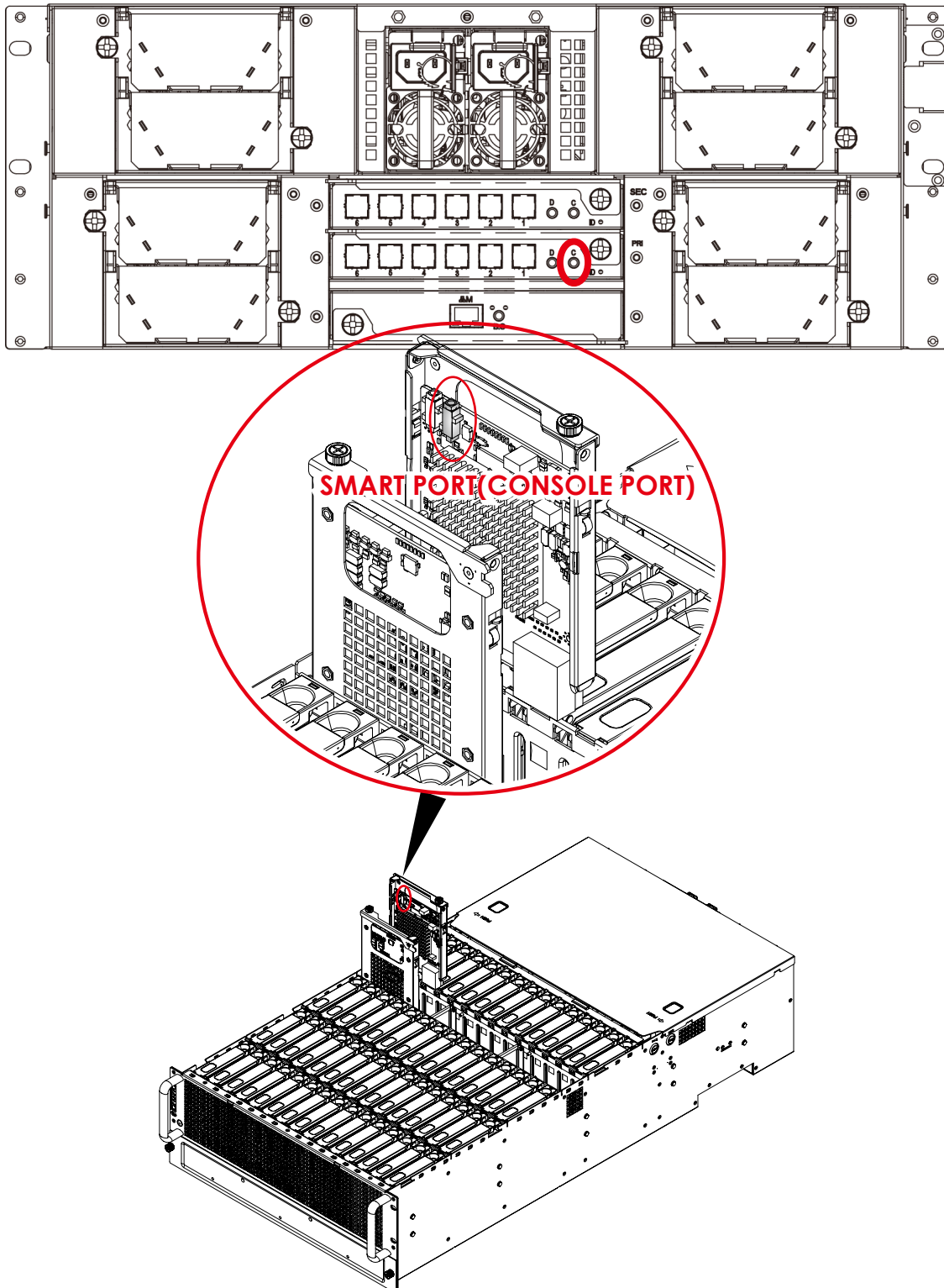
1.4 8644 with Zoning Configuration and 8644 Port Definition

There are 3 kinds of zoning options that can be implemented by Command Line interface operation (see Chapter 3 for reference). By using the zoning option, four of the 8644 ports will have a variety of zone group settings.

Before you begin, your JBOD must be equipped with HUB/EDGE setting.

Refer to [3.2 Connect Host to JBOD via RS232](#)

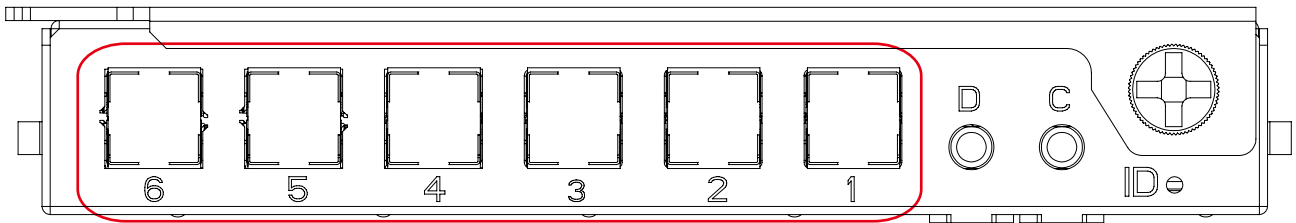
Refer to [3.5.2 How to configure T10 zoning](#)



Zone count 1:

60 drives per zone. All SFF8644 ports and drives are at the same zone group.
(SEE FIGURE BELOW).

Zone count 1:



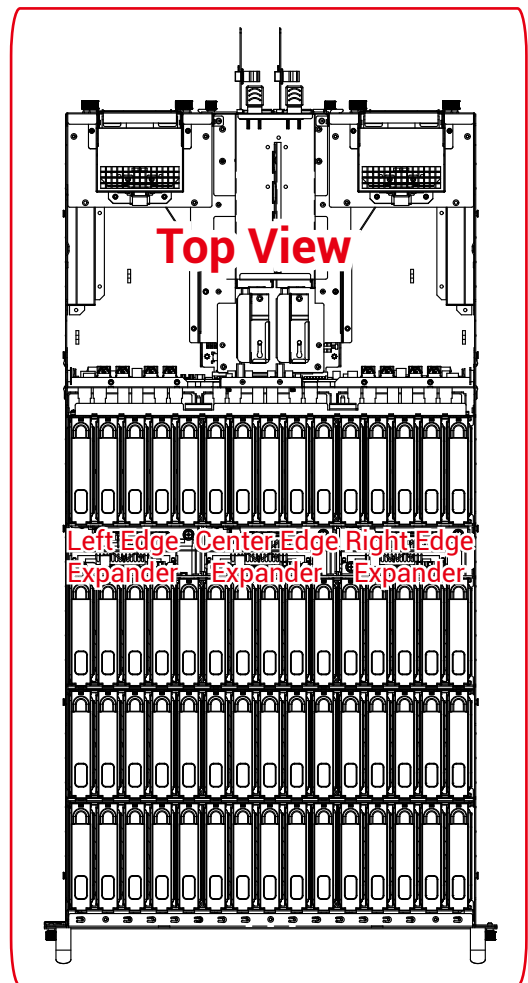
GROUP 1

Top View

46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Left Edge Expander				Center Edge Expander				Right Edge Expander						
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

GROUP 1

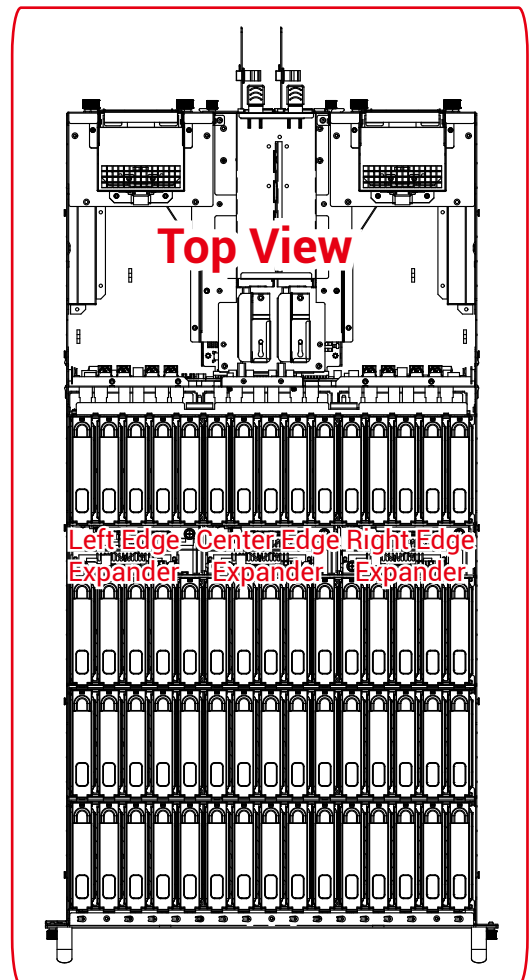
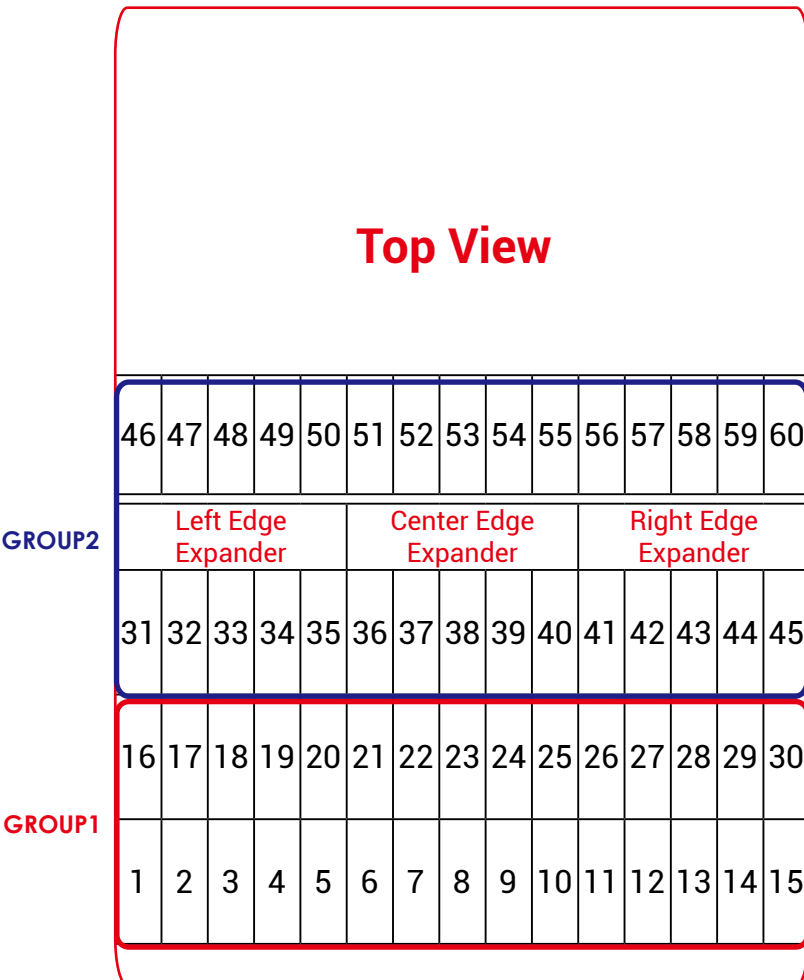
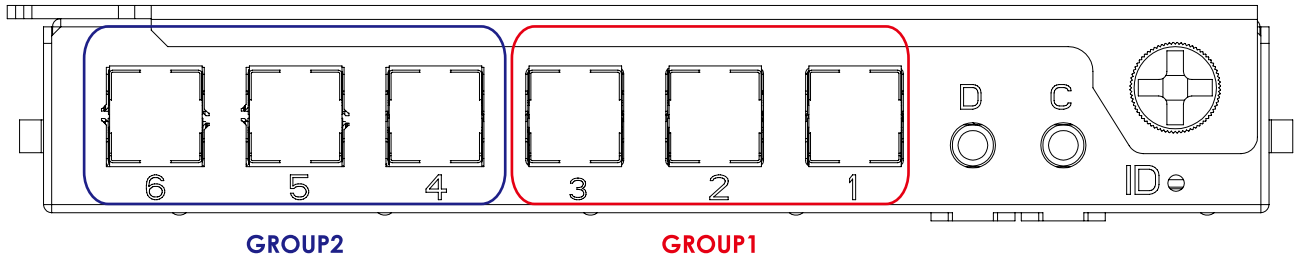
Top View



Zone count 2:

30 drives per zone. Port 1 & Port 2 & Port 3 are at zone group 1, Port 4 & Port 5 & Port 6 are at zone group 2 (SEE FIGURE BELOW).

Zone count 2:

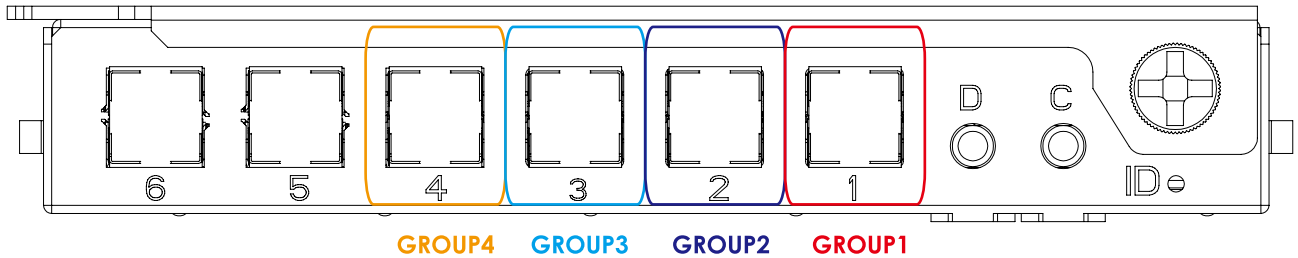


Zone count 4:

15 drives & Port 1 are at zone group 1, 15 drives & Port 2 are at zone group 2, 15 drives & Port 3 are at zone group 3, 15 drives & port 4 are at zone group 4.

(SEE FIGURE BELOW)

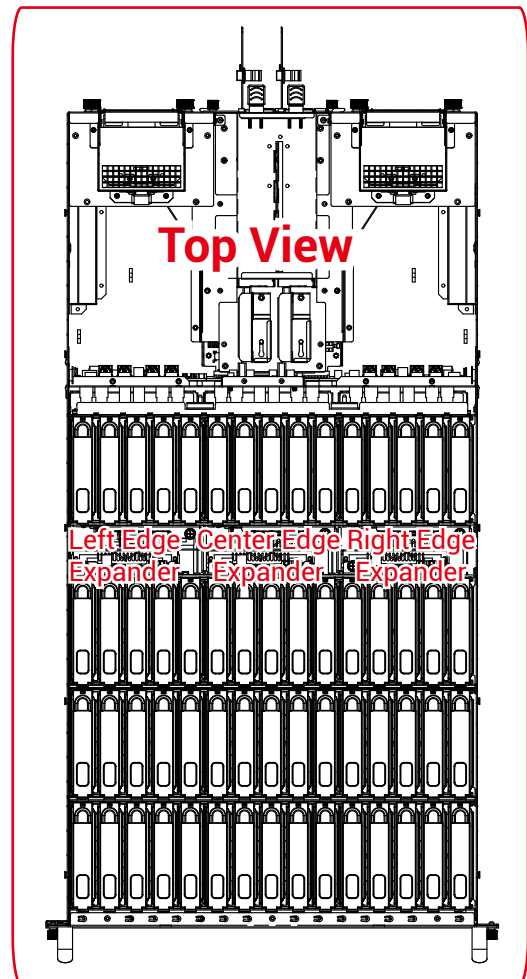
Zone count 4:



Top View

GROUP4	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
	Left Edge Expander				Center Edge Expander				Right Edge Expander						
GROUP3	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
GROUP2	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
GROUP1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Top View



Chapter 2. Hardware Setup

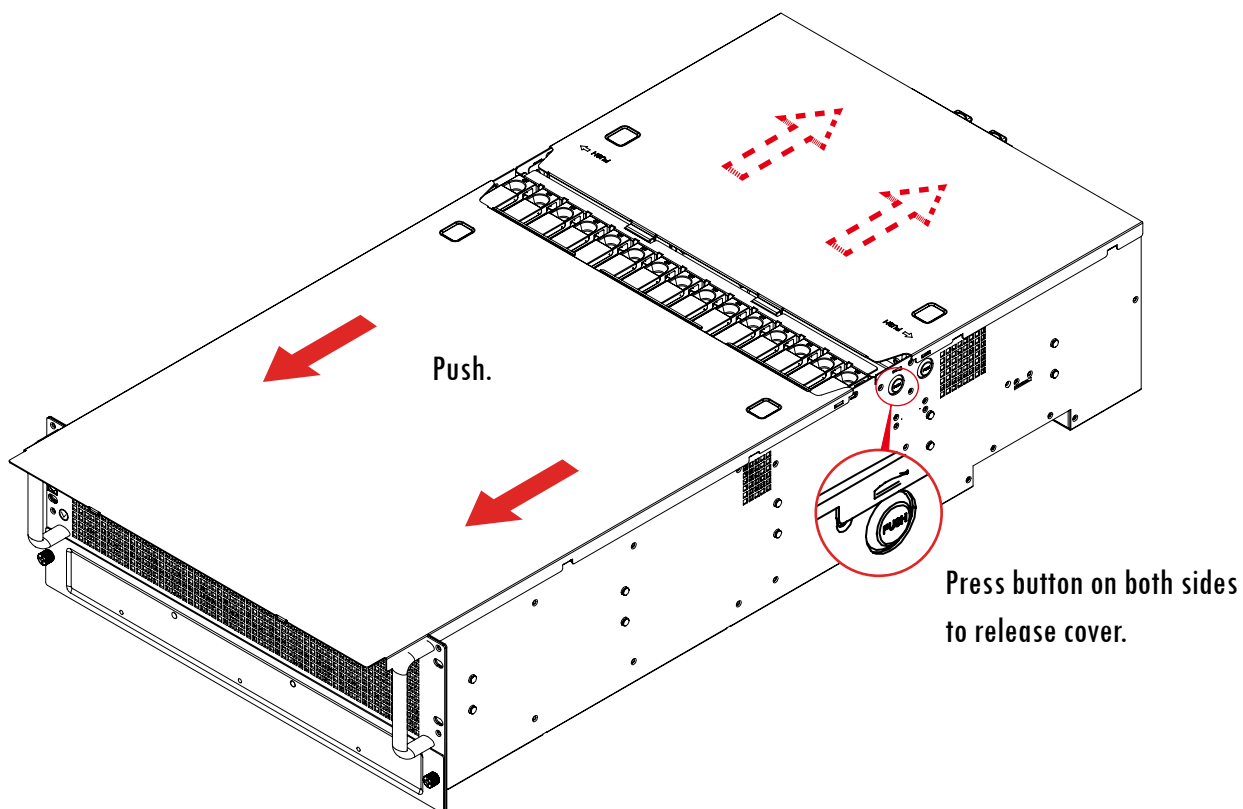
2.1 Top Cover

NOTE



The JBOD consists of two top covers with corresponding release buttons on both sides of the chassis. One cover slides toward the front panel to open, while the other slides toward the rear panel for removal.

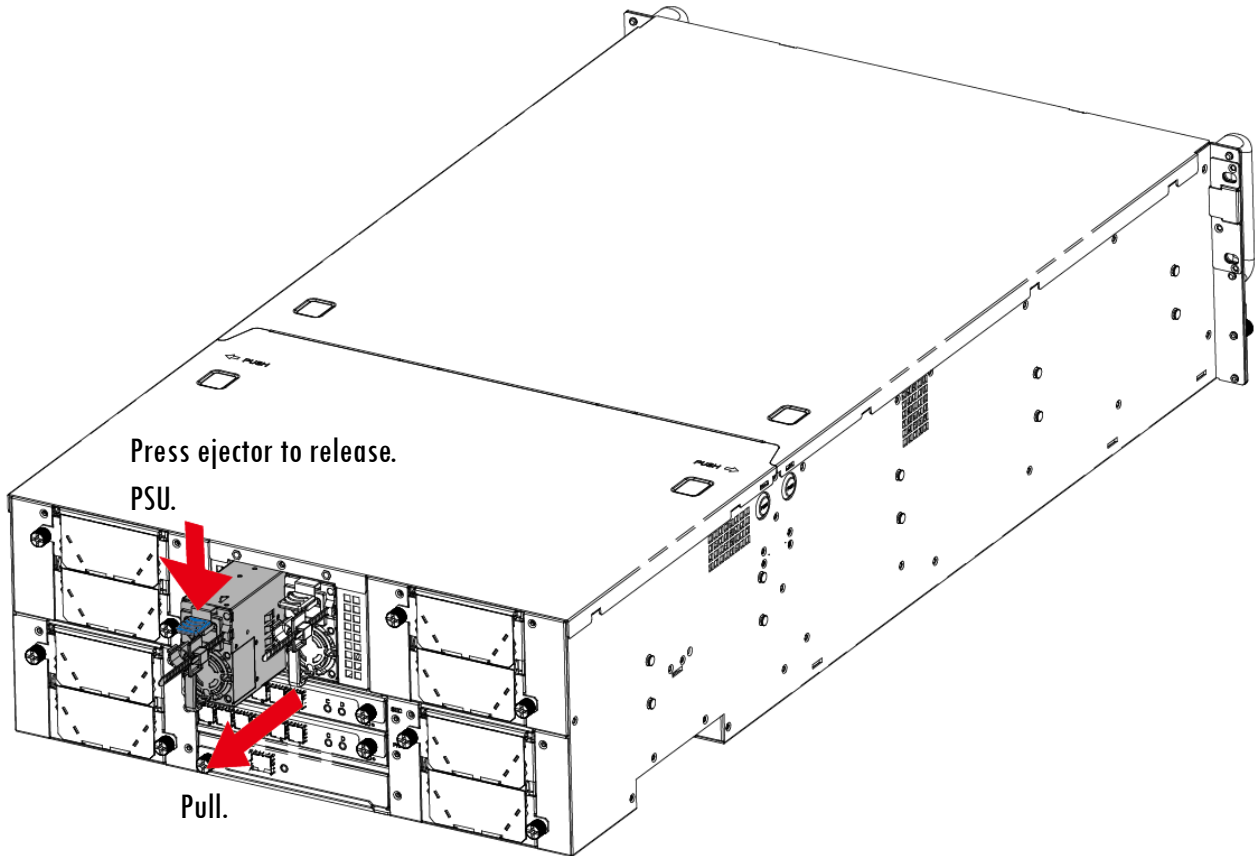
- ① Remove the top cover by pressing the release button x 2 on both sides of the chassis and sliding the corresponding cover to front/rear panel to open.
- ② Lift the cover upward to remove.



This information is provided for professional technicians only.

2.2 Power Supply Unit Module

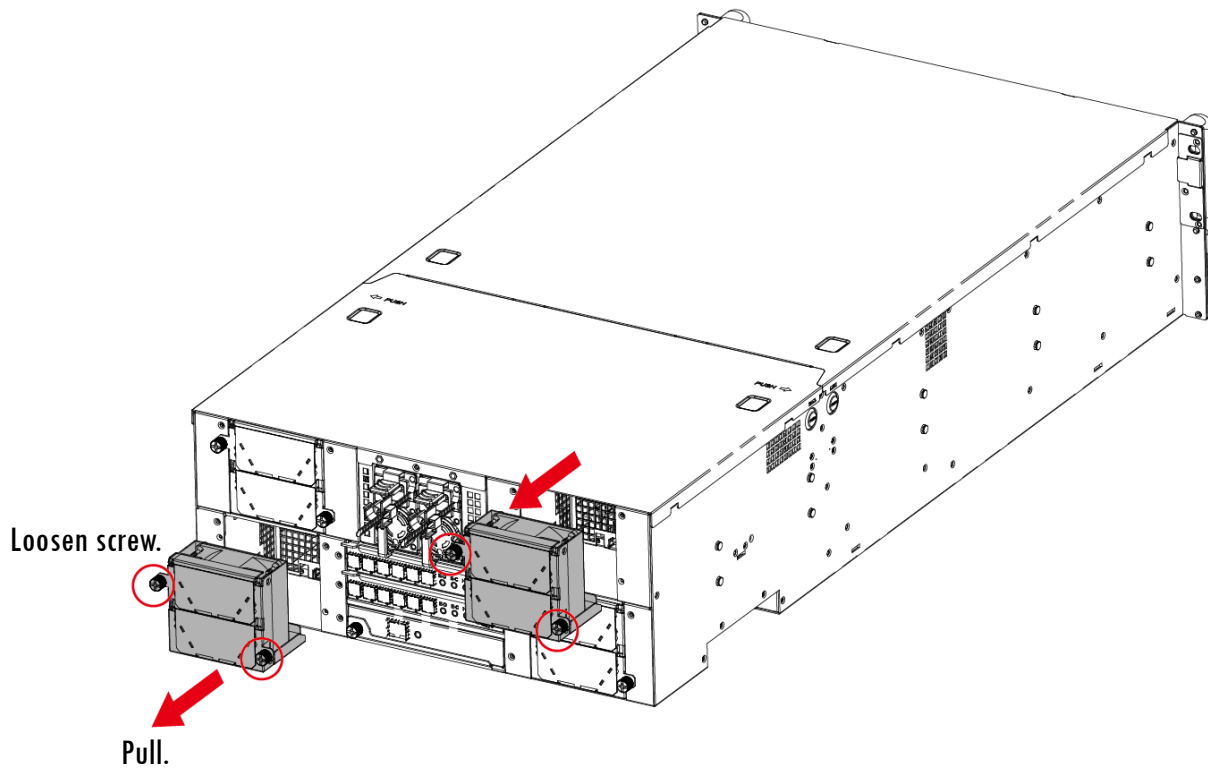
- ① Push the ejector to release the module.
- ② Pull the handle to remove the module out of the chassis.
- ③ Push the replaced power supply unit into the chassis. Ensure that the module is hooked into the cage.



This information is provided for professional technicians only.

2.3 Fan Module

- ① Unplug the cables and connectors.
- ② Loosen the captive screws to remove the fan.
- ③ Pull the fan module from the chassis.
- ④ Insert the replaced fan into the chassis and tighten the captive screws.

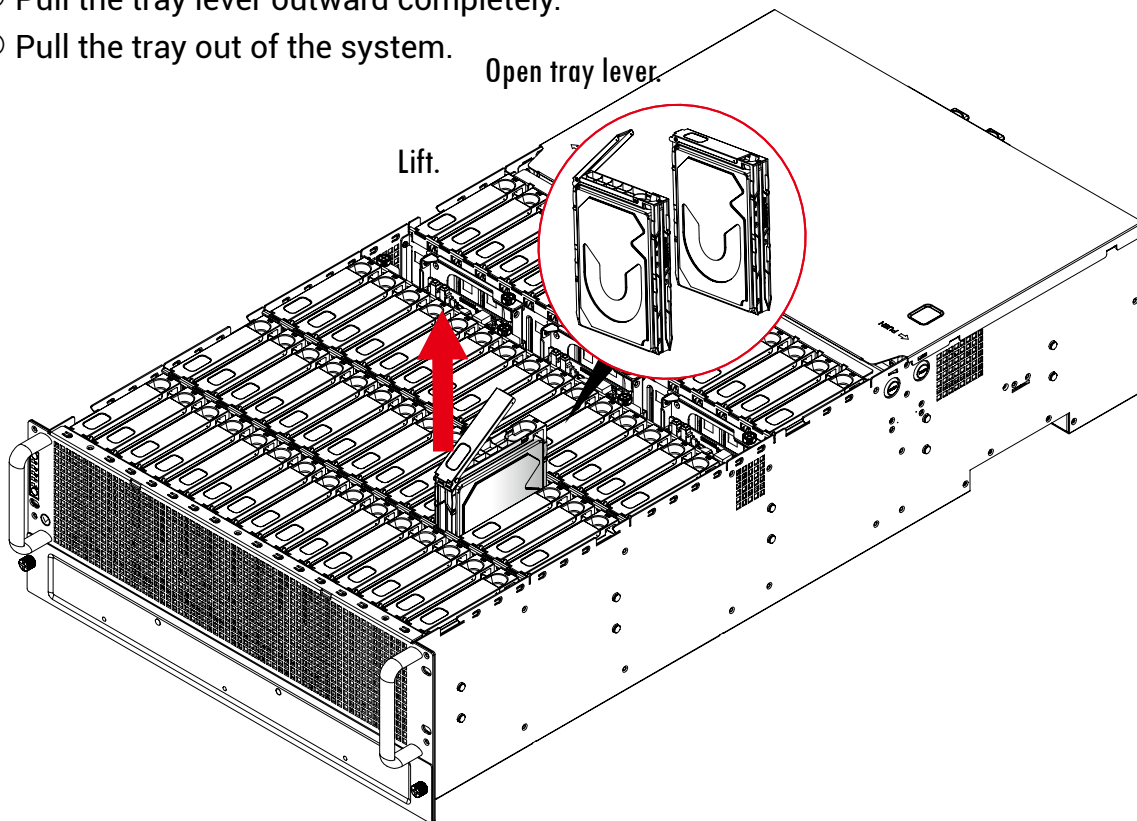


This information is provided for professional technicians only.

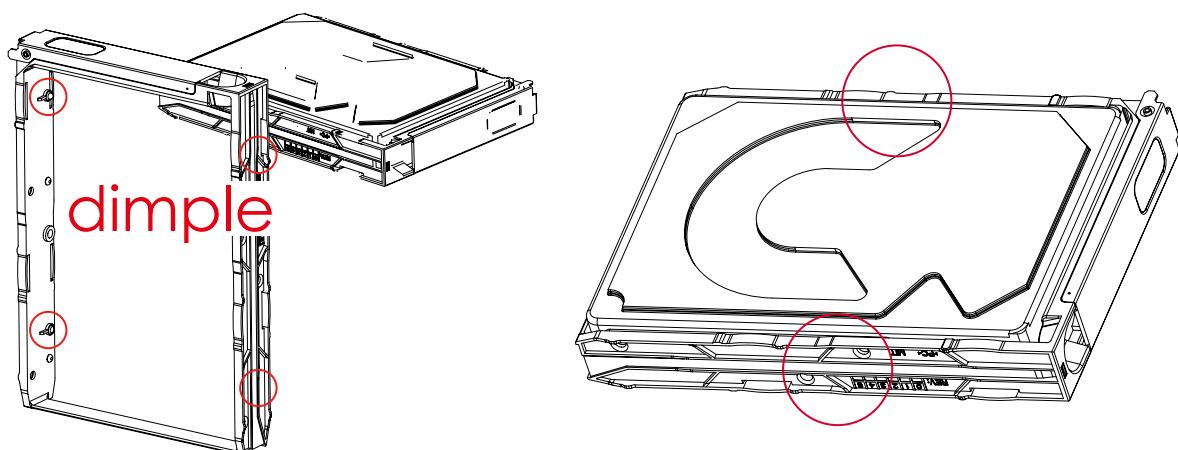
2.4 Hard Disk Drive

2.4.1 Install Hard Disk Drive

- ① Pull the tray lever open.
- ② Pull the tray lever outward completely.
- ③ Pull the tray out of the system.



- ④ Insert the hard disk drive into the tray. Ensure that the dimples on the tray match the hard disk drive. For additional assurance, fasten the screws x 2 on the drive tray to secure the hard disk drive.



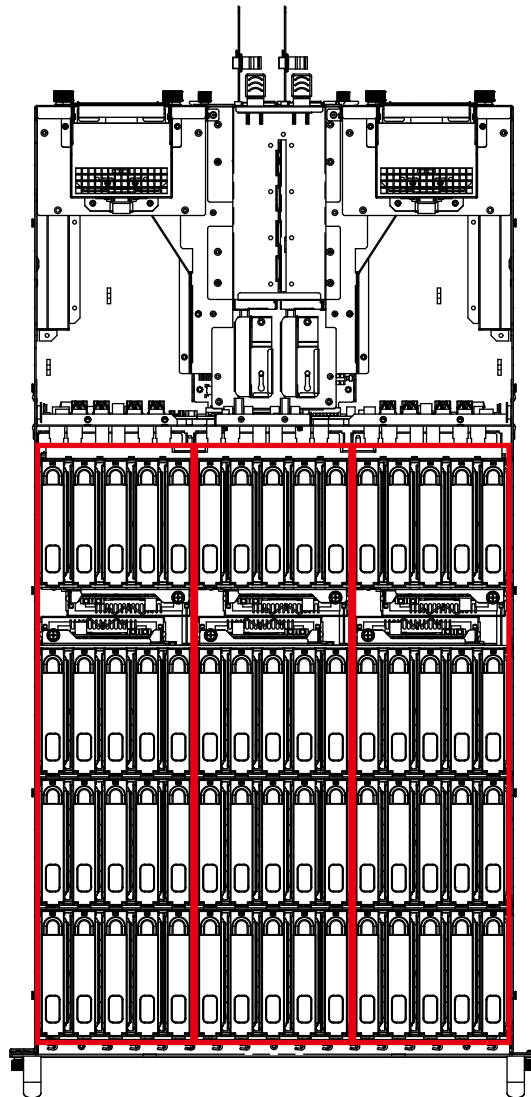
- ⑤ Insert the tray with the disk drive into the chassis.
- ⑥ Close the tray lever to complete installation.



This information is provided for professional technicians only.

2.4.2 Drive Slot Map

The drive slot map follows.



Left Edge Center Edge Right Edge

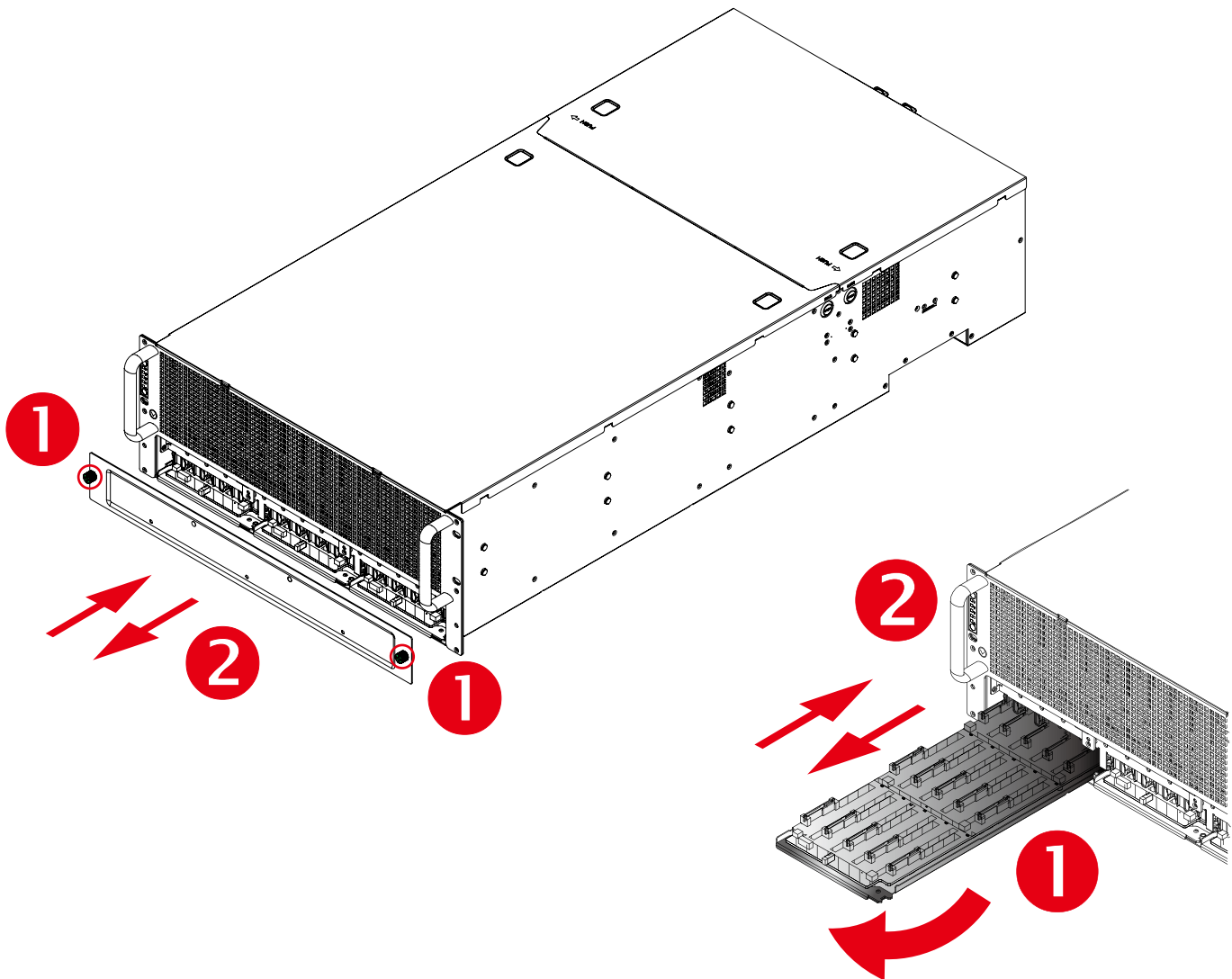
MegaRaid / HBA Card														
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15



This information is provided for professional technicians only.

2.5 HDD Backplane Module

- ① Remove the LED board by loosening the captive screws.
- ② Pull the HDD backplane from the chassis.
- ③ Insert a new HDD backplane into the chassis and close the lever.
- ④ Secure the LED board onto the chassis to complete.



NOTE



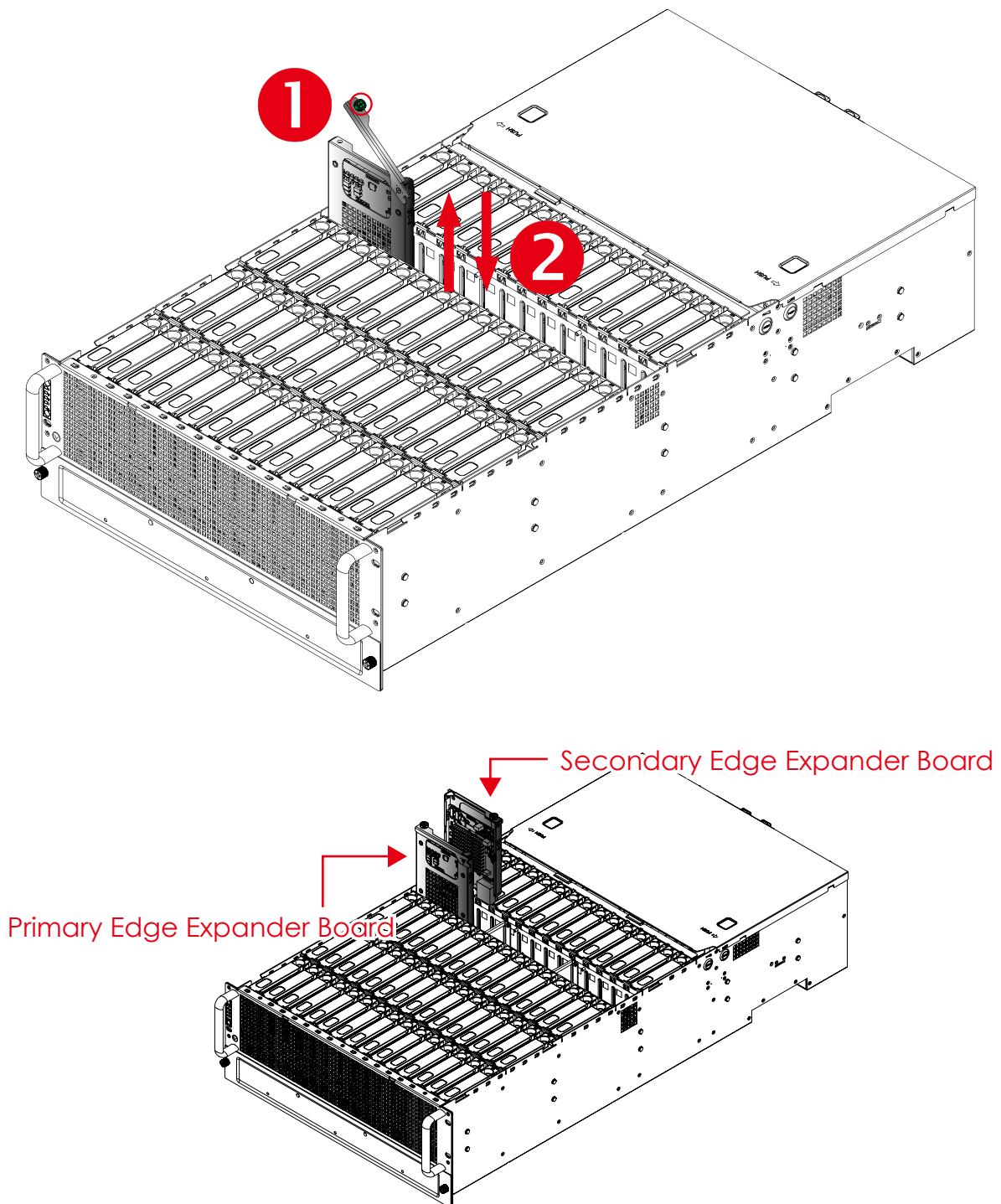
Before you pull out the HDD backplane, you must remove all the HDD trays and expander modules in order to proceed.



This information is provided for professional technicians only.

2.6 Expander

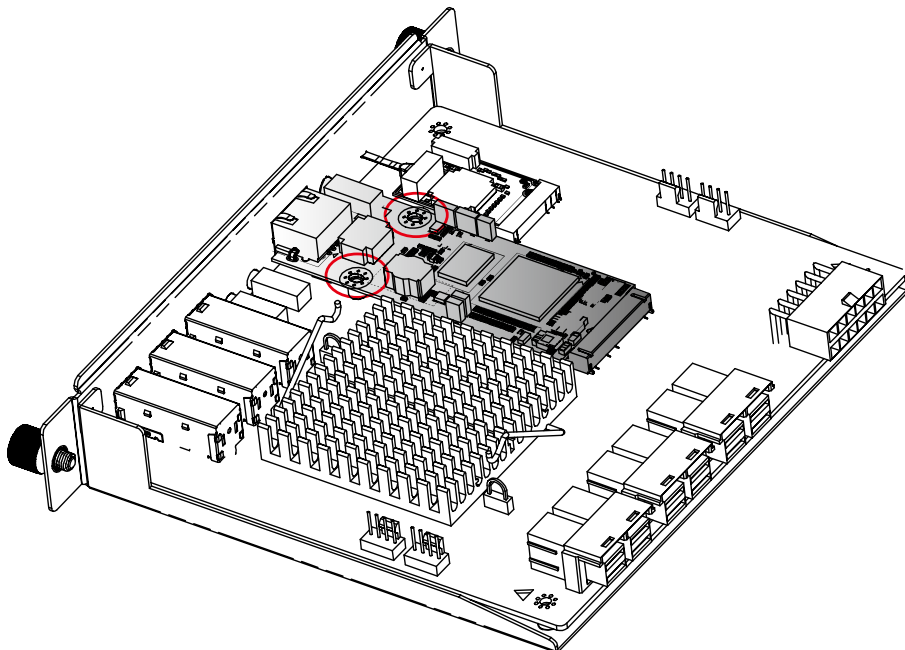
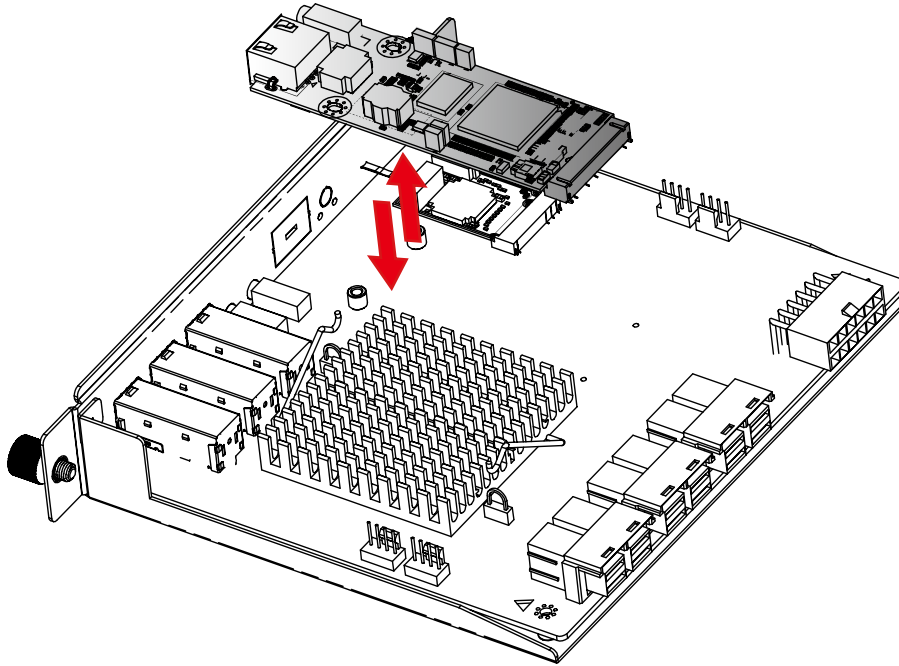
- ① Loosen the thumb screw to release expander tray lever.
- ② Hold the lever to pull the expander out of the enclosure.
- ③ Align the expander module with the opening in front of the enclosure and insert it firmly into the enclosure.
- ④ Close the lever and secure the retaining screw.



This information is provided for professional technicians only.

2.7 BMC Module

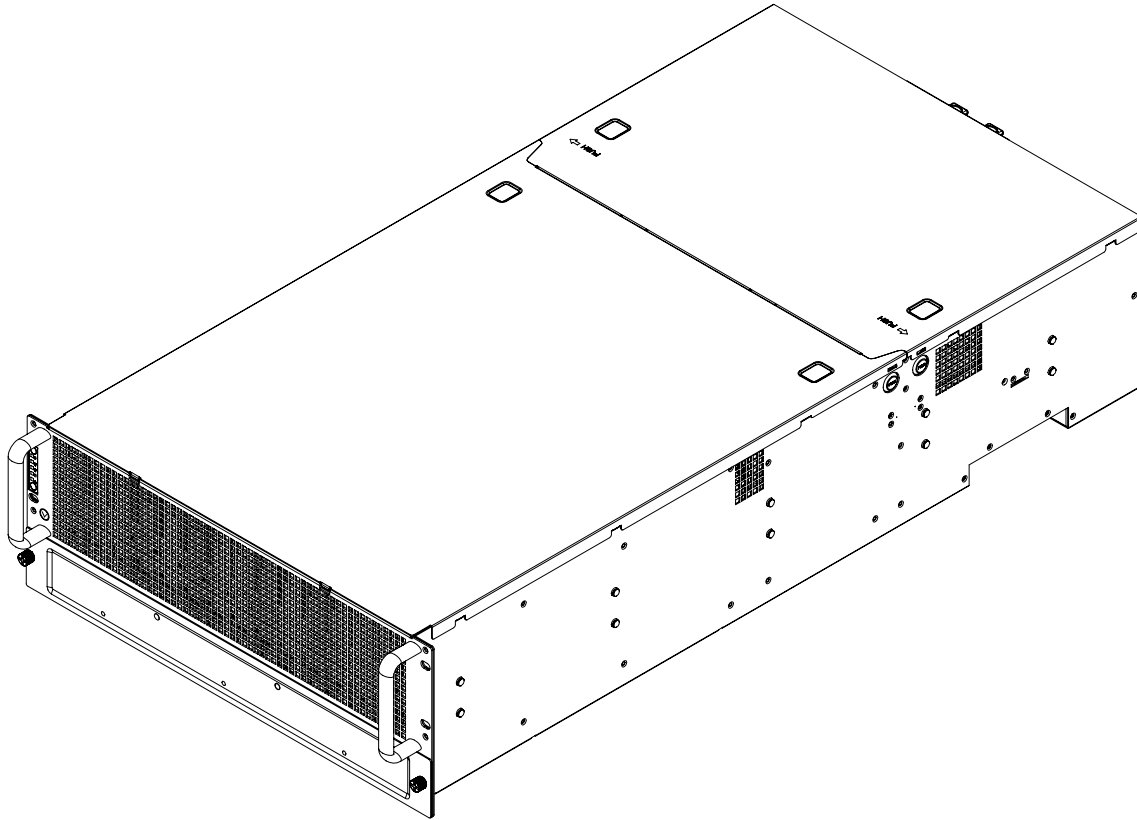
- ① Dislodge the BMC module from the carrier board.
- ② Remove the BMC module.
- ③ Align the BMC module on the carrier board
- ④ Place the BMC module onto the carrier board.



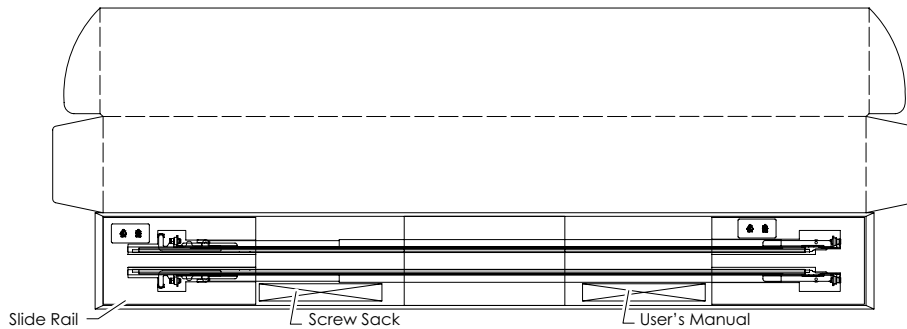
This information is provided for professional technicians only.

2.8 Slide Rail Installation

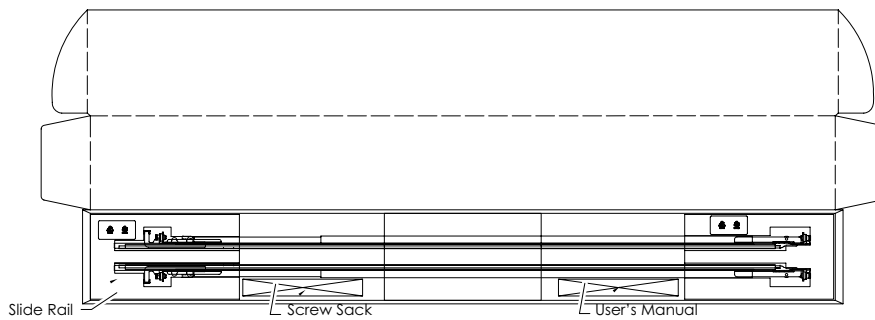
To install the slide rail, please refer to the manual in the slide rail kit.



Option 1: AP61-843



Option 2 : AP61-920

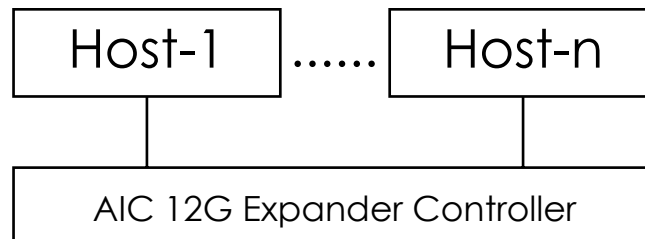


This information is provided for professional technicians only.

Chapter 3. Sub-system Configuration Setup

3.1 Supported Configuration and Unsupported Feature

3.1.1 Supported Configuration



NOTE



To have multiple host access support (the host number can be up to the number of wide ports on each AIC 12G expander controller), only the following drives are supported for shared access:

1. SAS drive/nearline SAS drive
2. SATA drive with an interposer which provides SATA-to-SAS conversion.

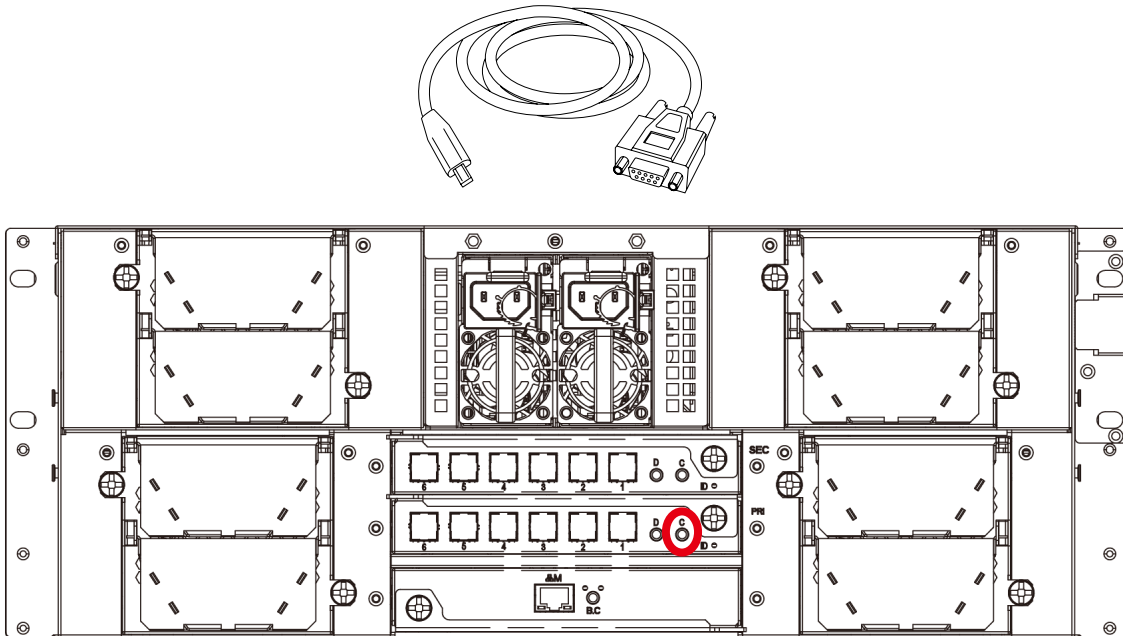
3.1.2 Unsupported Feature

(A) Enclosure logical identifier can be changed.

(B) Locating a drive via any HBA utility. Users should send standard SES command to locate a drive.

3.2 Connect Host to JBOD via RS232

Use a RS-232 DB9 cable to connect the console port of JBOD with host's PC COM port (see figures below for DB9 RS-232 cable and SAS expander COM port).



3.3 Utility Setup on Host

Step 1: Set up host RS232 connection

Set up RS232 connection application into your host as shown in the example process below.

For example:

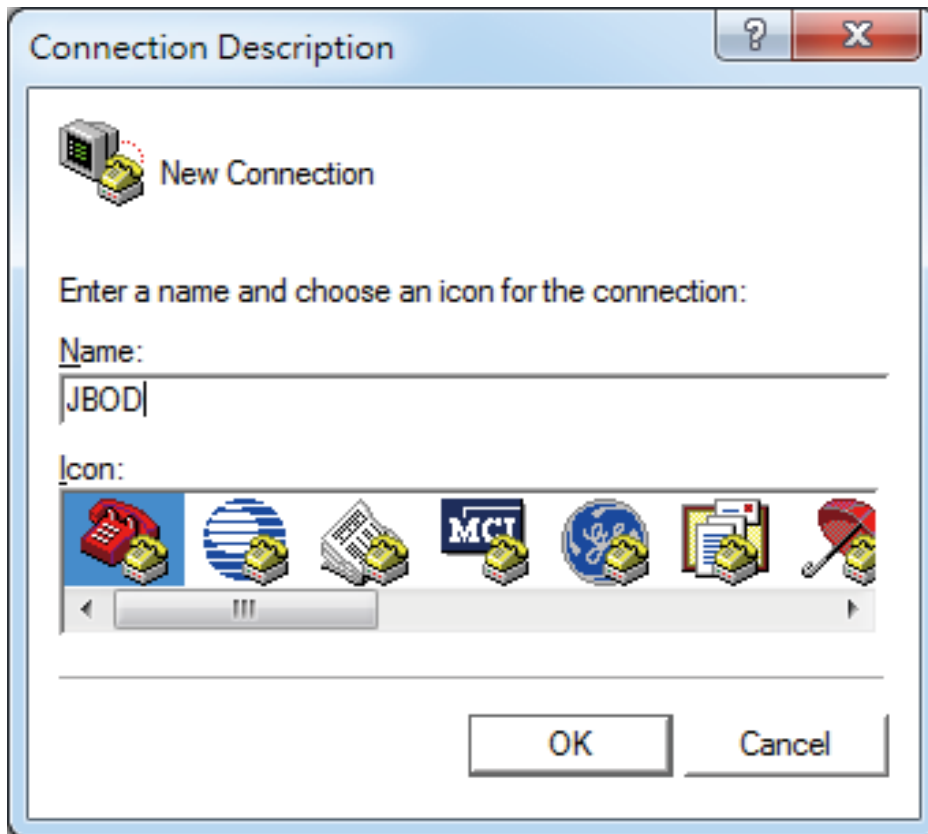
OS: Microsoft Windows Server 2008

RS232 connection application: Hyperterminal

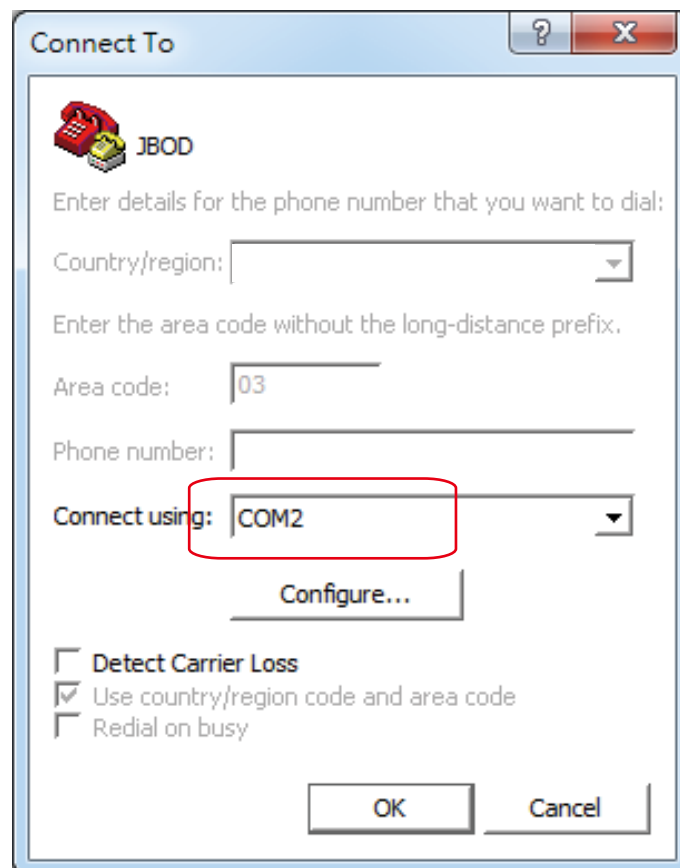
Step 2: Install HyperTrm.exe



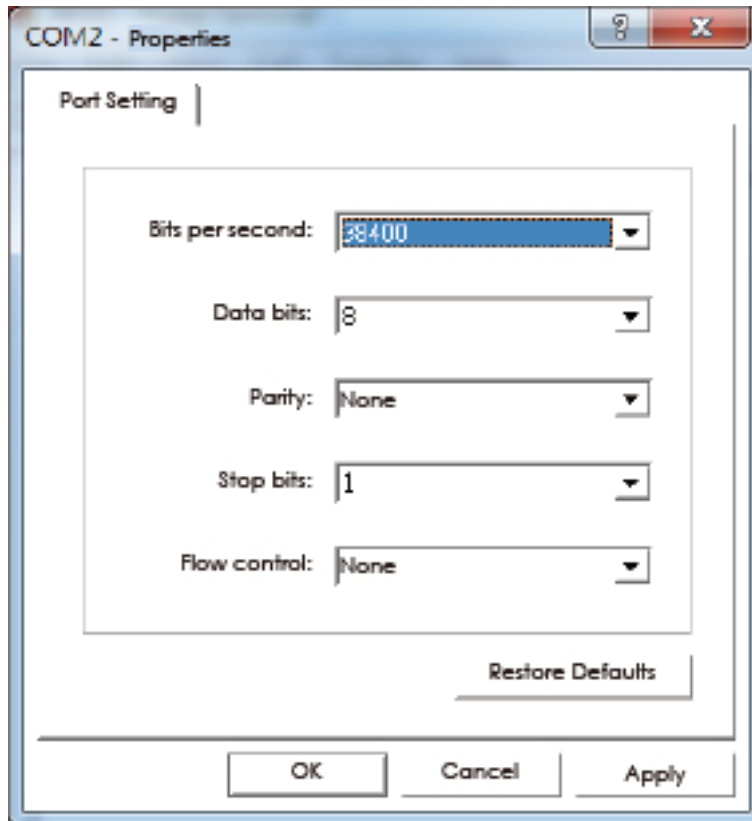
Step 3: Enter a new name for the icon in the field below and click OK.



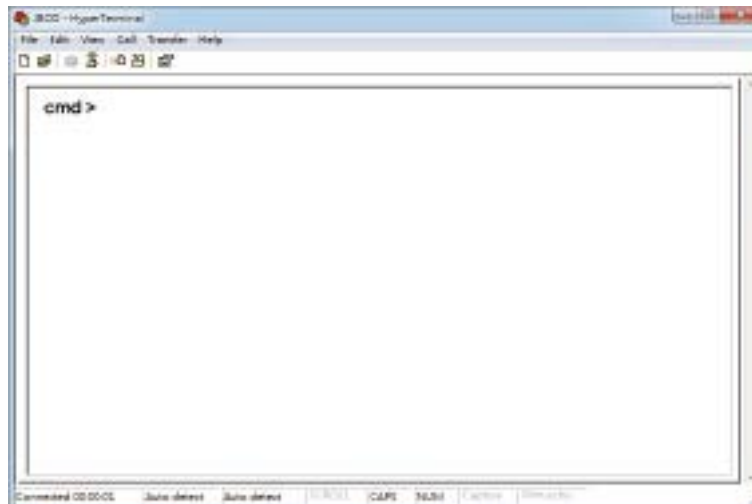
Step 4: Connect by using selecting an option in the drop down menu circled in red below (we selected COM2 in this example) and click OK.



Step 5: Under "Bits per second," select 38400. Under "Flow control," select: None. Click OK when you have finished your selections.

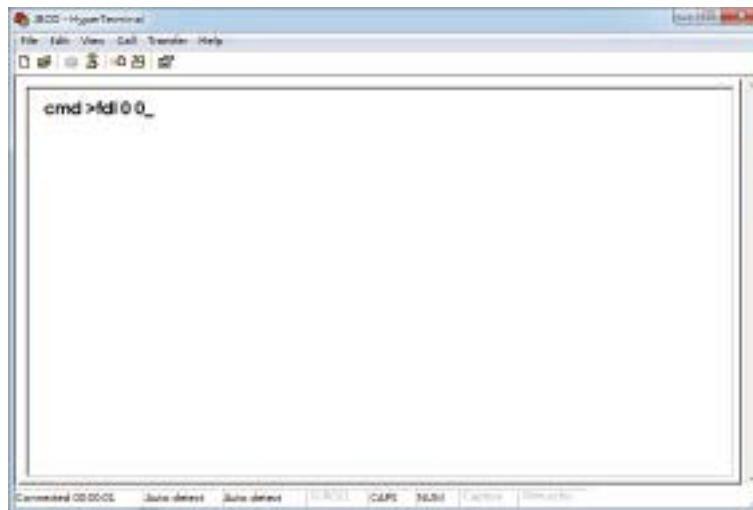


Step 6: After step 5, you will enter hyper terminal screen. Then please press "Enter" key and the cmd line will appear on the screen.

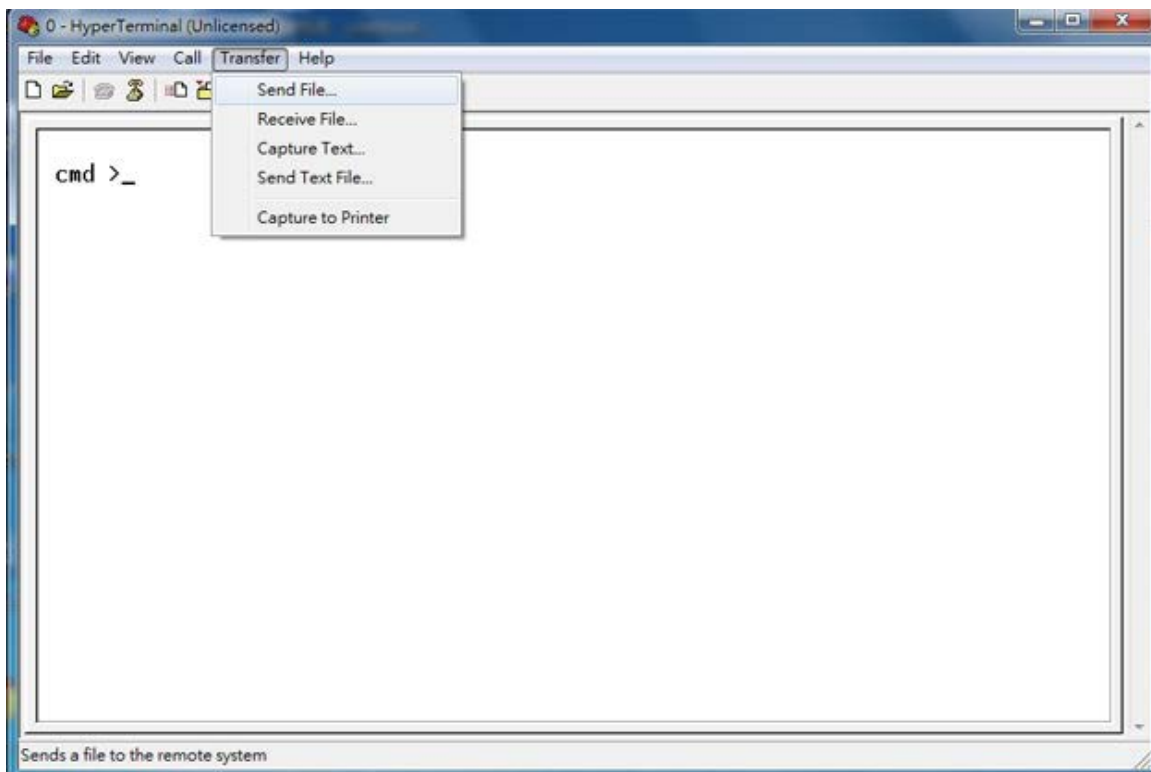


3.4 Update Firmware and MFG through Console Port

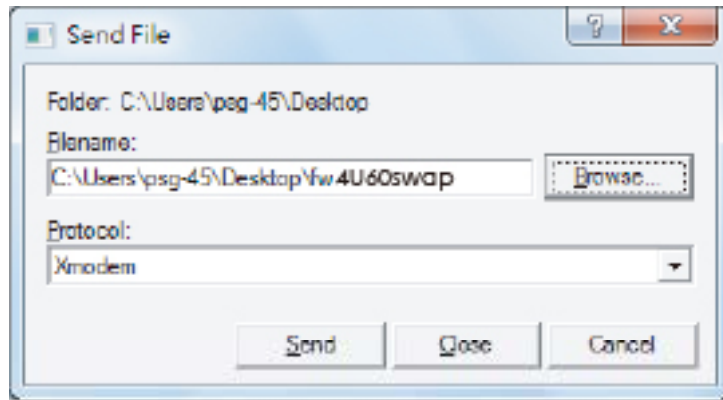
Step 1: Please input "fdl 0 0" in command line to update the firmware.



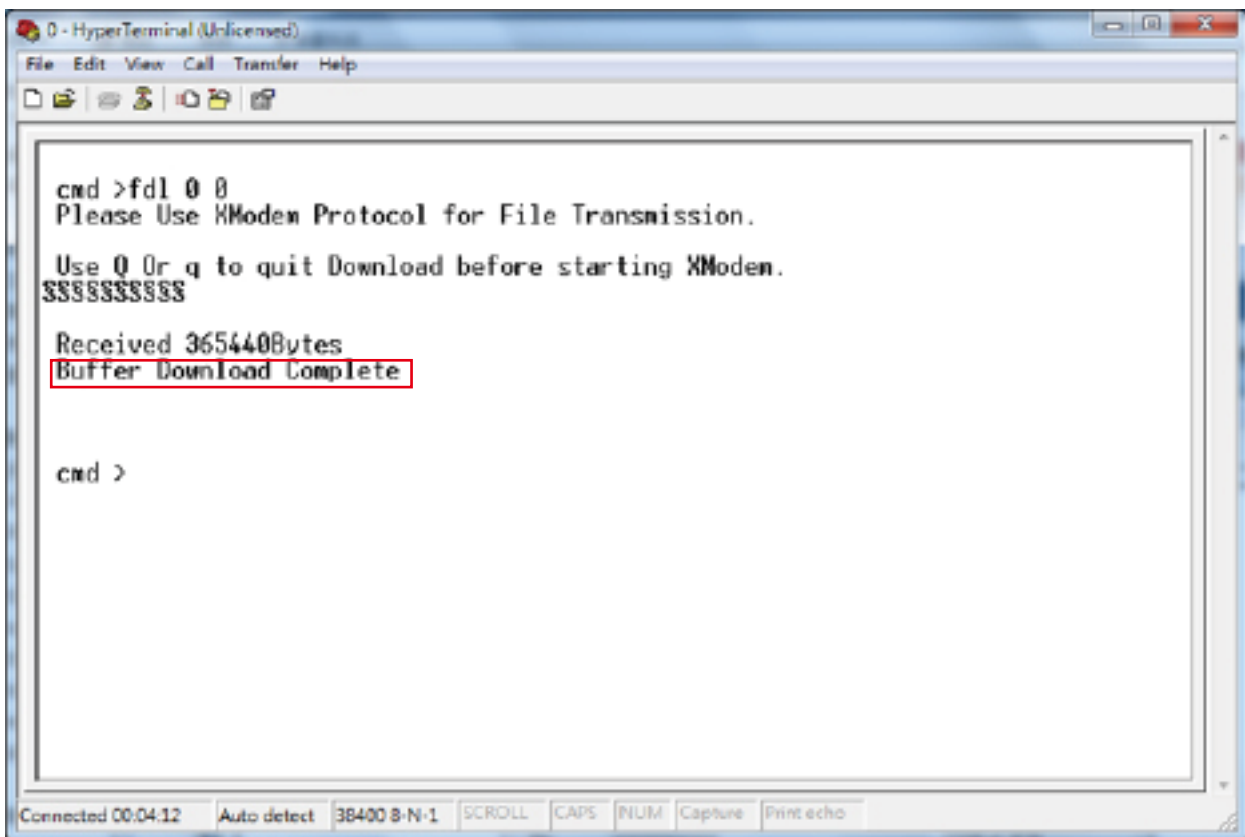
Step 2: Select the tool bar "Transfer" → "Send File" within 10 seconds.



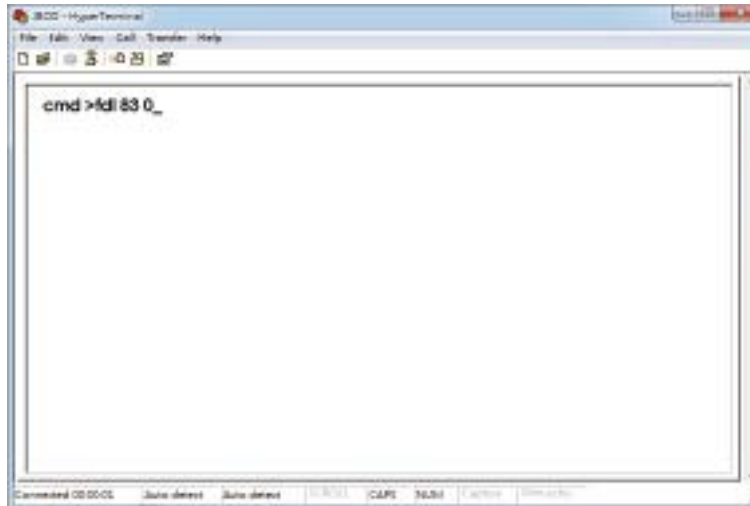
Step 3: Select the Firmware file and set the Protocol type as "Xmodem." Press the "Send" button.



Step 4: After completing the FW update, " Buffer Download Complete" will appear on the screen.



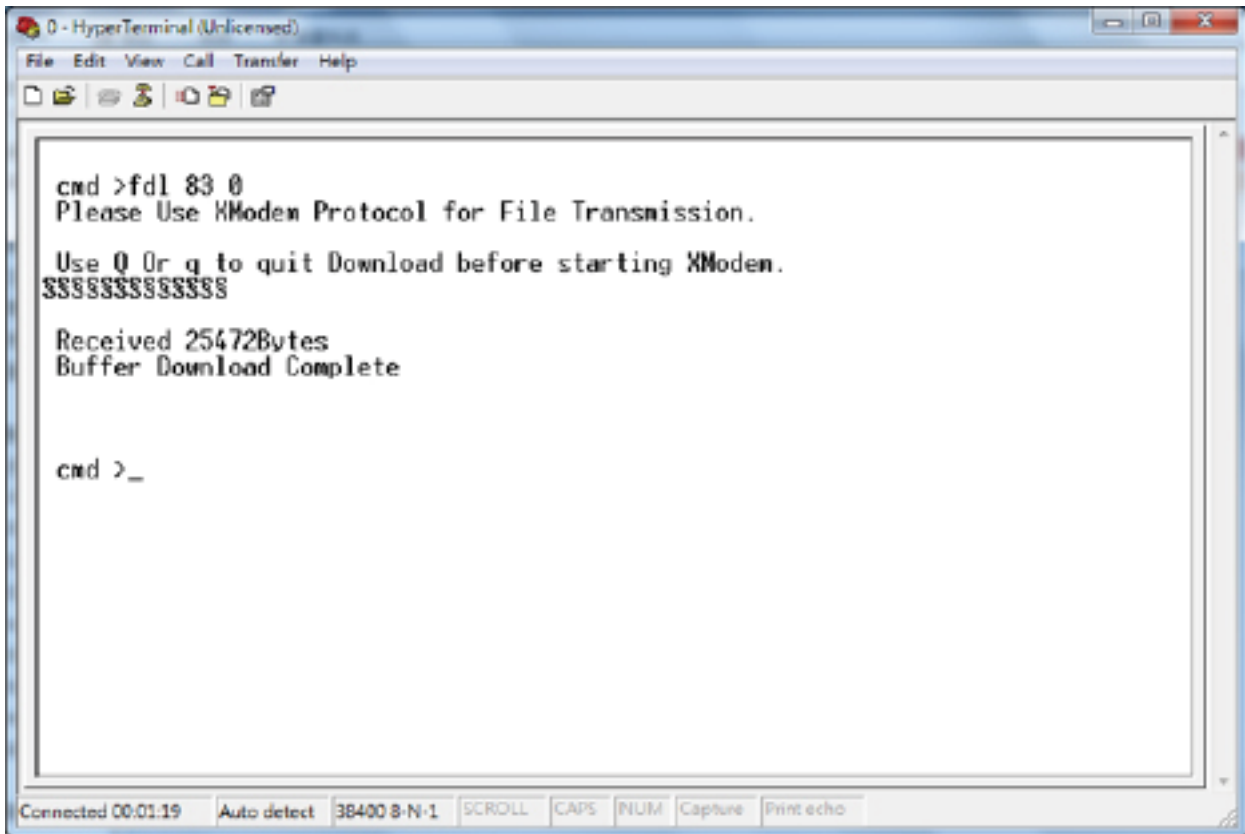
Step 5: Input "fdl 83 0 " in command line to update the MFG.



Step 6: Go to the Transfer menu and then select "Send file" within 10 seconds.

Step 7: Select the MFG file and set the Protocol type as "Xmodem." Press the "Send" button.

Step 8: After completing the MFG update, " Buffer Download Complete" will appear on the screen.



3.5 Configure Command Line Interface Operation

3.5.1 How to enable/disable T10 zoning

The default T10 zoning configuration is off.

(A) Check the current zoning state

```
cmd> phyzone state
```

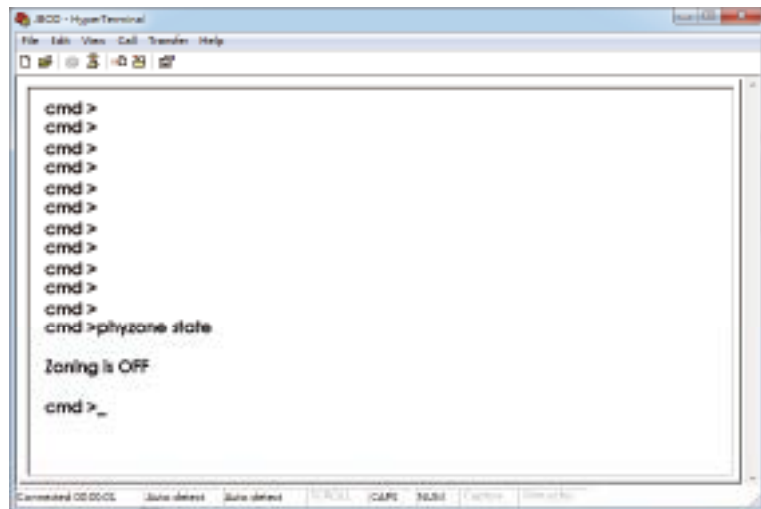
Zoning is OFF

(B) Enable zoning

```
cmd> phyzone on
```

(C) Disable zoning

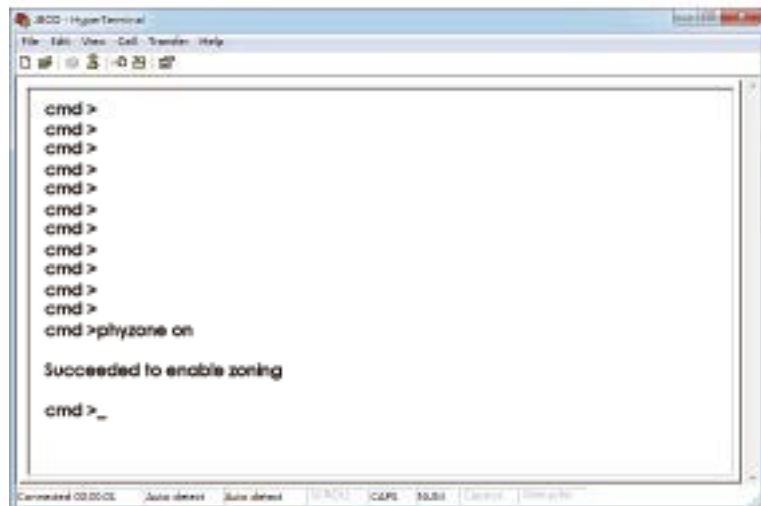
```
cmd> phyzone off
```



```
.BCD-HyperTerminal
File Edit View Call Transfer Help
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >phyzone state

Zoning is OFF

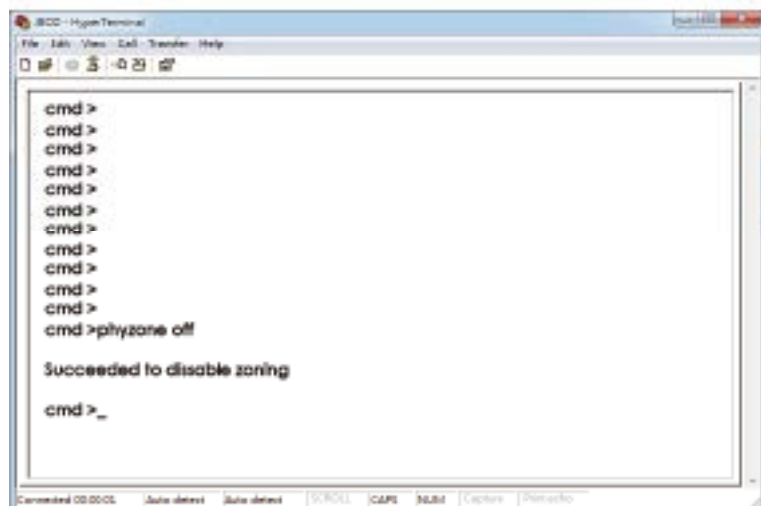
cmd >_
```



```
.BCD-HyperTerminal
File Edit View Call Transfer Help
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >phyzone on

Succeeded to enable zoning

cmd >_
```



```
.BCD-HyperTerminal
File Edit View Call Transfer Help
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >phyzone off

Succeeded to disable zoning

cmd >_
```

3.5.2 How to configure T10 zoning

After enabling T10 zoning, seven predefined groups are Group1, Group8, Group9, Group10, Group11, Group 12 and Group 13.

Each PHY should be in one of the seven groups, and all PHYs in a wide port should be in the same group.

Each PHY in Group1 can access any PHY in other groups, and vice versa. Each PHY in Group8 cannot access any PHY in groups other than Group8, and vice versa.

The command syntax is "phyzone phy_index group". The following example shows how to setup one drive accessed only the first port and another drive accessed only by the second port.

The configuration for the example is

- (A) PHY8 - PHY11 for the first wide port of HUB
- (B) PHY4 - PHY7 for the second wide port of HUB
- (C) PHY20 - PHY21 for drives on EDGE

Step 1: Read the current group for PHY4 of HUB

```
cmd> phyzone 4
```

Phy 4 for Zone Group 1

Step 2: Assign the second port (PHY4 - PHY7) for Group9

```
cmd> phyzone 4 9
```

```
cmd> phyzone 5 9
```

```
cmd> phyzone 6 9
```

```
cmd> phyzone 7 9
```

Step 3: Assign the first port (PHY8 - PHY11) of HUB for Group8

```
cmd> phyzone 8 8
```

```
cmd> phyzone 9 8
```

```
cmd> phyzone 10 8
```

```
cmd> phyzone 11 8
```

Step 4: Assign the drive on PHY20 of EDGE to be accessed only by the first port of HUB instead of the second port

```
cmd> phyzone 20 8
```

Step 5: Assign the drive on PHY21 of EDGE to be accessed only by the second port of HUB instead of the first port

```
cmd> phyzone 21 9
```

Step 6: Rest HUB and EDGE for taking effect with the new settings.

```
cmd> reset
```

```

800 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >phyzone 4
Phy 4 for Zone Group 1
cmd >_

```

```

800 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >phyzone 4 9
Succeeded to set zone group for the phy
cmd >phyzone 5 9
Succeeded to set zone group for the phy
cmd >phyzone 6 9
Succeeded to set zone group for the phy
cmd >phyzone 7 9
Succeeded to set zone group for the phy
cmd >
cmd >
cmd >
cmd >_

```

```

800 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >phyzone 8 8
Succeeded to set zone group for the phy
cmd >phyzone 9 8
Succeeded to set zone group for the phy
cmd >phyzone 10 8
Succeeded to set zone group for the phy
cmd >phyzone 10 8
Succeeded to set zone group for the phy
cmd >
cmd >
cmd >
cmd >_

```

```

800 - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >phyzone 20 8
Succeeded to set zone group for the phy
cmd >phyzone 21 9
Succeeded to set zone group for the phy
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >_
cmd >reset
_

```

3.5.3 How to get all revisions in AIC SAS 12G Expander

(A) Expander firmware revision

```
cmd> rev
```

(B) Expander configuration revision

```
cmd> showmfg
```

(C) MCU firmware revision or sensor information (MCU firmware revision is reported by Hub only)

```
cmd> sensor
```

```

BCC - HyperTerminal
File Edit View Call Transfer Help
[Icons]
-----
cmd> rev
-----
Firmware Revision Information:
-----
Active Firmware:
Revision: 1.12.1.4
Version Name: AIC SAS3FW-01.12.01-04
Firmware Family: 0 - OemFamilyD
Fast Boot: Yes Image Address: 0x10000000
cmd> showmfg
-----
Manufacturing Image Version Information:
-----
Mfg Revision: 1.1.0.4
Product Name: SAS3_HOTSWAP
Platform Name: AIC 12G
cmd>_
-----
Connected 09:00:00 Auto detect Auto detect SCROLL CAPS NUMB Capture Printecho

```

```

BCC - HyperTerminal
File Edit View Call Transfer Help
[Icons]
-----
cmd> sensor
-----
ENCLOSURE STATUS-----
Total fan number : 2
System Fan-0 speed : 10885 RPM
System Fan-1 speed : 10971 RPM
System FWN-0 : 82%
Expander Temperature : 74 Celsius degree
System Temperature-0 : 33 Celsius degree
T1 : 20 Celsius degree
T2 : 50 Celsius degree
TC : 55 Celsius degree
Voltage Sensor 0.5V : 0.93V
Voltage Sensor 1.8V : 1.80V

Power-0 : good
MCU ID : 2U24SAS3swap
Current Model : 2U24SAS3swap

Alarm-system : off
Alarm-temperature : off
Alarm-fan : off
Alarm-global : off
Buzzer-state : off
Buzzer-mute : off

MCU firmware version : 1.2
-----
cmd>_
-----
Connected 09:00:00 Auto detect Auto detect SCROLL CAPS NUMB Capture Printecho

```

3.5.4 How to configure temperature sensor(HUB only)

Four temperature settings in Celsius are T1, T2, warning threshold, and alarm (critical) threshold. The T1, T2 and alarm (critical) threshold are applied to the smart fan function.

(A) Get the current temperature settings

```
cmd> temperature
```

```
Temperature in Celsius (t1=20 C, t2=55 C, warning=50 C, alarm=55 C)
```

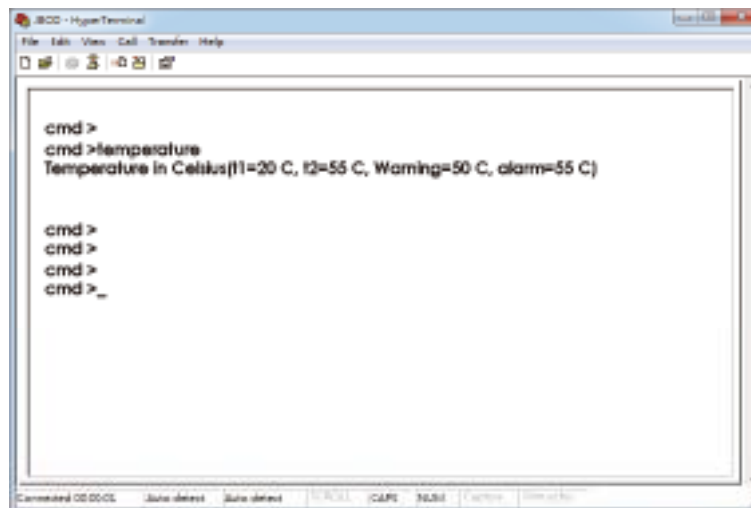
(B) Set temperature with new T1=18 C, T2=52 C, warning threshold=48 C, and alarm threshold=54 C. The new setting will take effect after reset.

```
cmd> temperature 18 52 48 54
```

```
cmd> reset
```

(C) We also take expander temperature into consideration, and the temperature parameters for expander are non-changeable. Expander temperature parameters: T1=40, T2=86 (max 115×0.75), and no warning or alarm.

The smart fan feature will use the highest PWM output which is calculated from system and expander temperature parameters.

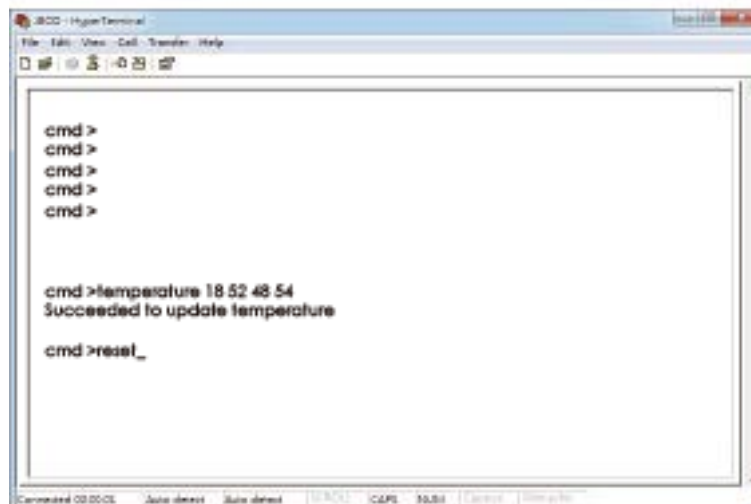


```

cmd>
cmd>temperature
Temperature in Celsius(t1=20 C, t2=55 C, Warning=50 C, alarm=55 C)

cmd>
cmd>
cmd>
cmd>_

```



```

cmd>
cmd>
cmd>
cmd>
cmd>

cmd>temperature 18 52 48 54
Succeeded to update temperature

cmd>reset_

```


3.5.5 How to configure enclosure address

(A) Get the current enclosure address

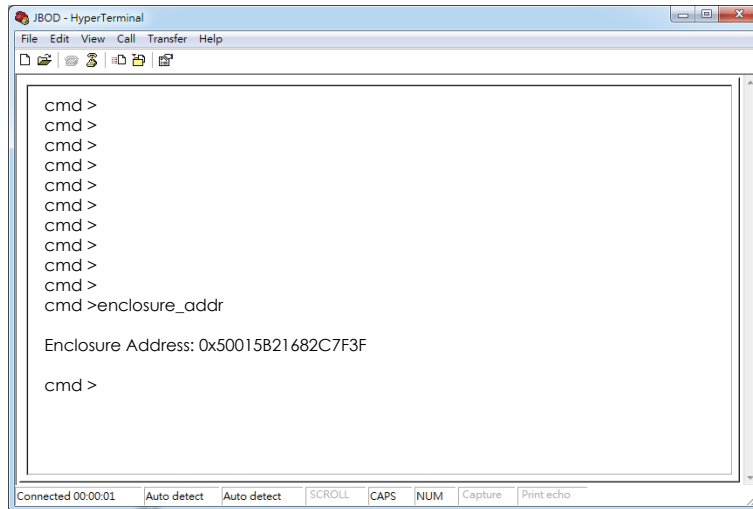
```
cmd> enclosure_addr
```

```
Enclosure Address: 0x500605B0000272BF
```

(B) Set the enclosure address with 0x500605B0000272BF. The new setting will take effect after reset.

```
cmd> enclosure_addr 500605B0000272BF
```

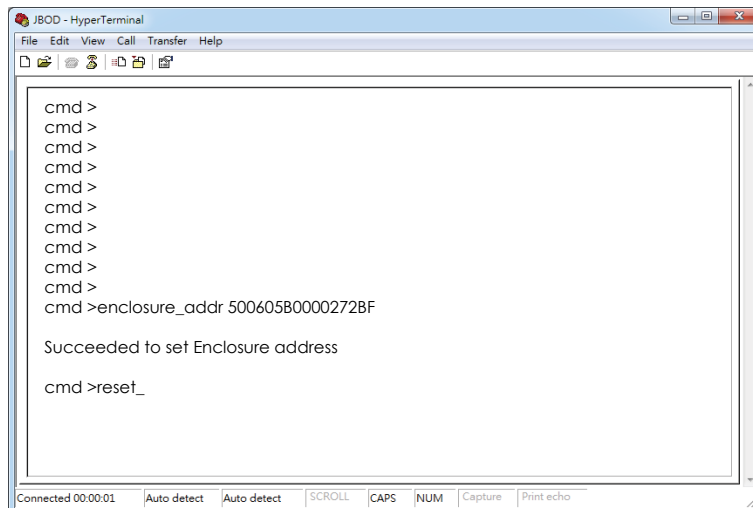
```
cmd> reset
```



```
JBOD - HyperTerminal
File Edit View Call Transfer Help
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >enclosure_addr

Enclosure Address: 0x50015B21682C7F3F

cmd >
```



```
JBOD - HyperTerminal
File Edit View Call Transfer Help
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >enclosure_addr 500605B0000272BF

Succeeded to set Enclosure address

cmd >reset_
```

3.5.6 How to configure standby timer for all disk drives(EDGE only)

This feature is applicable for SAS/SATA drives. Standby timer is in units of minutes. Setting standby timer with 0 minute disables this feature.

(A) Get current standby timer

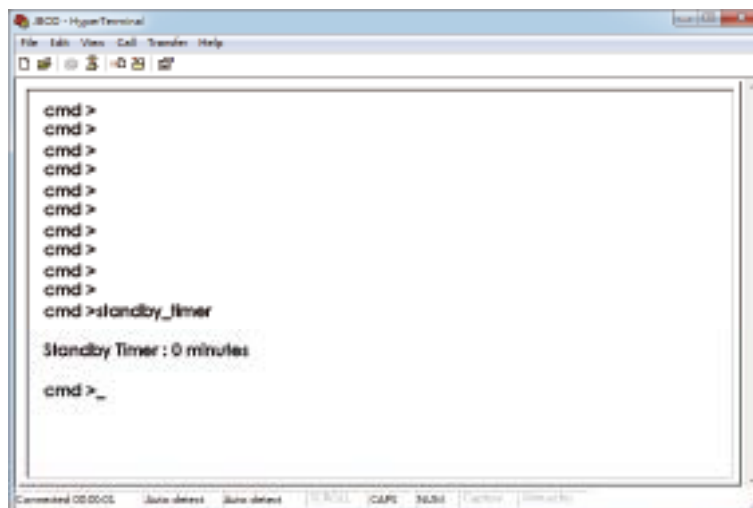
```
cmd> standby_timer
```

```
Standby Timer : 0 minutes
```

(B) Set the standby timer with 10 minutes. The new setting will take effect after reset.

```
cmd> standby_timer 10
```

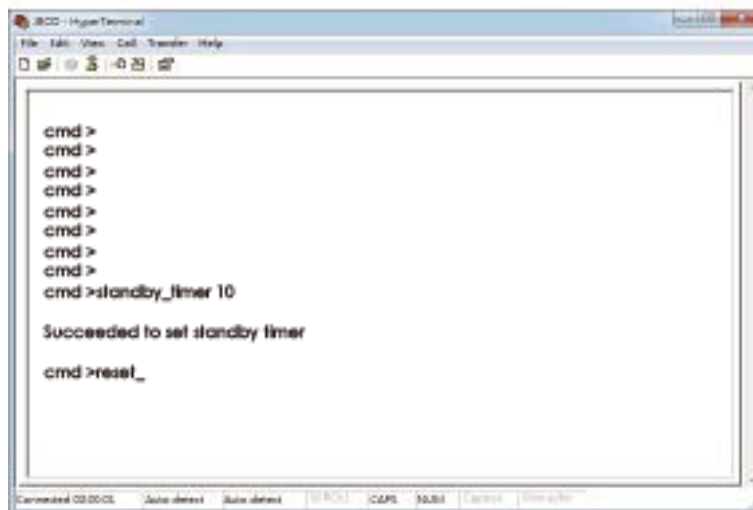
```
cmd> reset
```



```
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >standby_timer

Standby Timer : 0 minutes

cmd >_
```



```
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >standby_timer 10

Succeeded to set standby timer

cmd >reset_
```

NOTE

This function is not recommended to use with RAID card due to RAID card limitation.

3.5.7 How to configure wide port checker

This feature is applicable for SAS drives instead of SATA drives. If there is no connection with any active SAS initiator by checking all wide ports, AIC Expander Controller stops all attached SAS drives to save power consumption of SAS drives. Otherwise, AIC Expander Controller starts all attached SAS drives to provide drive access service to any active SAS initiator. The same setting should be applied to HUB and EGDE.

(A) Get the current state of wide port checker

```
cmd> check_wide_port
```

```
Checking wide port is OFF
```

(B) Enable checking wide port. The new setting will take effect after reset.

```
cmd> check_wide_port on
```

```
cmd> reset
```

(C) Disable checking wide port. The new setting will take effect after reset.

```
cmd> check_wide_port off
```

```
cmd> reset
```

```

BCC - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >check_wide_port
Checking wide port is OFF
cmd >_
    
```

```

BCC - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >check_wide_port on
Succeeded to configure checking wide port
cmd >reset_
    
```

```

BCC - HyperTerminal
File Edit View Call Transfer Help
[Icons]
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >
cmd >check_wide_port off
Succeeded to configure checking wide port
cmd >reset_
    
```

3.5.8 How to configure serial number

(A) Get the current serial number

```
cmd> serial_number
```

Expander number: 421-12021704510010 or Expander number: 421-12021704510010

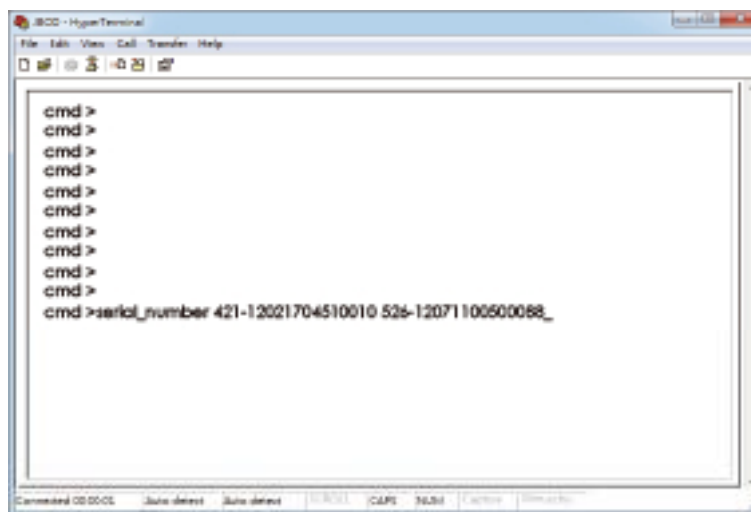
Enclosure number: 526-12071100500088

(B) Only set Expander serial number with 421-12021704510010.

```
cmd> serial_number 421-12021704510010
```

(C) Set both of Expander serial number (421-12021704510010) and Enclosure serial number (526-12071100500088).

```
cmd> serial_number 421-12021704510010 526-12071100500088
```



3.5.9 How to power off/on all disk drives automatically

This feature is applicable for SAS/SATA drives. If there is no connection with any active SAS initiator by checking all wide ports, AIC Expander Controller powers off all attached SAS/SATA drives to save power consumption. Otherwise, AIC Expander Controller powers on all attached SAS/SATA drives to provide drive access service to any active SAS initiator. The same setting should be applied to HUB and EDGE.

(A) Apply the following commands on the COM port.

```
cmd> check_wide_port standby
```

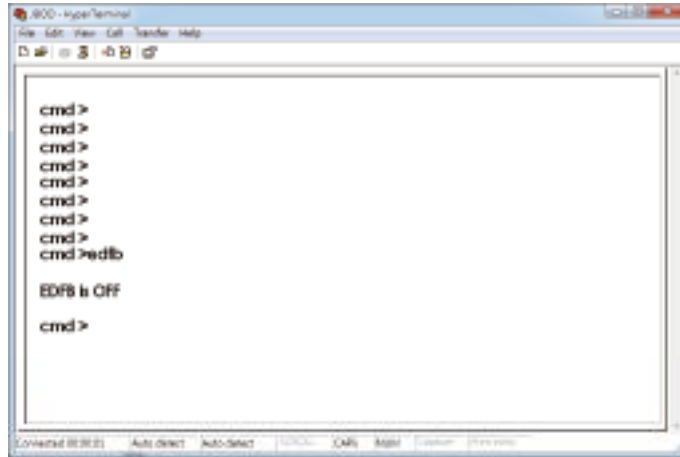
```
cmd> reset
```

3.5.10 How to configure EDFB (EDGE only)

The default EDFB configuration is off.

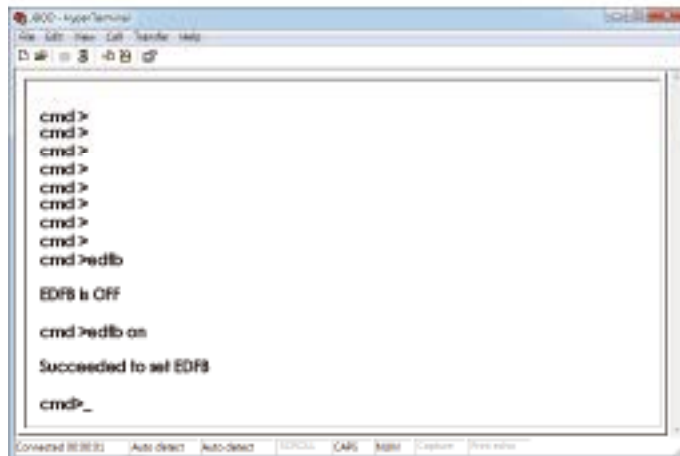
(A) Check the current configuration

```
cmd> edfb
EDFB is OFF
```



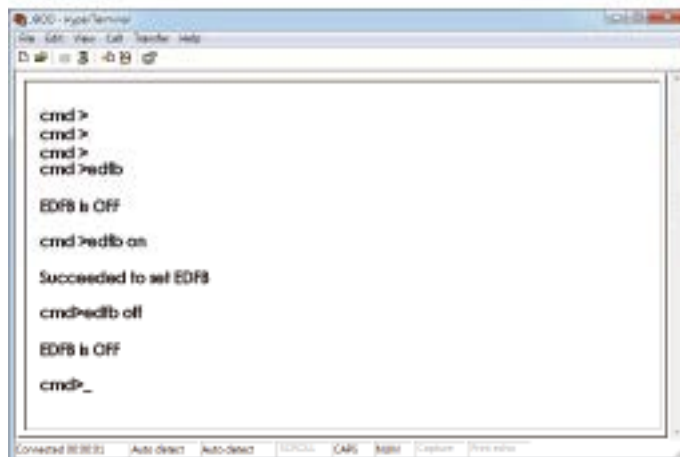
(B) Enable the edfb

```
cmd>edfb on
```



(C) Disable the edfb

```
cmd> edfb off
```



3.5.11 How to configure power setting (HUB only)

This feature is for restoring on AC power loss. Three supported options are "keep off", "keep on", and "keep last state". The default setting is "keep off".

(A) Get the current power setting

```
cmd> power_setting  
Power setting: keep off
```

(B) Set "keep off"

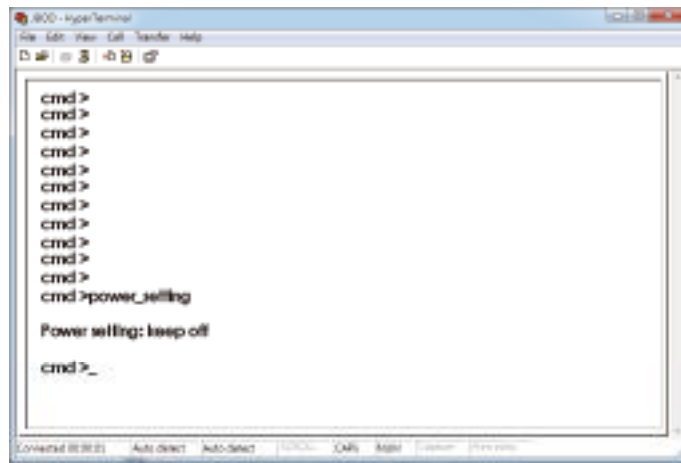
```
cmd> power_setting keep_off
```

(C) Set "keep on"

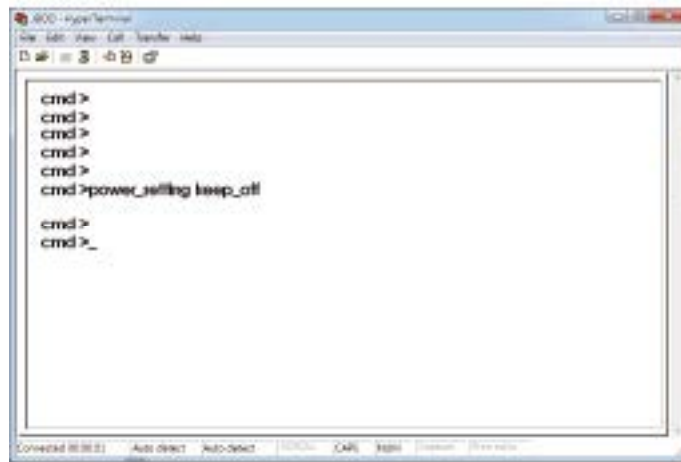
```
cmd> power_setting keep_on
```

(D) Set "keep last state"

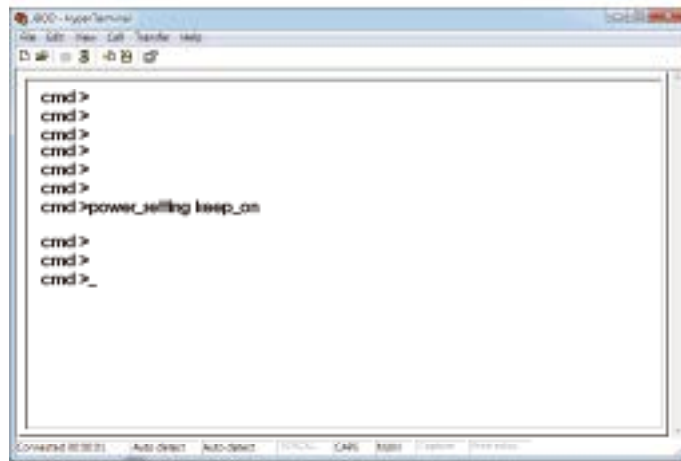
```
cmd> power_setting keep_last_state
```

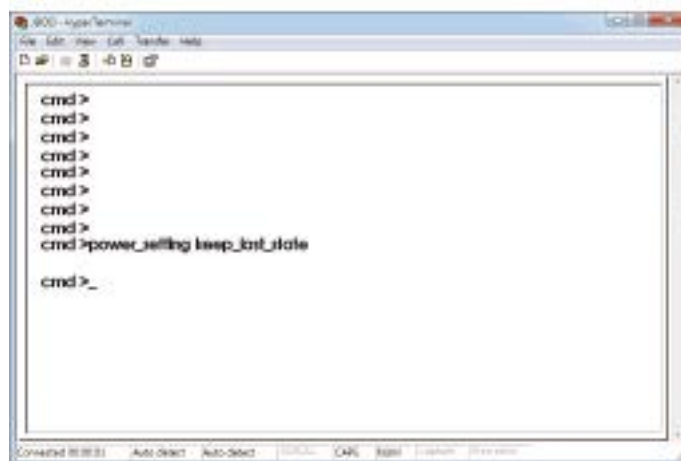
```
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>power_selling  
  
Power selling: keep off  
  
cmd>_
```



```
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>power_selling keep_off  
  
cmd>  
cmd>_
```



```
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>power_selling keep_on  
  
cmd>  
cmd>  
cmd>_
```



```
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>  
cmd>power_selling keep_init_state  
  
cmd>_
```

3.5.12 How to configure zone count

Remove the SAS cable between the HBA/RAID card and the J4U60-01 before configuring zone count. Power the J4U60-01 off after configuring zone count. Power on the J4U60-01, and then insert the SAS cable.

Three zone configurations supported are one zone(default), two zones, and four zones. The default configuration is one zone of which T10 zoning configuration is disabled. T10 zoning configuration of the other configurations (two zones and four zones) is enabled. All COM ports for HUB and EDGE should be applied with the same configuration.

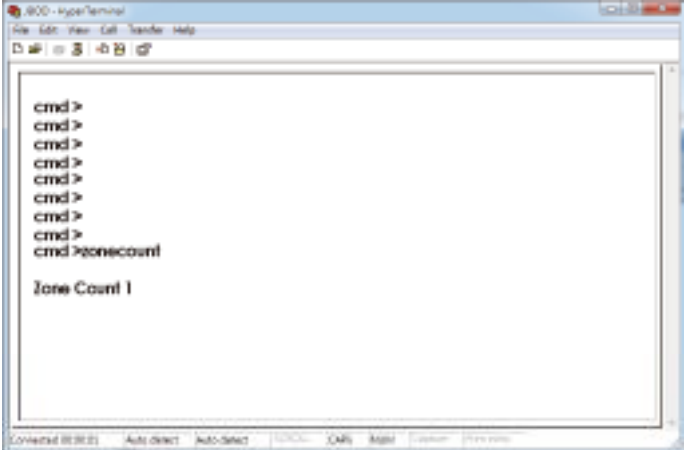
Port connection, refer to [1.4 8644 with Zoning Configuration and 8644 port definition](#)

(A) Get current zone count


```
cmd> zonecount  
Zone Count 1
```

(B) Set zone count = 2

```
cmd> zonecount 2  
Succeeded to set zone count 2
```



```
800 - HyperTerminal  
File Edit View Call Transfer Help  
Connected (80000) Auto-detect Auto-detect 115200 8N1 8bits 57600  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >zonecount  
Zone Count 1
```



```
800 - HyperTerminal  
File Edit View Call Transfer Help  
Connected (80000) Auto-detect Auto-detect 115200 8N1 8bits 57600  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >  
cmd >zonecount 2  
Succeeded to set zone count 2  
cmd>_
```

(C) Predefined zones follow.

(C-1) When Zone Count = 1, T10 zoning is disabled.

HUB:

Zone #	1
Wideport	1,2,3,4,5,6

EDGE:

Zone #	1
Slot	1~60

(C-2) When Zone Count = 2, T10 zoning is enabled.

HUB:

Zone #	1	2
Wideport	1,2,3	4,5,6

EDGE:

Zone #	1	2
Slot	1~30	31~60

(C-3) When Zone Count = 4, T10 zoning is enabled.

No disk could be seen if we connect HBA/RAID card with port 5 and 6 of HUB.

HUB:

Zone #	1	2	3	4	Others
Wideport	1	2	3	4	5,6

EDGE:

Zone #	1	2	3	4
Slot	1~15	16~30	31~45	46~60

3.5.13 How to configure multiple "up" ports (HUB only)

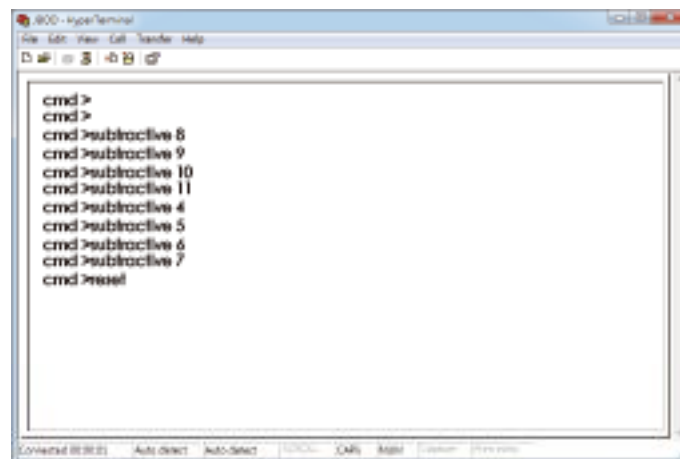
This feature can support multiple "up" ports when the zone count = 1.

- (A) Configure Port-1 and Port-2 to be "up" ports. Port-1 is composed of PHY 8 ~ 11, and Port-2 is composed of PHY 4 ~ 7.

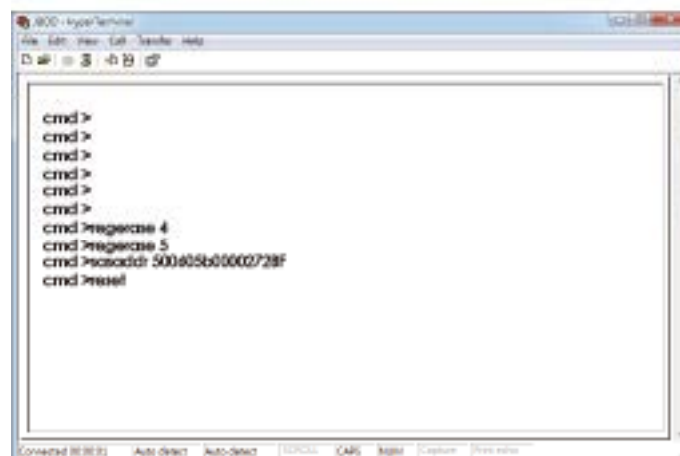
```
cmd> subtractive 8
cmd> subtractive 9
cmd> subtractive 10
cmd> subtractive 11
cmd> subtractive 4
cmd> subtractive 5
cmd> subtractive 6
cmd> subtractive 7
cmd> reset
```

- (B) Restore the default of the zone count = 1 after keeping the SAS address. The SAS address (500605B0:000272BF) is used for HUB.

```
cmd> reerase 4
cmd> reerase 5
cmd> sasaddr 500605B0000272BF
cmd> reset
```



```
cmd>
cmd>
cmd> subtractive 8
cmd> subtractive 9
cmd> subtractive 10
cmd> subtractive 11
cmd> subtractive 4
cmd> subtractive 5
cmd> subtractive 6
cmd> subtractive 7
cmd> reset
```



```
cmd>
cmd>
cmd>
cmd>
cmd>
cmd>
cmd> reerase 4
cmd> reerase 5
cmd> sasaddr 500605b0000272bf
cmd> reset
```

3.6 SES Inband Features

To ensure J4060-03 can work properly and provide high performance, durability. J4060-03 has implemented SCSI Enclosure Services to monitor the status of power supply, system cooling fan and working temperature. It also has the indicators to deliver the status of fail devices such as power supply or cooling fan. You can get the information directly from the front indicators to know how your enclosure works.

For detailed information, please visit <http://www.t10.org>

If you are a member of the T10 working group, the Standard which controlled by T10 technical committee, could be found at

<http://www.t10.org/cgi-bin/ac.pl?t=f&f=ses2r19a.pdf>

3.6.1 SES pages supported are listed below

- 00h - List of supported diagnostic pages
- 01h - SES configuration
- 02h - SES enclosure control / enclosure status
- 04h – SES String In
- 05h – SES Threshold Out / In
- 07h - SES element descriptor
- 0Ah - SES additional element
- 0Eh - SES download microcode control / SES download microcode status
- 82h – SES Vendor specific page : Chassis Number
- 83h – SES Vendor specific page : Canister Number

3.6.2 SES elements supported are listed below.

- 02h - Power Supply
- 03h – Cooling
- 04h - Temperature Sensor
- 0Eh - Enclosure
- 12h - Voltage
- 17h - Array Device

3.6.3 Implementation on SES Pages

3.6.3.1 SES String In Page

Get PMBUS information with String In Page.

String In Format

Byte 0	I2C congestion status (0: no congestion, 1: congestion or failure)
Byte 1~2	PSU Module1 STATUS_WORD
Byte 3~4	PSU Module2 STATUS_WORD
Byte 5~14	Reserved (0xFF)

3.6.3.2 SES Threshold Out / In

It includes only Temperature Sensor and Voltage Sensor elements.

Threshold control element format

BYTE/BIT	7	6	5	4	3	2	1	0
0	REQUESTED HIGH CRITICAL THRESHOLD							
1	REQUESTED HIGH WARNING THRESHOLD							
2	REQUESTED LOW WARNING THRESHOLD							
3	REQUESTED LOW CRITICAL THRESHOLD							

Threshold control element format

BYTE/BIT	7	6	5	4	3	2	1	0
0	HIGH CRITICAL THRESHOLD							
1	HIGH WARNING THRESHOLD							
2	LOW WARNING THRESHOLD							
3	LOW CRITICAL THRESHOLD							

3.6.3.3 SES Vendor specific page: Chassis Number (page code 82h) Out / In

The length N of chassis number can be 0 to 30 bytes. If no chassis number is entered (N=0), then chassis number is cleared.

Chassis Number control format

BYTE/BIT	7	6	5	4	3	2	1	0
0~N	Chassis Number							

If no chassis number is found, return Status = 1 (failed) only, else return Status=0 (success) followed by chassis number.

Chassis Number status format

BYTE/BIT	7	6	5	4	3	2	1	0
0	Status (0: success, 1: failed)							
1~N (if success)	Chassis Number							

3.6.3.4 SES Vendor specific page: Canister Number (page code 83h) Out / In

The length N of canister number can be 0~30 bytes. If no canister number is entered (N=0), then canister number is restored to default: 0x20 0x20 0x20 0x20 0x20 0x20 0x20 0x20 (8 spaces in ASCII).

Canister Number control format

BYTE/BIT	7	6	5	4	3	2	1	0
0~N	Canister Number							

If no canister number is found, return Status = 1 (failed) only, else return Status=0 (success) followed by canister number.

Canister Number status format

BYTE/BIT	7	6	5	4	3	2	1	0
0	Status (0: success, 1: failed)							
1~N (if success)	Canister Number							

3.6.4 Implementation on SES Elements

Only the fields highlighted in green are supported.

3.6.4.1. Power Supply Element

(A) Power Supply Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	Reserved							
3	Reserved	RQST FAIL	RQST ON	Reserved				

Field	Value
RQST ON	Please refer to section "SES Element Control Functions" for details.

(B) Power Supply Status Element

BYTE/BIT	7	6	5	4	3	2	1	0	
0	COMMON STATUS								
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE				
1	IDENT	Reserved							
2	Reserved				DC OVER VOLTAGE	DC UNDER VOLTAGE	DC OVER CURRENT	Reserved	
3	HOT SWAP	FAIL	RQSTED ON	OFF	OVERTMP FAIL	TEMP WARN	AC FAIL	DC FAIL	

Field	Value
ELEMENT	OK: No failure or warning conditions detected
STATUS CODE	CRITICAL: FAIL bit is set due to one or more failure condition
FAIL	A failure condition is detected
RQSTED ON	1: On 0: Off for Disk Power Supply
OFF	1: Off for Disk Power Supply 0: On
AC FAIL	A failure condition is detected
DC FAIL	A failure condition is detected

3.6.4.2 Cooling Element

(A) Cooling Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	Reserved							
3	Reserved	RQST FAIL	RQST ON	Reserved		REQUESTED SPEED CODE		

Field	Value
RQST IDENT	Please refer to section "SES Element Control Functions" for details.
REQUESTED SPEED CODE	Please refer to section "SES Element Control Functions" for details.

(B) Cooling Status Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON STATUS							
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE			
1	IDENT	Reserved				ACTUAL FAN SPEED (MSB)		
2	ACTUAL FAN SPEED (LSB)							
3	HOT SWAP	FAIL	RQST ON	OFF	Reserved	ACTUAL SPEED CODE		

Field	Value
ELEMENT STATUS CODE	OK: Actual fan speed > 0 CRITICAL: The fan RPM can't be detected or equal to 0.
IDENT	Applicable only for Cooling element 0 0: Enable the smart fan function 1: Disable the smart fan function
ACTUAL FAN SPEED	Current fan RPM
FAIL	The fan RPM can't be detected or equal to 0.
ACTUAL SPEED CODE	Speed code level bases on current fan RPM.

3.6.4.3 Temperature Sensor Element

(A) Temperature Sensor Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	RQST FAIL	Reserved					
2	Reserved							
3	Reserved							

(B) Temperature Sensor Status Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON STATUS							
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE			
1	IDENT	FAIL	Reserved					
2	TEMPERATURE							
3	Reserved				OT FAILURE	OT WARNING	UT FAILURE	UT WARNING

Field	Value
ELEMENT STATUS CODE	OK: Everything is Ok
	NON-CRITICAL: If either warning limit is exceeded
	CRITICAL: If either failure limit is exceeded
FAIL	A warning or failure condition is detected
TEMPERATURE	Temperature reading
OT FAILURE	Temperature has exceeded the failure high threshold value
OT WARNING	Temperature has exceeded the warning high threshold value
UT FAILURE	Temperature is below the failure low threshold value
UT WARNING	Temperature is below the warning low threshold value

3.6.4.4 Enclosure Element

(A) Enclosure Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	POWER CYCLE REQUEST		POWER CYCLE DELAY					
3	POWER OFF DURATION						REQUEST FAILURE	REQUEST WARNING

Field	Value
RQST IDENT	Please refer to section "SES Element Control Functions" for details.
REQUEST FAILURE	Please refer to section "SES Element Control Functions" for details.
REQUEST WARNING	Please refer to section "SES Element Control Functions" for details.

(B) Enclosure Status Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON STATUS							
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE			
1	IDENT	Reserved						
2	TIME UNTIL POWER CYCLE						FAILURE INDICATION	WARNING INDICATION
3	REQUEST POWER OFF DURATION						FAILURE REQUESTED	WARNING REQUESTED

Field	Value
ELEMENT STATUS CODE	OK
IDENT	0: Identify LED of Hub is OFF 1: Identify LED of Hub is solid ON
FAILURE REQUESTED	Set by the REQUEST FAILURE on Enclosure Control Element
WARNING REQUESTED	Set by the REQUEST WARNING on Enclosure Control Element

3.6.4.5 Voltage Element

(A) Voltage Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	RQST FAIL	Reserved					
2	Reserved							
3	Reserved							

(B) Voltage Status Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON STATUS							
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE			
1	IDENT	FAIL	Reserved		WARN OVER	WARN UNDER	CRIT OVER	CRIT UNDER
2	VOLTAGE							
3								

Field	Value
ELEMENT STATUS CODE	OK: Everything is Ok NON-CRITICAL: If either warning limit is exceeded CRITICAL: If either failure limit is exceeded
FAIL	A warning or failure condition is detected
VOLTAGE	Voltage reading

3.6.4.6 Array Device Element

(A) Array Device Control Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST OK	RQST RSVD DEVICE	RQST HOT SPARE	RQST CONS CHECK	RQST IN CRIT ARRAY	RQST IN FAILED ARRAY	RQST REBUILD/REMAP	RQST R/R ABORT
2	RQST ACTIVE	DO NOT REMOVE	Reserved	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved
3	Reserved		RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved	

Field	Value
PRDFAIL	Please refer to section "SES Element Control Functions" for details.
RQST OK	Please refer to section "SES Element Control Functions" for details.
RQST RSVD DEVICE	Please refer to section "SES Element Control Functions" for details.
RQST HOT SPARE	Please refer to section "SES Element Control Functions" for details.
RQST CONS CHECK	Please refer to section "SES Element Control Functions" for details.
RQST IN CRIT ARRAY	Please refer to section "SES Element Control Functions" for details.
RQST IN FAILED ARRAY	Please refer to section "SES Element Control Functions" for details.
RQST REBUILD/REMAP	Please refer to section "SES Element Control Functions" for details.
RQST R/R ABORT	Please refer to section "SES Element Control Functions" for details.
RQST ACTIVE	Please refer to section "SES Element Control Functions" for details.
DO NOT REMOVE	Please refer to section "SES Element Control Functions" for details.
RQST MISSING	Please refer to section "SES Element Control Functions" for details.
RQST INSERT	Please refer to section "SES Element Control Functions" for details.
RQST REMOVE	Please refer to section "SES Element Control Functions" for details.
RQST IDENT	Please refer to section "SES Element Control Functions" for details.
RQST FAULT	Please refer to section "SES Element Control Functions" for details.
DEVICE OFF	Please refer to section "SES Element Control Functions" for details.

(B) Array Device Status Element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON STATUS							
	Reserved	PRDFAIL	DISABLE	SWAP	ELEMENT STATUS CODE			
1	OK	RSVD DEVICE	HOT SPARE	CONS CHK	IN CRIT ARRAY	IN FAILED ARRAY	REBUILD/REMAP	R/R ABORT
2	APP CLIENT BYPASSED A	DO NOT REMOVE	ENCLOSURE BYPASSED A	ENCLOSURE BYPASSED B	READY TO INSERT	RMV	IDENT	REPORT
3	APP CLIENT BYPASSED B	FAULT SENSED	FAULT REQSTD	DEVICE OFF	BYPASSED A	BYPASSED B	DEVICE BYPASSED A	DEVICE BYPASSED B

Field	Value
PRDFAIL	Set by the PRDFAIL on Array Device Control Element
ELEMENT STATUS CODE	OK: A drive is detected in the slot NOT INSTALLED: No drive is installed in the slot
OK	Set by the RQST OK on Array Device Control Element
RSVD DEVICE	Set by the RQST RSVD DEVICE on Array Device Control Element
HOT SPARE	Set by the RQST HOT SPARE on Array Device Control Element
CONS CHK	Set by the RQST CONS CHECK on Array Device Control Element
IN CRIT ARRAY	Set by the RQST IN CRIT ARRAY on Array Device Control Element
IN FAILED ARRAY	Set by the RQST IN FAILED ARRAY on Array Device Control Element
REBUILD/REMAP	Set by the RQST REBUILD/REMAP on Array Device Control Element
R/R ABORT	Set by the RQST R/R ABORT on Array Device Control Element
DO NOT REMOVE	Set by the DO NOT REMOVE on Array Device Control Element
READY TO INSERT	Set by the RQST INSERT on Array Device Control Element
RMV	Set by the RQST REMOVE on Array Device Control Element
IDENT	Set by the RQST IDENT on Array Device Control Element
FAULT REQSTD	Set by the RQST FAULT on Array Device Control Element
DEVICE OFF	Set by the DEVICE OFF on Array Device Control Element

3.6.5 SES Element Control Functions

3.6.5.1 LED indicators (blue and red) associated with an attached disk drive

Array Device Slot control element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST OK	RQST RSVD DEVICE	RQST HOT SPARE	RQST CONS CHECK	RQST IN CRIT ARRAY	RQST IN FAILED ARRAY	RQST REBUILD/REMAP	RQST R/R ABORT
2	RQST ACTIVE	DO NOT REMOVE	Reserved	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved
3	Reserved		RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved	

The default behavior for blue LED is "LED is on when the disk is not busy, and off when the disk is executing a command". When the "RQST IDENT" bit is set, the blue LED overwrites its default behavior with a slow blink while the red LED is off. The blue LED is set "Activity" for not overwriting its default behavior.

The behavior "Fast Blink" is "LED is blinking at 2Hz frequency".

The behavior "Slow Blink" is "LED is blinking at 1Hz frequency".

The behavior "ON"/"OFF" is "LED is solid ON/OFF without blinking".

Slot Control Bit	Blue LED	Red LED
RQST OK	Activity	OFF
RQST RSVD DEVICE	Activity	OFF
RQST HOT SPARE	Activity	OFF
RQST CONS CHECK	Activity	Fast Blink
RQST IN CRIT ARRAY	Activity	Slow Blink
RQST IN FAILED ARRAY	Activity	Slow Blink
RQST REBUILD/REMAP	Activity	Fast Blink
RQST R/R ABORT	Activity	Slow Blink
RQST ACTIVE	Activity	OFF
DO NOT REMOVE	Activity	OFF
RQST MISSING	ON	ON
RQST INSERT	Activity	Slow Blink
RQST REMOVE	Activity	Slow Blink
RQST IDENT	Slow Blink	OFF
RQST FAULT	ON	ON
DEVICE OFF	OFF	OFF
PRDFAIL	Activity	Slow Blink

3.6.5.2 How to turn on/off the power of a drive slot

Array Device Slot control element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST OK	RQST RSVD DEVICE	RQST HOT SPARE	RQST CONS CHECK	RQST IN CRIT ARRAY	RQST IN FAILED ARRAY	RQST REBULD/REMAP	RQST R/R ABORT
2	RQST ACTIVE	DO NOT REMOVE	Reserved	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved
3	Reserved		RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved	

The "DEVICE OFF" for a drive slot is defined in the bit4, byte3 of the "Array Device Slot control element" in the SES specification. Set the bit to turn off a slot power, and vice versa. We use the software package "sg3_utils" on Linux for example, and have a SAS HBA and a cable to connect your host with the expander.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i
/dev/sg2 AIC 12G 4U60swap: Edge-L 0c08
```

(B) Get the current state of a slot power. The "Device off=0" means the slot power is on.

```
$ sg_ses --page=2 /dev/sg2
Element 0 descriptor:
App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
```

(C) Get the descriptor of a slot power

```
$ sg_ses --page=7 /dev/sg2
Element 0 descriptor: Disk001
```

(D) Turn off a slot power

```
$ sg_ses --descriptor=Disk001 --set=3:4:1 /dev/sg2
```

(E) Turn on a slot power

```
$ sg_ses --descriptor=Disk001 --clear=3:4:1 /dev/sg2
```

NOTE

This function is not recommended to use with RAID card due to RAID card limitation.

3.6.5.3 How to power off the entire enclosure

Power Supply control element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	Reserved							
3	Reserved	RQST FAIL	RQST ON	Reserved				

The "RQST ON" for Power Supply is defined in the bit5, byte3 of the "Power Supply control element" in the SES specification. Clear the bit on Power Supply Element "PowerSupply01" or "PowerSupply02" to power off the entire enclosure. We use the software package "sg3_utils" on Linux for example, and have a SAS HBA and a cable to connect your host with the expander.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i
```

```
/dev/sg2 AIC 12G 4U60swap: Hub 0c07
```

(B) Power off the entire enclosure

```
$ sg_ses --descriptor=PowerSupply01 --clear=3:5:1 /dev/sg2
```

3.6.5.4 How to identify the enclosure

Enclosure control element								
BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	POWER CYCLE REQUEST		POWER CYCLE DELAY					
3	POWER OFF DURATION						REQUEST FAILURE	REQUEST WARNING

When the identify LED of Hub is off, the identity is disabled. When solid on, the identity is enabled. The "RQST IDENT" for Enclosure is defined in the bit7, byte1 of the "Enclosure control element" in the SES specification. Set the bit to enable the identity. Clear the bit to disable the identity. We use the software package "sg3_utils" on Linux for example, and have a SAS HBA and a cable to connect your host with the expander.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i
```

```
/dev/sg2 AIC 12G 4U60swap: Hub 0c07
```

(B) Enable the identity

```
$ sg_ses --descriptor=EnclosureElement01 --set=1:7:1 /dev/sg2
```

(C) Disable the identity

```
$ sg_ses --descriptor=EnclosureElement01 --clear=1:7:1 /dev/sg2
```

3.6.5.5 How to enable/disable the enclosure alarm by your software

Enclosure control element								
BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	POWER CYCLE REQUEST		POWER CYCLE DELAY					
3	POWER OFF DURATION						REQUEST FAILURE	REQUEST WARNING

The system alarm LED is used for the enclosure alarm and power alarm. The "REQUEST FAILURE" and "REQUEST WARNING" for Enclosure are defined in the bit1, byte3 and bit0, byte3 of the "Enclosure control element" in the SES specification. Setting either bit can enable the enclosure alarm. Clearing both bits disables the enclosure alarm. We use the software package "sg3_utils" on Linux for example, and have a SAS HBA and a cable to connect your host with the expander.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i
```

```
/dev/sg2 AIC 12G 4U60swap: Hub 0c07
```

(B) Enable the enclosure alarm

```
$ sg_ses --descriptor=EnclosureElement01 --set=3:1:1 /dev/sg2
```

or

```
$ sg_ses --descriptor=EnclosureElement01 --set=3:0:1 /dev/sg2
```

(C) Disable the enclosure alarm

```
$ sg_ses --descriptor=EnclosureElement01 --clear=3:1:1 /dev/sg2
```

and

```
$ sg_ses --descriptor=EnclosureElement01 --clear=3:0:1 /dev/sg2
```

3.6.5.6 How to manually change PWM (fan speed) for all Cooling elements

Cooling control element								
BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved			
1	RQST IDENT	Reserved						
2	Reserved							
3	Reserved	RQST FAIL	RQST ON	Reserved	REQUESTED SPEED CODE			

The "RQST IDENT" for Cooling is defined in the bit7, byte1 and the "REQUESTED SPEED CODE" is defined in the bit2 ~ 0, byte3 of the "Cooling control element" in the SES specification. Set "RQST IDENT" bit to disable the smart fan function, and then change PWM or fan speed for all Cooling elements by setting the "REQUESTED SPEED CODE" bits. Clear "RQST IDENT" bit to enable the smart fan function again. Please disable the smart fan function before changing PWM or fan speed. Only Cooling element 0 supports this feature. We use the software package "sg3_utils" on Linux for example, and have a SAS HBA and a cable to connect your host with the expander.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i
```

```
/dev/sg2 AIC 12G 4U60swap: Hub 0c07
```

(B) Set "RQST IDENT" of Cooling element 0 to disable the smart fan function

```
$ sg_ses --descriptor=SystemCoolingElement01 --set=1:7:1 /dev/sg2
```

(C) Set "REQUESTED SPEED CODE" of Cooling element 0 to change PWM or fan speed for all Cooling elements. Set "REQUESTED SPEED CODE"=7 (100% PWM) for example.

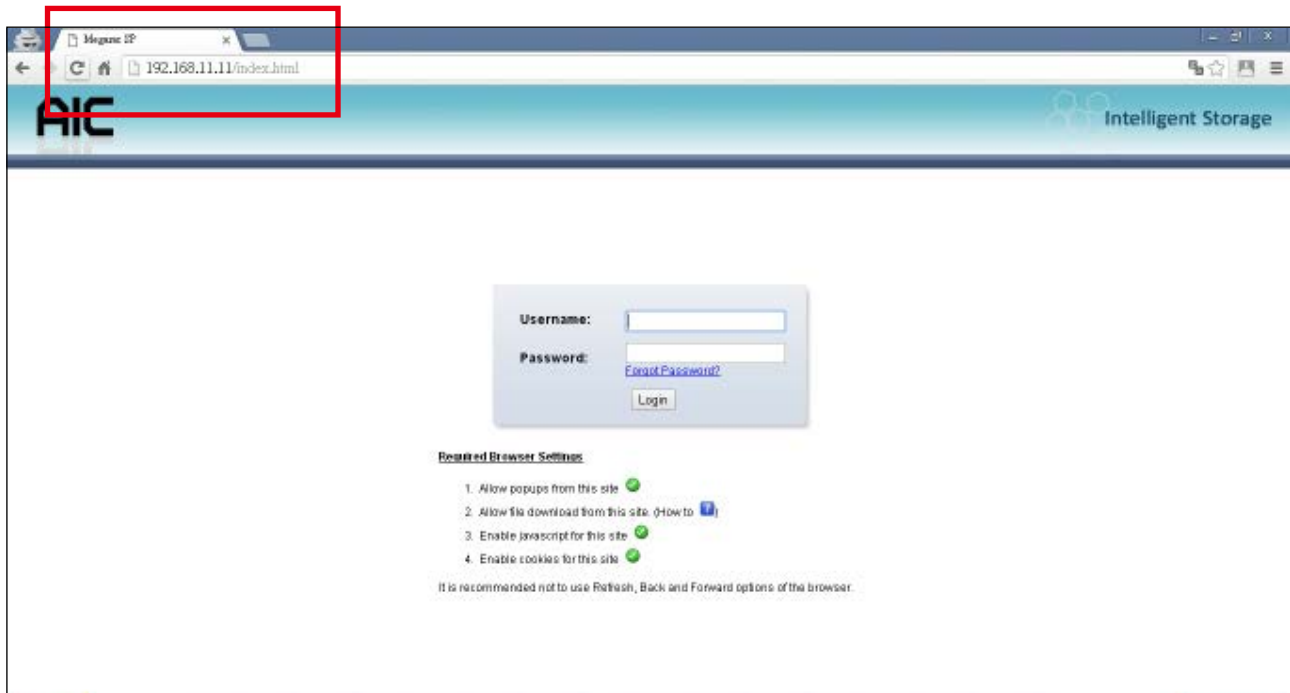
```
$ sg_ses --descriptor=SystemCoolingElement01 --set 3:2:3=7 /dev/sg2
```

REQUESTED SPEED CODE	PWM
7	100%
6	90%
5	80%
4	70%
3	60%
2	50%
1	40%
0	Leave at current speed

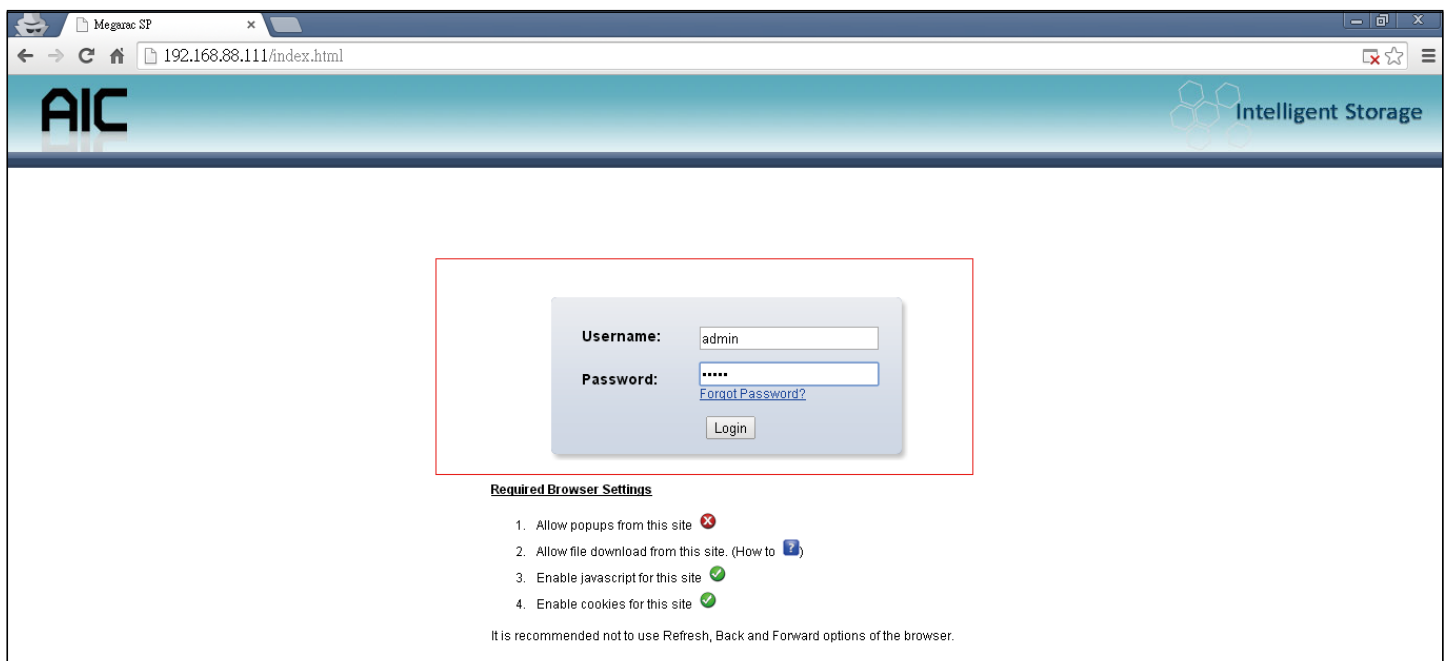
Chapter 4. BIOS Configuration Settings

4.1 Login

Open a web browser and enter the default IP **http://192.168.11.11**. When the login window appears, set the user name and password to "admin." Click Log In to continue.

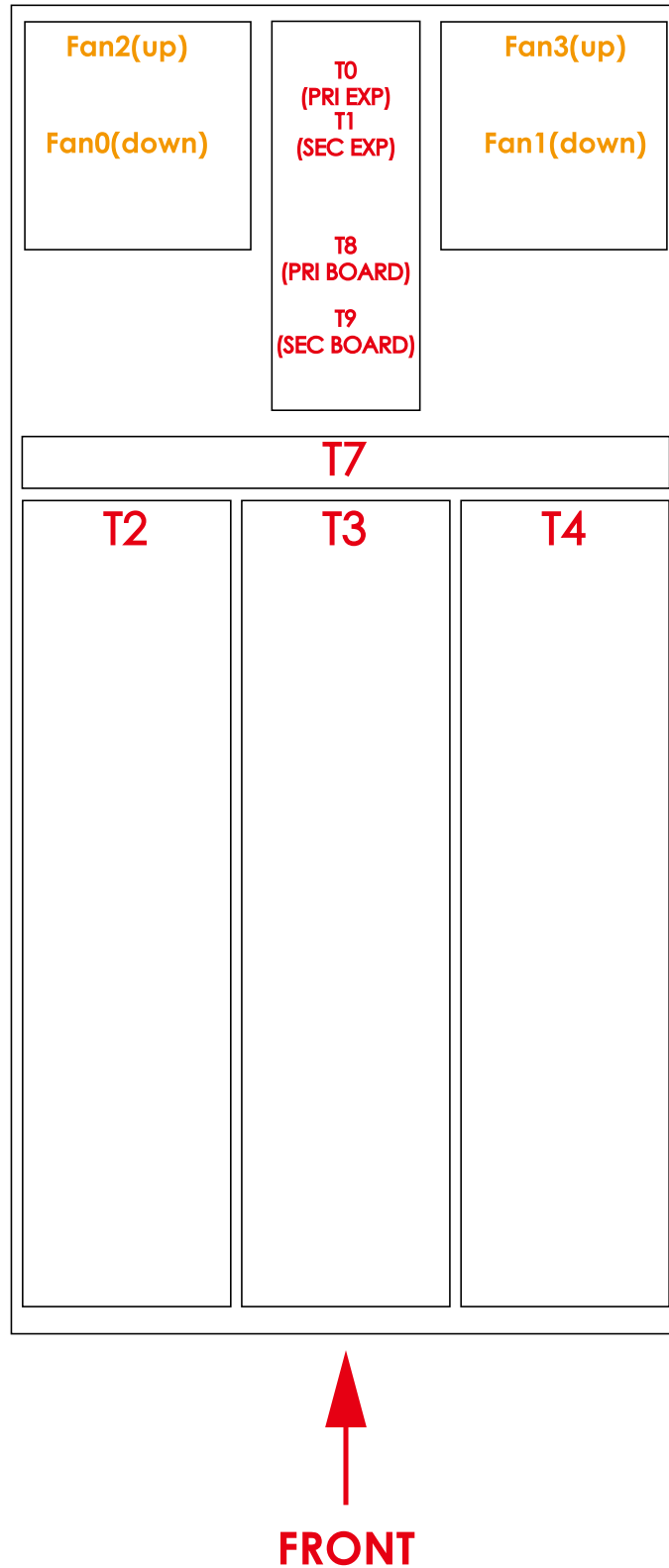


Account:admin
Password:admin



4.2 Sensor's Location for Fan & Temperature

EXP: expander chip



4.3 Utility Setup on Host

Please refer to Section 3.2.

4.4 Connect Host to BMC by RS232

1. Type in "[" and the screen will automatically display the IPMI serial interface.

```
-----  
IPMI Terminal Interface  
-----  
Usage :  
Terminal Text command : [SYS Command]  
Terminal IPMI command : [NetFn SeqNum Cmd Data 0 ... Data N]  
Type [SYS HELP] - To get list of Text Command  
IPMI Terminal:/> [
```

Type in the command "#[sys pwd -u admin admin]" for logging in the interface. The screen will automatically display [OK].

```
IPMI Terminal:/> [sys pwd -u admin admin ]  
[OK]
```

Type in the command "#[30 0 2 1 3 0 0]" to check for the BMC default IP. The screen will automatically display [34 00 02 00 11 C0 AB 0B 0B].

```
IPMI Terminal:/> [30 0 2 1 3 0 0]  
[34 00 02 00 11 C0 A8 0B 0B]
```

2. Get LAN information

Get LAN static IP /DHCP [30 00 02 01 04 00 00]
 Get LAN IP [30 00 02 01 03 00 00]
 Get submask [30 00 02 01 06 00 00]
 Get gateway [30 00 02 01 0C 00 00]

0 _{hex}	=	0 _{dec}
1 _{hex}	=	1 _{dec}
2 _{hex}	=	2 _{dec}
3 _{hex}	=	3 _{dec}
4 _{hex}	=	4 _{dec}
5 _{hex}	=	5 _{dec}
6 _{hex}	=	6 _{dec}
7 _{hex}	=	7 _{dec}
8 _{hex}	=	8 _{dec}
9 _{hex}	=	9 _{dec}
A _{hex}	=	10 _{dec}
B _{hex}	=	11 _{dec}
C _{hex}	=	12 _{dec}
D _{hex}	=	13 _{dec}
E _{hex}	=	14 _{dec}
F _{hex}	=	15 _{dec}

```
IPMI Terminal:/> [30 00 02 01 04 00 00 ]
[34 00 02 00 11 02]
```

```
IPMI Terminal:/> [30 00 02 01 03 00 00 ]
[34 00 02 00 11 C0 A8 58 6B]
```

```
IPMI Terminal:/> [30 00 02 01 06 00 00 ]
[34 00 02 00 11 FF FF FF 00]
```

```
IPMI Terminal:/> [30 00 02 01 0C 00 00 ]
[34 00 02 00 11 C0 A8 58 01]
```

Get LAN static IP /DHCP. **01** represents static IP, **02** represents DHCP.

The number in the red box represents hexadecimal number.

According to the left picture, the IP is calculated as follows:

16*12 + 0 = 192, 16*10 + 8 = 168, 16*5 + 8 = 88, 16*6 + 11 = 107

192.168.88.107

3. Set LAN information

Set LAN information

Set LAN static IP /DHCP [30 00 01 01 04 01/02]
 Set LAN IP [30 00 01 01 03 C0 A8 00 0A]
 Set submask [30 00 01 01 06 FF FF FF 00]
 Set gateway [30 00 01 01 0C C0 A8 00 01]

```
IPMI Terminal:/> [30 00 01 01 04 01 ]
[34 00 01 00]

IPMI Terminal:/> [30 00 01 01 03 C0 A8 00 0A ]
[34 00 01 00]

IPMI Terminal:/> [30 00 01 01 06 FF FF FF 00 ]
[34 00 01 00]

IPMI Terminal:/> [30 00 01 01 0C C0 A8 00 01 ]
[34 00 01 00]
```

The green code is the return code.

The green number in the red box is the completed code. **00 means OK.**

The blue text is the value that can be configured.

To configure the IP address, **set the LAN status to static.**

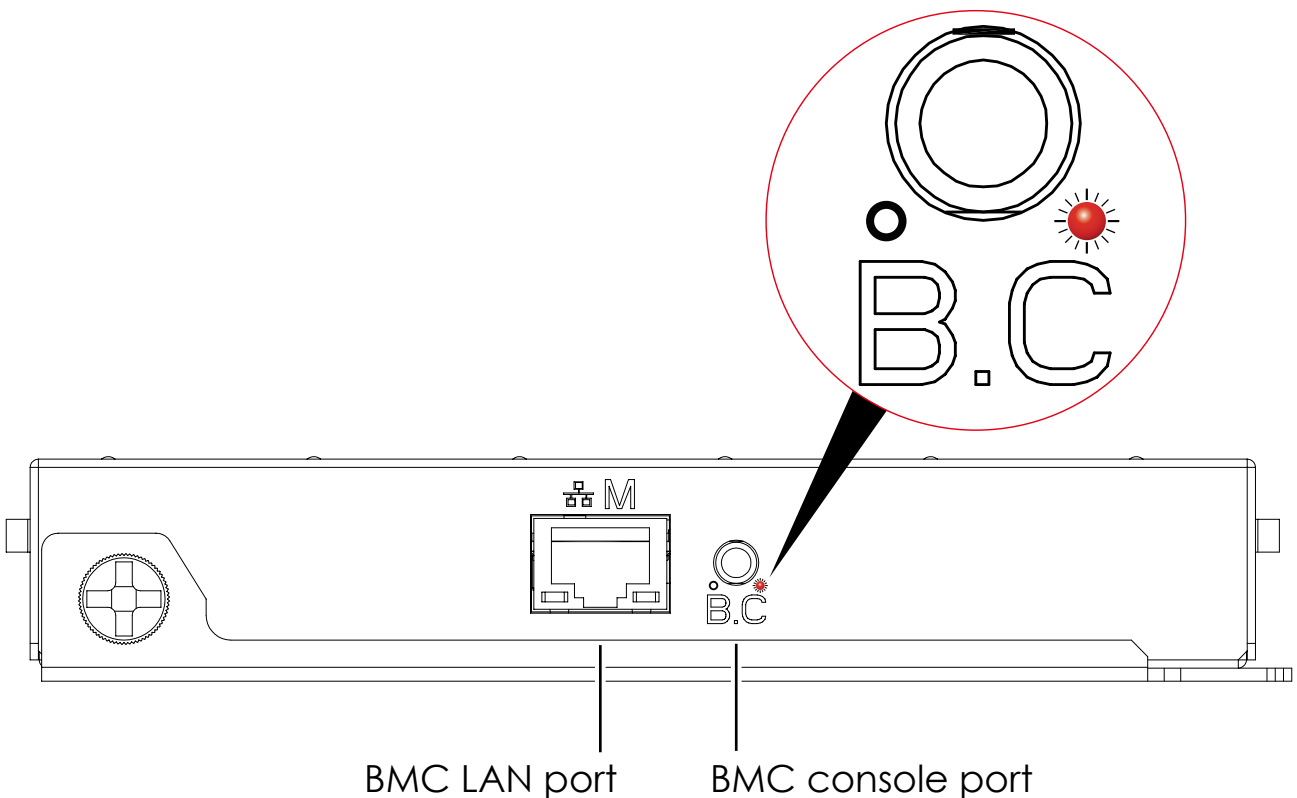
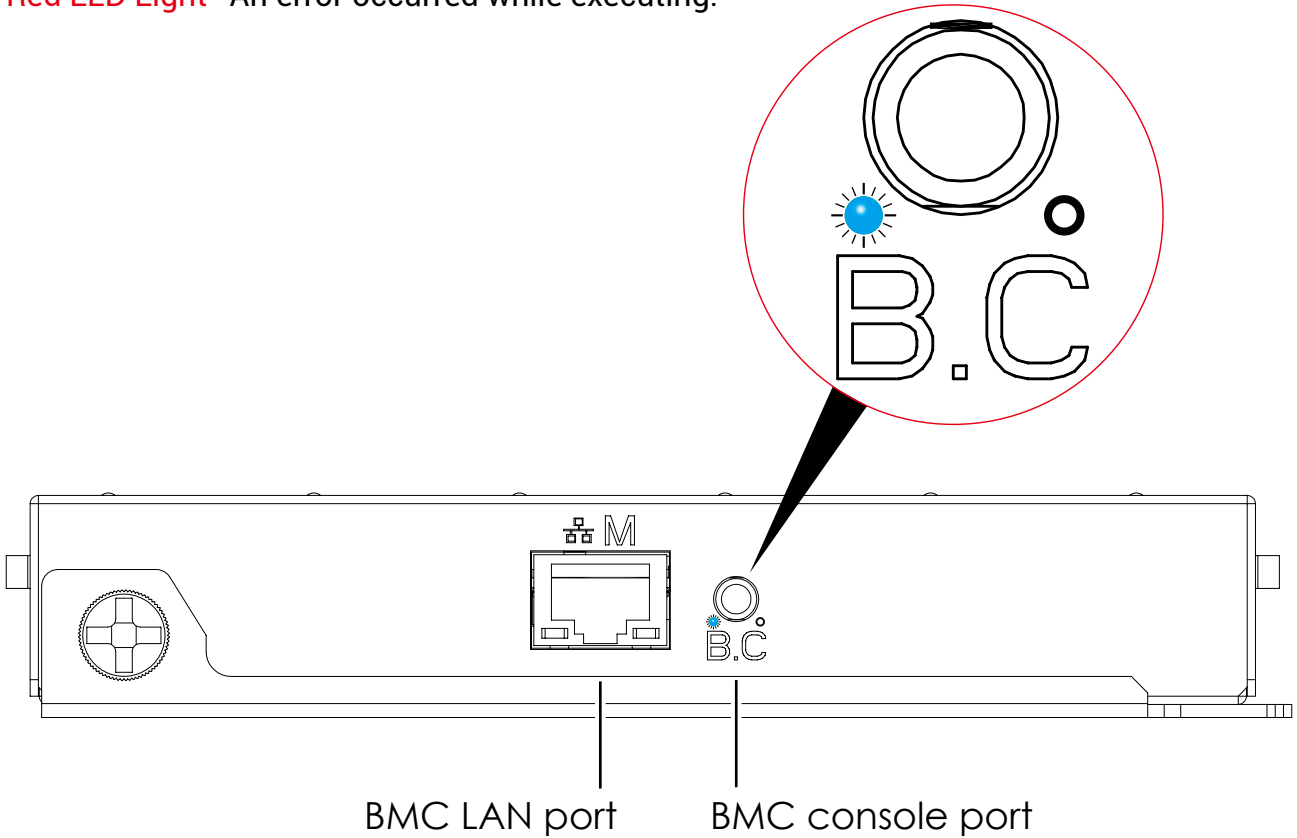
To use BMC firmware 4U60JBC020020 or later versions, set the default IP to **192.168.11.11.**

4.5 BMC LED Signal

There are two BMC LED signals under the BMC console port.

Blue LED Light- Normal execution.

Red LED Light- An error occurred while executing.



4.6 Web UI

4.6.1 Dashboard

Device Information

Displays the Firmware Revision and Firmware Build Time (Date and Time).

Network Information

Shows network settings for the device. Click on the link Edit to view the Network Settings Page.

Remote Control

Not support this function.

Remote Console Preview Box

It will show the console preview of the remote server using java application. Click on 'Refresh' button to reload the console preview.

Sensor Monitoring

It lists all available sensors on the device, with information such as status, name, reading, and status icon, as well as a link to that sensor's page.

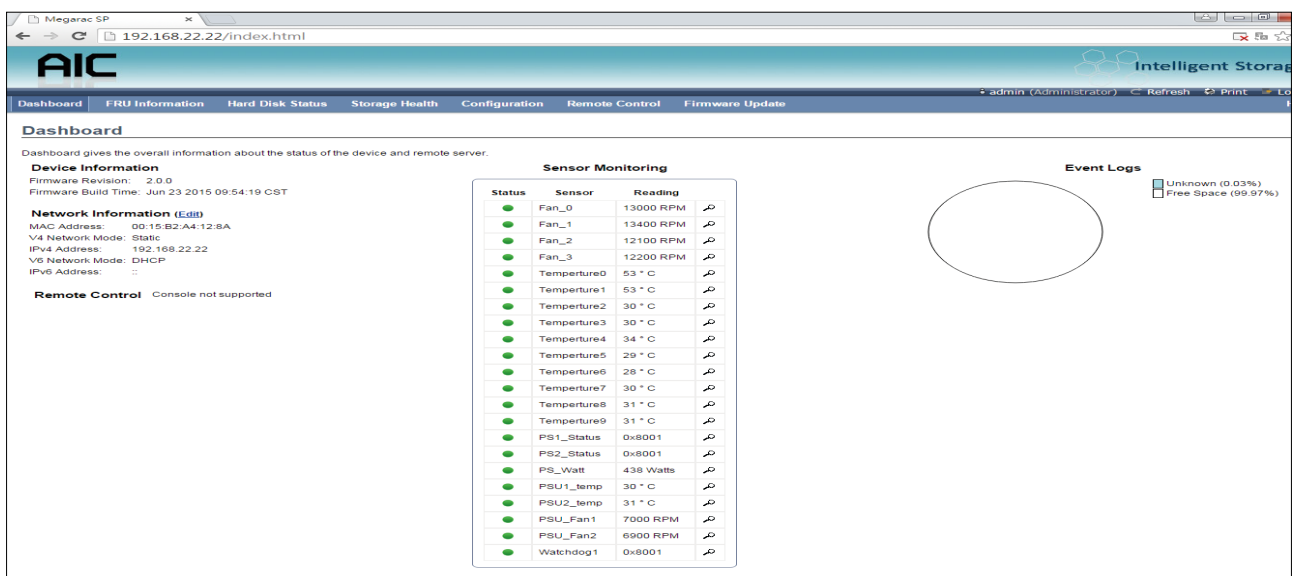
There are 3 possible states for a Sensor:

- Green dot denotes a Normal state.
- Yellow exclamation mark denotes a Warning state.
- Red x denotes a Critical state.

The magnifying glass allows access to the Sensor details page for that sensor.

Event Logs

A graphical representation of all events incurred by the various sensors and % occupied/available space in logs. If you click on the color-coded rectangle in the Legend for the chart, you can view a list of those specific events only.



4.6.2 FRU information

This page displays the BMC FRU file information. On selecting a particular FRU Device ID, the corresponding FRU information will be displayed.

Basic Information

It displays the FRU device ID and device name for the selected FRU device ID.

Chassis Information

It displays the following Chassis information fields.

- Area Format Version
- Chassis Type
- Chassis Part Number
- Chassis Serial Number
- Chassis Extra

- Board Serial Number
- Board Part Number
- FRU File ID
- Board Extra

Board Information

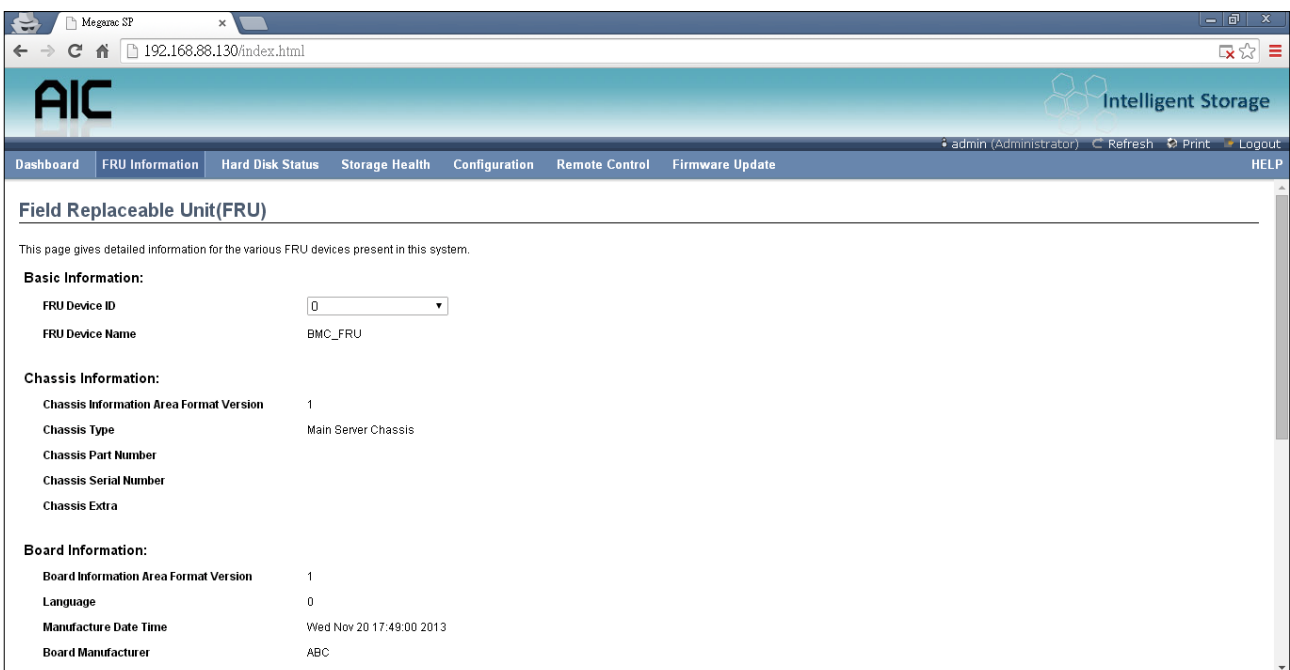
It displays the following Board information fields.

- Area Format Version
- Language
- Manufacture Date Time
- Board Manufacturer
- Board Product Name

Product Information

It displays the following Product information fields.

- Area Format Version
- Language
- Manufacturer Name
- Product Name
- Product Part Number
- Product Version
- Product Serial Number
- Asset Tag
- FRU File ID
- Product Extra



4.6.3 Hard Disk Status

This page displays all the HDD power on/off status, using the "Power On" and "Power Off" button to control HDD status.

ACTIONS

Power On

Select the HDD to turn the power on.

Power off

Select the HDD to turn the power off.

Icon status

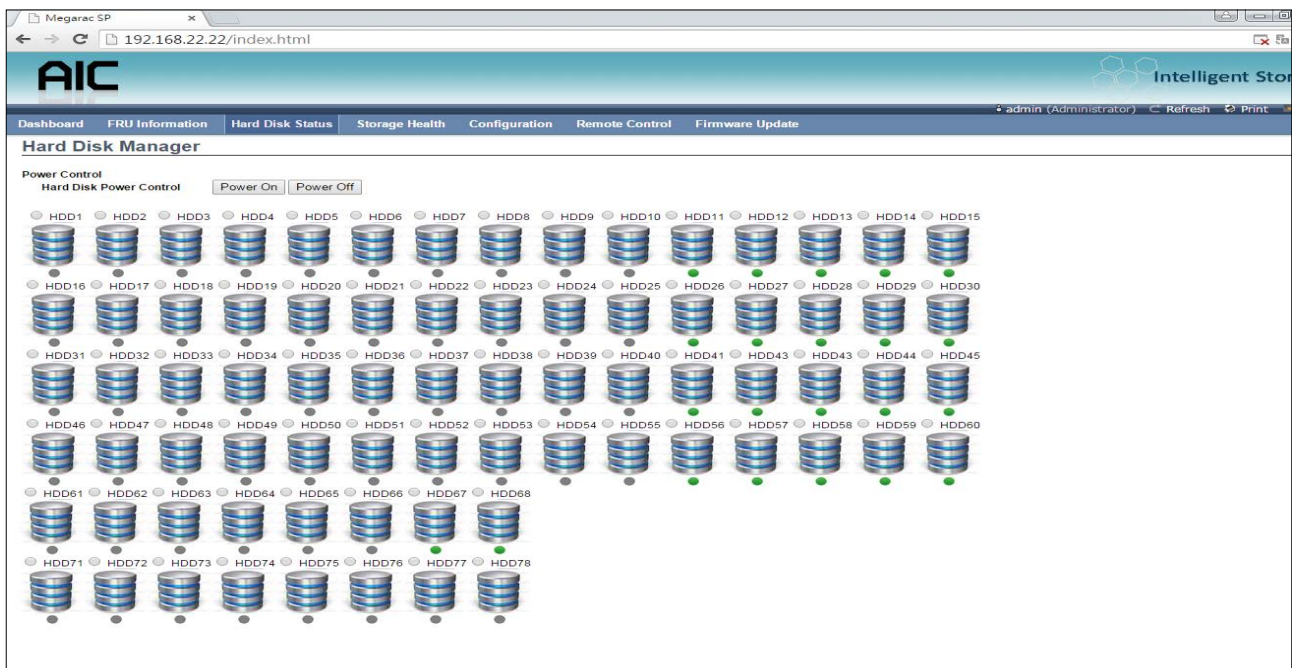
Green: The HDD is inserted into the slot and the power is on.

Blue: The HDD is inserted into the slot and the power is off.

Red: The HDD is inserted into the slot and there is an error.

Gray: The HDD is not inserted into the slot.


Orange: The disk is rebuilding.



4.6.4 Storage Health

4.6.4.1 Sensor Readings

A list of sensor readings will be displayed here. Click on the record to check for more information about different sensors, such as thresholds and graphical representations of all associated events. Double click on the record to toggle (ON / OFF) the live widget for that particular sensor. Filter the list to view particular sensors by using the drop-down list box.

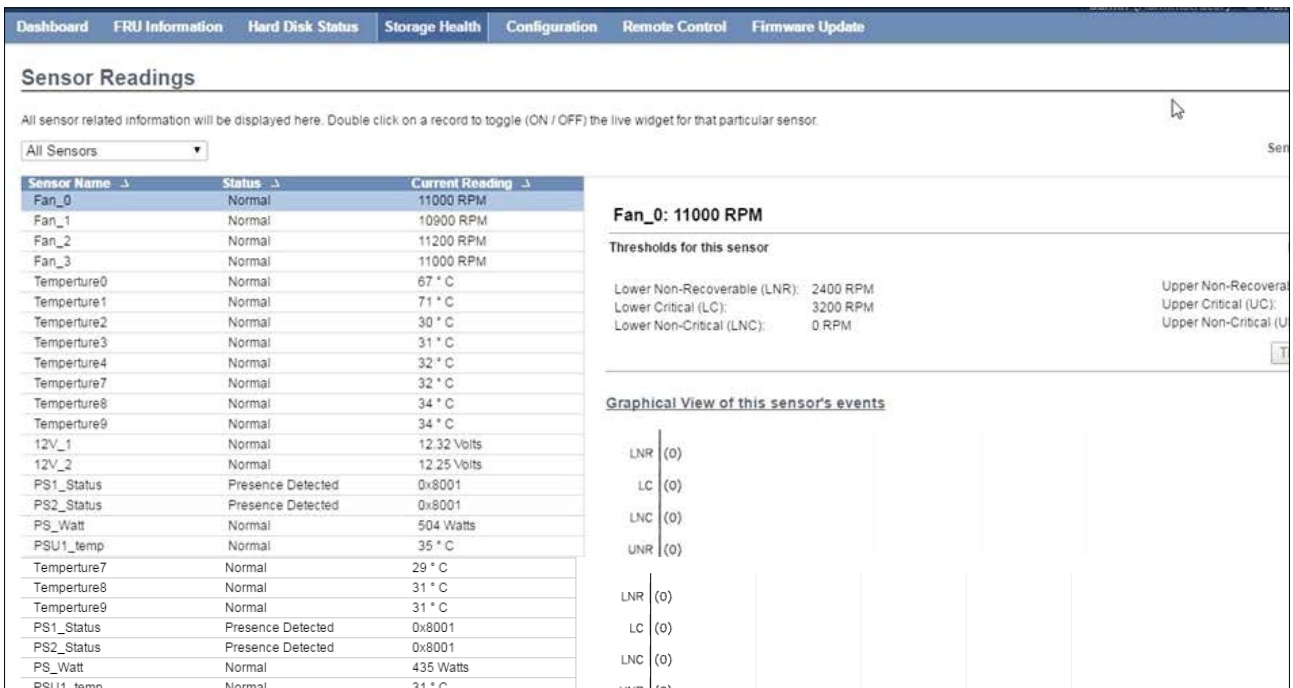
 **NOTE**
N/A represents not applicable.

Live Widget

Turn ON or OFF the live widget for this sensor. This widget gives a dynamic representation of the readings for the sensor.

View this Event Log

Click this button to go the event log page for the viewed sensor.



The screenshot displays the BMC configuration interface. At the top, there is a navigation menu with tabs: Dashboard, FRU Information, Hard Disk Status, Storage Health (selected), Configuration, Remote Control, and Firmware Update. Below the menu is the 'Sensor Readings' section. A message states: 'All sensor related information will be displayed here. Double click on a record to toggle (ON / OFF) the live widget for that particular sensor.' A dropdown menu is set to 'All Sensors'. A table lists various sensors with columns for Sensor Name, Status, and Current Reading. The 'Fan_0' sensor is highlighted. To the right of the table, a detailed view for 'Fan_0: 11000 RPM' is shown, including 'Thresholds for this sensor' (Lower Non-Recoverable (LNR): 2400 RPM, Lower Critical (LC): 3200 RPM, Lower Non-Critical (LNC): 0 RPM) and a 'Graphical View of this sensor's events' section with a table of event data.

Sensor Name	Status	Current Reading
Fan_0	Normal	11000 RPM
Fan_1	Normal	10900 RPM
Fan_2	Normal	11200 RPM
Fan_3	Normal	11000 RPM
Temperature0	Normal	67 ° C
Temperature1	Normal	71 ° C
Temperature2	Normal	30 ° C
Temperature3	Normal	31 ° C
Temperature4	Normal	32 ° C
Temperature7	Normal	32 ° C
Temperature8	Normal	34 ° C
Temperature9	Normal	34 ° C
12V_1	Normal	12.32 Volts
12V_2	Normal	12.25 Volts
PS1_Status	Presence Detected	0x8001
PS2_Status	Presence Detected	0x8001
PS_Watt	Normal	504 Watts
PSU1_temp	Normal	35 ° C
Temperature7	Normal	29 ° C
Temperature8	Normal	31 ° C
Temperature9	Normal	31 ° C
PS1_Status	Presence Detected	0x8001
PS2_Status	Presence Detected	0x8001
PS_Watt	Normal	435 Watts
PSU1 temp	Normal	31 ° C

4.6.4.2 Event Log

This page displays the list of events incurred by different sensors on this device. Double click on the record to see the details of that entry. Sort the list of entries by clicking on any of the column headers. Use the sensor type or sensor name filter options to view those specific events logged in the device.

BMC Timezone

Check this option to display the event log entries logged with the BMC Timezone value.

Client Timezone

Check this option to display the event log entries logged with the Client (user's) Timezone value.

UTC Offset

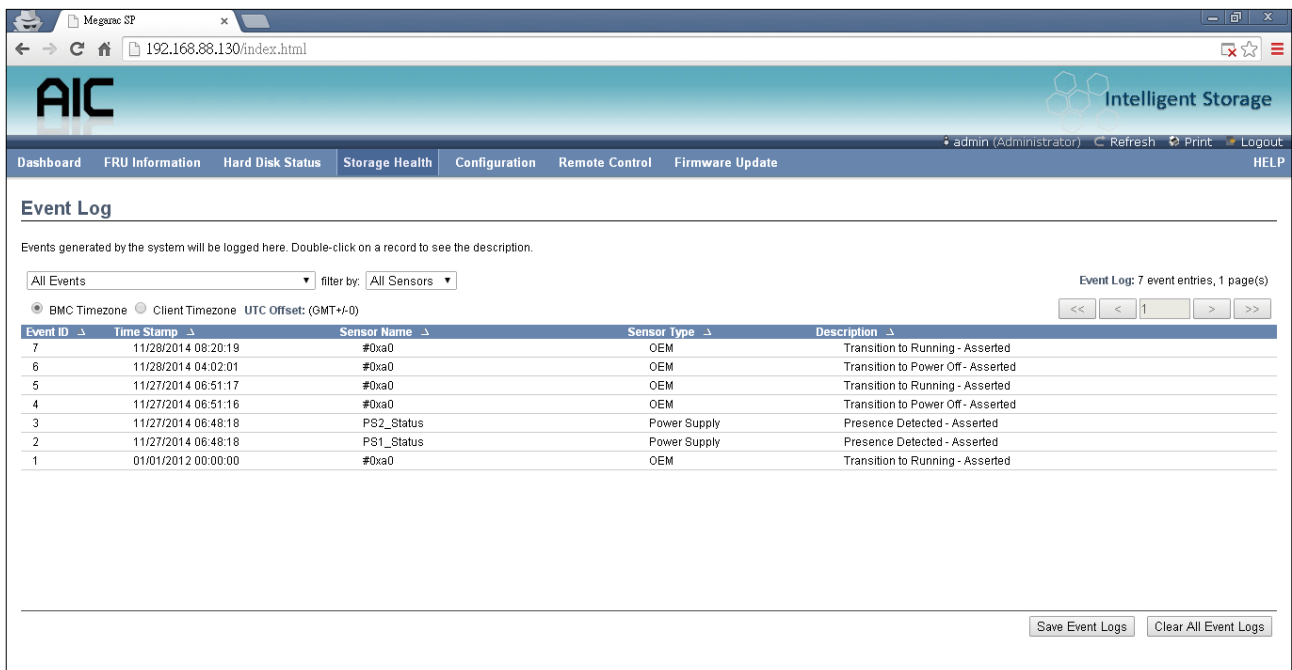
Displays the current UTC Offset value based on which event Time Stamps will be updated. Navigational arrows can be used to selectively access different pages of the Event Log.

Clear All Event Logs

Clear All Event Logs option will delete all existing records for all sensors.

Save All Event Logs

Save All Event Logs option will save all existing records for all sensors.



4.6.5 Configuration

4.6.5.1 DNS

This page is used to configure the Host name and Domain Name Server configuration of the device.

The screenshot shows the 'DNS Server Settings' page in the AIC Intelligent Storage web interface. The page is titled 'DNS Server Settings' and includes the following sections:

- Host Configuration:**
 - Host Settings:** A dropdown menu set to 'Automatic'.
 - Host Name:** A text input field containing 'AMID015B2A624AA'.
- Register BMC:**
 - eth0:** A checkbox for 'Register BMC' is checked, and a radio button for 'Direct Dynamic DNS' is selected.
- Domain Name Configuration:**
 - Domain Settings:** A dropdown menu set to 'eth0_v4'.
 - Domain Name:** A text input field containing 'lamyournfather'.
- Domain Name Server Configuration:**
 - DNS Server Settings:** A dropdown menu set to 'eth0'.
 - IP Priority:** Radio buttons for 'IPv4' (selected) and 'IPv6'.
 - DNS Server 1:** A text input field containing '192.168.88.1'.
 - DNS Server 2:** An empty text input field.
 - DNS Server 3:** An empty text input field.

Host configuration

Host Settings Select either Automatic or Manual settings.

Host Name It displays the hostname of the device if Auto is selected. If the Host setting is selected as Manual, specify the hostname of the device.

Register BMC Select the BMC's network port to register with the DNS settings. Check the option 'Register BMC' to register with the DNS settings. Select the option 'Direct Dynamic DNS' to register with direct dynamic DNS or select 'DHCP Client FQDN' to register through a DHCP server.

Domain Name Configuration

Domain Settings It lists the options for the domain interface as Manual, v4 or v6 for multi LAN channels.

Domain Name It displays the domain name of the device if Auto is selected. If the Domain setting is chosen as Manual, then specify the domain name of the device.

Domain Name Server It contains a database of the public addresses and their associated hostnames.

DNS Server Settings It lists the options for the DNS interface, Manual and available LAN interfaces.

IP Priority If the IP Priority is IPv4, it will have 2 IPv4 DNS servers and 1 IPv6 DNS server. If the IP Priority is IPv6, it will have 2 IPv6 DNS servers and 1 IPv4 DNS server.

**NOTE**

This is not applicable for manual configuration.

DNS Server 1, 2 & 3

Specify the DNS (Domain Name System) server address to be configured for the BMC.

- An IPv4 Address is made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx".

- Each number ranges from 0 to 255.

- The first number must not be 0.

DNS Server Address will support the following:

- IPv4 Address format.

- IPv6 Address format.

Save

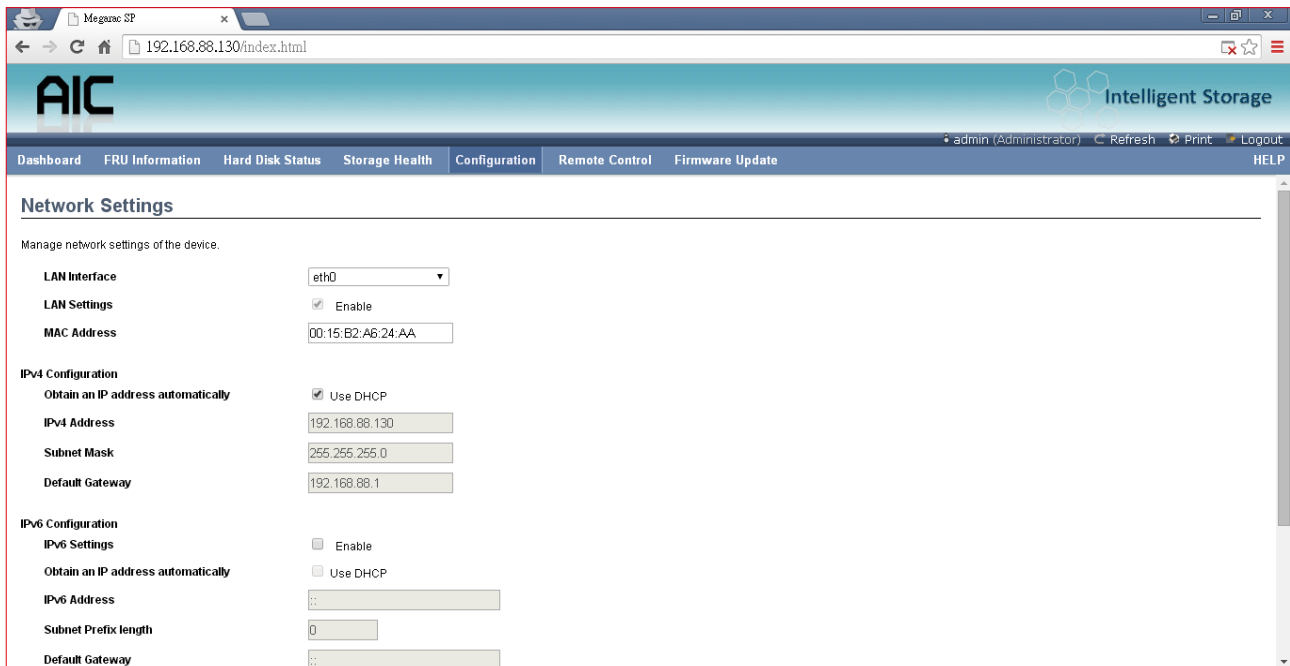
Click 'Save' to save any changes made. You will be logged out of current UI session and will need to log back in.

Reset

Reset the modified changes.

4.6.5.2 Network

This page is used to configure the network settings for available LAN channels.



LAN Interface

Select the LAN interface to be configured.

LAN Settings

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

MAC Address

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

IPv4 Configuration

It lists the IPv4 configuration settings.

Obtain an IP address automatically

Enable 'Use DHCP' to dynamically configure the IPv4 address using Dynamic Host Configuration Protocol (DHCP).

IPv4 Address, Subnet Mask, Default Gateway

If DHCP is disabled, specify a static IPv4 address, Subnet Mask and Default Gateway to be configured for the selected interface.

- An IP Address consists of 4 sets of numbers separated by dots as in "xxx.xxx.xxx.xxx".
- Each set ranges from 0 to 255.
- The first Number must not be 0.

IPv6 Configuration

It lists the IPv6 configuration settings.

IPv6 Settings

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

Obtain an IP address automatically

Enable 'Use DHCP' to dynamically configure the IPv4 address using Dynamic Host Configuration Protocol (DHCP).

IPv6 Address

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

Subnet Prefix length

Specify the subnet prefix length for the IPv6 settings.

- Value ranges from 0 to 128.

Default Gateway

Specify the v6 default gateway for IPv6 settings.

Save

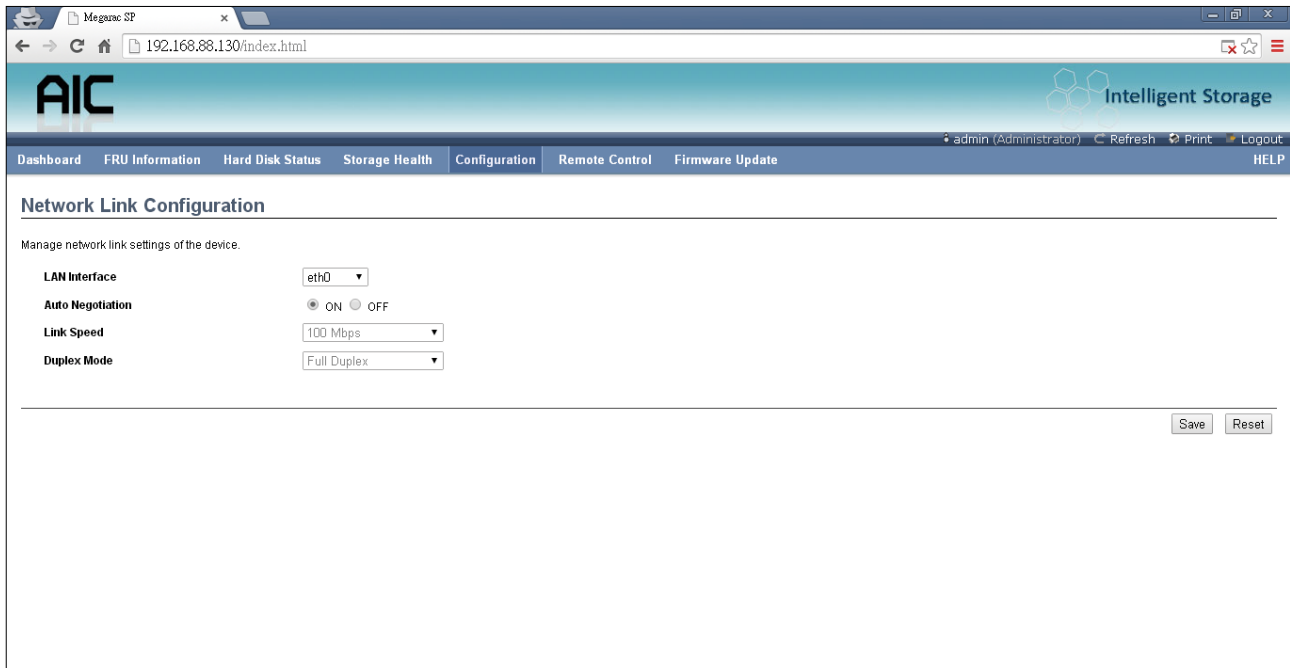
Click 'Save' to save any changes made. You will be prompted to log out of the current UI session and log back in at the new IP address.

Reset

Click 'Reset' to reset the modified changes.

4.6.5.3 Network Link

This page is used to configure the network link option for the available network interfaces.



LAN Interface

Select the network interface from the list for which the Link speed and duplex mode are to be configured.

Auto Negotiation

This option is enabled to allow the device to perform automatic configuration to achieve the best possible mode of operation (speed and duplex) over a link.

Link Speed

Link speed will list all the supported capabilities of the network interface. It can be 10/100/1000 Mbps.

Duplex Mode

Select any one of the following Duplex Modes.

- Half Duplex
- Full Duplex

Save

Click 'Save' to save the settings.

Reset

Click 'Reset' to reset the modified changes.

4.6.5.4 NTP

This page displays the device's current Date & Time Settings. It can be used to configure either Date & Time or NTP (Network Time Protocol) server settings for the device.

The screenshot shows a web browser window with the URL 192.168.88.130/index.html. The page header includes the AIC logo and navigation tabs: Dashboard, FRU Information, Hard Disk Status, Storage Health, Configuration (selected), Remote Control, and Firmware Update. The user is logged in as 'admin (Administrator)'. The main content area is titled 'NTP Settings' and contains the following form elements:

- Date:** A dropdown menu for the month (set to 'November'), a dropdown for the day (set to '28'), and a dropdown for the year (set to '2014').
- Time:** Three input fields for hours (08), minutes (28), and seconds (17).
- Timezone:** A dropdown menu.
- Primary NTP Server:** An input field containing 'pool.ntp.org'.
- Secondary NTP Server:** An input field containing 'time.nist.gov'.
- Automatically synchronize Date & Time with NTP Server

A 'Refresh' button is located at the bottom right of the form area.

Date

Specify the current Date for the device.

Time

Specify the current Time for the device.

NOTE



As a year 2038 problem exists. The acceptable date range is from 01-01-2005 to 01-18-2038.

NTP Server

Specify the NTP Server for the device. Check the 'Automatically synchronize' option to configure the NTP Server. The NTP Server will support the following:

- IP Address (Both IPv4 and IPv6 format).
- FQDN (Fully qualified domain name) format.

UTC Offset

UTC Offset list contains the UTC offset values for the NTP server, which can be used to display the exact local time.

**NOTE**

Use the correct UTC offset after adjusting for DST automatically synchronize.

Check this option to automatically synchronize Date and Time with the NTP Server.

Refresh

Click 'Refresh' to reload the current date & time settings.

Save

Click 'Save' to save any changes made.

Reset

Click 'Reset' to reset the modified changes.

4.6.5.5 PEF

This page is used to configure the Event Filter, Alert Policy and LAN Destination. To view the page, the user must at least be an Operator. To modify or add a PEF, the user must be an Administrator.

PEF Management

Use this page to configure Event Filter, Alert Policy and LAN Destination. To delete or modify an entry, select it in the list and click "Delete" or "Modify". To add a new entry, select an unconfigured slot and click "Add".


Event Filter | Alert Policy | LAN Destination

PEF ID	Filter Configuration	Event Filter Action	Event Severity	Sensor Name
1	Enabled	[Alert]	Unspecified	Any
2	Enabled	[Alert]	Unspecified	Any
3	Enabled	[Alert]	Unspecified	Any
4	Enabled	[Alert]	Unspecified	Any
5	Enabled	[Alert]	Unspecified	Any
6	Enabled	[Alert]	Unspecified	Any
7	Enabled	[Alert]	Unspecified	Any
8	Enabled	[Alert]	Unspecified	Any
9	Enabled	[Alert]	Unspecified	Any
10	Enabled	[Alert]	Unspecified	Any
11	Enabled	[Alert]	Unspecified	Any
12	Enabled	[Alert]	Unspecified	Any
13	Enabled	[Alert]	Unspecified	Any

Configured Event Filter count: 15

Add | Modify | Delete

NOTE

 Free slots are denoted by "~" in all columns for the slot. For more information, refer to the Platform Event Filtering (PEF) section in IPMI specification.

Event Filter

Click the Event Filter tab to show configured Event filters and available slots. You can modify or add new event filter entries here. A maximum of 40 slots are available and include the default of 15 event filter configurations.

Alert Policy

Click the Alert policy tab to show configured Alert policies and available slots. You can modify or add new alert policy entries here. A maximum of 60 slots are available.

LAN Destination

Click the LAN Destination tab to show configured LAN destinations and available slots. You can modify or add new LAN destination entries here. A maximum of 15 slots are available

Send Test Alert

Select a configured slot in the LAN Destination tab and click 'Send Test Alert' to send a sample alert to the configured destination.

NOTE

Test alerts can be sent only with SMTP Configurations set to enabled. SMTP support can be enabled under Configuration SMTP.

Add

Select a free slot and click 'Add' to add a new entry to the device. Alternatively, double click on a free slot.

Modify

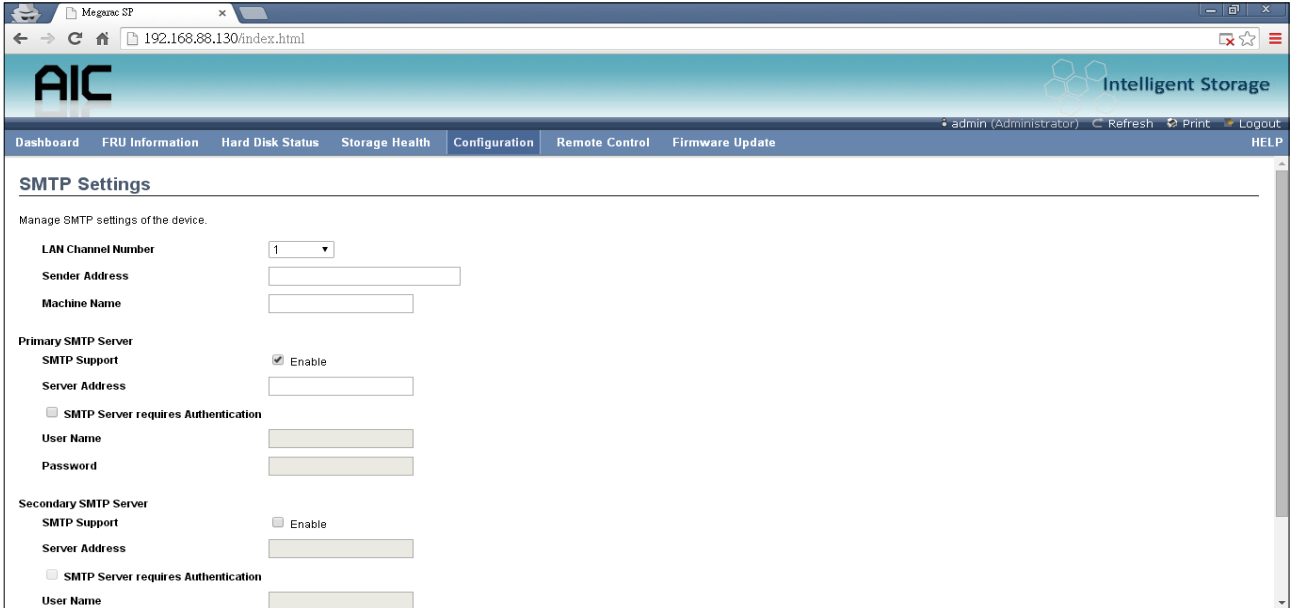
Select a configured slot and click 'Modify' to modify that entry. Alternatively, double click on the configured slot.

Delete

Select the desired configured slot to be deleted and click 'Delete'.

4.6.5.6 SMTP

This page is used to configure the SMTP settings.



The screenshot shows the 'SMTP Settings' page in the AIC Intelligent Storage web interface. The page title is 'SMTP Settings' and it includes a navigation menu with options like Dashboard, FRU Information, Hard Disk Status, Storage Health, Configuration, Remote Control, and Firmware Update. The main content area is titled 'Manage SMTP settings of the device.' and contains the following configuration options:

- LAN Channel Number:** A dropdown menu currently set to '1'.
- Sender Address:** A text input field.
- Machine Name:** A text input field.
- Primary SMTP Server:**
 - SMTP Support:** A checked checkbox labeled 'Enable'.
 - Server Address:** A text input field.
 - SMTP Server requires Authentication:** An unchecked checkbox.
 - User Name:** A text input field.
 - Password:** A text input field.
- Secondary SMTP Server:**
 - SMTP Support:** An unchecked checkbox labeled 'Enable'.
 - Server Address:** A text input field.
 - SMTP Server requires Authentication:** An unchecked checkbox.
 - User Name:** A text input field.

LAN Channel Number

Select the LAN channel to which the SMTP information needs to be configured.

Sender Address

Enter the 'Sender Address' valid on the SMTP Server.

Machine Name

Enter the 'Machine Name' of the SMTP Server.

- Machine Name is a string of maximum 15 alpha-numeric characters.
- Space, special characters are not allowed.

Primary SMTP Server

It lists the Primary SMTP Server configuration.

SMTP Support

Check this option to enable SMTP support for the BMC.

Server Address

Enter the 'IP address' of the SMTP Server. It is a mandatory field.

- An IP Address is made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx".
- Each Number ranges from 0 to 255.
- The first Number must not be 0.

The server address will support the following:

- IPv4 Address format.
- IPv6 Address format.

SMTP Server requires Authentication

Check the option 'Enable' to enable SMTP Authentication.

NOTE



SMTP server authentication types supported are

- CRAM-MDS
- Login
- Plain

IF the SMTP server does not support any one of the above authentication types. The user will get an error message stating, "Authentication type is not supported by SMTP server."

Username

Enter the username to access SMTP Accounts.

- The User Name can be 4 to 64 alpha-numeric characters.
- It must start with an alphabet.
- Special characters ',' (comma), ':' (colon), ';' (semicolon), ' ' (space) and '\' (backslash) are not allowed.

Password

Enter the password for the SMTP User Account.

- Passwords must be at least 4 characters long.
- Space is not allowed.



NOTE

This field will not allow more than 64 characters.

Secondary SMTP Server

It lists the Secondary SMTP Server configuration. It is an optional field. If the Primary SMTP server is not working, then it tries the Secondary SMTP Server configuration.

Save

Click 'Save' to save the new SMTP server configuration.

Reset

Click 'Reset' to reset the modified changes.

4.6.5.7 Schedule

This page displays the device's current date & time. It can be used to configure dates within a week or specific a date to power on/off the device.

If you want to change the device date & time, please go to the NTP page.

Megarac SP
192.168.22.22/index.html
AIC Intelligent Storage
admin (Administrator) Refresh Print LogOut HEL

Schedule Power ON/OFF

Manage the date & time to do power on/off of the device.

Date: January 1 2012
Time: 01 25 58
Timezone:

-----Weekly schedule-----

Enable schedule
Action: Power on Power off
Set days for action: Sun Mon Tue Wed Thu Fri Sat
Time: 10 51

Enable schedule
Action: Power on Power off
Set days for action: Sun Mon Tue Wed Thu Fri Sat
Time: 12 45

-----Specific days schedule-----

Enable schedule
Action: Power on Power off
Date: January 16
Time: 8 50

Enable schedule
Action: Power on Power off
Date: August 13
Time: 4 30

Save Reset

ACTIONS

Enable schedule

Check this option for enable/disable the schedule.

Action

Check a action to do power on/off for the device.

Set days for action

Setting dates within a week to do power on/off for the device.

Date


Specify a date for the device.

Time

Specify a time for the device.

4.6.5.8 User

The displayed table shows any configured Users and available slots. You can modify or add new users from here. A maximum of 10 slots are available, including the default 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.

 **NOTE**
Free slots are denoted by "~" in all columns for the slot.

Add User

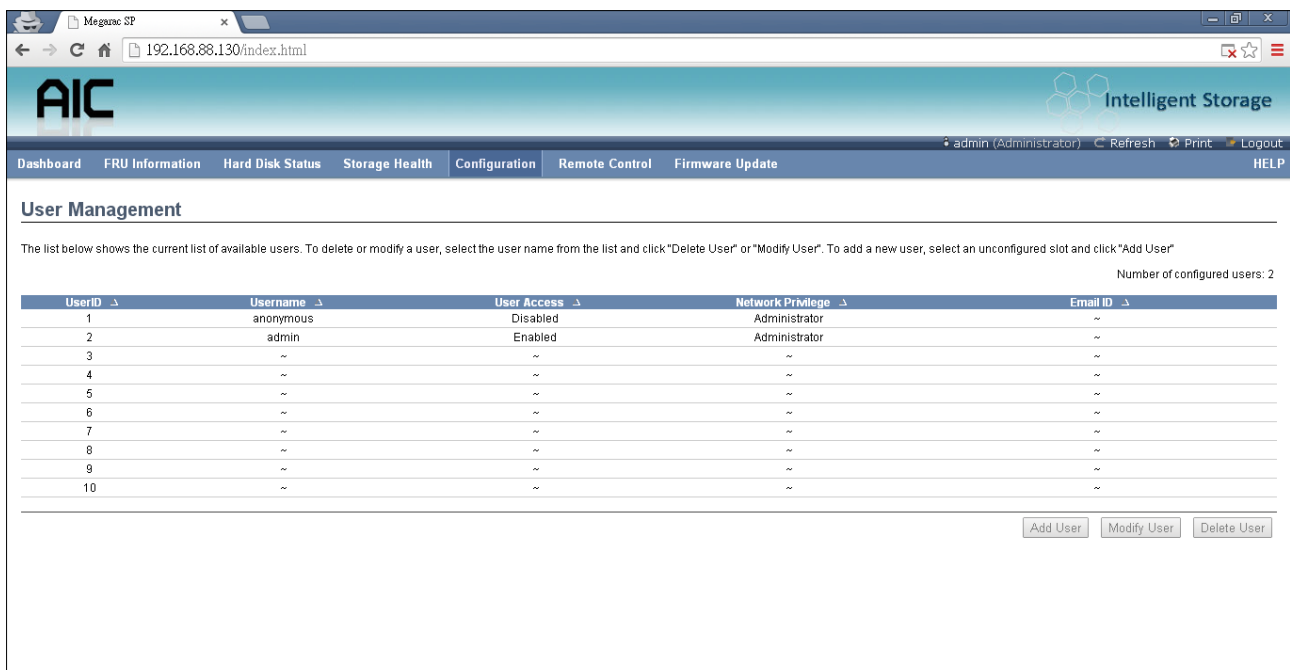
Select a free slot and click 'Add User' to add a new user to the device. Alternatively, double click on a free slot to add a user.

Modify User

Select a configured slot and click 'Modify User' to modify that user. Alternatively, double click on the configured slot.

Delete User

Select the desired user to be deleted and click 'Delete User'



The screenshot shows a web browser window displaying the BMC configuration page for 'User Management'. The page includes a navigation menu with options like 'Dashboard', 'FRU Information', 'Hard Disk Status', 'Storage Health', 'Configuration', 'Remote Control', and 'Firmware Update'. Below the menu, there is a table of users with columns for UserID, Username, User Access, Network Privilege, and Email ID. The table shows two configured users: 'anonymous' (disabled) and 'admin' (enabled), and eight free slots (denoted by '~'). At the bottom right, there are three buttons: 'Add User', 'Modify User', and 'Delete User'.

UserID	Username	User Access	Network Privilege	Email ID
1	anonymous	Disabled	Administrator	~
2	admin	Enabled	Administrator	~
3	~	~	~	~
4	~	~	~	~
5	~	~	~	~
6	~	~	~	~
7	~	~	~	~
8	~	~	~	~
9	~	~	~	~
10	~	~	~	~

4.6.6 Remote Control

4.6.6.1 Storage power control

This page helps you to view or perform any host power cycle operations.

Reset Expander

Select an expander to do cold reset.

Power Off Storage

Select this option to immediately power off the storage.

Power On Storage

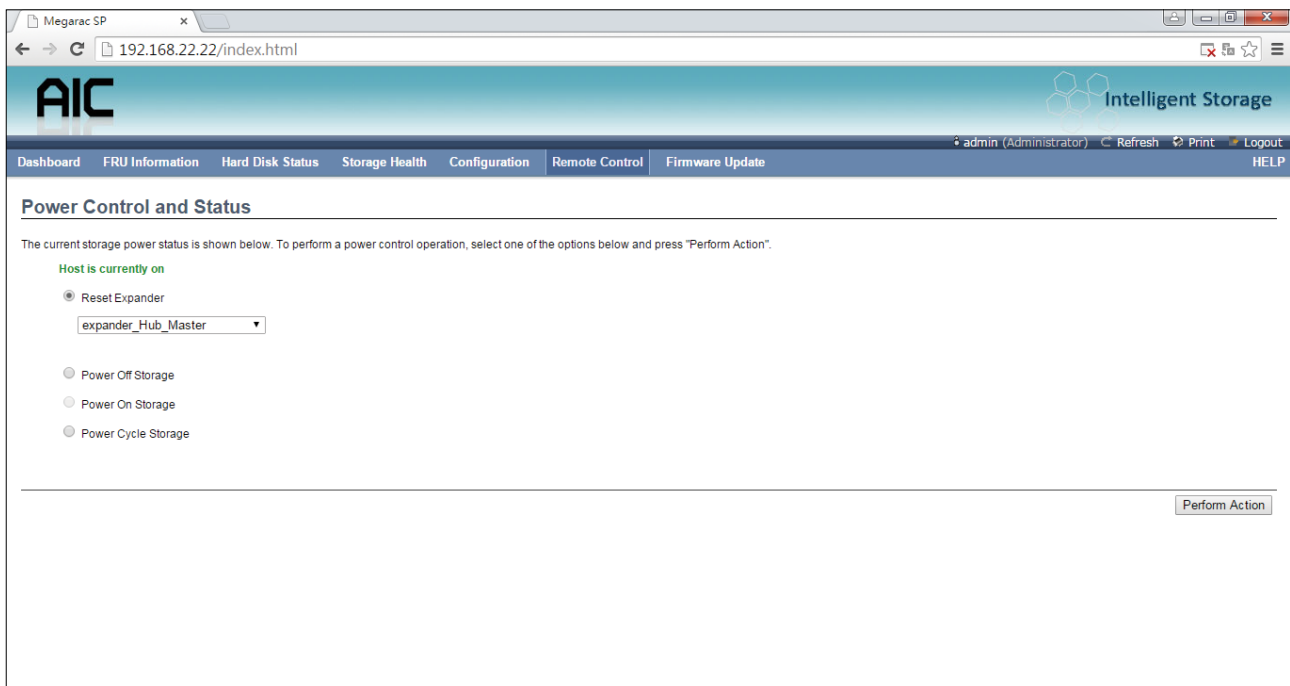
Select this option to power on the storage.

Power Cycle Storage

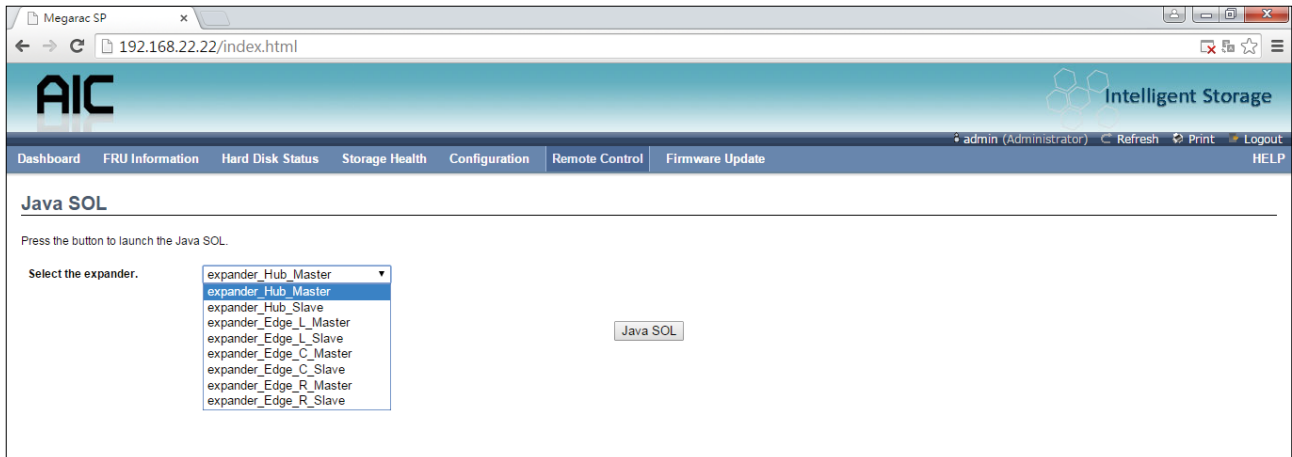
Select this option to first power off, and then reboot the system (cold boot).


Perform Action

Click 'Perform Action' to perform the selected option.

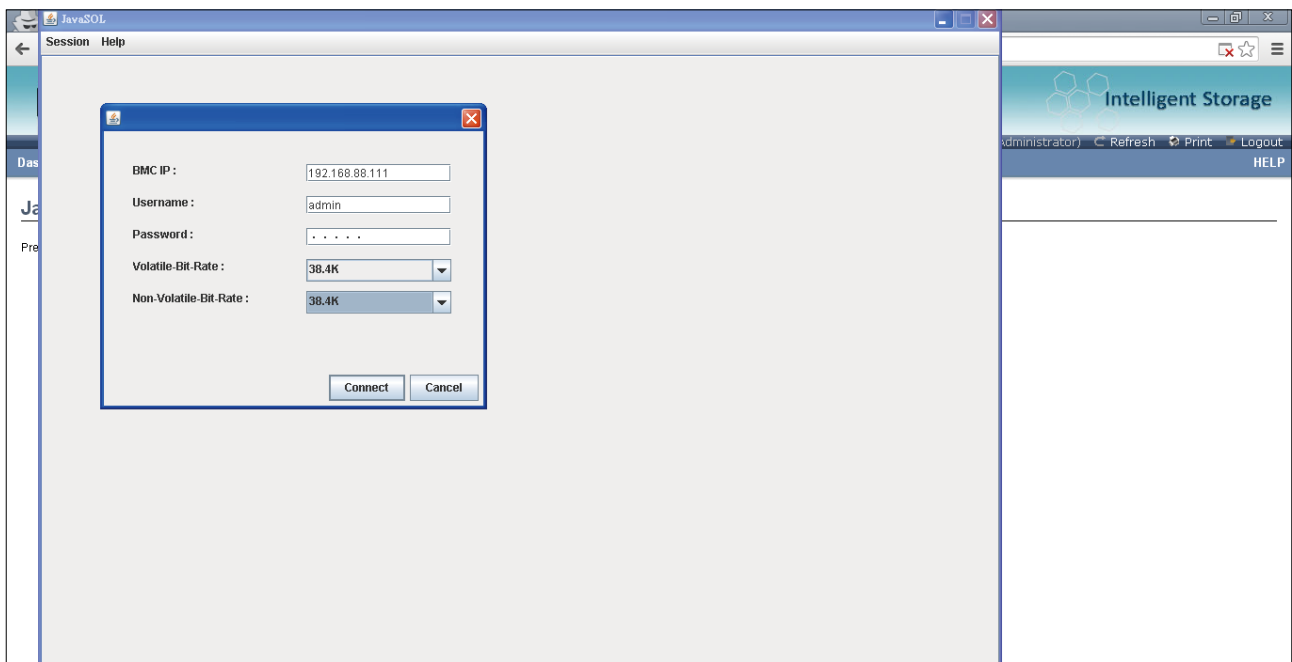


4.6.6.2 JAVA SOL



NOTE
 A compatible JRE must be installed in the system prior to the launch of the JNLP file.

Launch the Java SOL, you must have Administrator privileges.
 Choose an expander that can use smart console in Java SOL.



Volatile-Bit-Rate

Please set 38.4K

Non-Volatile-Bit-Rate

Please set 38.4K

This function can connect to expander command line mode.

4.7 Firmware Update

4.7.1 Requirement

Browsers:

FireFox 24.0 or later version

Chrome 35.0 or later version

I.E. 7.0 or later version

Linux:

Redhat 6.4

NOTE



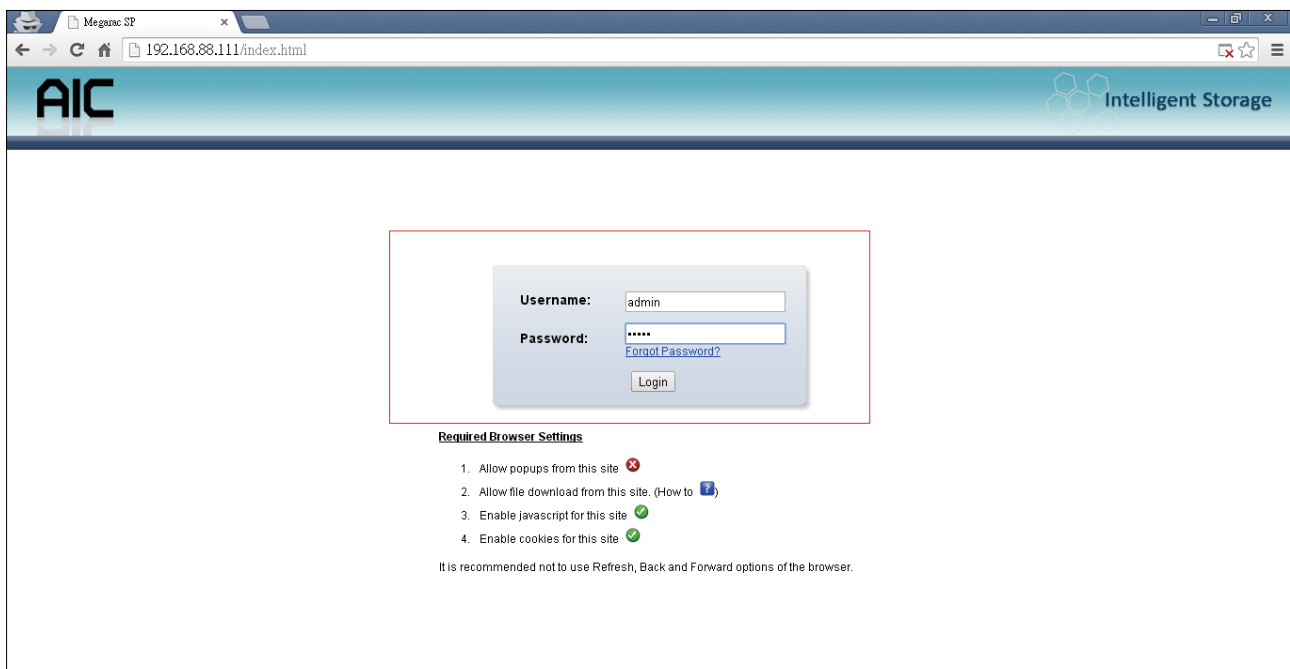
If you want to update a new version firmware for BMC, please clear the web browser cookies when the update process is complete.

4.7.2 Web update

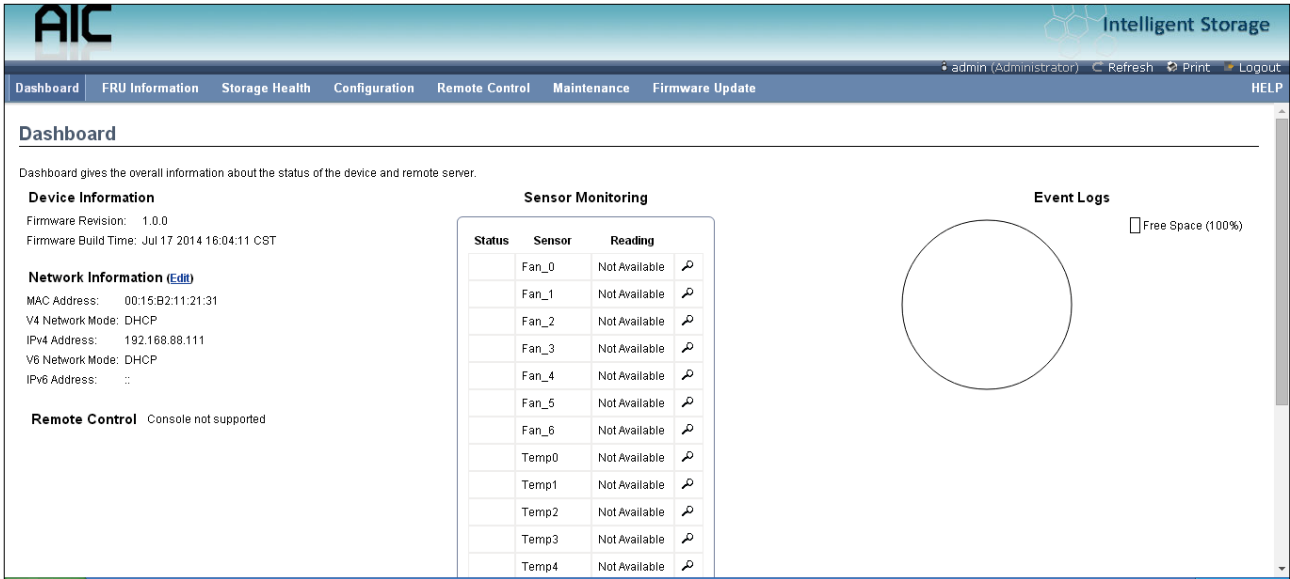
1. Check if the BMC IP is valid.
2. Open a browser and type in the BMC IP. It will show the BMC web UI. Type in the default account or use an administrator privileged account.

Username: **admin**

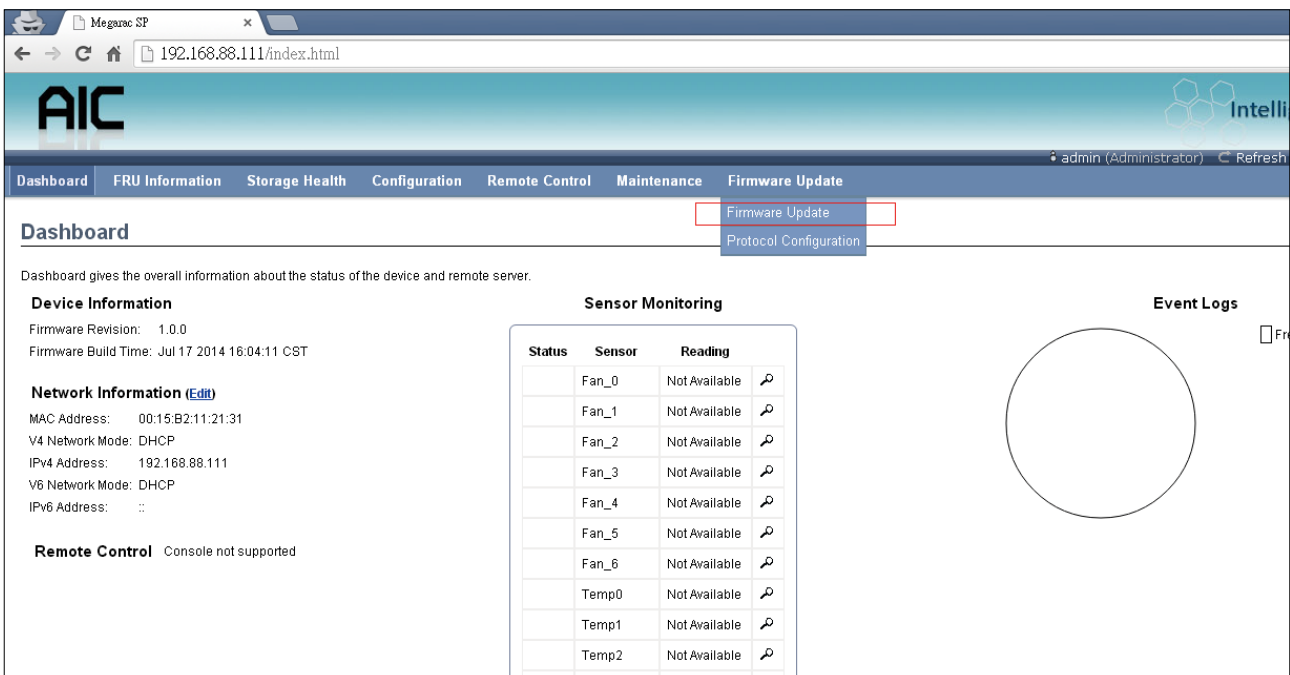
Password: **admin**



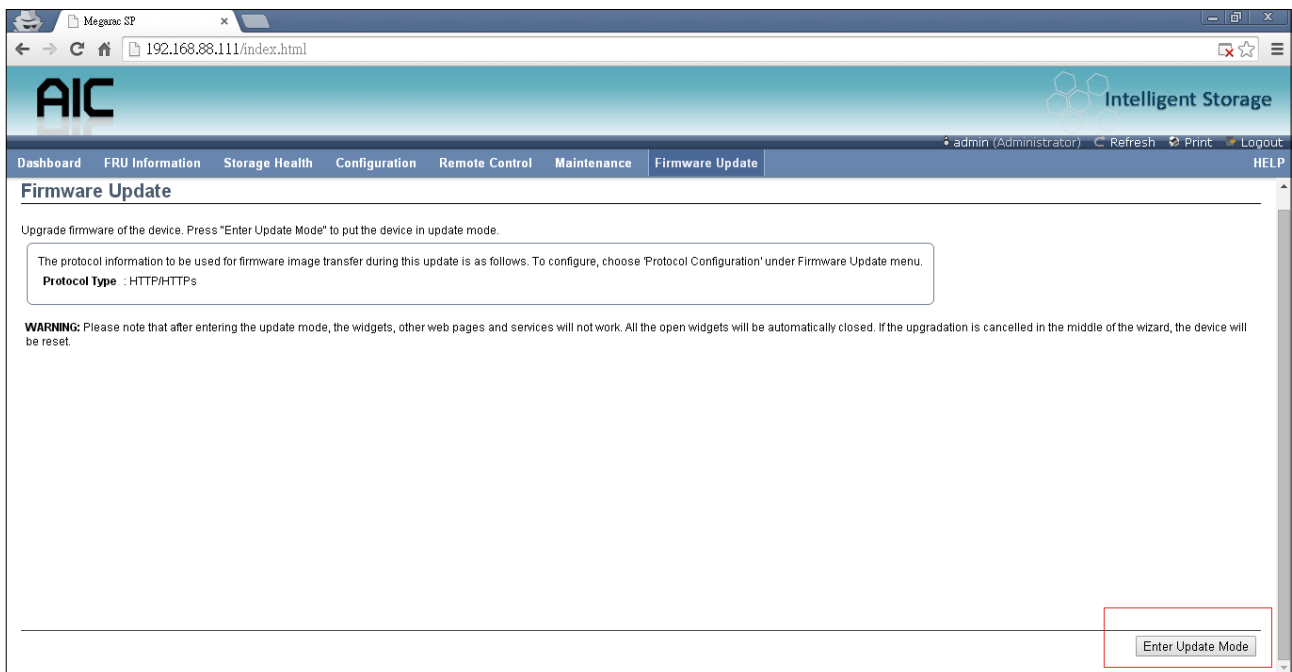
3. This is login main page.



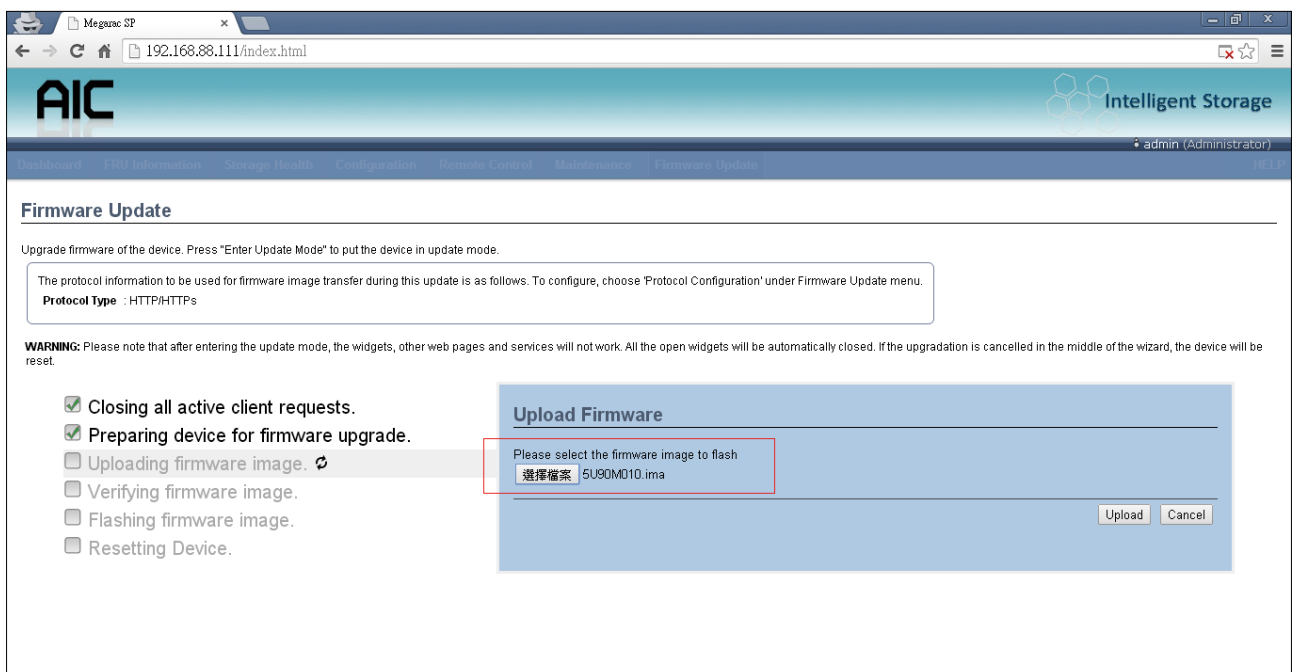
4. Click the "Firmware Update" and a drop-down menu will pop up. Click the "Firmware Update."



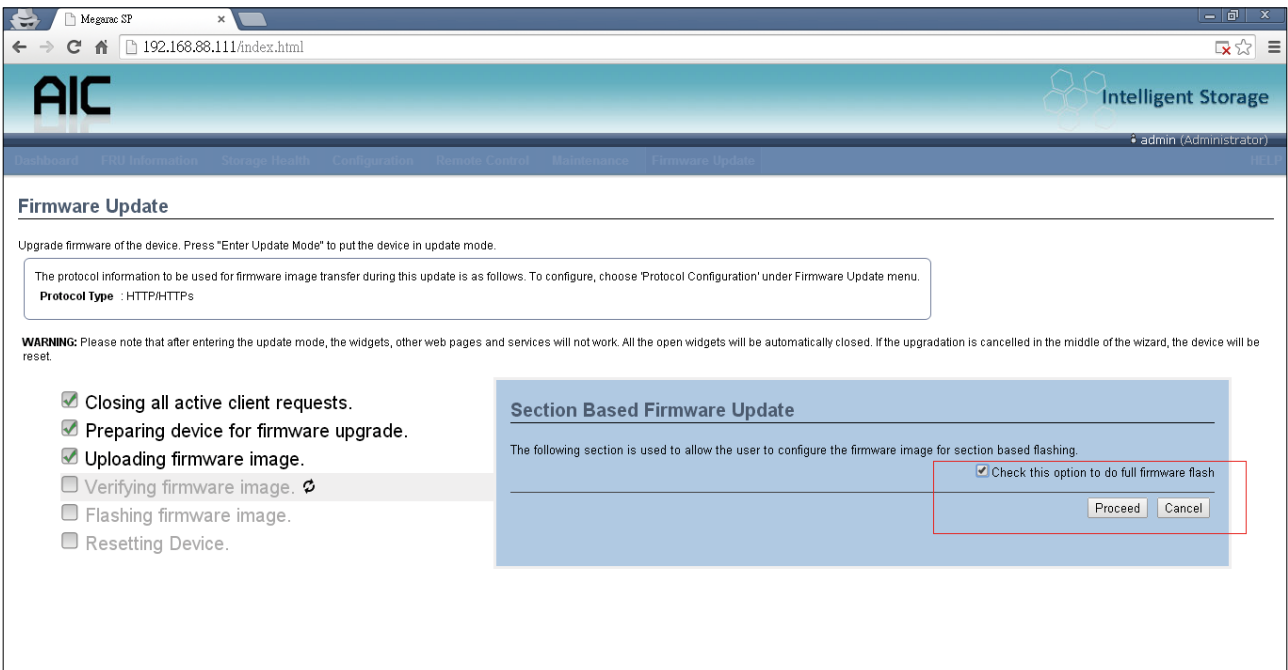
- This page will show the update warning. If you really want to update BMC firmware, click the "Enter Update Mode" button.



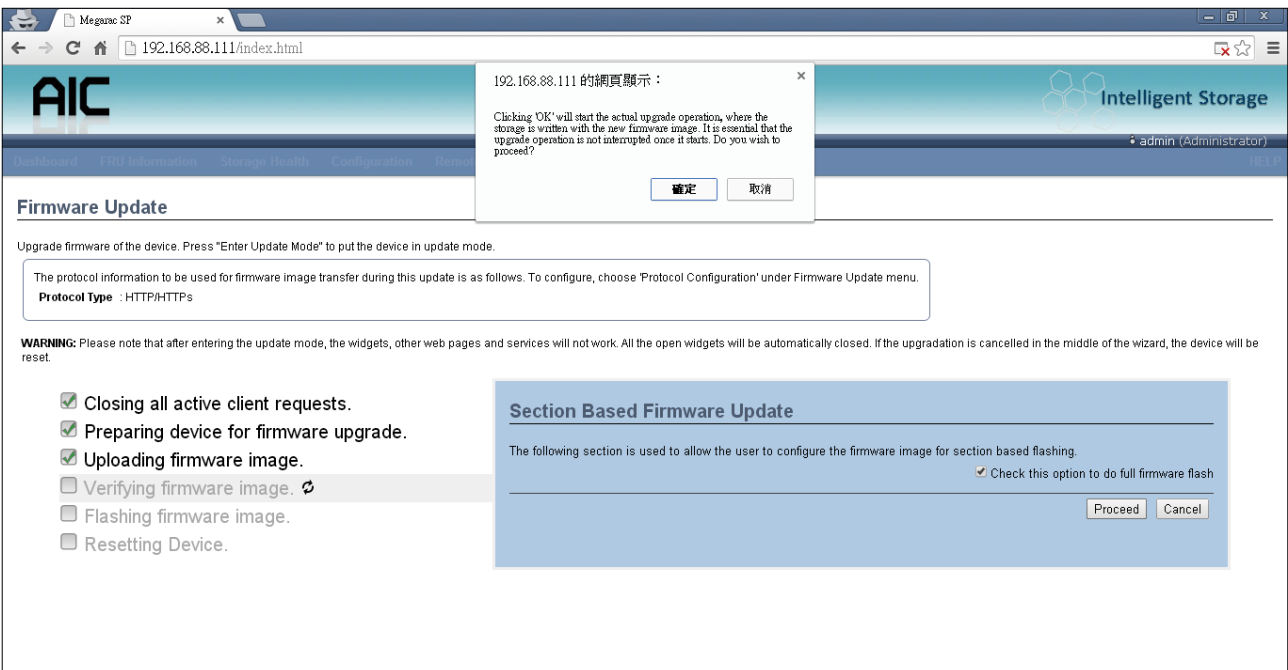
- Wait few minutes, it will pop a window. Click the "Select file" to upload firmware file that you want to update.



7. Wait a few minutes. it will pop a window for check update section. Check the "Check this option to do all full firmware flash" option.

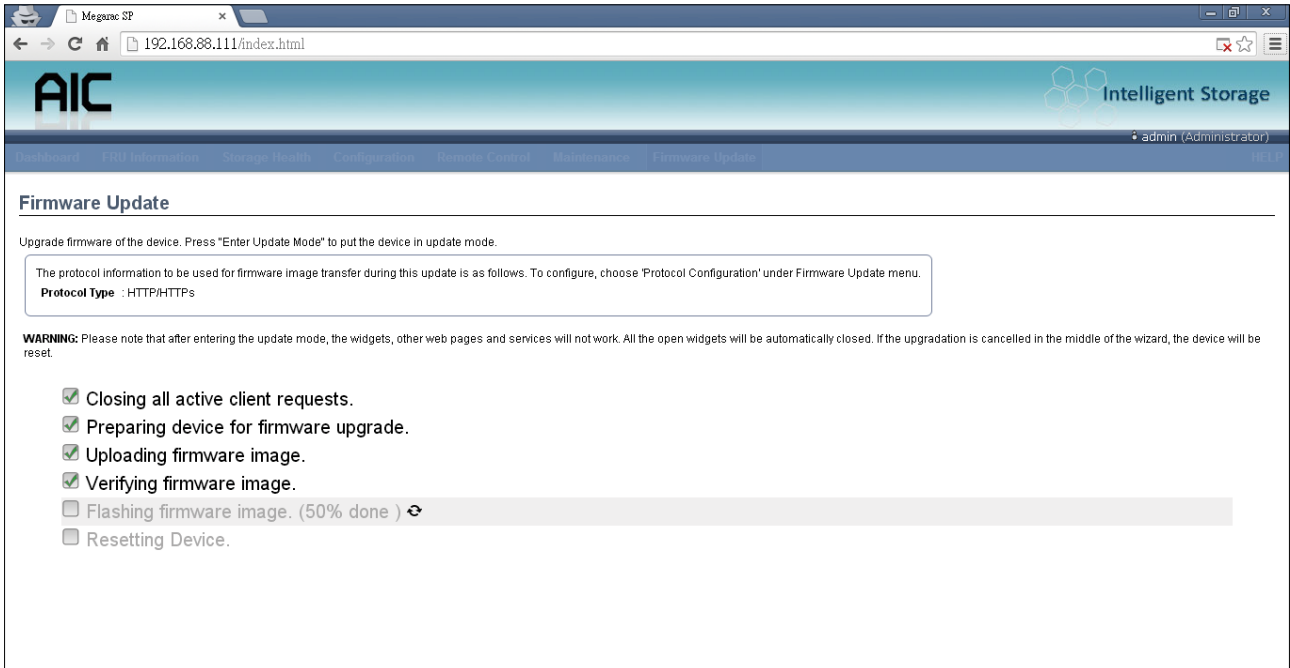


8. Click "OK" for the firmware to start the update process.

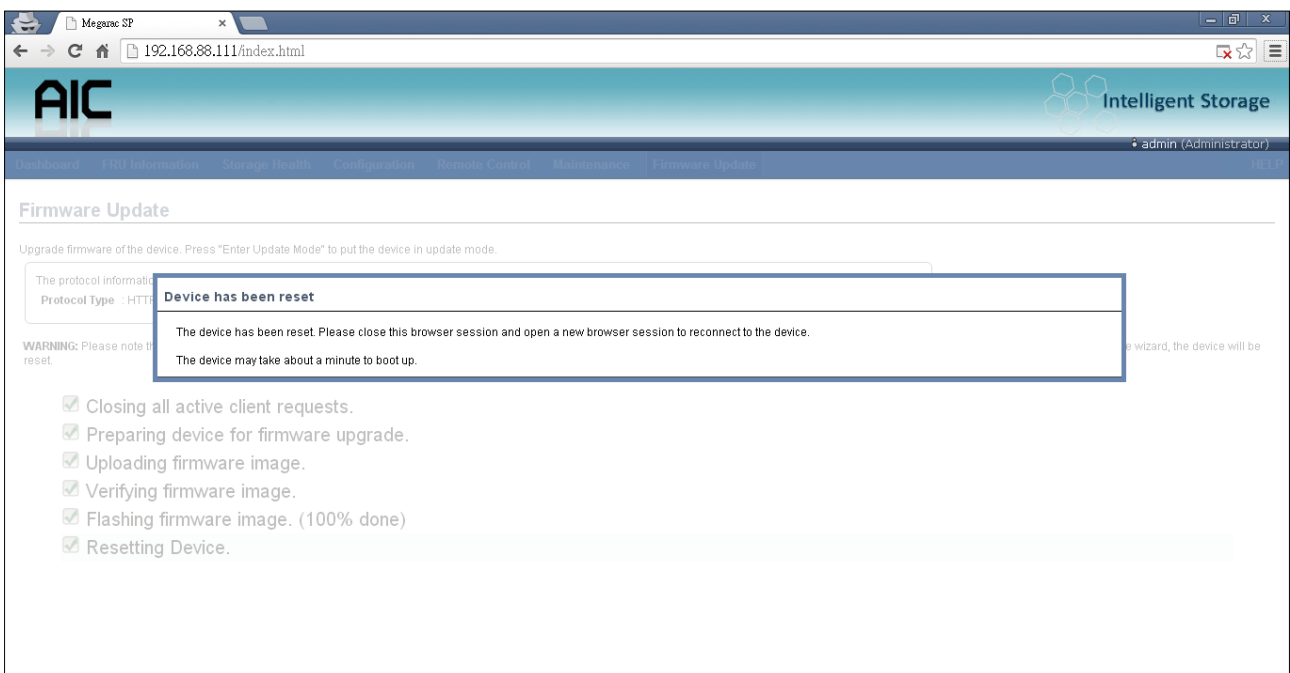


9. In the update process, it will take 3~5 minutes.

 **NOTE**
Please do not close this web page. The firmware will crash if you close this page.

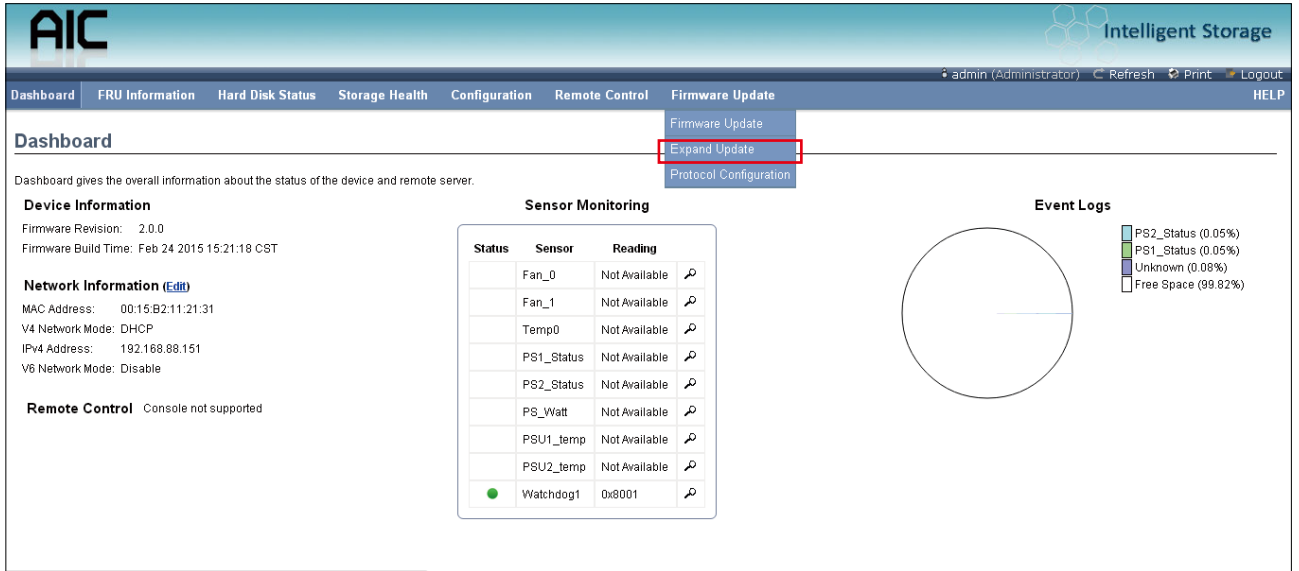


10. When “Device has been reset” window appears, it means firmware update is successful. Wait 90 seconds for BMC to restart.

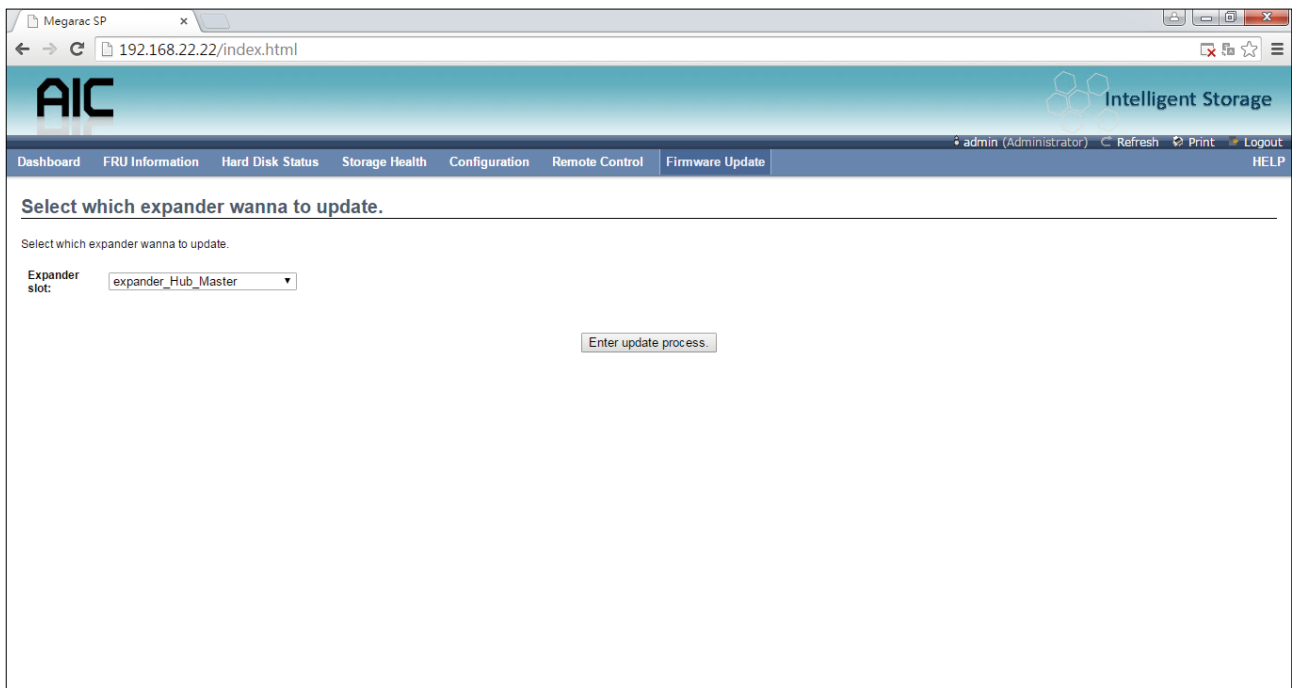


4.8 Expander Firmware Update

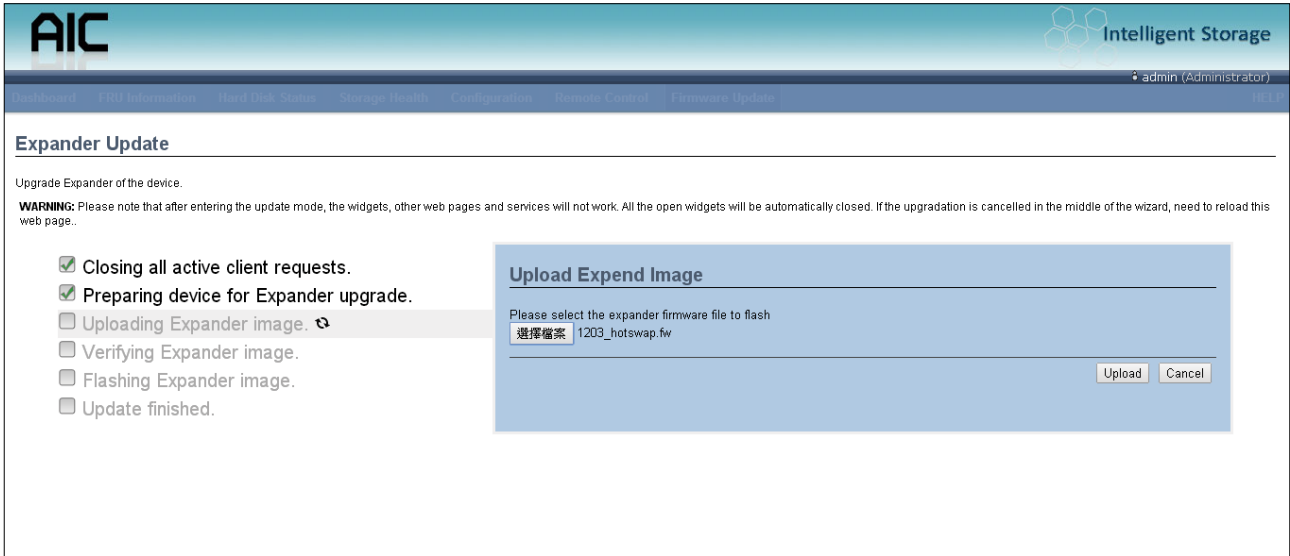
1. Click the "Firmware Update" and it will pop a drop-down menu. Click the "Expand Update."



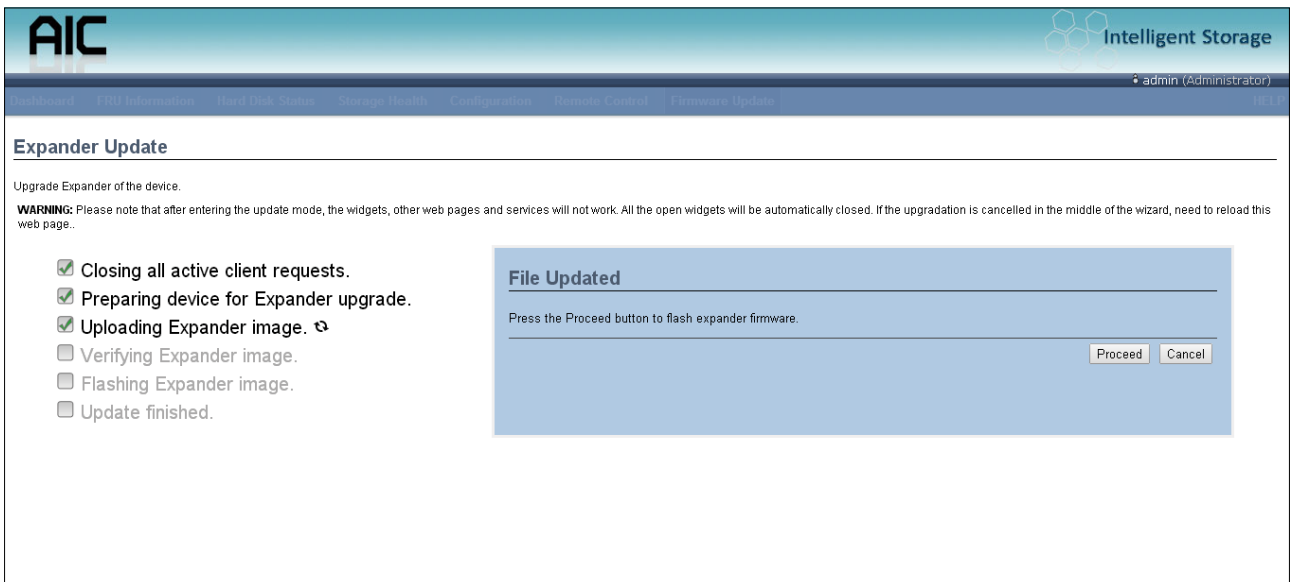
2. Choose the expander firmware file that you want to update.



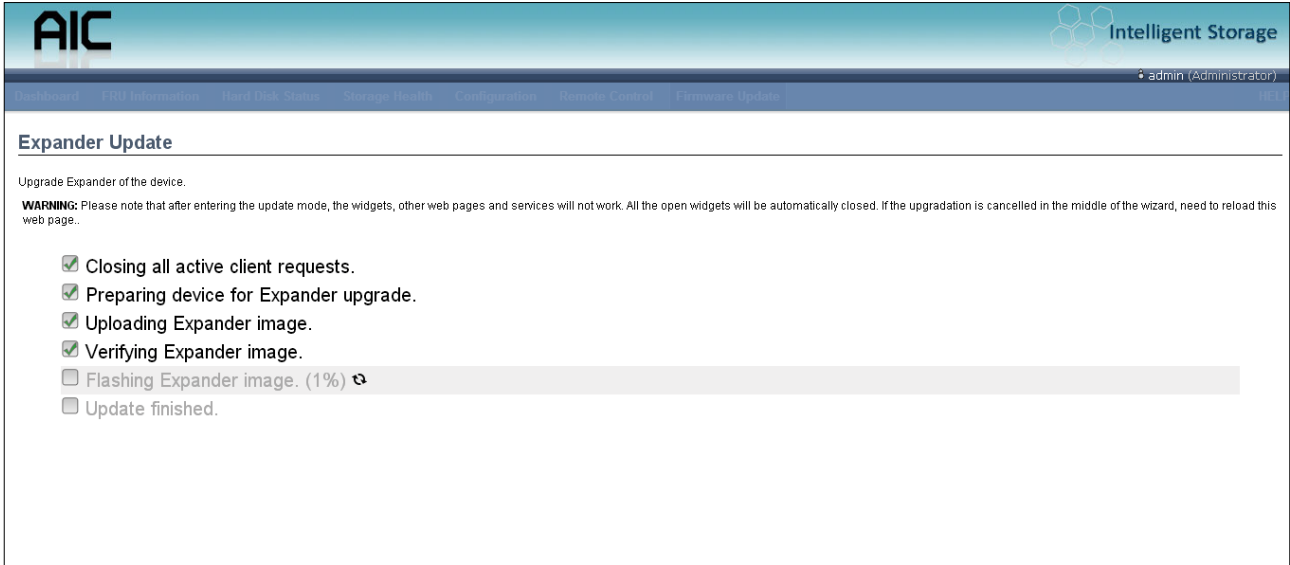
3. Choose the expander firmware file and then click the "upload" button.



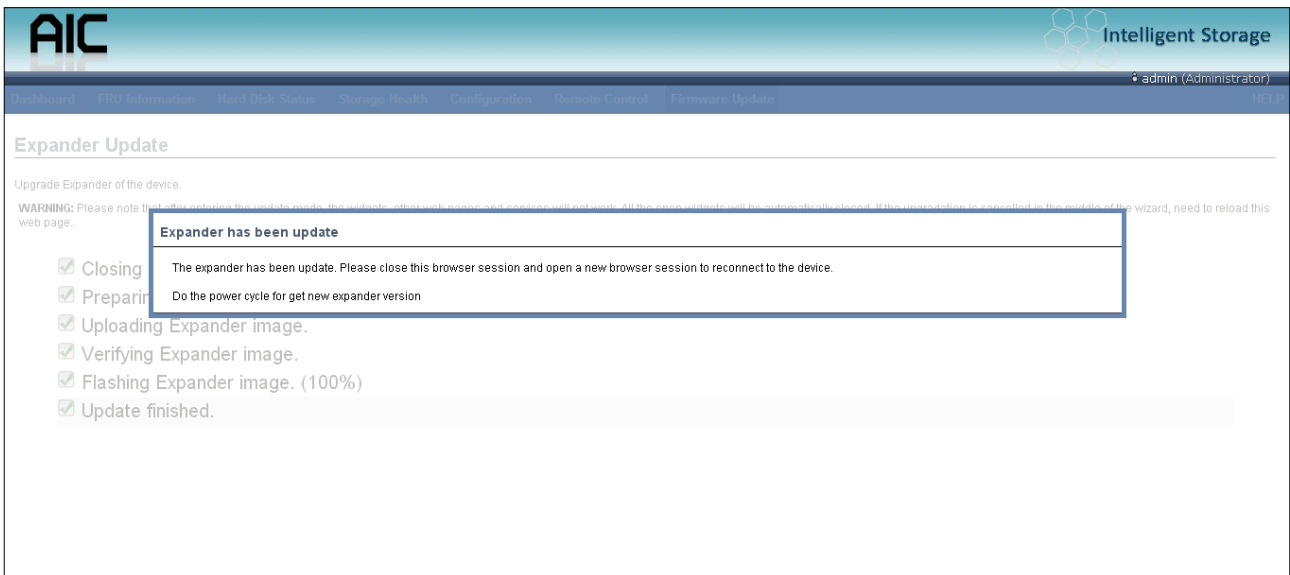
4. Click the "Proceed" button.



5. Processing.



6. Update successful.



7. If the update processes not successful, please check the version of the expander firmware or whether if the system is turned off.

The screenshot shows the AIC Intelligent Storage web interface. At the top left is the 'AIC' logo, and at the top right is the 'Intelligent Storage' logo. Below the logos is a navigation bar with the text 'admin (Administrator)'. The main content area is titled 'Expander Update' and contains the following text:

Upgrade Expander of the device.

WARNING: Please note that after entering the update mode, the update software will not work. All the open windows will be automatically closed. If the upgrade is cancelled in the middle of the wizard, need to reload this web page.

Expander update NOT success

- Closing
- Preparing
- Uploading Expander image.
- Verifying Expander image.
- Flashing Expander image.
- Update finished.

The error message box contains the following text:

Expander update not success. Please close this browser session and open a new browser session to reconnect to the device.

Please check the expander status is ready or the upload file is currently.

4.9 Firmware Safety Mode

If your update process fails or the primary firmware suffers some error, it will boot into safety mode.

1. If you see the **sensor name, status LED and ID LED are abnormal, the LEDs are cross blinking**, it means the firmware is in safety mode. In safety mode some of the functions will be useless!

The screenshot shows the MEGARAC web interface. At the top, there is a navigation bar with the MEGARAC logo and the American Megatrends logo. Below the navigation bar, there are tabs for Dashboard, FRU Information, Server Health, Configuration, Remote Control, and Firmware Update. The main content area is titled "Dashboard" and contains three sections: Device Information, Sensor Monitoring, and Event Logs.

Device Information
 Firmware Revision: 1.0.0
 Firmware Build Time: Jun 17 2014 18:47:17 CST

Network Information (Edit)
 MAC Address: 00:15:B2:A6:24:A4
 V4 Network Mode: DHCP
 IPv4 Address: 192.168.88.123
 V6 Network Mode: DHCP
 IPv6 Address: ::

Remote Control Console not supported

Sensor Monitoring

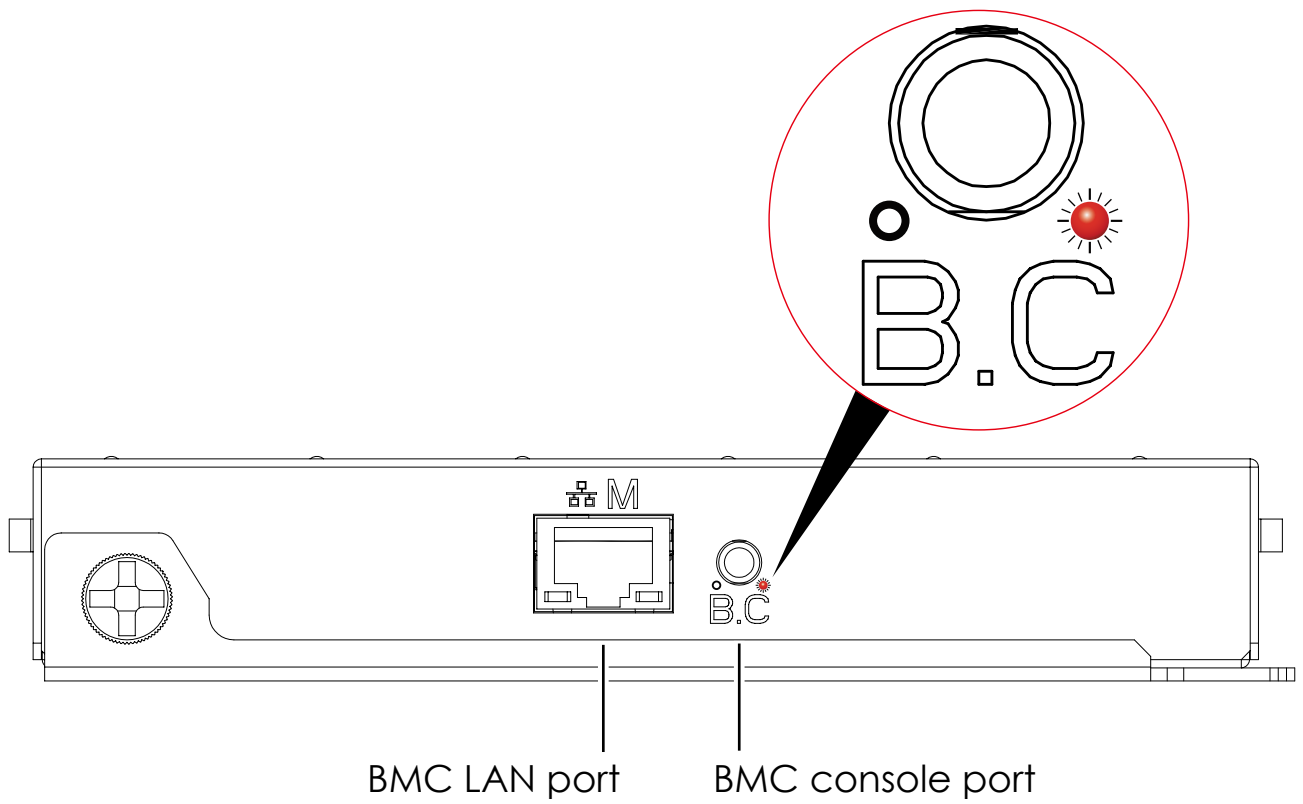
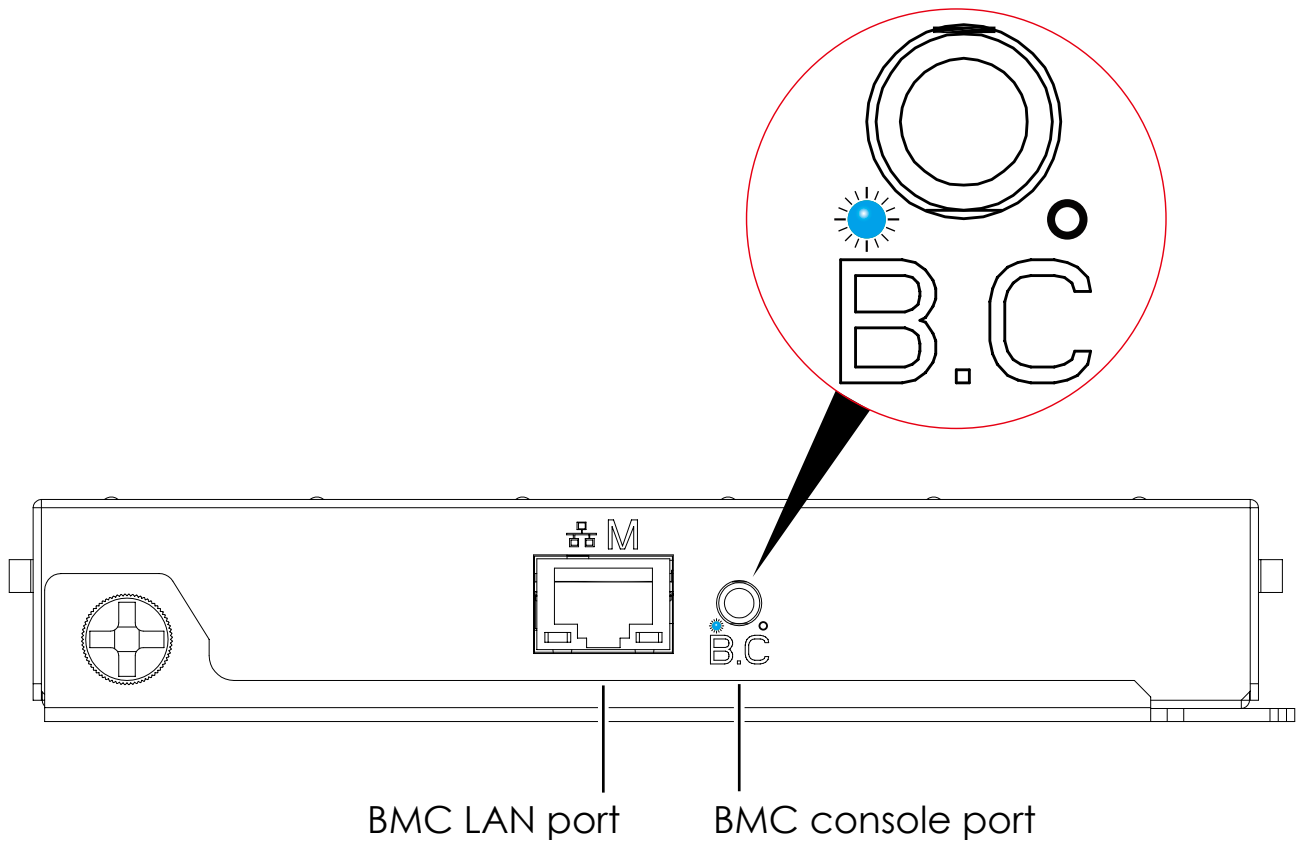
Status	Sensor	Reading	
	BMC SAFETY MODE	Not Available	🔗
	Clear the WEB	Not Available	🔗
	page cookie to	Not Available	🔗
	refresh the page	Not Available	🔗
	then you can see	Not Available	🔗
	BMC RESET	Not Available	🔗
	option and more	Not Available	🔗
	info. Follow the	Not Available	🔗
	indicator to	Not Available	🔗
	reset BMC.	Not Available	🔗

Event Logs

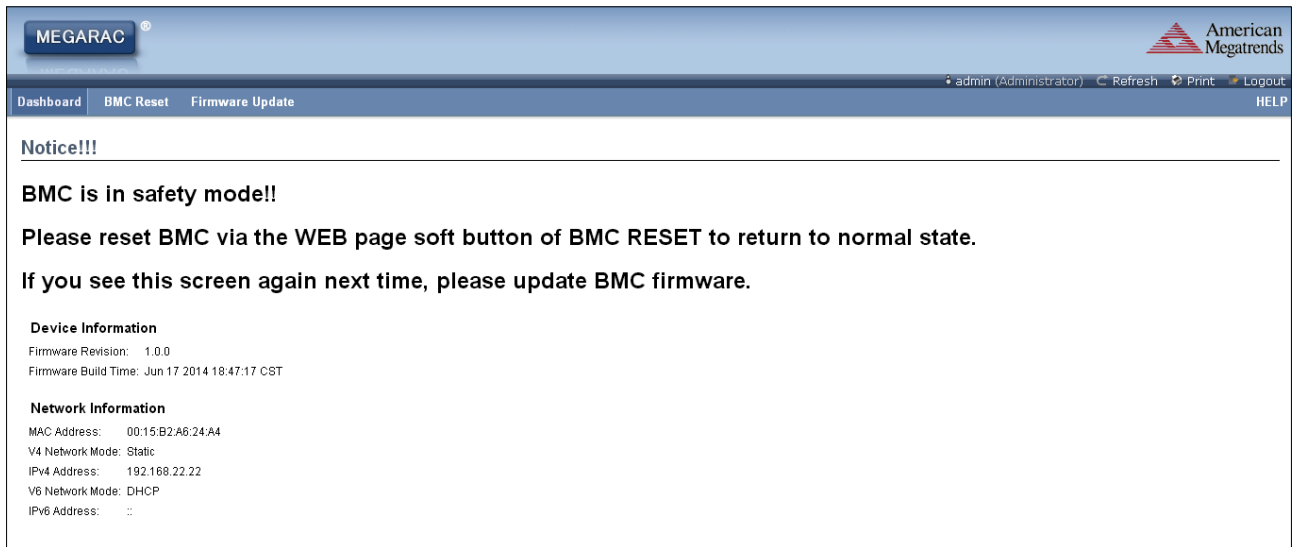
- Unknown (0.11%)
- Free Space (99.89%)

```

root@david:~
[root@david ~]# ipmitool -I lanplus -H 192.168.88.123 -U admin -P admin sdr
BMC SAFETY MODE | no reading | ns
Clear the WEB | no reading | ns
page cookie to | no reading | ns
refresh the page | no reading | ns
then you can see | no reading | ns
BMC RESET | no reading | ns
option and more | no reading | ns
info. Follow the | no reading | ns
indicator to | no reading | ns
reset BMC. | no reading | ns
[root@david ~]#
    
```



2. Please **clear browser cookies** and re-start browser. The BMC web UI will refresh the web page object.



The screenshot displays the MEGARAC web interface. At the top left is the MEGARAC logo. At the top right is the American Megatrends logo. Below the logo is a navigation bar with tabs for Dashboard, BMC Reset, and Firmware Update. In the top right corner of the page, there is a user menu showing 'admin (Administrator)' and options for Refresh, Print, Logout, and HELP.

Notice!!!

BMC is in safety mode!!

Please reset BMC via the WEB page soft button of BMC RESET to return to normal state.

If you see this screen again next time, please update BMC firmware.

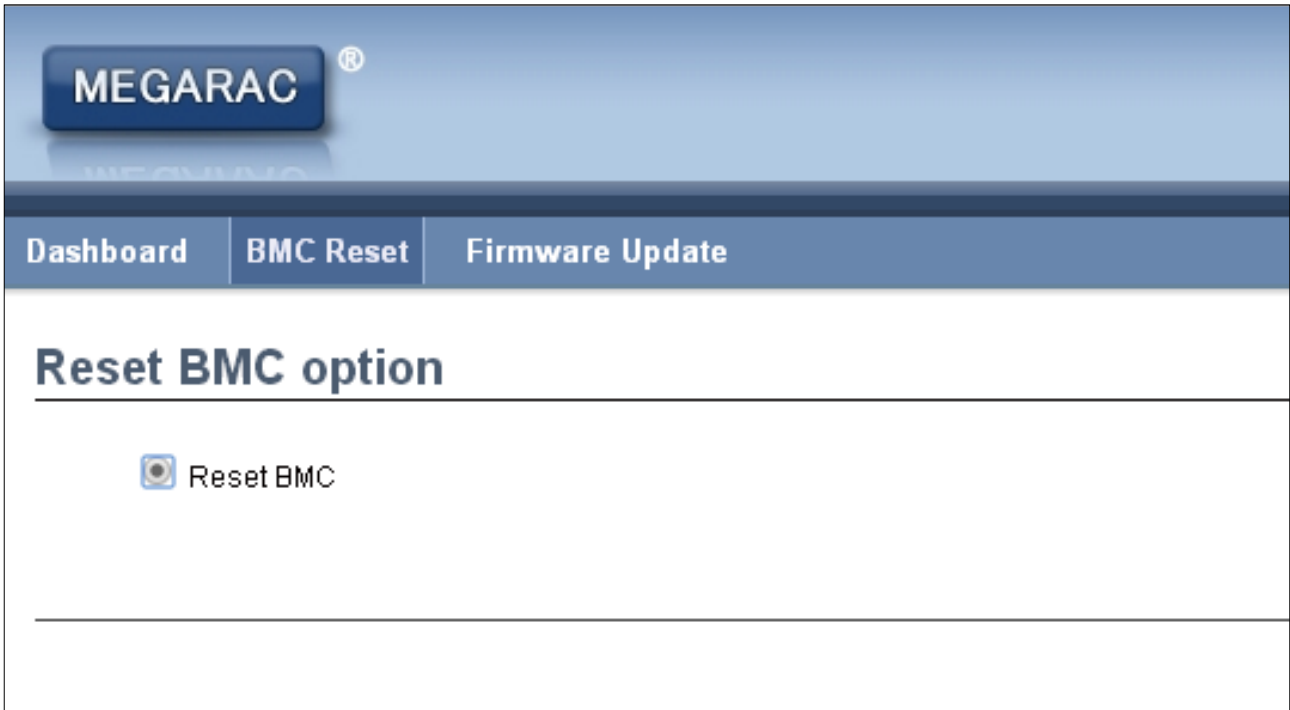
Device Information

Firmware Revision: 1.0.0
Firmware Build Time: Jun 17 2014 18:47:17 CST

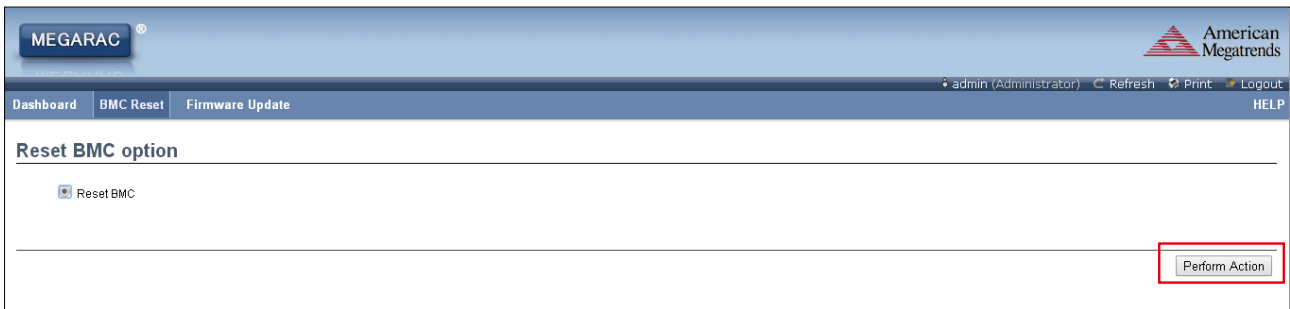
Network Information

MAC Address: 00:15:B2:A6:24:A4
V4 Network Mode: Static
IPv4 Address: 192.168.22.22
V6 Network Mode: DHCP
IPv6 Address: ::

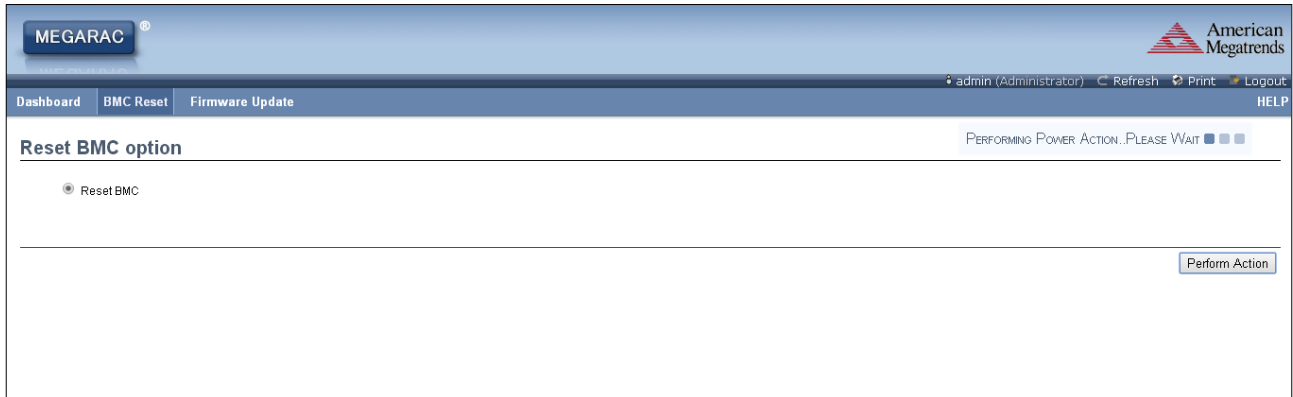
3. Click the "BMC Reset" button to go into the reset page.



4. Select the "BMC reset" and Click the "Perform Action" button.



- The page will show "Requesting" status. This web page will be invalid because of resetting the BMC. **Wait 90 seconds to clear browser cookies** to re-login the web UI again.



- If you still see the safety mode page, please follow section 4.5 web update to update your firmware.

Chapter 4. Technical Support



www.aicipc.com

Taiwan, Global Headquarters

Address: No. 152, Section 4,
Linghang N. Rd, Dayuan District,
Taoyuan City 337, Taiwan
Tel: +886-3-433-9188
Fax: +886-3-287-1818
Sales Email: sales@aicipc.com.tw
Support Email: support@aicipc.com

Shanghai, China

Address: Room 1009, No. 777,
Zhaojia Bang Rd, Shanghai 200032,
Shanghai, China
Tel: +86-21-54961421
Fax +86-21-54961422 #608
Sales Email: csales@aicipc.com.tw
Support Email: support@aicipc.com

Moscow, Russia

Address: Khoroshevskoye Shosse, 32A,
Office 403 (2nd Entrance, 4th Floor),
Moscow 123007, Russia
Tel: +7-4997019998
Sales Email: support-ru@aicipc.com.tw
Support Email: support-ru@aicipc.com.tw

North California, United States

Address: 48531 Warm Springs
Boulevard Suite 404 Fremont, CA
94539, United States
Tel: +1-510-573-6730
Fax: +1-510-573-6729
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

South California, United States

Address: 21808 Garcia Lane
City of Industry, CA 91789,
United States
Toll free: +7-4997019998
Tel: +1-909-895-8989
Fax: +1-909-895-8989#157
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

New Jersey, United States

Address: 11 Melanie Lane
Unit #20 & 21
East Hanover, NJ 07936, United States
Tel: +1-973-884-8886
Fax: +1-973-884-4794
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

Houten, The Netherlands

Address: Peppelkade 58, 3992AK, Houten,
The Netherlands
Tel: +31-30-6386789
Fax: +31-30-6360638
Sales Email: sales@aicipc.nl
Support Email: support@aicipc.com