J4078-01-35X

4U78 12G JBOD
User's Manual

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Document Release History

Release Date	Version	Update Content
July 2018	1	Release to public.
October 2018	1.1	1. Update BMC 2. Update Java Sol 3. New cover
March 2019	1.2	Slide rail update
April 2019	1.3	Safety instruction update
December 2019	1.6	BMC update
February 2020	1.7	Expander BMC update
April 2020	1.8	Expander BMC update
May 2020	1.9	BMC dashboard update
May 2021	2	Fan sensor update
June 2021	2.1	BMC update
September 2021	2.2	Content update
January 2022	2.3	Datasheet spec update
April 2022	2.4	BMC Section 4.3.2.8 update

Preface

Copyright

Trademarks

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.

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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 harware 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.

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.

About This Manual

Thank you for selecting and purchasing J4078-01-35X.
This user's manual is provided for professional technicians to perform easy hardware setup, basic system configurations, and quick software startup. This document pellucidly presents a brief overview of the product design, device installation, and firmware settings for J4078-01-35X. For the latest version of this user's manual, please refer to the AIC® website: https://www.aicipc.com/en/productdetail/40911.

Chapter 1 Product Features

J4078-01-35X is an ideal SAS JBOD that is specifically designed to accommodate diverse corporations and enterprises who pursue flexibility, easy control, and density in external or backup storage. This product supports 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 JBOD. 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 Sub-system Configuration Setup

This chapter provides details about the supported features and unsupported configurations about your host(s) and expander controller connection.

Chapter 4 BMC Configuration Settings

This chapter illustrates the diverse functions of IPMI BMC, including the details on logging into the web page and assorted definitions. These descriptions are helpful in configuring various functions through Web GUI without entering the BIOS setup.

Chapter 5 Technical Support

For more information or suggestion, please contact the nearest AIC® corporation representative in your district or visit the AIC® website: https://www.aicipc.com/en/index.
It is our greatest honor to provide the best service for our customers.

Chapter 1. Product Features

J4078-01-35X is a high performance JBOD product that includes 78 x 3.5" drive bays and single/dual expander module(s). For more information about our product, please visit our website athttps://www.aicipc.com/en/index.

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 contents of the shipping carton are all there 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.

- System chassis

  (includes power supply, fan

  & hard disk drive tray)
- Power cord (vary per region)
- Rear handle (uninstalled)
- Cable management kit x 1 (optional)
- Slide rail x 1 set (optional)

PACKAGE CONTENT MAY VARY PER REGION.

1.2 Specifications

General	Number of Expander	Single/Dual
	Expander Chip	Broadcom SAS35x48
	Host/Expansion Interface	4 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 & IEM port
	LED Indicators, Audible Alarm	Yes
Hot swap and Redundancy	Drive Bays	78
	Cooling	• 8 x 60x56mm hot swap fans • 1 x 40x56mm fan per expander module
	Power Supply	1600W 1+1 hot swap redundant 80+ Platinum
	Power Entry	Dual AC Inlet
	Expander Modules	Dual SAS topology (Optional)

Electrical and Environmental	AC Input	• 200~240V,50/60Hz,12A (except China/Taiwan) • 200-240V,50/60Hz,10A (for China/Taiwan)
	Operating Environment	Temperature : 0ºC to 35ºC Relative humidity : 20% to 80%
	Non-operating Environment	Temperature : -20ºC to 60ºC Relative humidity : 10% to 90%
Physical Specification	Dimensions (W x D x H)	mm : 434 x 810.5 x 176 434 x 974.7 x 176 (with CMA)
		inches : 17 x 31.9 x 7 17 x 38.4 x 7 (with CMA)
	Gross Weight (w/ PSU, Rail and Pallet; w/o Disks)	kgs : 57.67
		lbs : 127.1
	Packaging Dimensions (W x D x H)	mm : 675 x 1120 x 536
		inches : 26.6 x 44.1 x 21.1
Mounting	Standard	31” fixed rail
	Option	Cable Management Kit

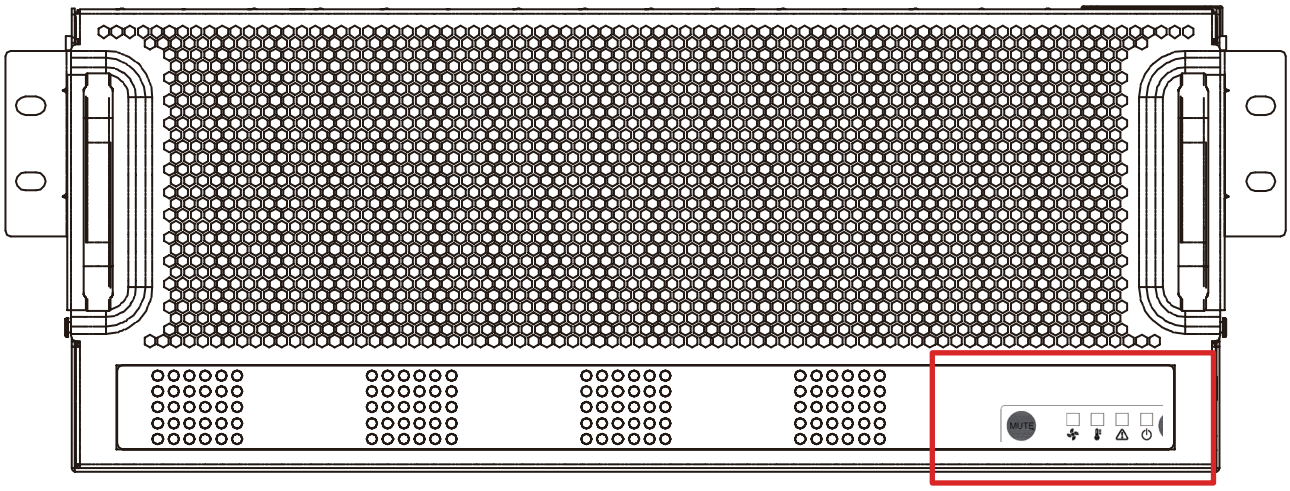
1.3 Feature

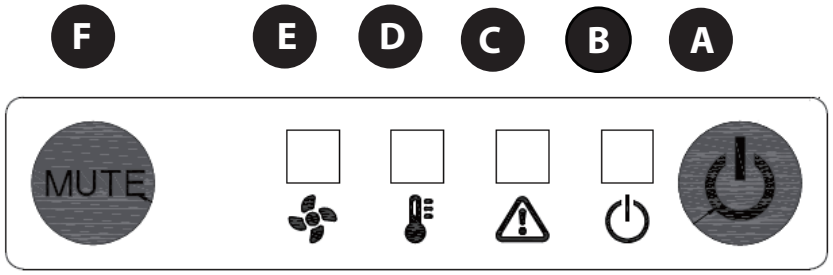
J4078-01-35X is a reliable SAS JBOD with 78 drives bays. This product is designed to accommodate single/dual hub expanders with 4 Mini SAS HD wide ports. Featuring the expander chip, Broadcom SAS35x48, which is underscored for its high scalability and performance of supporting up to 12 Gb/s, this product enhances these features by integrating designs, redundant fans, and expansion to offer easy control and high performance for our customers.

- Intelligent Enclosure Management
- Individual drive power management
- Easy maintenance and management
- Tool-less drive trays
- Design for 1000mm depth cabinet

Front Panel

J4078-01-35X offers 2 system buttons (System Power switch & System Alert Mute switch) and 4 LED indicators (Power, Power Fail, Temperature (overheating), and Fan Fault).





A

System Power	
Behavior	Status
Normal	Off
Press	Boot up
Long Press	System shut down

B

Power LED	
Behavior	Status
On	Blue
Off	No status

C

Power Fail LED	
Behavior	Status
Normal	Off
Failed	Red

D

Temperature (Overheating) LED	
Behavior	Status
Normal	Off
Failed	Red

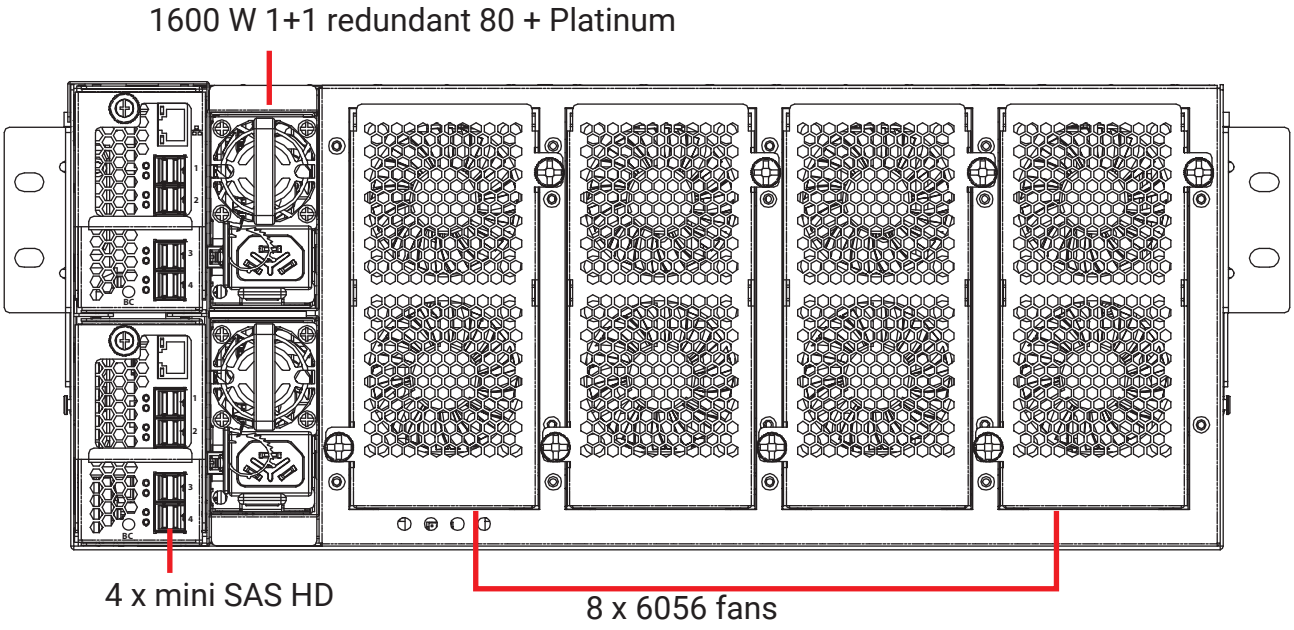
E

Fan Fault LED	
Behavior	Status
Normal	Off
Failed	Red

F

System Alert Mute Switch	
Behavior	Status
Normal	Off
Press	Alert mute

Rear Panel

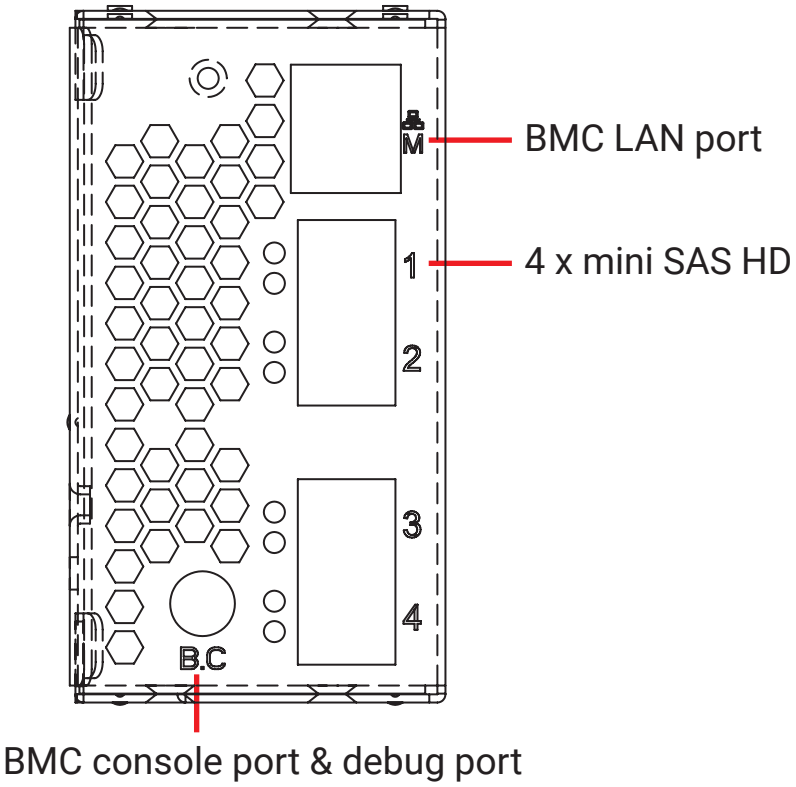


NOTE

The power supply only supports 200V~240V AC input

Rear Expander Panel

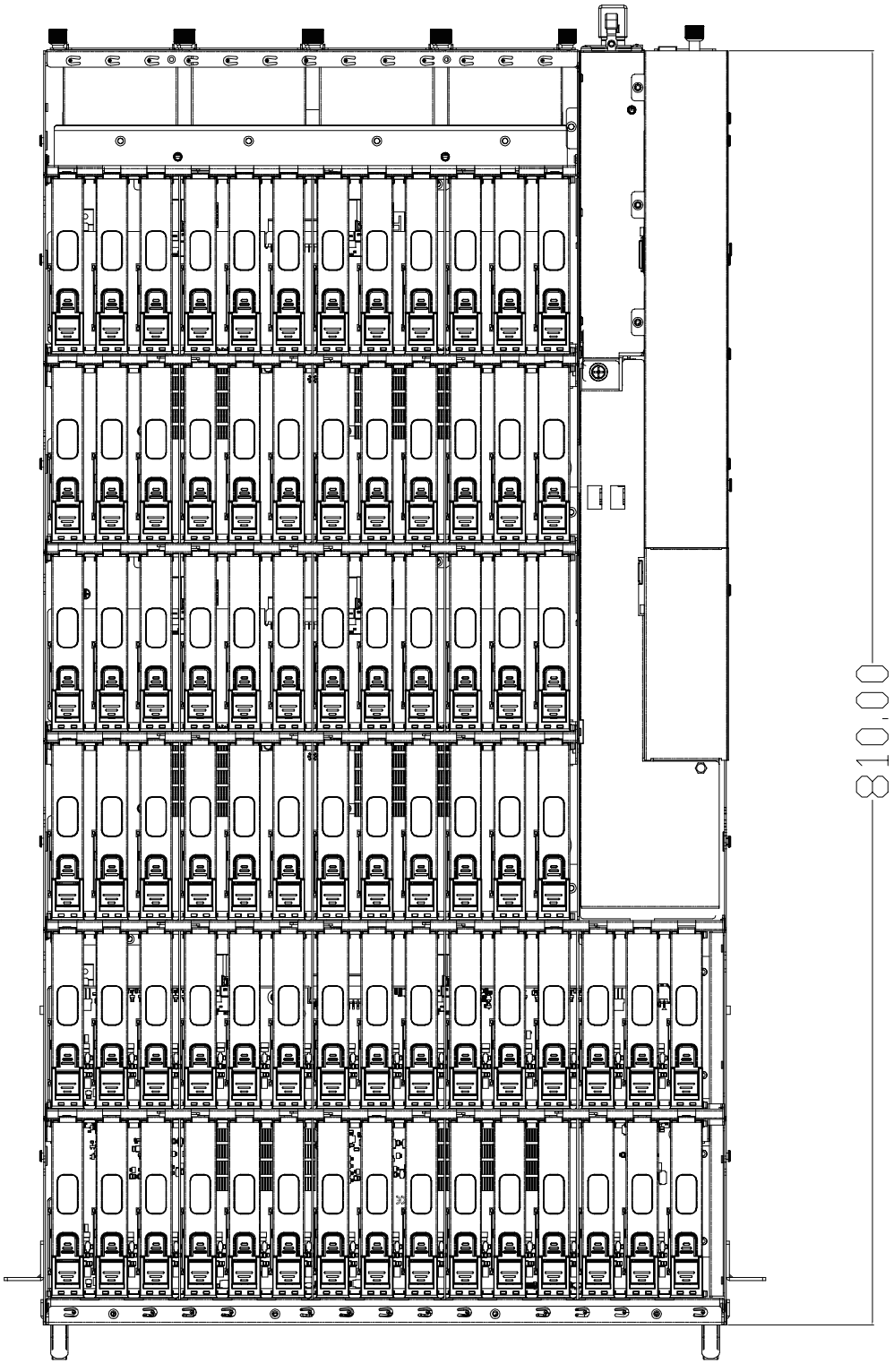
J4078-01-35X offers single/dual expander(s) with 1 BMC port and 4 mini SAS HD ports per expander module.



Major Components

J4078-01-35X offers 3.5" x 78 HDD bays.

- 12Gb/s & 6Gb/s SAS if using dual expanders
- 12Gb/s SAS and 6Gb/s SATA if using single expander



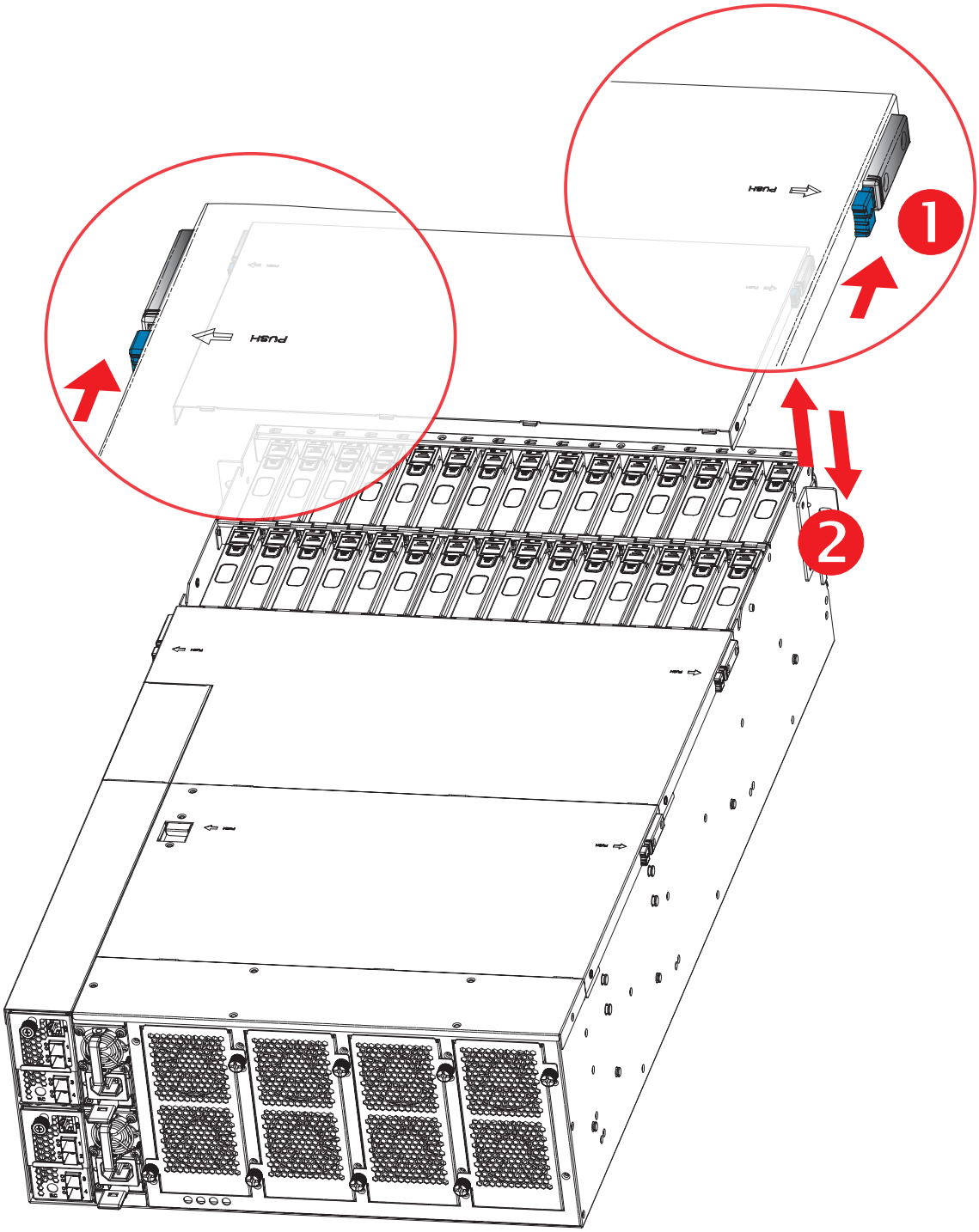
Chapter 2. Hardware Setup

2.1 Top Cover

2.1.1 Removing and Installing the First Top Cover

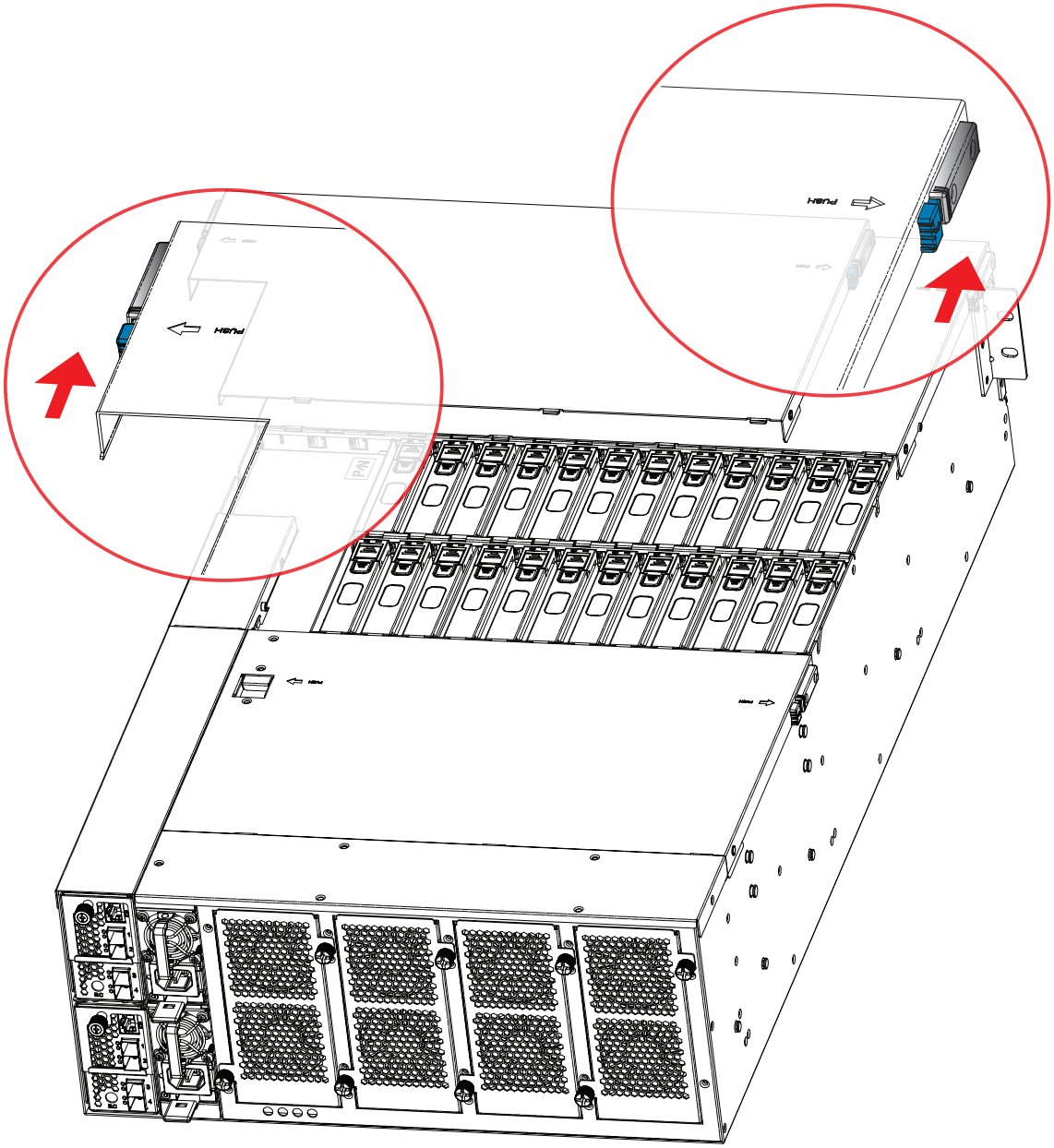
Step 1 Push the release button on both sides of the top cover.

Step 2 Lift the cover from the chassis.



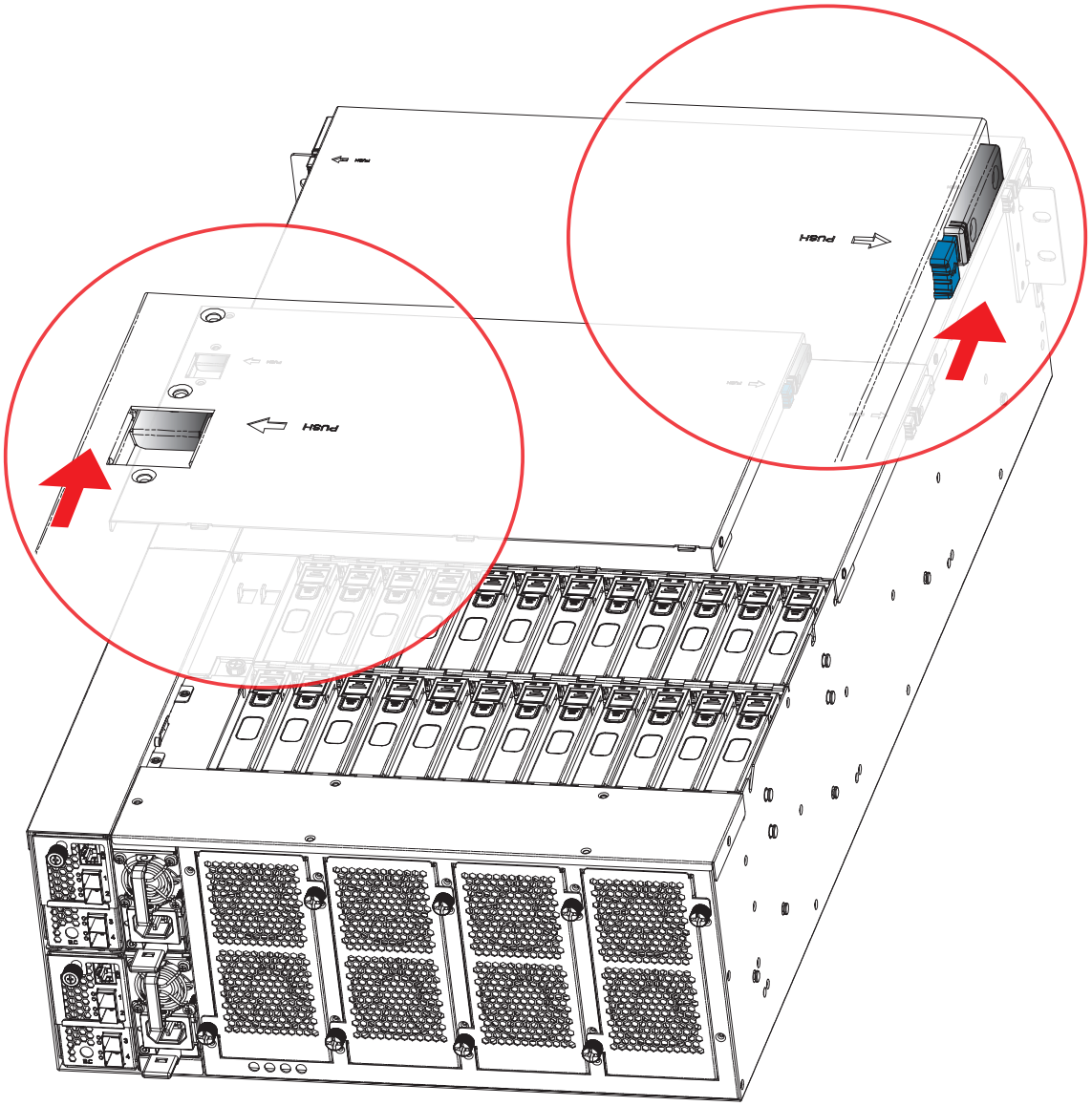
2.1.2 Removing and Installing the Middle Top Cover

Step 1 Push the release button on both sides of the top cover.
Step 2 Lift the cover from the chassis.



2.1.3 Removing and Installing Rear Top Cover

Step 1 Push the release button on both sides of the top cover.
Step 2 Lift the cover from the chassis.

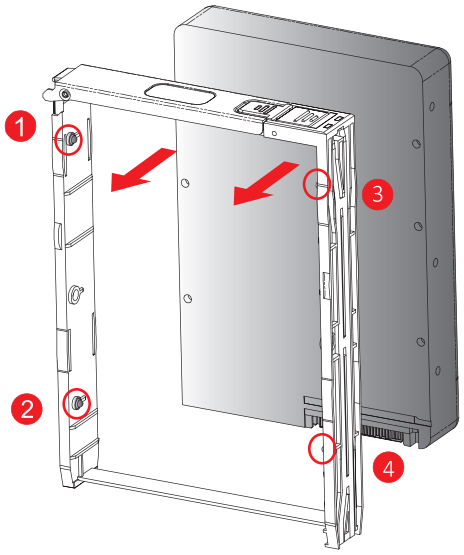


This information is provided for professional technicians only.

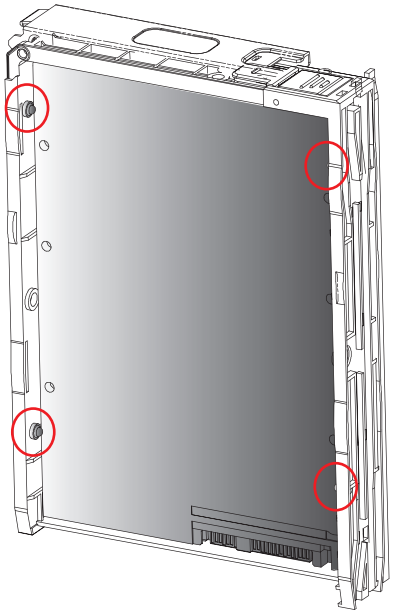
2.2 Disk Drive

2.2.1 Installing the 3.5" Hard Disk Drive

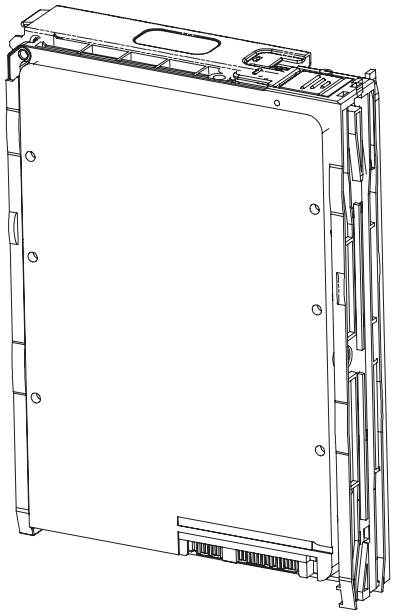
Step 1 Match the dimples on the HDD with the tool-less tray.
Step 2 Align the HDD with the tray by placing it against each other.



Step 3 Insert the HDD into the tool-less tray in the suggested order above. Make certain to attach the side of the tray with the larger dimples to the HDD first and the side with the smaller dimples last for easier installation.



Step 4 Complete the installation.

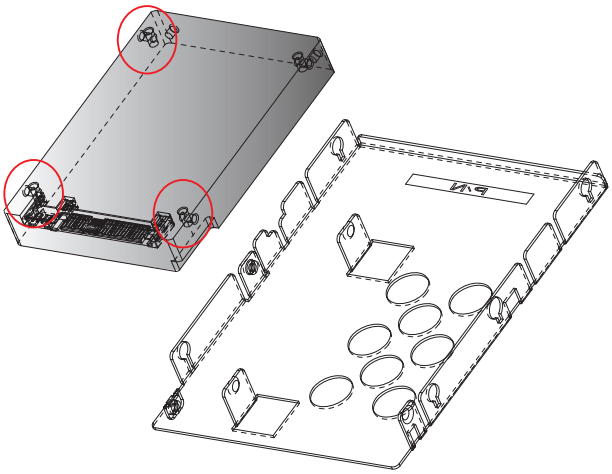


2.2.2 Removing the 3.5" HDD from the Tray

Pull the sides of the tray to remove the HDD. Make certain to pull the tray with smaller dimples first away from the HDD and the larger dimples last for easier removal.

2.2.3 Installing the 2.5" Hard Disk Drive (Optional)

Step 1 Attach the HDD onto the HDD bracket and secure the screws (in red circle).



Step 2 Match the dimples (in dotted red circle) on the HDD bracket and HDD with the tool-less tray.

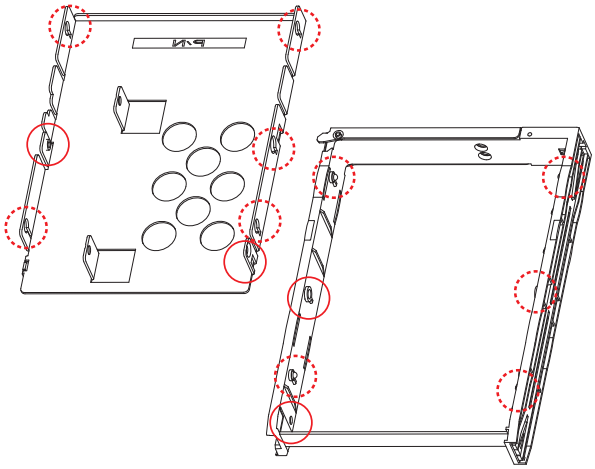
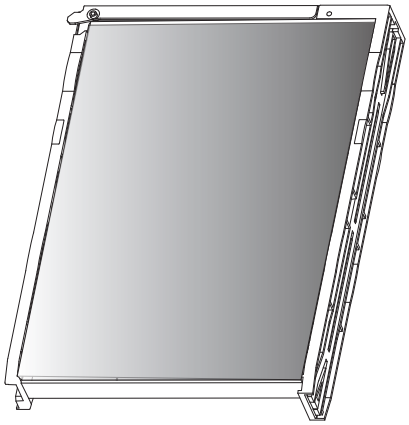


Image without HDD to demonstrate the location of dimple and screw.

- Screw location in red circle.
- Dimple location in the dotted red circle

Step 3 Insert the bracket and HDD into the tool-less tray.
Step 4 Secure the screws on the bracket to complete installation.



2.2.4 Removing and Installing the HDD Tray

2.2.4.1 Installing the HDD Tray

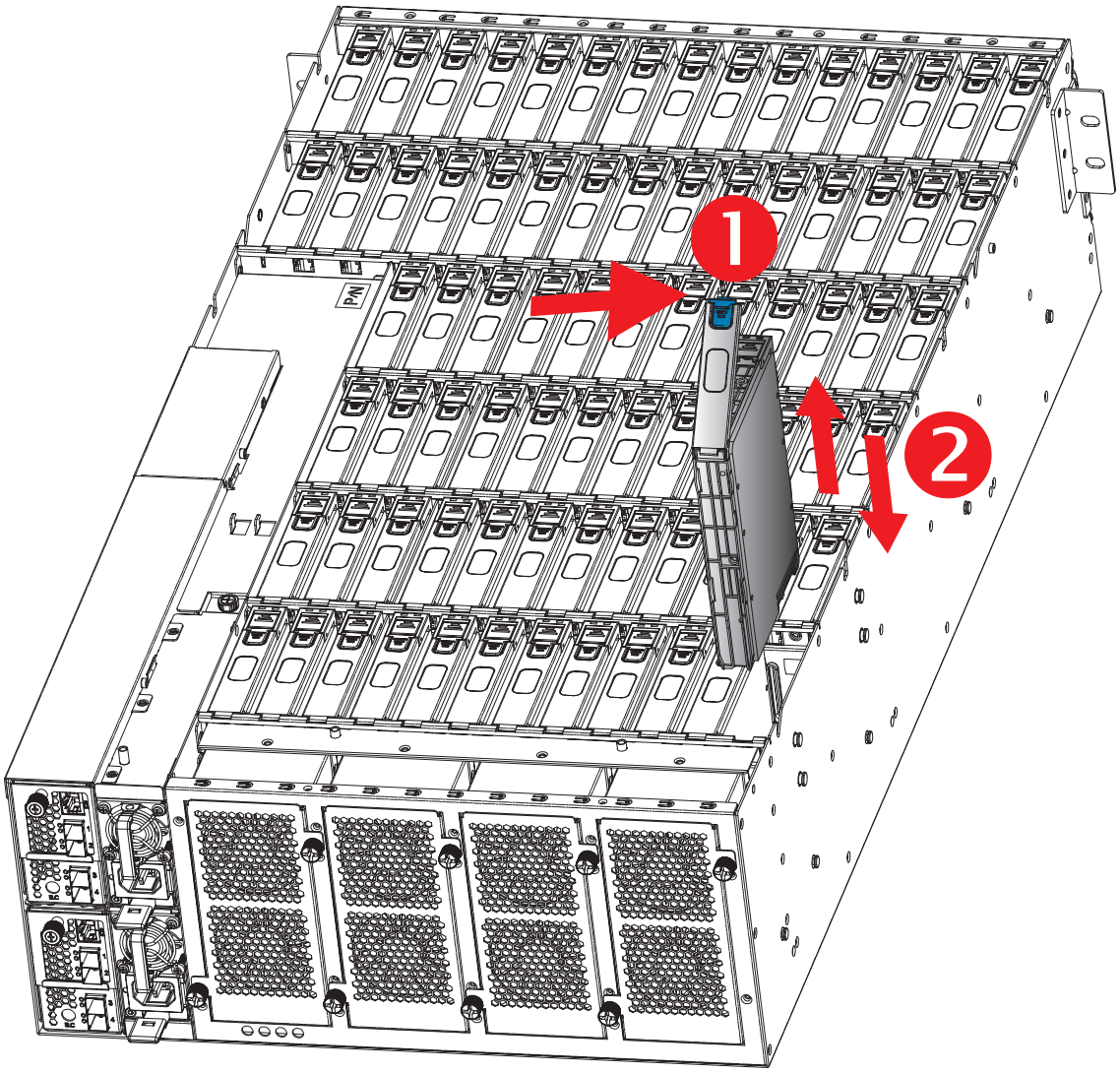
Step 1 Insert the drive tray into chassis HDD cage. Make sure the drive tray is correctly secured in place when its front edge aligns with the bay edge.

Step 2 Push the tray lever until it reaches the end and clicks.

2.2.4.2 Removing the HDD Tray

Step 1 Press the release button on the tray lever.

Step 2 Pull upwards to remove the HDD tray from the enclosure.



This information is provided for professional technicians only.

2.3 Power Supply Unit Module

2.3.1 Installing the Power Supply Unit

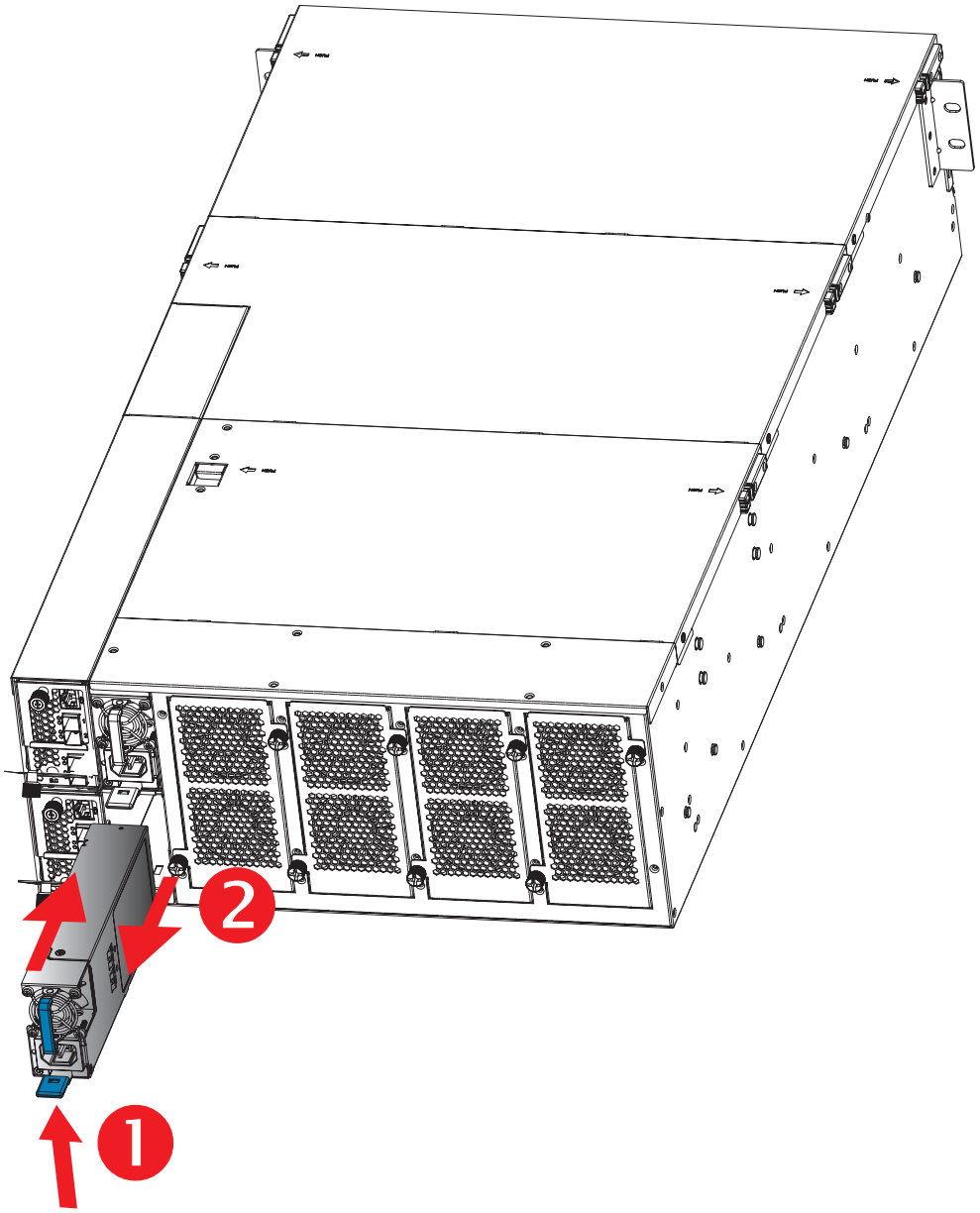
Push the power supply module into the enclosure. Make sure the latch on the module is fully hooked onto the PSU housing.

2.3.2 Removing the Power Supply Unit

Step 1 Remove power cables connected to the power supply module. Allow a minute for fan to spin down.

Step 2 Push the latch and hold the tray handle.

Step 3 Pull the power supply module gently until it slides out of the enclosure.



This information is provided for professional technicians only.

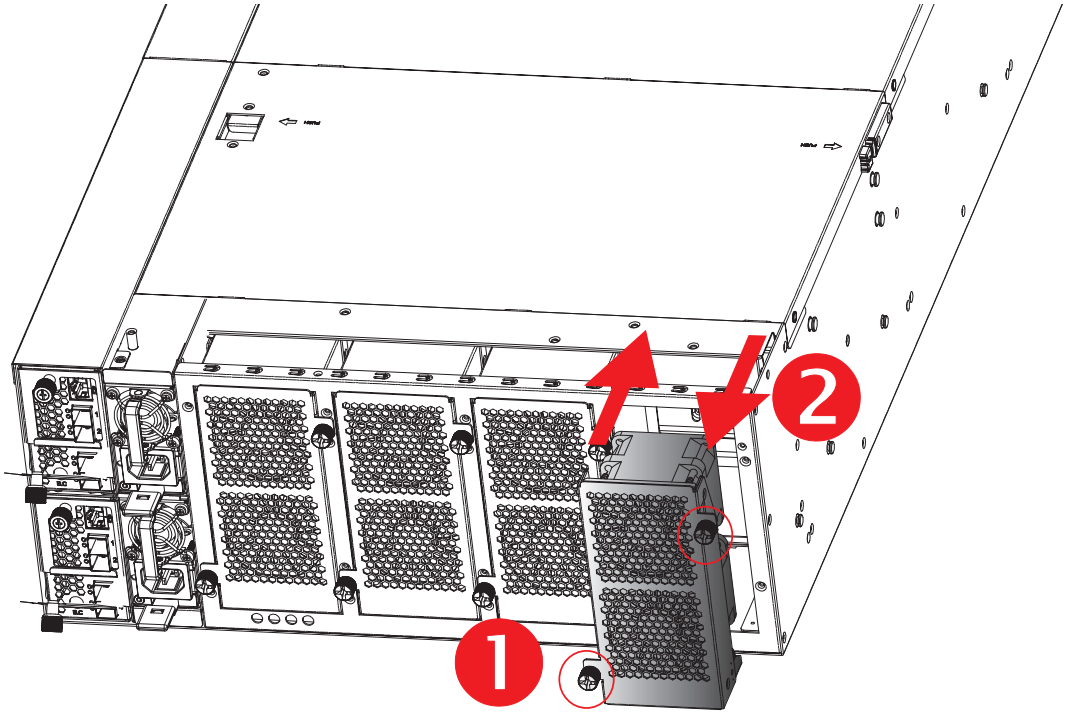
2.4 Fan Module

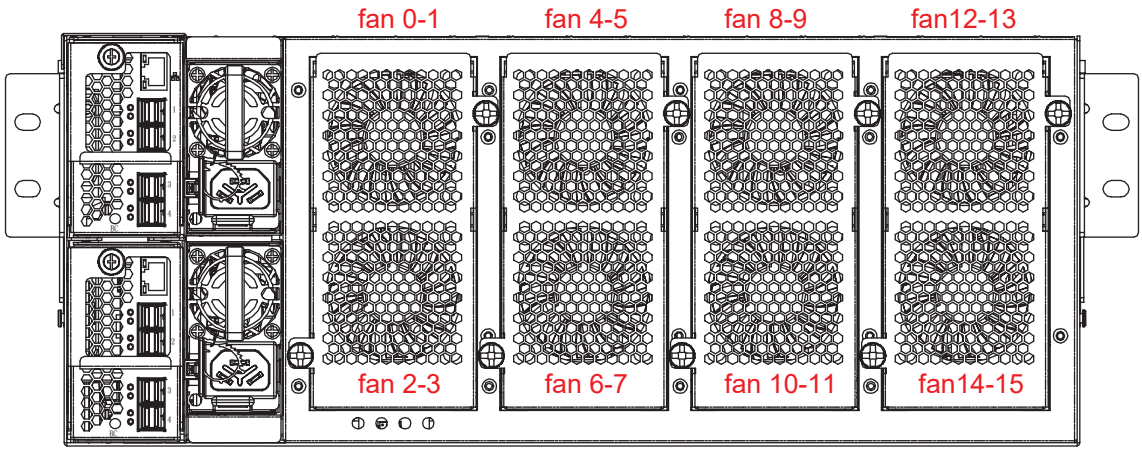
2.4.1 Installing the Fan

Align the fan module with the opening in the enclosure and insert the module into the JBOD.

2.4.2 Removing the Fan

Step 1 Loosen the thumb screws x 2 pcs on the fan module.
Step 2 Pull the fan module from the enclosure.





This information is provided for professional technicians only.

2.5 Expander Module

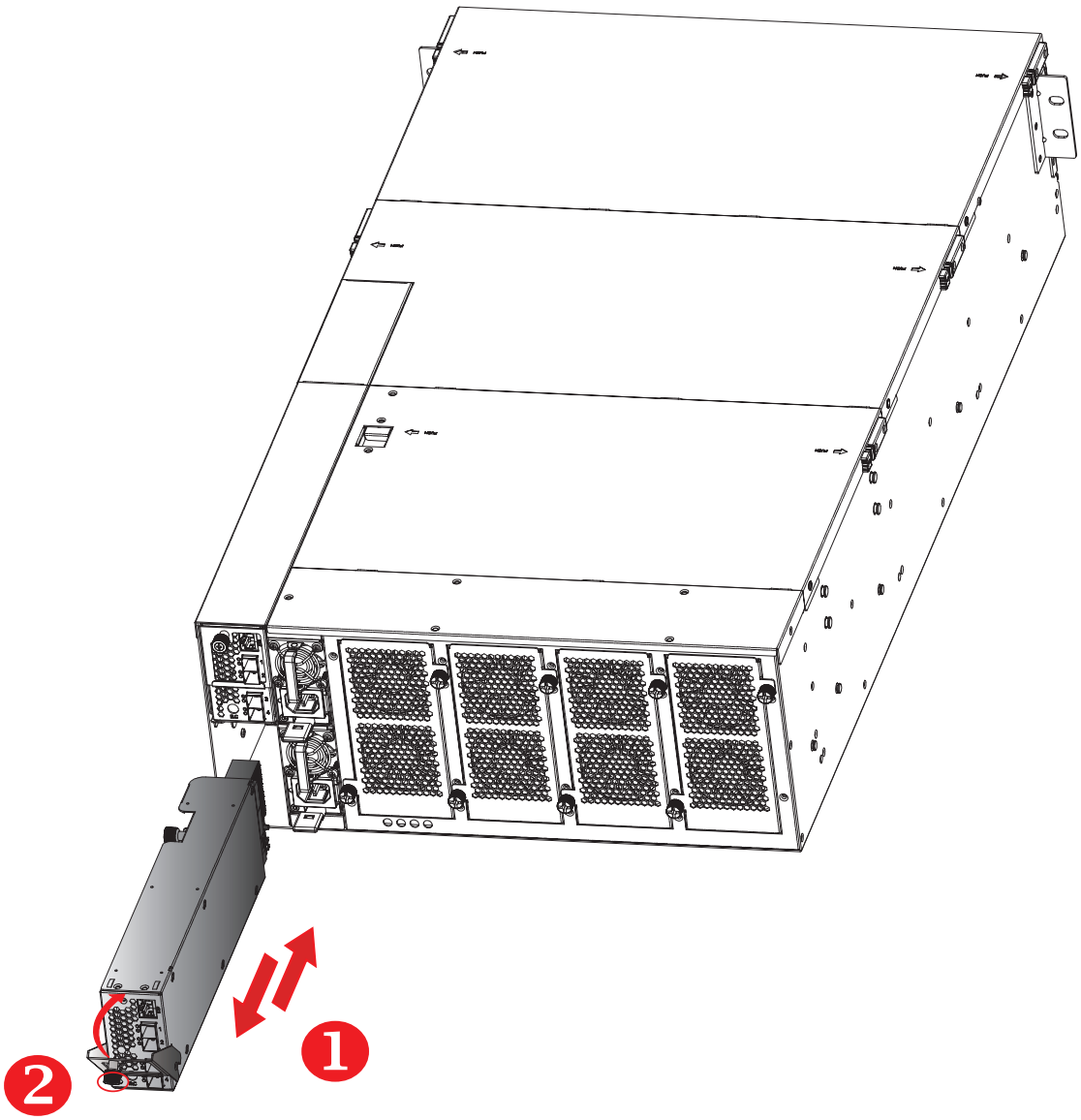
2.5.1 Installing the Expander

Step 1 Align the expander module with the opening in front of the enclosure and insert it into the enclosure.

Step 2 Close the lever and secure the retaining screw.

2.5.2 Removing the Expander

Loosen the screw to remove.



This information is provided for professional technicians only.

2.6 Drive Backplane Module

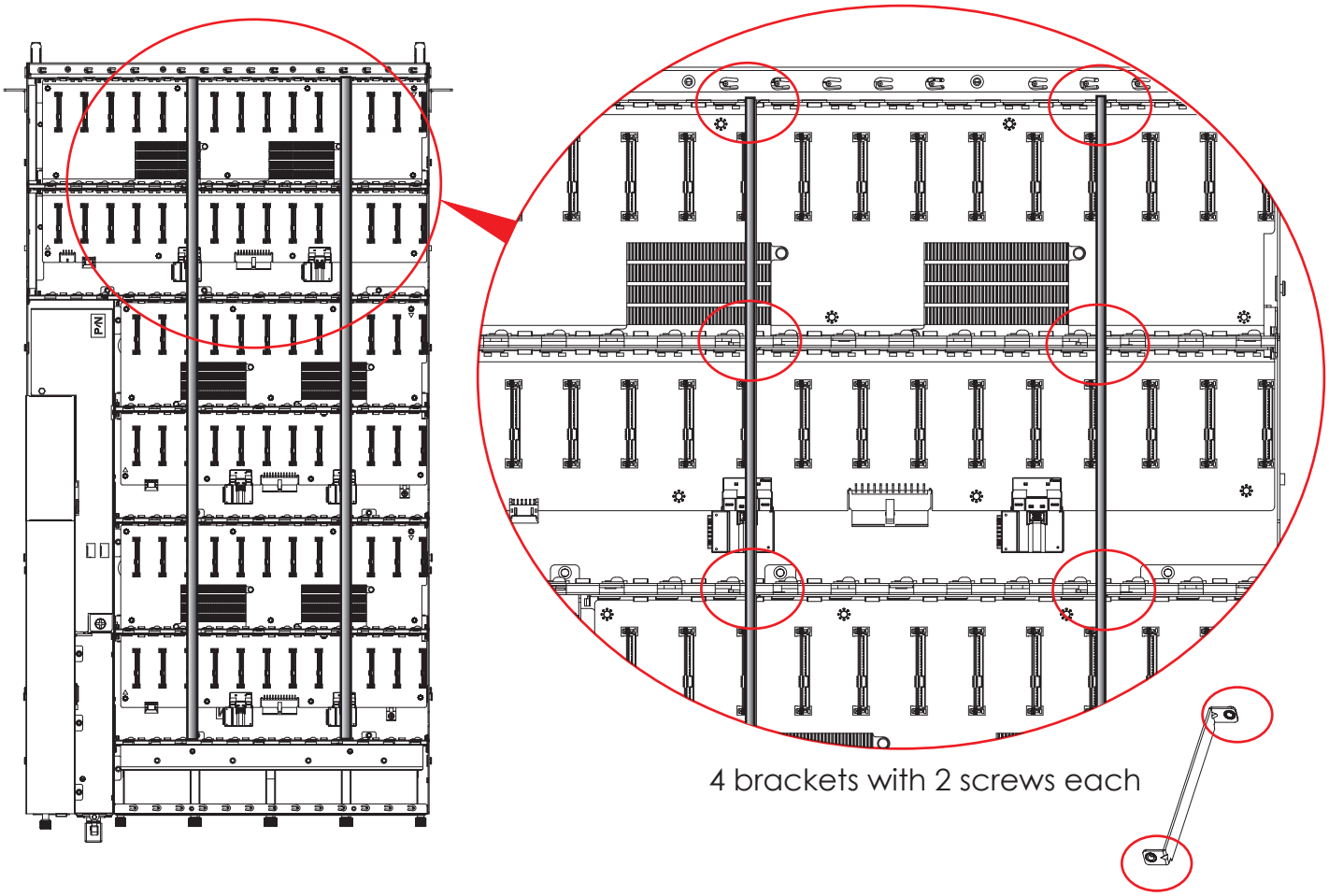
> **NOTE**
> Before you pull out the HDD backplane, your must remove all the HDD trays and cables.

2.6.1 Installing the HDD Backplane

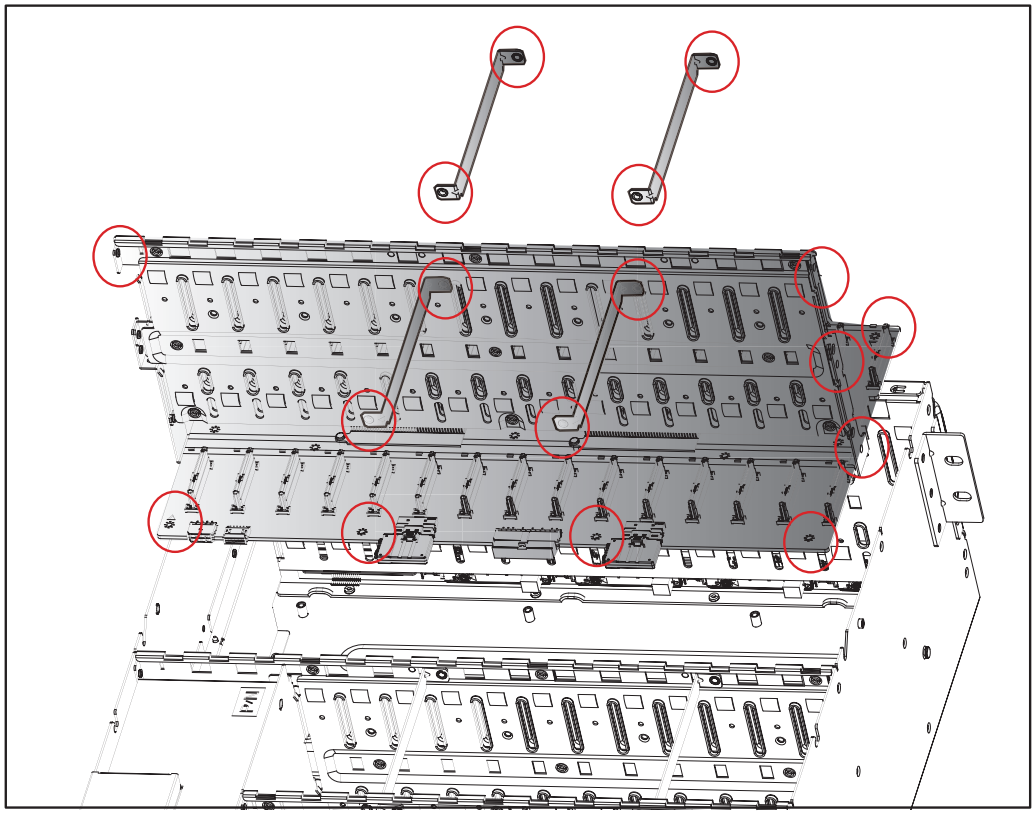
Step 1 Position the HDD backplane module into the chassis and secure the screws x 12 pcs onto the enclosure (8 screws on the HDD backplane, 4 screws on the HDD backplane tray).
Step 2 Position the brackets x 4 on the top of the HDD backplane module and secure the screws x 8 pcs (1 bracket with 2 screws each).
Step 3 Repeat step 1 and step 2 to install the second backplane.

2.6.2 Removing the HDD Backplane

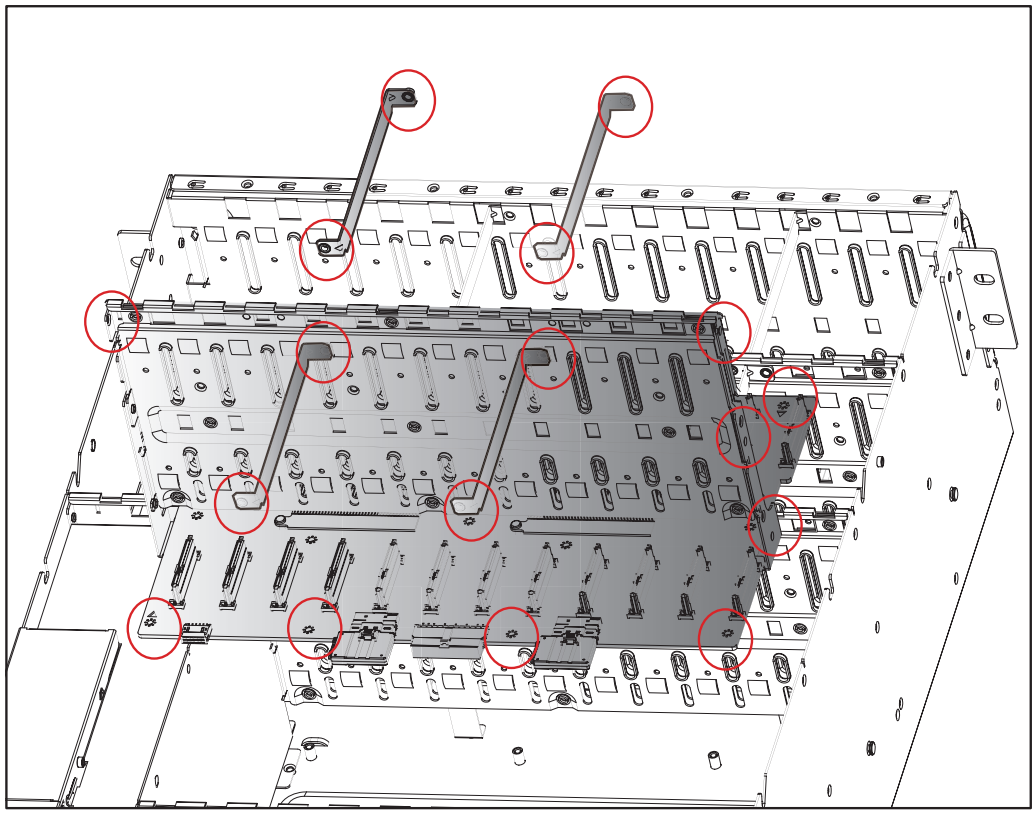
Step 1 Remove the HDD disk trays from the enclosure.
Step 2 Remove the top brackets x 4 from the chassis by removing the screws x 8 pcs (1 bracket with 2 screws each).
Step 3 Remove the screws x 12 pcs on the HDD backplane module (8 screws on the HDD backplane and 4 screws on the HDD backplane tray).
Step 4 Repeat step 1 to 3 to remove the second HDD backplane module.



Bracket and HDD backplane removal



Bracket and second HDD backplane removal



This information is provided for professional technicians only.

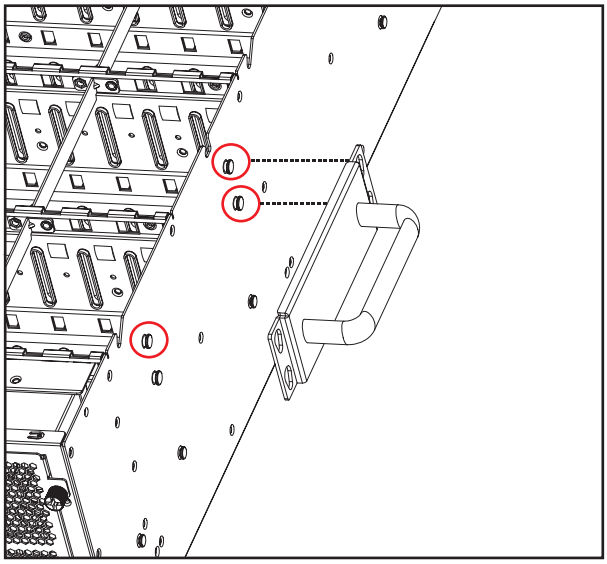
2.7 Rear Handle

2.7.1 Installing the Rear Handle

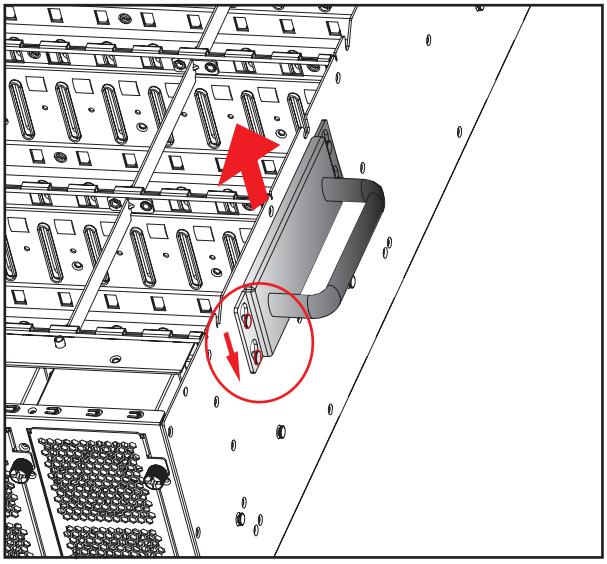
Step 1 Match the locking plate on the handle with the locks on the chassis.

Step 2 Pull the handle upward to lock the handle onto the chassis.

Aligning the handle with the chassis.



Securing the handle.



2.7.2 Removing the Rear Handle

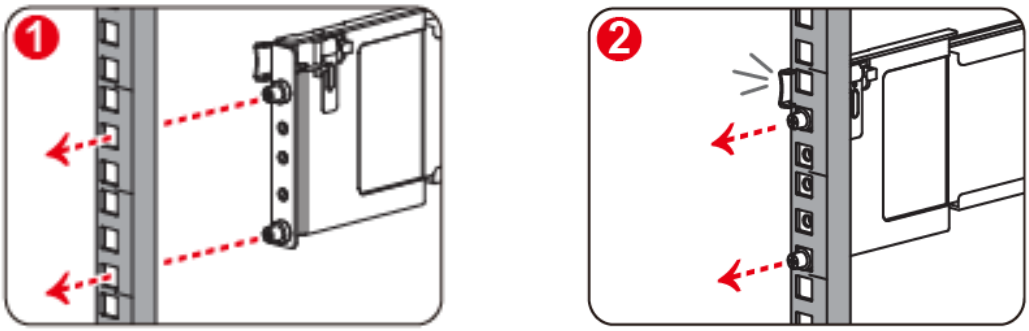
Step 1 Push the handle downward to dismatle the lock from the handle.

Step 2 Remove the handle from the chassis.

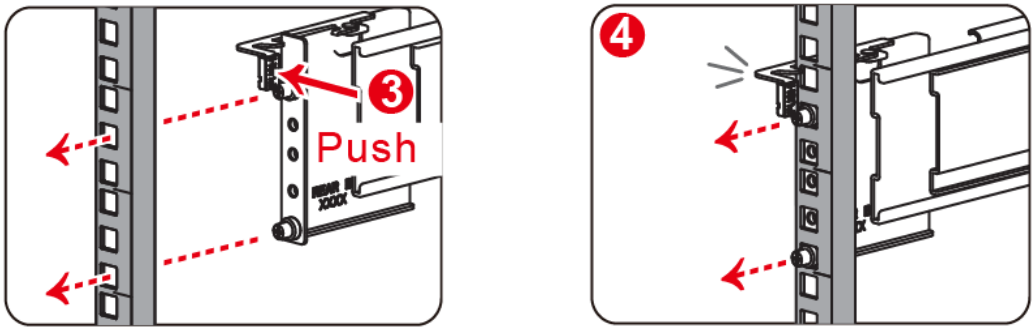
This information is provided for professional technicians only.

2.8 Slide Rail

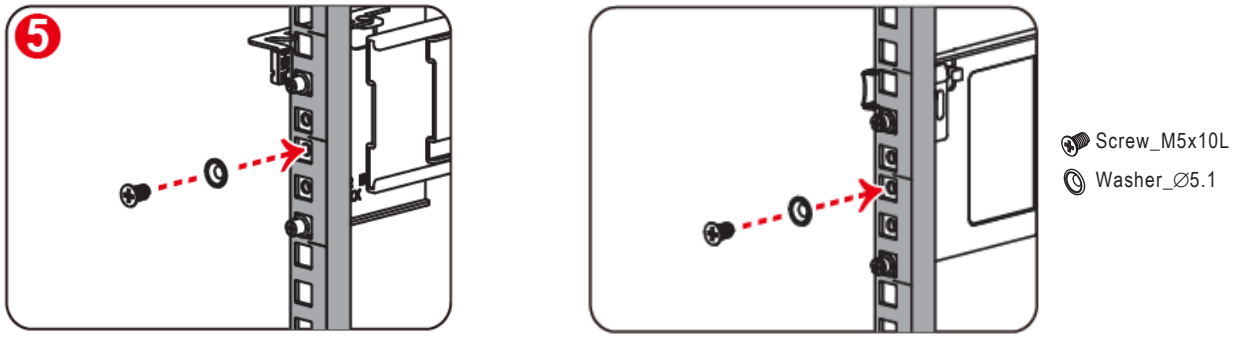
1. Attach the slide rail braket assembly to the rack frame.
   ① Align and attach the front rail bracket to the rack.
   ② Ensure that the latch on the rail is hooked onto the rack.



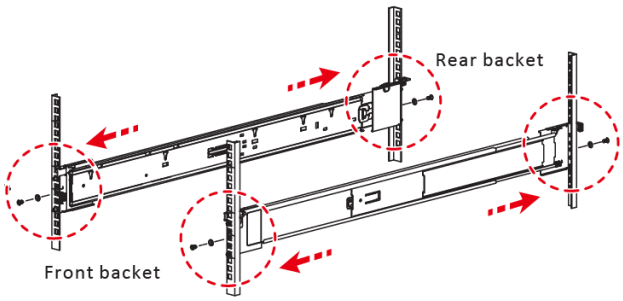
   ③ Align and attach the rear rail braket to the rack by pushing the latch outward. Ensure the latch is hooked onto the rack.
   ④ Ensure that the latch on the rail is hooked onto the rack.



   ⑤ Secure the rail bracket with a washer and screw on both sides of the rail bracket.



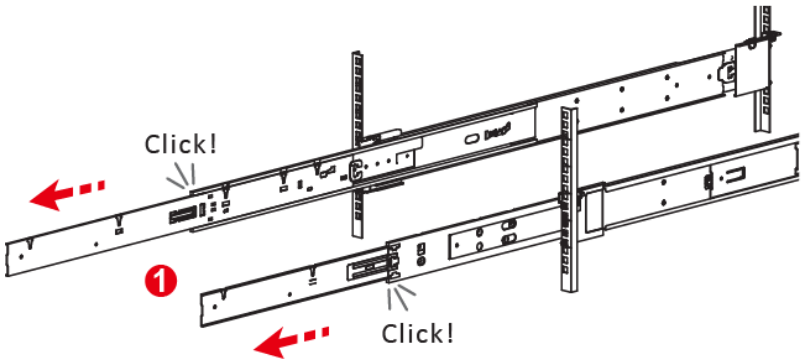
   ⑥ Repeat ① to ⑤ to install the other side of the rack.



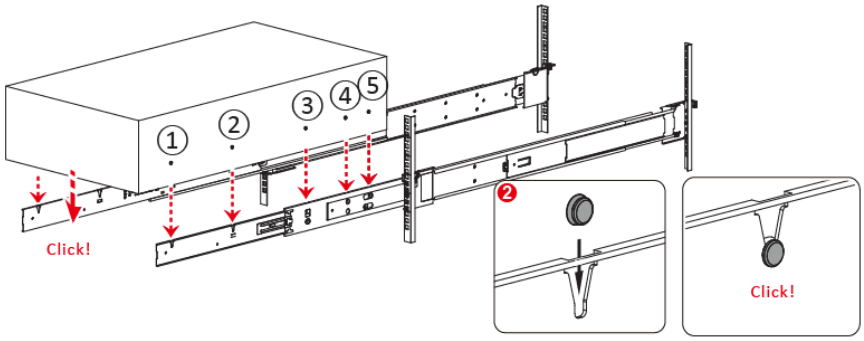
This information is provided for professional technicians only.

2. Attach the chassis onto the rack fram

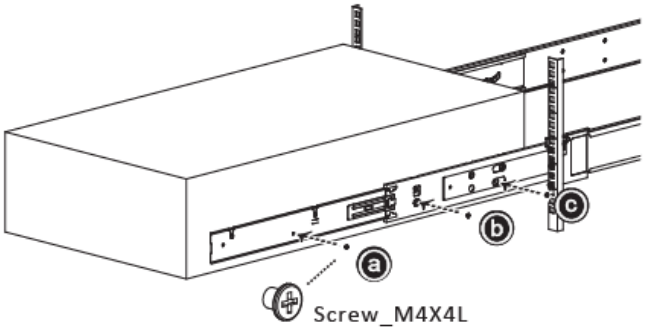
① Pull the inner and middle rail to fully locked position.



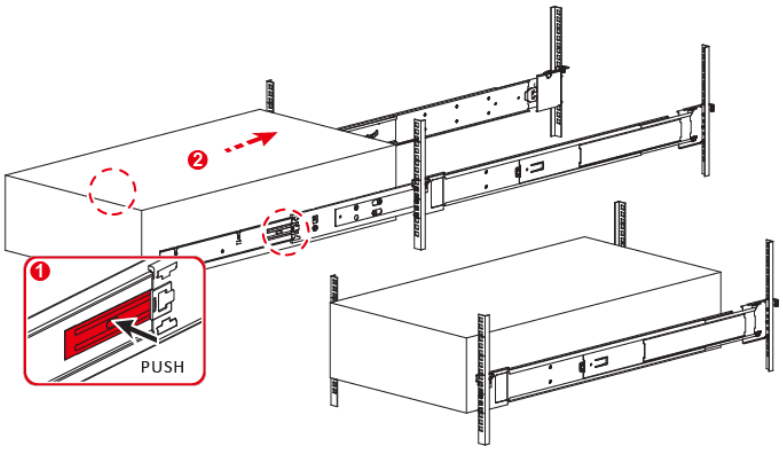
② Position the chassis vertically into the rail. Ensure the standoffs on the chassis slide into the v slots on the rail bracket.



③ Secure the chassis to the rail with screws.



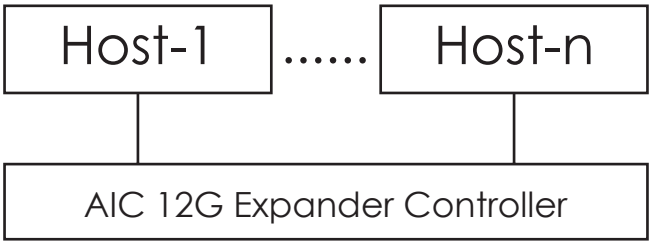
④ Push the release tab on the inner rail and push the chassis into the frame.



Chapter 3 Sub-system Configuration Setup

3.1 Supported Configuration and Unsupported Feature

3.1.1 Supported Configuration



To have multiple host/path 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

Locating a drive via any HBA utility is not supported. Users should send standard SES command to the enclosure (4U78swapHub) to locate a drive.

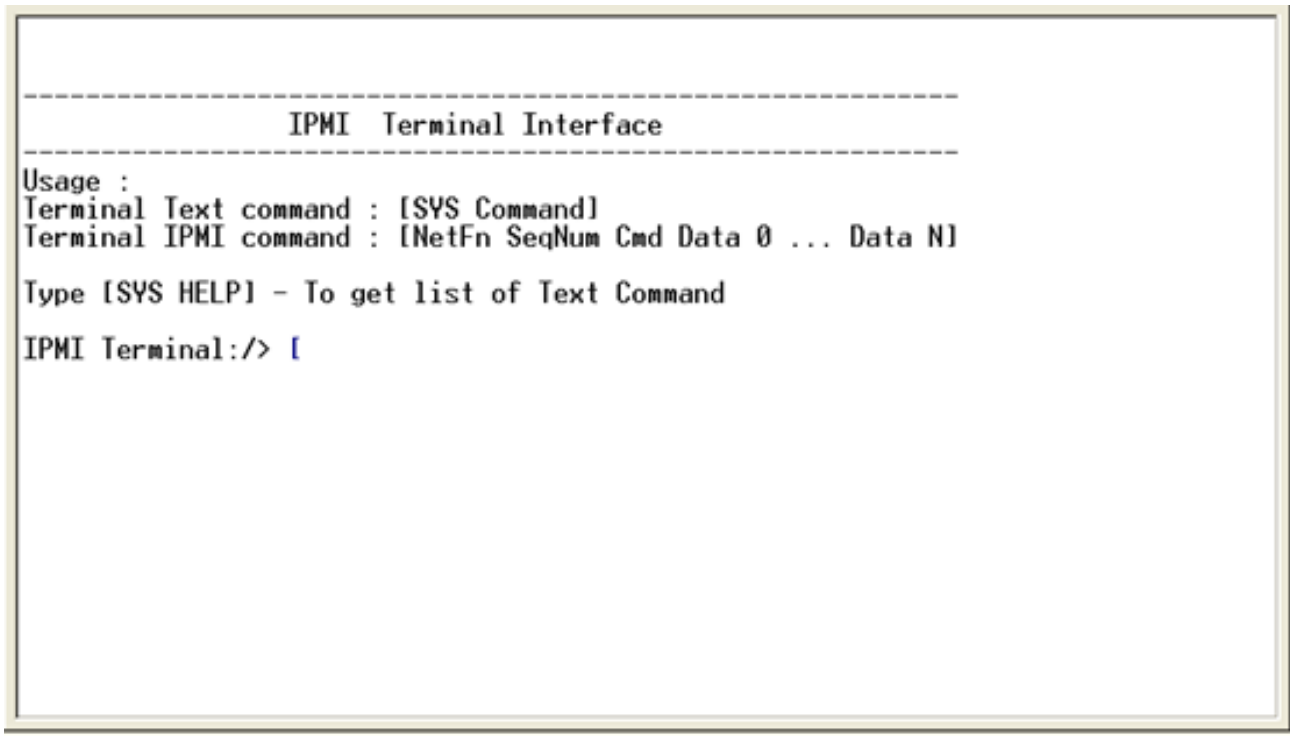
3.1.2 Unsupported Feature

1. Enclosure logical identifier can be changed.
2. Locating a drive via any HBA utility. Users should send standard SES command to locate a drive.
3. The management software MegaRAID Storage Manager with LSI 6G RAID Card is not supported.

Chapter 4. BMC Configuration Settings

4.1 Login

1. Push the “[” key, it will show the IPMI serial interface.



Type command for login the interface.

#[sys pwd –u admin admin]

It will response [OK]

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

2. Find LAN information.

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}

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

```
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]
```

Find LAN static IP /DHCP: 01 is static IP and 02 is DHCP.
The red box represents hexadecimal digits. According to the left figure, the IP is 16*12 + 0 = 192, 16*10 + 8 = 168, 16*5 + 8 = 88, 16*6 + 11 = 107. Therefore, the IP is 192.168.88.107

3. 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 digits is the returned code.

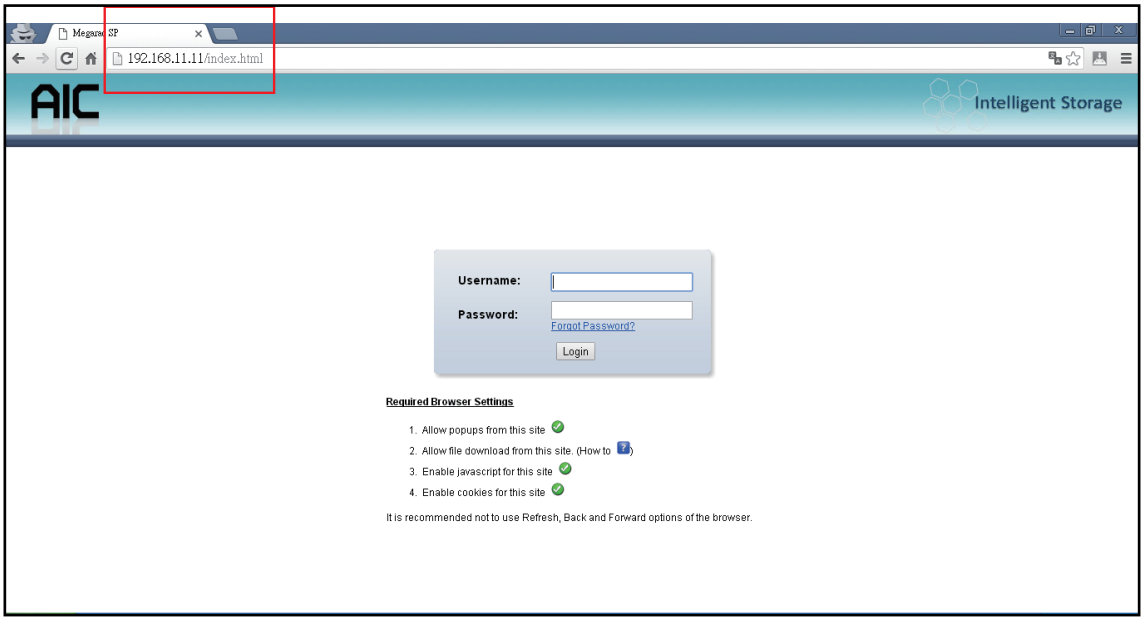
The green digits in the red box is completion code.

00 represents the confirmed code.

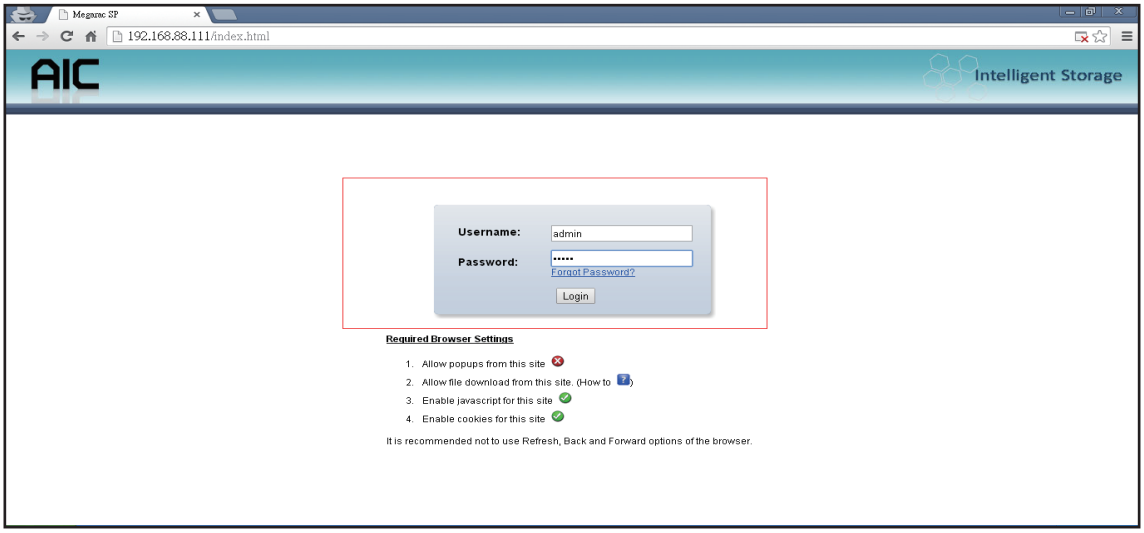
The blue digits are can be configured to any value.

If you want to change the IP address, you must set the **LAN status to static**.

4. Connect to RJ45 port. Set the local host IP to **192.168.11.xx** segment.
5. Open the web browser and enter default IP **http://192.168.11.11** . When the login window appears, set the user name and password to "admin."
6. Click Log In to continue.

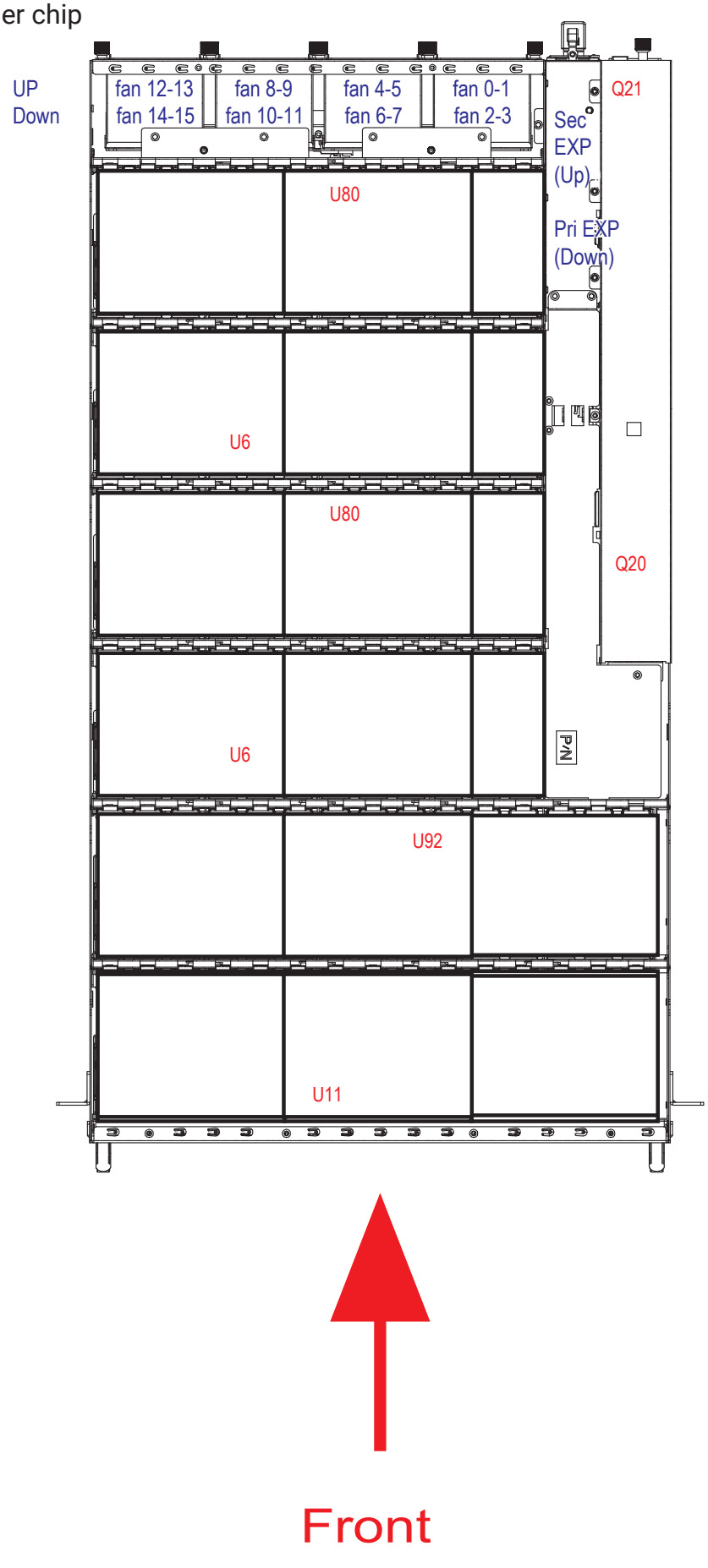


Type the default account and password
Account: admin
Password: admin



4.2 Sensor's Location for Fan and Temperatue

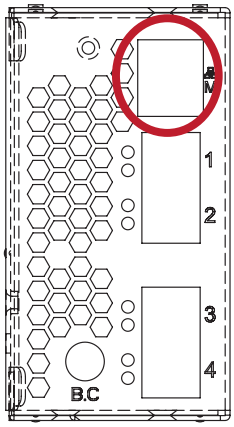
EXP: expander chip



4.3 Expander Setting via Java SOL

Step 1 Plug in the BMC LAN port.

Expander rear panal



Step 2 Log into the BMC interface. Please refer to 4.1 Login.

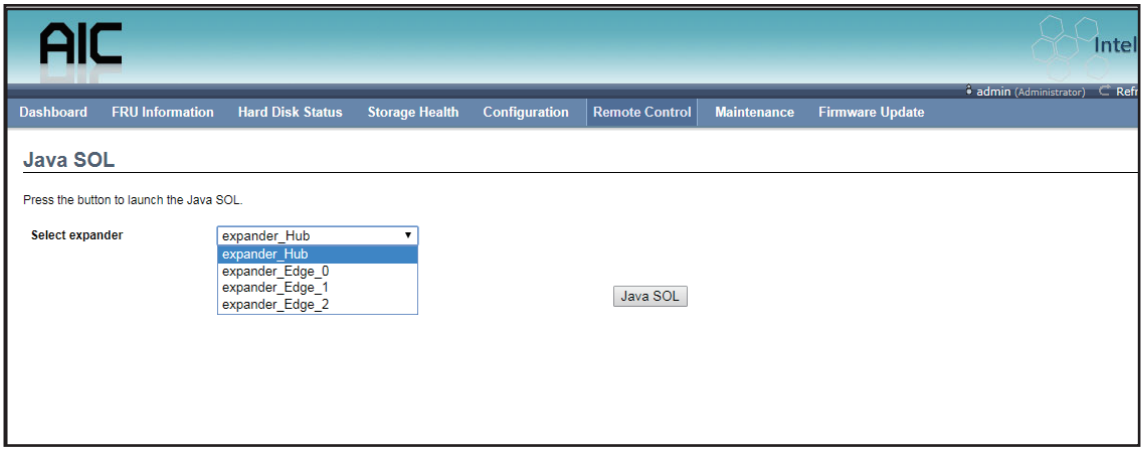
Step 3 Initiate Java SOL. Use one of the methods below to configure the expander setting.

4.3.1 Java SOL

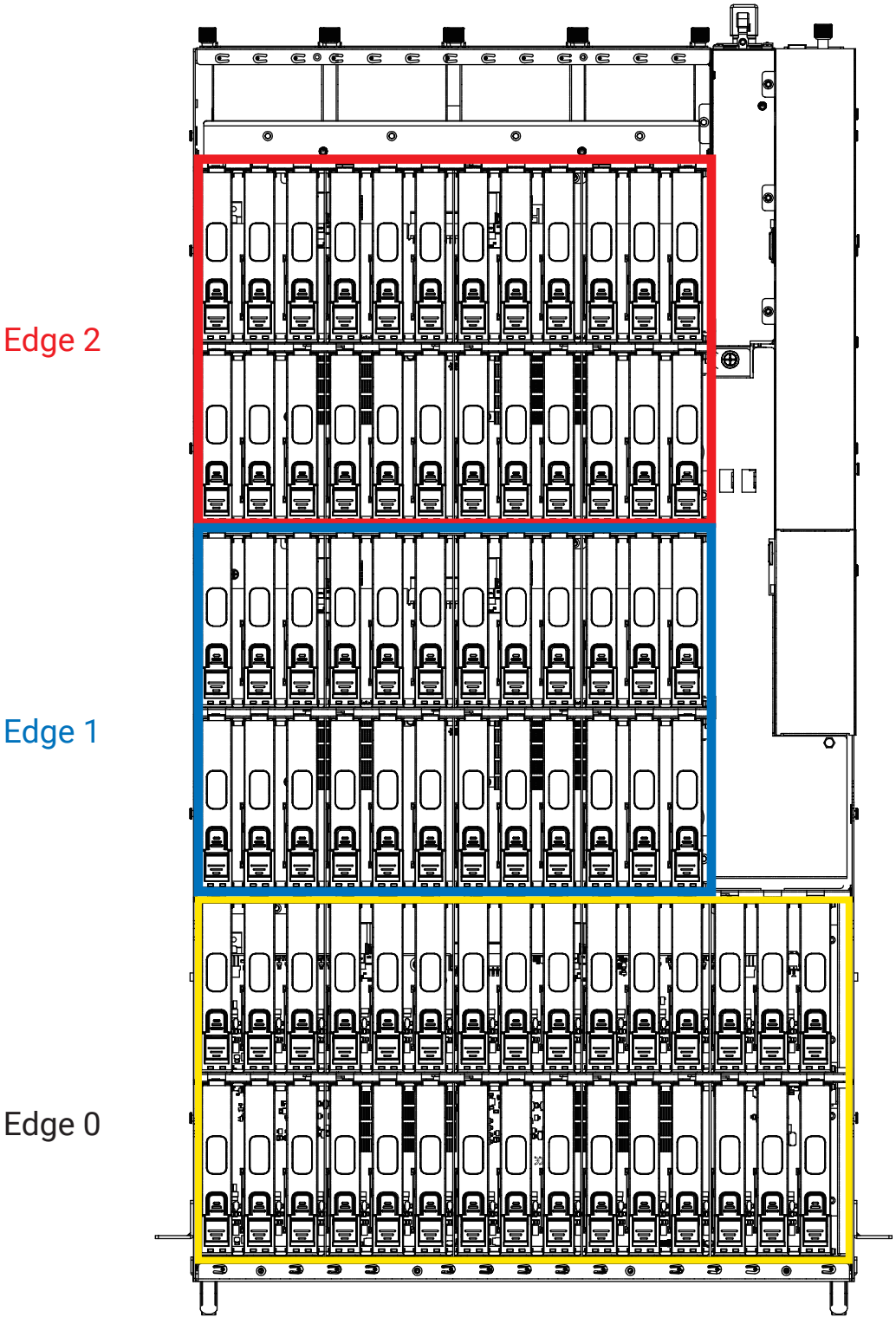
There are two methods to initiate Java Sol.

Method 1

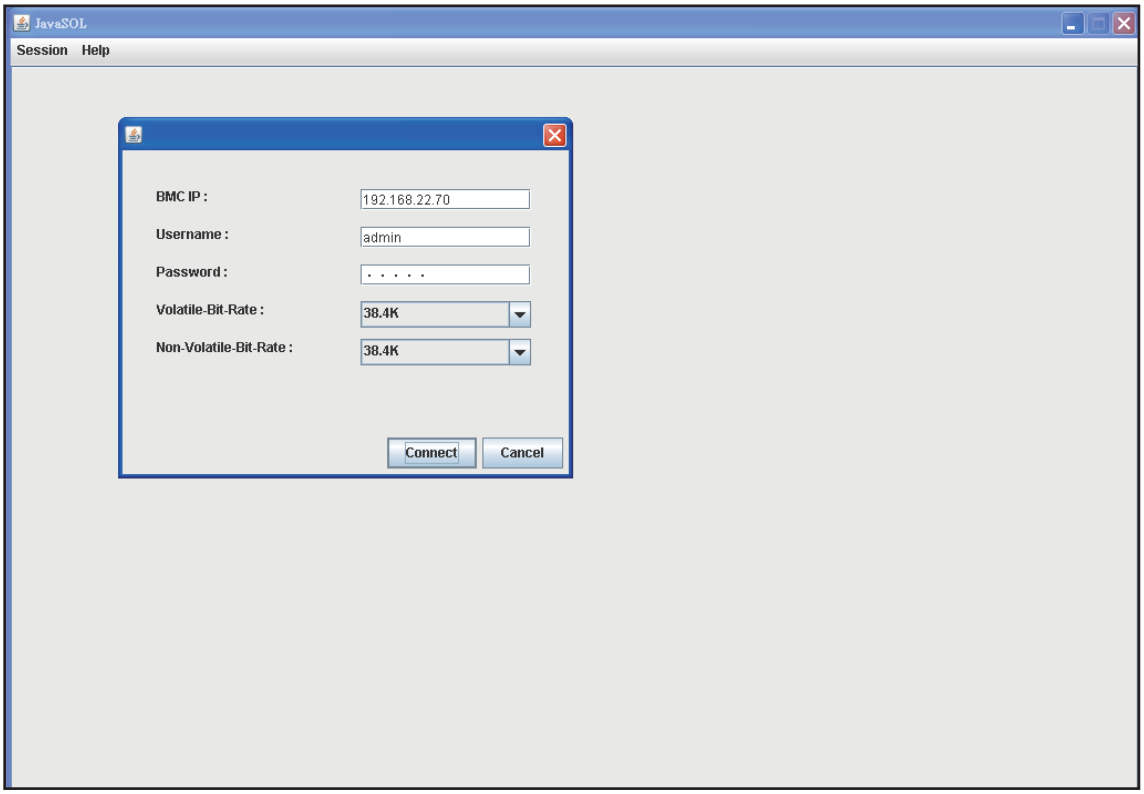
1. Select an expander under **Select expander** and click Java Sol.



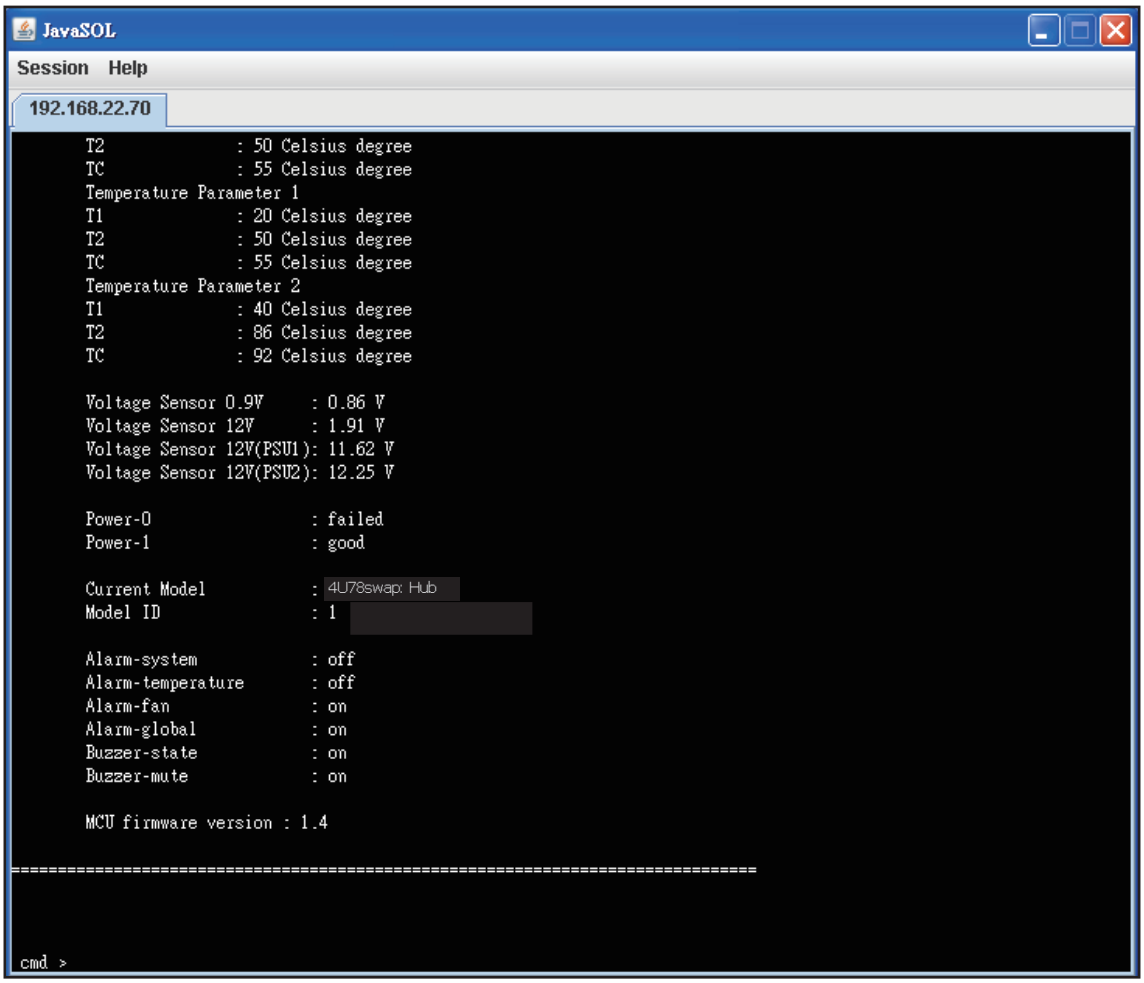
Edge 0, Edge 1, Edge 2 Top View Location



2. Download jsol.jnlp file and proceed to execute the program.
3. Check the warning message option and execute it (If JAVA blocks this action, please set the IP in order to access web site in the JAVA setting.).



4. Input the BMC IP, account, password, and set the baud rate to “38.4."

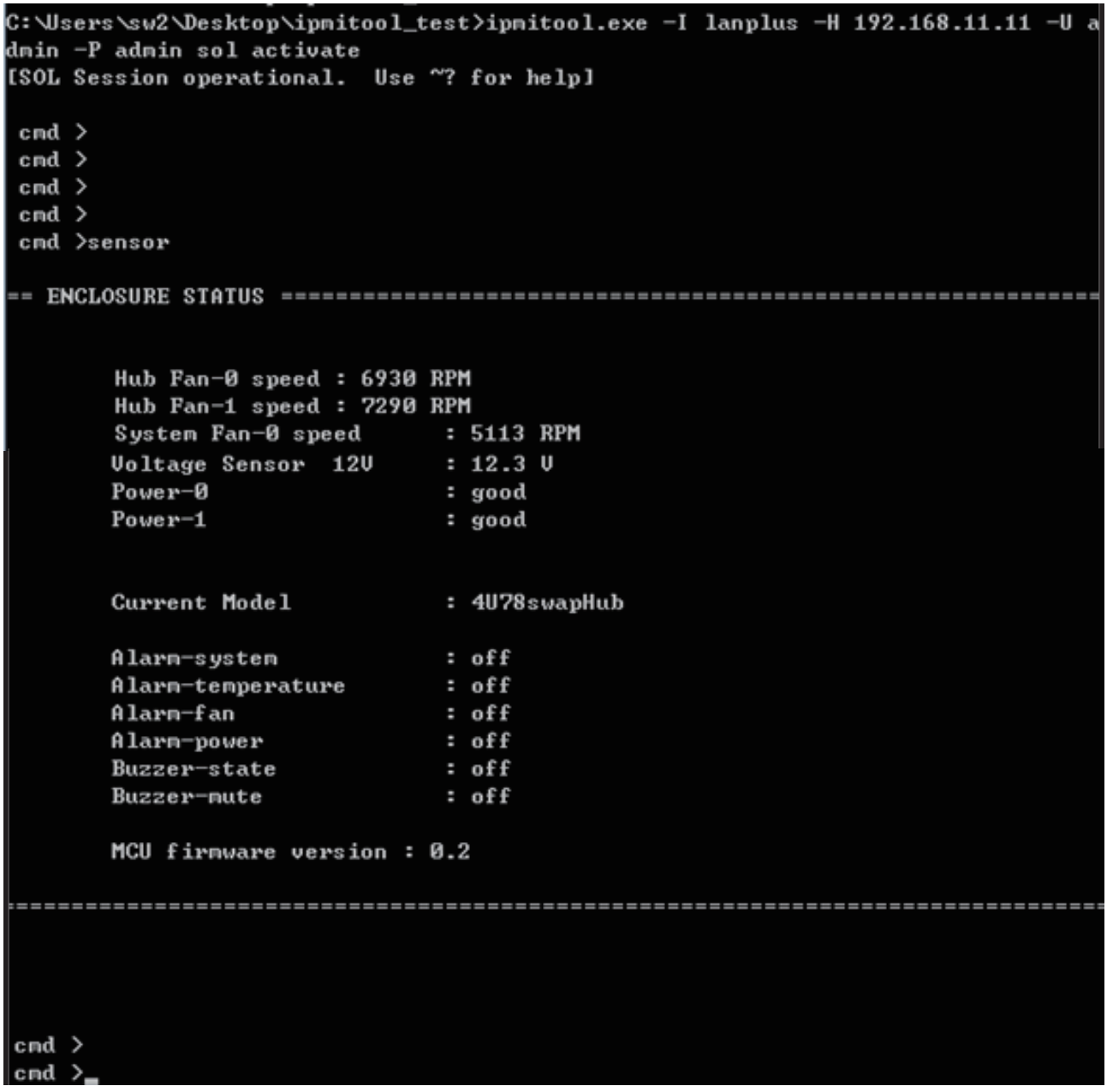


5. Now you can use the expander smart console via BMC SOL.

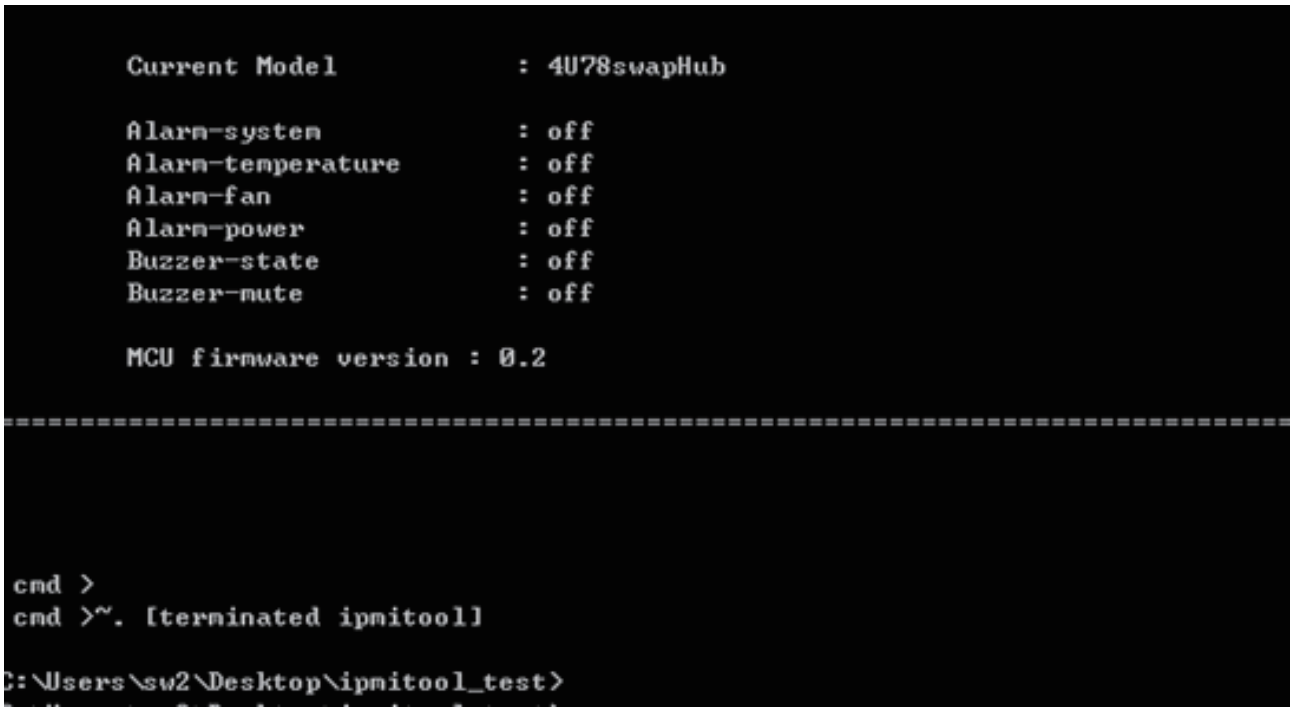
Method 2

1. In addition, you can use ipmitool to start SOL function.

#ipmitool –I lanplus –H <BMC IP> -U admin –P admin sol activate



2. When you need to use SOL, type “~.” to exit this function.



3. If you want switch to another expander, you do not need to close SOL. Use the command below to switch your expander.

SET EXPANDER

NetFN 36

Command Code: 54h

Message	Byte	Data Field
Request	1	Expander select 01h: Hub 02h: Edge_0 03h: Edge_1 04h: Edge_2
Response	1	Completion Code 00h Success CCh Invalid value data

#ipmitool –I lanplus –H <BMC IP> -U admin –P admin raw 0x36 0x54 0x1

4.3.2 Configure Serial Command Line Interface

The RS232 setting - baud rate: 38400 bps, data bits: 8, parity: none, stop bits: 1, flow control: none

4.3.2.1 How to configure T10 zoning

After enabling T10 zoning, five predefined groups are Group1, Group8, Group9, Group10, and Group11. Each PHY should be in one of the five 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 Group9, and vice versa.

The command syntax is "phyzone phy_index group." The following example shows how to setup one drive accessed only by 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 - PHY35 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

4.3.2.2 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

4.3.2.3 How to configure enclosure address (HUB only)

(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

4.3.2.4 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

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

4.3.2.5 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

4.3.2.6 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.

cmd> check_wide_port standby
cmd> reset

4.3.2.7 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

4.3.2.8 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."

NOTE
This feature will be over-written by Hub MFG since Hub firmware 1.12.48.61.

(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

4.3.2.9 How to configure zone count

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

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

Remove the SAS cable between the HBA/RAID card and the 4U78swap before configuring zone count. Power the 4U78swap swap off after configuring zone count. Power on the 4U78swap, and then insert the SAS cable.

Three zone configurations supported are one zone, 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.

(A) Get current zone count
cmd> zonecount
Zone Count 1

(B) Set zone count = 2
cmd> zonecount 2
Succeeded to set zone count 2

(C) Predefined zones

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

HUB:

Zone #	1
Wideport	1, 2, 3, 4

EDGE:

Zone #	1
Slot	1~78

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

HUB:

Zone #	1	2
Wideport	1, 2	3, 4

EDGE:

Zone #	1	2
Slot	1~39	40~78

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

HUB:

Zone #	1	2	3	4
Wideport	1	2	3	4

EDGE:

Zone #	1	2	3	4
Slot	1~20	21~40	41~60	61~78

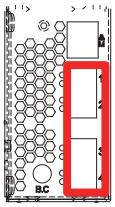
Zone Count

Zone count 1:

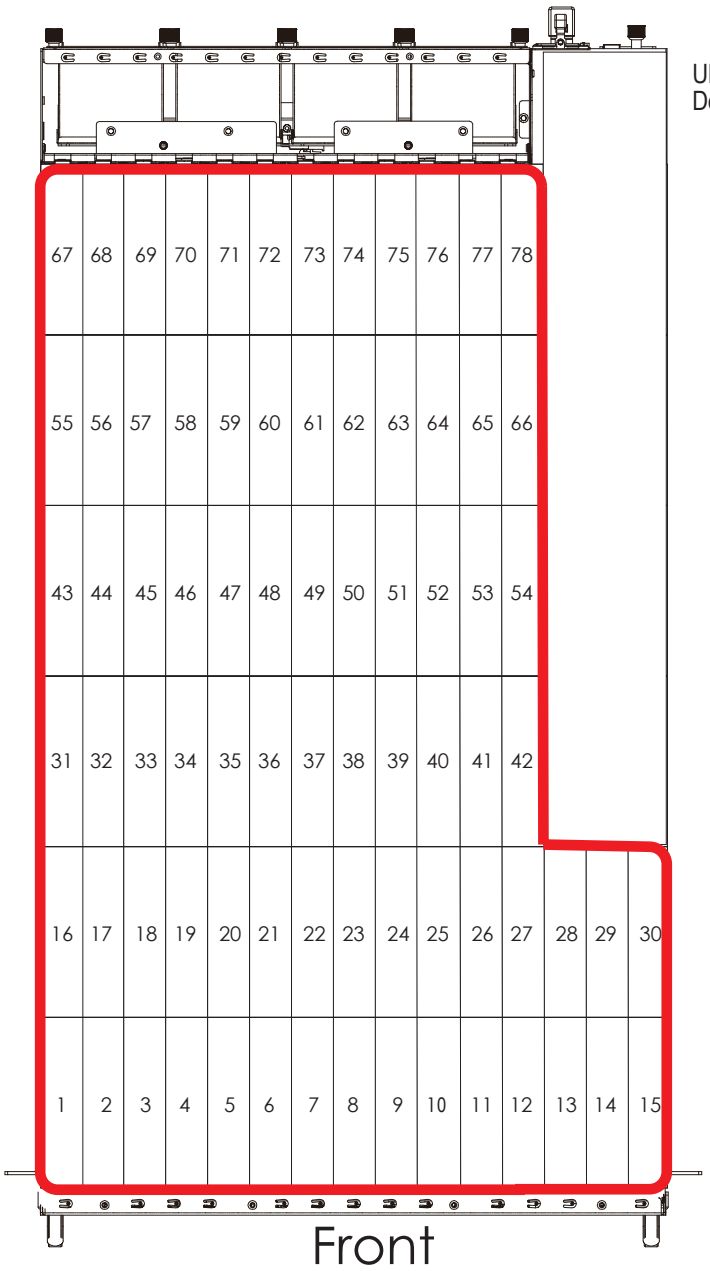
78 drives per zone. All SFF-8644 ports and drives are at the same zone group.

SEE FIGURE BELOW.

Expander rear panel

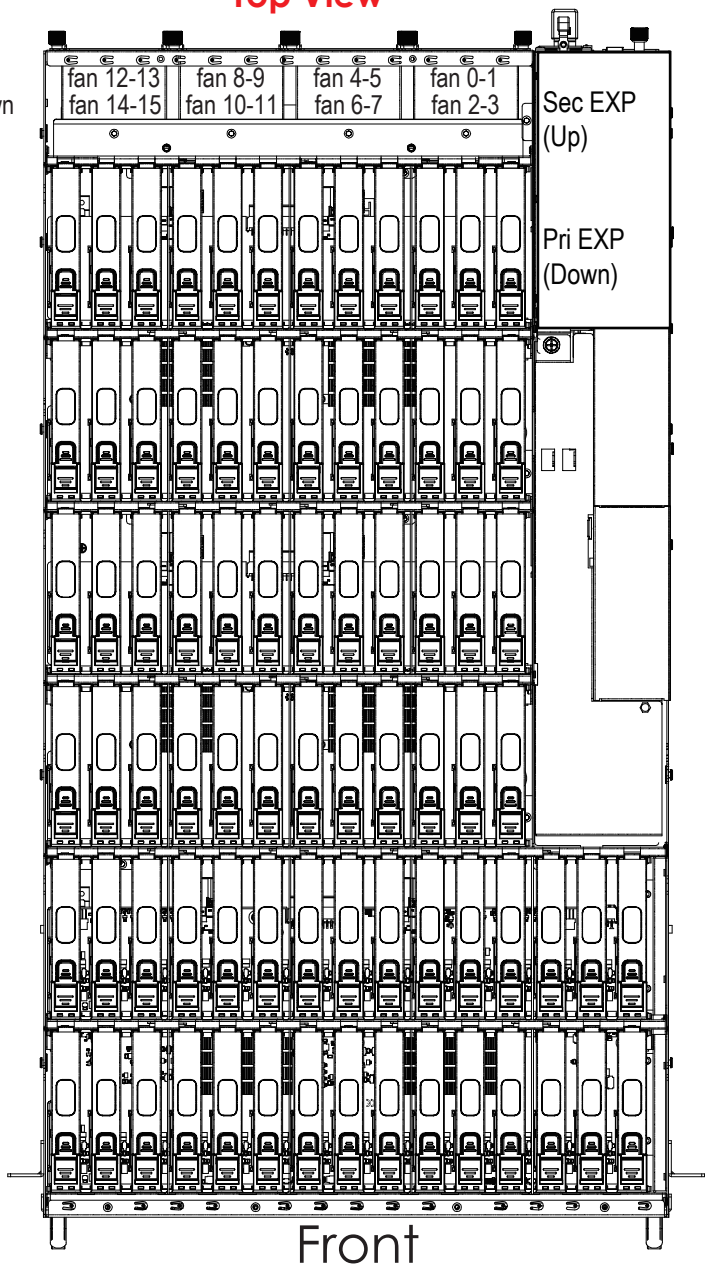


Group 1



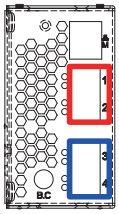
UP
Down

Top View



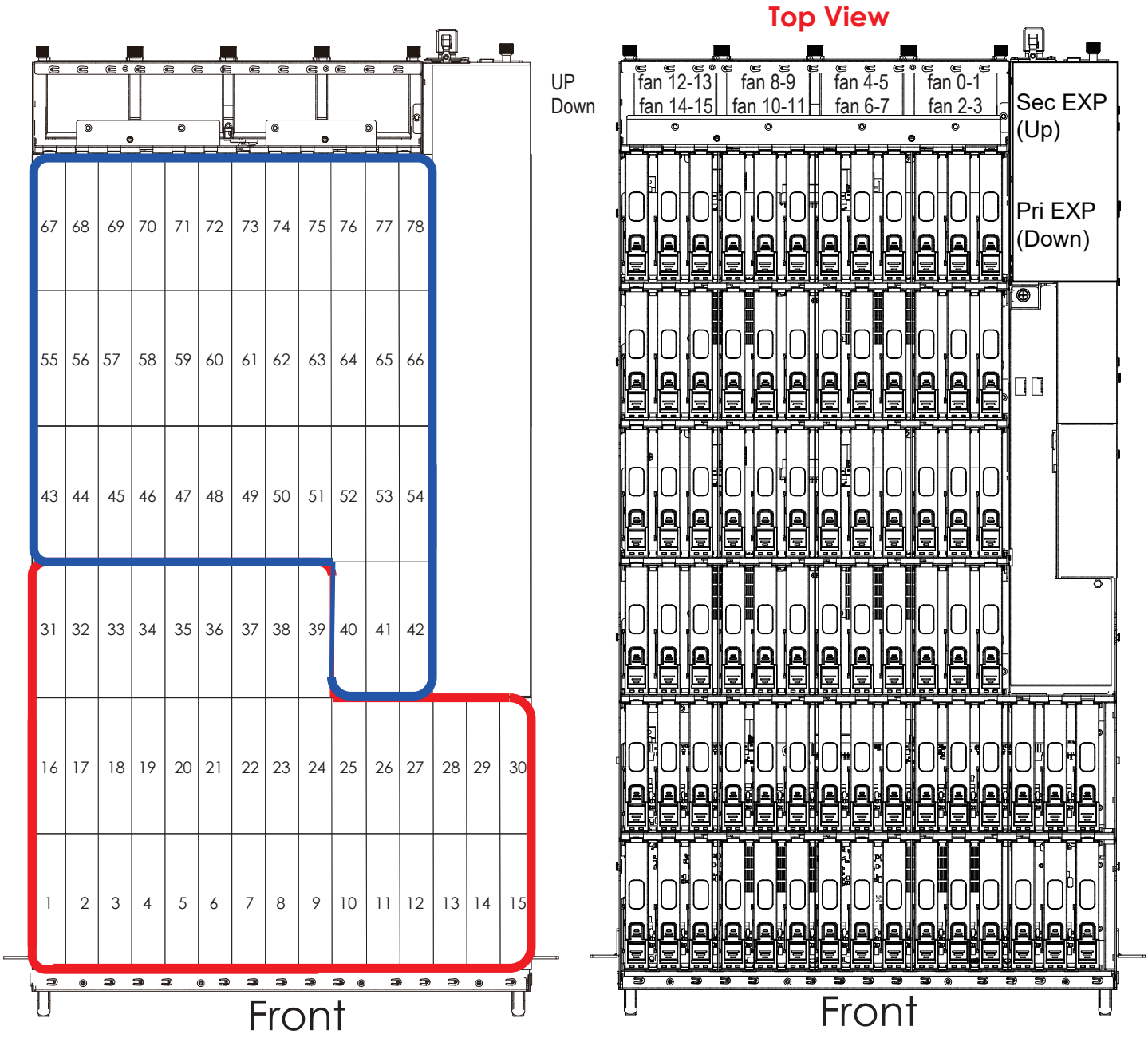
Zone count 2:
39 drives per zone. Port 1 & 2 is in zone group 1. Port 3 & 4 is in zone group 2.
SEE FIGURE BELOW.

Expander rear panel



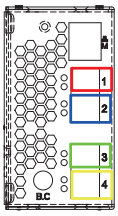
Group 1

Group 2

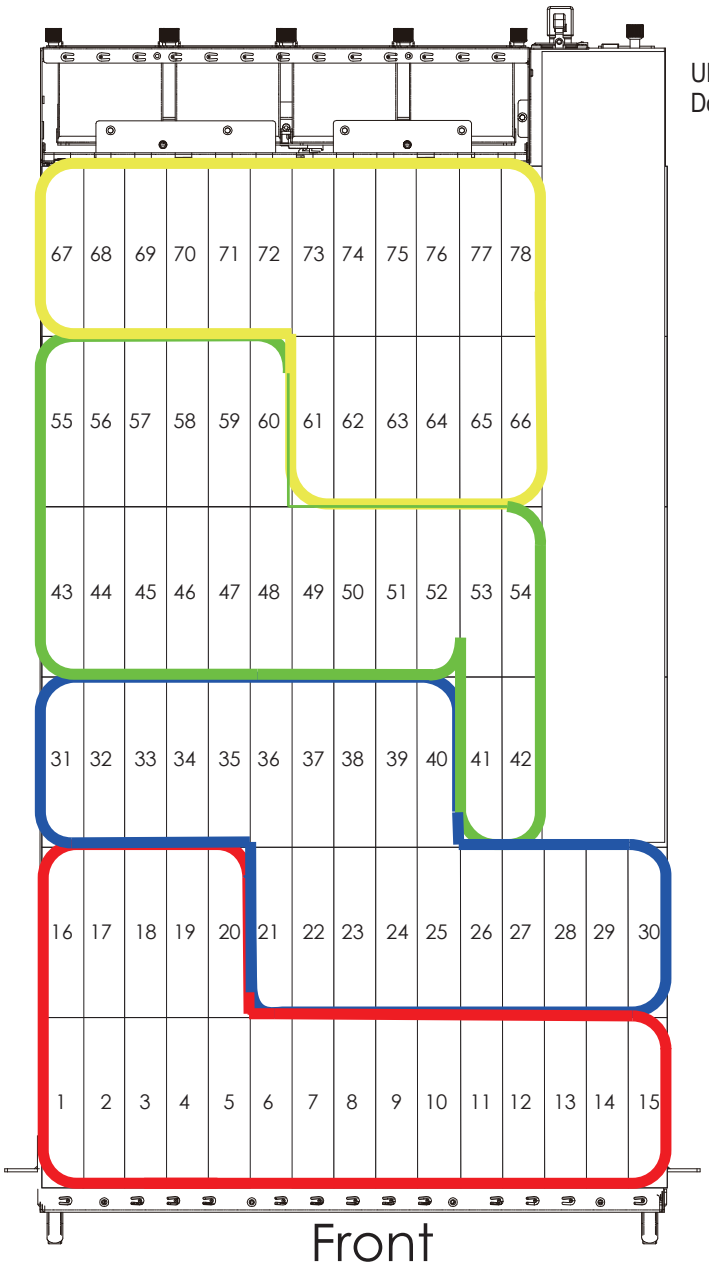


Zone count 4:
20 drives per zone. Port 1 is in at zone group 1. Port 2 is in zone group 2. Port 3 is in zone group 3. Port 4 is at zone group 4.
SEE FIGURE BELOW.

Expander rear panel

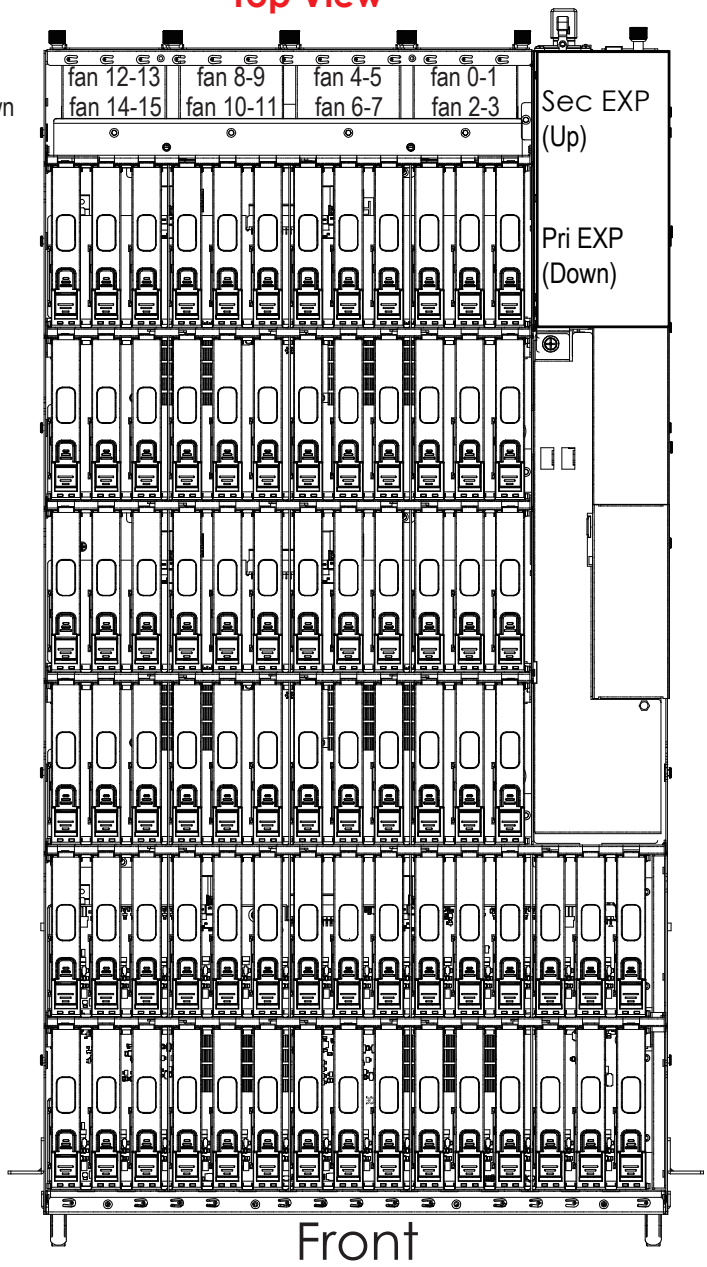


Group 1
Group 2
Group 3
Group 4



UP
Down

Top View



4.3.2.10 How to configure zoning of the wide port (HUB only)

After enabling T10 zoning, five predefined groups are Group1, Group8, Group9, Group10, and Group11.

(A) Get current zoning of wide port 1
    cmd> zone_port 1
    Wideport 01 for Zone Group 01

(B) Set wideport 1 as Zone Group 8
    cmd> zone_port 1 8
    Succeeded to set zone group for the phy

4.3.2.11 How to configure zoning of the disk slot (EDGE only)

After enabling T10 zoning, five predefined groups are Group1, Group8, Group9, Group10, and Group11.

(A) Get current zoning of Disk Slot 10
    cmd> zone_slot 10
    Slot 10 for Zone Group 1.
(B) Set Disk Slot 10 as Zone Group 8
    cmd> zone_slot 10 8
    Succeeded to set zone group for the phy

4.3.3 SES Inband Features

To ensure proper function, high performance, and durability, J4078-01-35X has implemented SCSI Enclosure Services to monitor the status of power supply, system cooling fan, and working temperature. It also has 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

4.3.3.1 SES Pages

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
83h – SES Vendor specific page : Canister Number

4.3.3.2 SES Elements

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

4.3.3.3 Implementation on SES Pages

SES String In Page
Get PMBUS information with String In Page.

String In Format

BYTE/BIT	7	6	5	4	3	2	1	0
0	I2C congestion (0: no congestion, 1: congestion or failure)							
1	PSU Module1 STATUS_WORD							
2								
3	PSU Module2 STATUS_WORD							
4								
5-14	Reserved (0xFF)							

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 status 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							

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							

4.3.3.4 Implementation on SES Elements

Only the fields highlighted in green are supported.

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

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								
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.

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

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
POWER CYCLE REQUEST	Please refer to section “SES Element Control Functions” for details.
POWER CYCLE DELAY	Please refer to section “SES Element Control Functions” for details.
POWER OFF DURATION	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
TIME UNTIL POWER CYCLE	The time until the enclosure's power is scheduled to be off. 0: No Power cycle scheduled, 1~60: The enclosure is scheduled to begin a power cycle after the indicated number of minutes. 63: The enclosure is scheduled to begin a power cycle after zero minute.

REQUEST POWER OFF DURATION	The time that power is scheduled to keep off when power is cycled. 0: (i) No power cycle is scheduled or (ii) It is scheduled to be kept off for 10 seconds. 1~60: Power is scheduled to be kept off for the indicated number of minutes. 63: Power is scheduled to be kept off until manually restored.
FAILURE REQUESTED	Set by the REQUEST FAILURE on Enclosure Control Element
WARNING REQUESTED	Set by the REQUEST WARNING on Enclosure Control Element.

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
WARN OVER	Voltage has exceeded the warning high threshold value
WARN UNDER	Voltage is below the warning low threshold value
CRIT OVER	Voltage has exceeded the failure high threshold value
CRIT UNDER	Voltage is below the failure low threshold value
VOLTAGE	Voltage reading

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	Reserved0			
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 2	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved 1
3	Reserved 5	Reserved 4	RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved3	

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.
Reserved2	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.
Reserved5	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

4.3.3.5 SES Element Control Functions

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	Reserved0			
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 2	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved 1
3	Reserved 5	Reserved 4	RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved 3	

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 0.5Hz 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

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	Reserved0			
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 2	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved 1
3	Reserved 5	Reserved 4	RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved3	

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     4U78swapEdge       0c31
```

(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 the RAID card limitation

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 “PowerSupply00” or “PowerSupply01” 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 4U78swapHub       0c30
```

(B) Power off the entire enclosure

```
$ sg_ses --descriptor=PowerSupply00 --clear=3:5:1 /dev/sg2
```

How to enable/disable the enclosure power cycle by your software

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	POWER CYCLE REQUEST	POWER CYCLE DELAY						
3	POWER OFF DURATION						REQUEST FAILURE	REQUEST WARNING

The "POWER CYCLE REQUEST", “POWER CYCLE DELAY” and “POWER OFF DURATION” for Enclosure are defined in the bit7~6, byte2, bit5~0, byte2 and bit7~2, byte3 of the "Enclosure control element" in the SES specification. Set “POWER CYCLE REQUEST” as 01b to begin a power cycle in minutes set by “POWER CYCLE DELAY” (1~60 minutes, 0 for beginning power cycle immediately) and keep off for minutes set by “POWER OFF DURATION” (set 1~60 minutes, 0 for 10 seconds and 63 for keeping off). A request to begin a power cycle while a previous request is still active should override the previous request. Set
“POWER CYCLE REQUEST” as 10b to cancel any scheduled power cycle.

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

```
$ sg_map -i

/dev/sg2    AIC      12G 4U78swapHub       0c30
```

(B) Request to begin a power cycle (POWER CYCLE REQUEST = 01b) after 10 minutes (POWER CYCLE DELAY = 10 = 0Ah) and keep off for 3 minutes (POWER OFF DURATION =3):

```
sg_ses --descriptor=EnclosureElement00 --set=2:7:14=0x1283 /dev/sg2
```

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     4U78swapHub       0c30
```

(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
```

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 the first Cooling element of each type (HUB fans and System fans) 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 4U78swapHub 0c30

(B) Set "RQST IDENT" of the first Cooling element to disable the smart fan function
“HubCoolingElement00” is the first cooling element for the HUB / motherboard, and “SysCoolingElement00” is the first cooling element for the HDDs / backplane. Here we take “SysCoolingElement00” as example.
$ sg_ses --descriptor= SysCoolingElement00 --set=1:7:1 /dev/sg2

(C) Set "REQUESTED SPEED CODE" of SysCoolingElement00 to change PWM or fan speed for all Cooling elements. Set "REQUESTED SPEED CODE"=7 (100% PWM) for example.
$ sg_ses --descriptor= SysCoolingElement00 --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

How to update firmware / MFG for the Edge expanders

Enclosure control element

BYTE/BIT	7	6	5	4	3	2	1	0
0	COMMON CONTROL							
	SELECT	PRDFAIL	DISABLE	RST SWAP	Reserved0			
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 2	RQST MISSING	RQST INSERT	RQST REMOVE	RQST IDENT	Reserved 1
3	Reserved 5	Reserved 4	RQST FAULT	DEVICE OFF	ENABLE BYP A	ENABLE BYP B	Reserved3	

The edges are hidden behind the hub, so please follow the steps below to update firmware and MFG of the Edge0 via inband SAS. The same steps can be applied to all the other edges. We use the software package "sg3_utils" and LSI utility “g3Xflash” 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
```
$ sg_map -i
/dev/sg2    AIC      12G 4U78swapHub       0c30
```

(B) Set "Reserved2" of Disk001 to make the Edge0 visible.
Disk001 for Edge0, Disk031 for Edge1 and Disk055 for Edge2.
```
$ sg_ses --descriptor=Disk001 --set=2:5:1 /dev/sg1
```

(C) Get SAS address for the Hub. The SAS address (500605B0:000272BF) is used for the Hub.
```
$./g3Xflash -i get avail
```

(D) Reset the Hub to have an additional device: Edge0 in Linux
```
$./g3Xflash -i 500605b0000272bf reset exp
```

(E) Show the devices for the Hub and the Edge0
$ sg_map -i

/dev/sg1 AIC 12G 4U78swapHub 0c30
/dev/sg2 AIC 12G 4U78swapEdge0 0c31

(F) Update firmware of the Edge0
$ sg_write_buffer --id=0x0 --in=<firmware filename> --mode=0x2 --offset=0 /dev/sg2

(G) Update MFG of the Edge0
$ sg_write_buffer --id=0x83 --in=<MFG filename> --mode=0x2 --offset=0 /dev/sg2

(H) Get SAS address of Edge0. The SAS address (50015B20:9000EBBF) is used for the Edge0.
$ ./g3Xflash –i get avail

(I) Reset the Edge0 to activate its new firmware / MFG.
$./g3Xflash -i 50015b209000ebbf reset exp

(J) Get the current firmware version of the Edge0 for confirmation.
$./g3Xflash -i 50015b209000ebbf get ver

(K) Set "Reserved5" of Disk001 to make the Edge0 invisible
$ sg_ses --descriptor=Disk001 --set=3:7:1 /dev/sg1

(L) Reset the Hub to refresh the change of the Edge0 in Linux
$./g3Xflash -i 500605b0000272bf reset exp

4.3.4 Reading Phy Counters via Java Sol

1. Initiate SOL function in BMC.

```
D:\ipmitool_test>ipmitool.exe -I lanplus -H 192.168.11.11 -U admin -P admin sol
activate
```

#ipmitool –I lanplus –H [BMC_IP] –U admin –P admin sol activate

2. Select expander connection
NetFN 36
Command Code: 53h

Message	Byte	Data Field
Request	1	Expander select 01h: Hub 02h: Edge-0 03h: Edge-1 04h: Edge-2
Response	1	Completion Code 00h Success
	2	Expander select value

#ipmitool –I lanplus –H <BMC IP> -U admin –P admin raw 0x36 0x54 0x1

3. Read expander Edge-0 counter value
Execute ipmi command to configure BMC SOL to Edge-0
ipmitool -I lanplus -H [BMC_IP] -U admin -P admin raw 0x36 0x54 0x2

```
D:\ipmitool_test>ipmitool.exe -I lan -H 192.168.11.11 -U admin -P admin raw 0x36
 0x54 0x2
 02
 cmd >sensor

== ENCLOSURE STATUS ==========================================================


        Expander Temperature     : 40 Celsius degree
        System Temperature-0     : 22 Celsius degree
        System Temperature-1     : 25 Celsius degree

        Voltage Sensor 0.9V      : 0.94 V
        Voltage Sensor 1.8V      : 1.77 V

        Current Model            : 4U78swapEdge0

==============================================================================




 cmd >
```

4. Type in “counters” to execute counters command.

```
cmd >counters

================================================================================

Phy Layer Error Counters
================================================================================

PHY       Event1            Event2            Event3            Event4
Id   ----------------  ----------------  ----------------  -------------
         InvWrdCnt         DispErrCnt        LossSyncCnt       RstSeqFailCn
================================================================================

00       00000000          00000000          00000000          00000000
01       00000000          00000000          00000000          00000000
02       00000000          00000000          00000000          00000000
03       00000000          00000000          00000000          00000000
04       00000000          00000000          00000000          00000000
05       00000000          00000000          00000000          00000000
06       00000000          00000000          00000000          00000000
07       00000000          00000000          00000000          00000000
08       00000000          00000000          00000000          00000000
09       00000000          00000000          00000000          00000000
10       00000000          00000000          00000000          00000000
11       00000000          00000000          00000000          00000000
12       00000000          00000000          00000000          00000000
13       00000000          00000000          00000000          00000000
14       00000000          00000000          00000000          00000000
15       00000000          00000000          00000000          00000000
16       00000000          00000000          00000000          00000000
17       00000000          00000000          00000000          00000000
18       00000000          00000000          00000000          00000000
19       00000000          00000000          00000000          00000000
20       00000000          00000000          00000000          00000000
21       00000000          00000000          00000000          00000000
22       00000000          00000000          00000000          00000000
23       00000000          00000000          00000000          00000000
24       00000000          00000000          00000000          00000000
25       00000000          00000000          00000000          00000000
26       00000000          00000000          00000000          00000000
27       00000000          00000000          00000000          00000000
28       00000000          00000000          00000000          00000000
29       00000000          00000000          00000000          00000000
30       00000000          00000000          00000000          00000000
31       00000000          00000000          00000000          00000000
32       00000000          00000000          00000000          00000000
33       00000000          00000000          00000000          00000000
34       00000000          00000000          00000000          00000000
35       00000000          00000000          00000000          00000000
36       00000000          00000000          00000000          00000000
37       00000000          00000000          00000000          00000000
38       00000000          00000000          00000000          00000000
39       00000000          00000000          00000000          00000000
================================================================================


================================================================================

Generic Broadcast Counter
================================================================================

Broadcast Counter Not Configured.

================================================================================



cmd >
```

5. To read the the expander Edge-1 counter value, 1, execute the ipmi command to configure BMC SOL to Edge-1

ipmitool -I lanplus -H [BMC_IP] -U admin -P admin raw 0x36 0x54 0x3

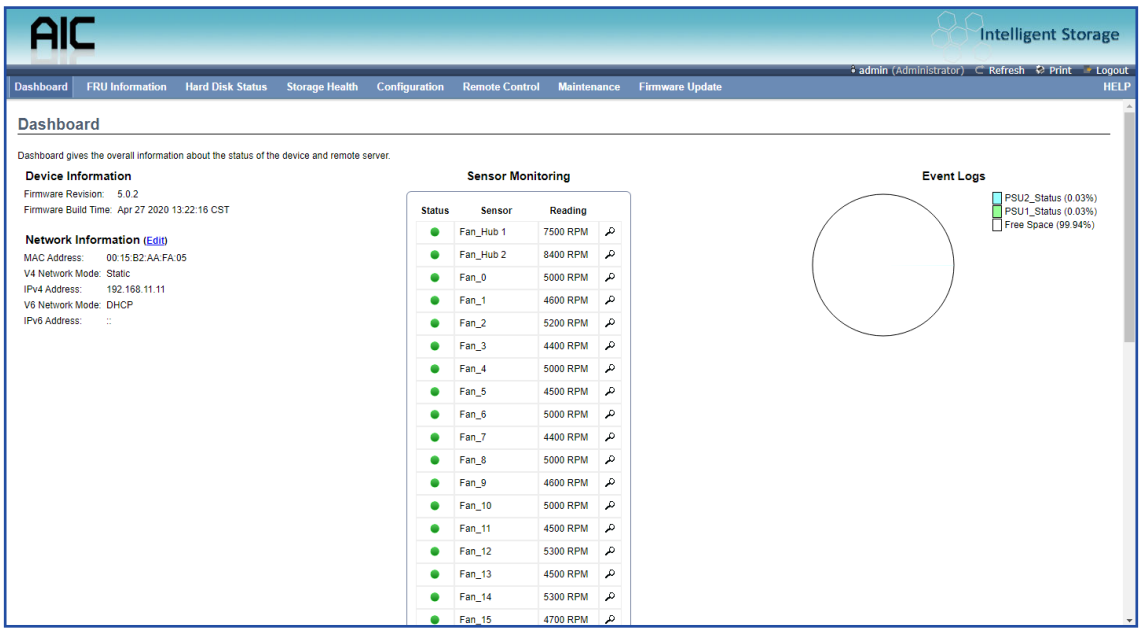
```
D:\ipmitool_test>ipmitool.exe -I lan -H 192.168.11.11 -U admin -P admin raw 0x36
 0x54 0x3
 03

cmd >sensor

== ENCLOSURE STATUS ============================================================


        Expander Temperature    : 38 Celsius degree
        System Temperature-0    : 23 Celsius degree
        System Temperature-1    : 25 Celsius degree

        Voltage Sensor 0.9V     : 0.94 V
        Voltage Sensor 1.8V     : 1.77 V

        Current Model           : 4U78swapEdge1

================================================================================



cmd >
```

6. Type in “counters” to execute counters command.

```
        Current Model           : 4U78swapEdge1

================================================================================




 cmd >counters

================================================================================

Phy Layer Error Counters
================================================================================

PHY       Event1             Event2             Event3             Event4
Id   -----------------  -----------------  -----------------  -------------
         InvWrdCnt          DispErrCnt        LossSyncCnt       RstSeqFailCn
================================================================================

00       00000000           00000000           00000000           00000000
01       00000000           00000000           00000000           00000000
02       00000000           00000000           00000000           00000000
03       00000000           00000000           00000000           00000000
04       00000000           00000000           00000000           00000000
05       00000000           00000000           00000000           00000000
06       00000000           00000000           00000000           00000000
07       00000000           00000000           00000000           00000000
08       00000000           00000000           00000000           00000000
09       00000000           00000000           00000000           00000000
10       00000000           00000000           00000000           00000000
11       00000000           00000000           00000000           00000000
12       00000000           00000000           00000000           00000000
13       00000000           00000000           00000000           00000000
14       00000000           00000000           00000000           00000000
15       00000000           00000000           00000000           00000000
16       00000000           00000000           00000000           00000000
17       00000000           00000000           00000000           00000000
18       00000000           00000000           00000000           00000000
19       00000000           00000000           00000000           00000000
20       00000000           00000000           00000000           00000000
21       00000000           00000000           00000000           00000000
22       00000000           00000000           00000000           00000000
23       00000000           00000000           00000000           00000000
24       00000000           00000000           00000000           00000000
25       00000000           00000000           00000000           00000000
26       00000000           00000000           00000000           00000000
27       00000000           00000000           00000000           00000000
28       00000000           00000000           00000000           00000000
29       00000000           00000000           00000000           00000000
30       00000000           00000000           00000000           00000000
31       00000000           00000000           00000000           00000000
32       00000000           00000000           00000000           00000000
33       00000000           00000000           00000000           00000000
34       00000000           00000000           00000000           00000000
35       00000000           00000000           00000000           00000000
================================================================================



================================================================================

Generic Broadcast Counter
================================================================================

Broadcast Counter Not Configured.

================================================================================




 cmd >
```

4.4 Web UI

4.4.1 Dashboard



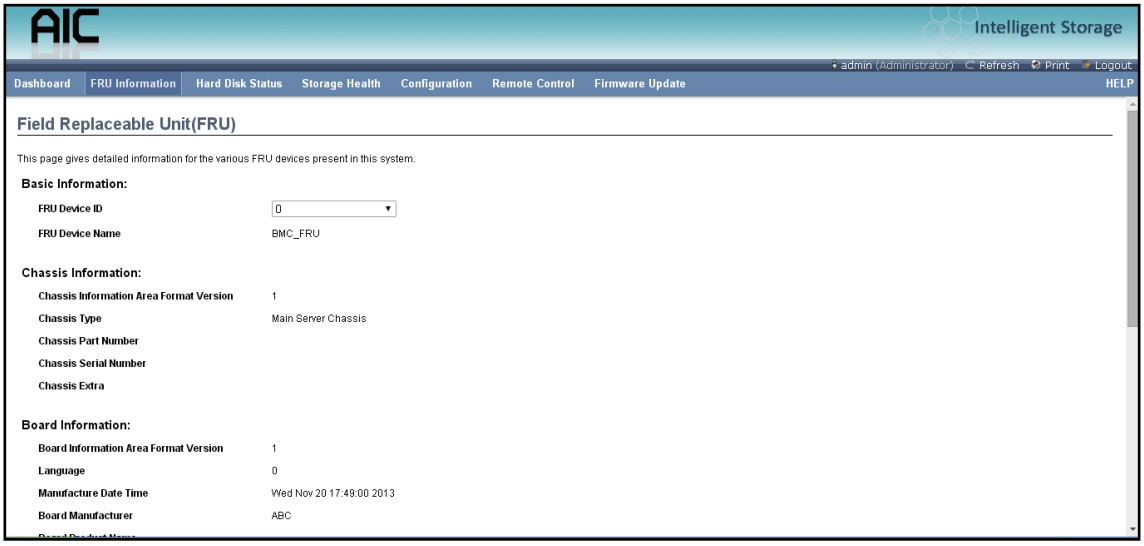
Device Information
Displays the Firmware Revision and Firmware Build Time (Date and Time).

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

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.

4.4.2 FRU information



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

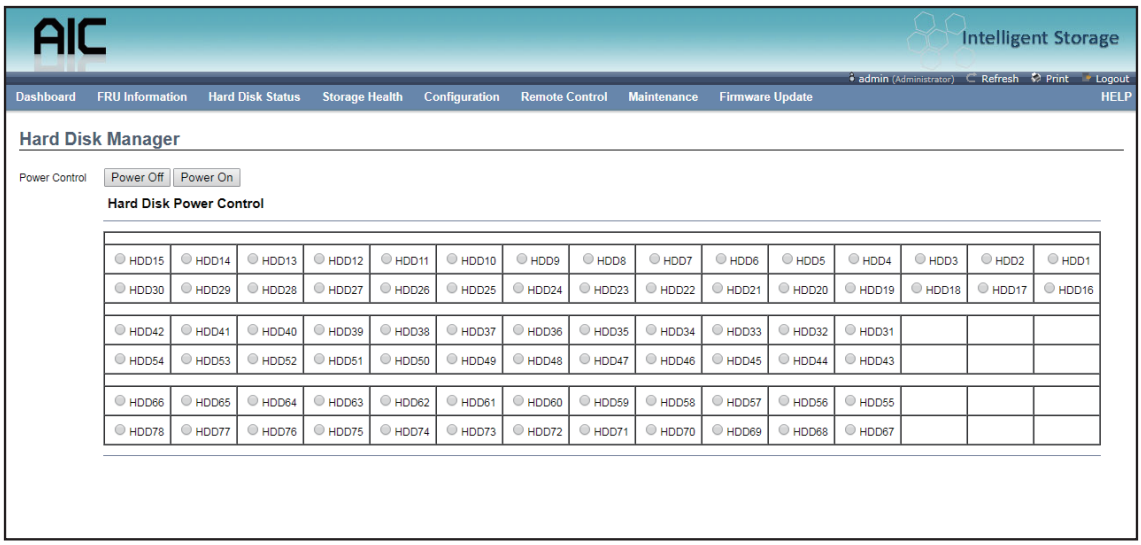
Basic Information
It displays the FRU device ID and device name for the selected FRU device ID.

Chassis Information
It displays the following Chassis information fields.
- Area Format Version
- Chassis Type
- Chassis Part Number
- Chassis Serial Number
- Chassis Extra

Board Information
It displays the following Board information fields.
- Area Format Version
- Language
- Manufacture Date Time
- Board Manufactu
- Board Product Name
- Board Serial Number
- Board Part Number
- FRU File ID
- Board Extra

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

4.4.3 Hard Disk Status



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

ACTIONS

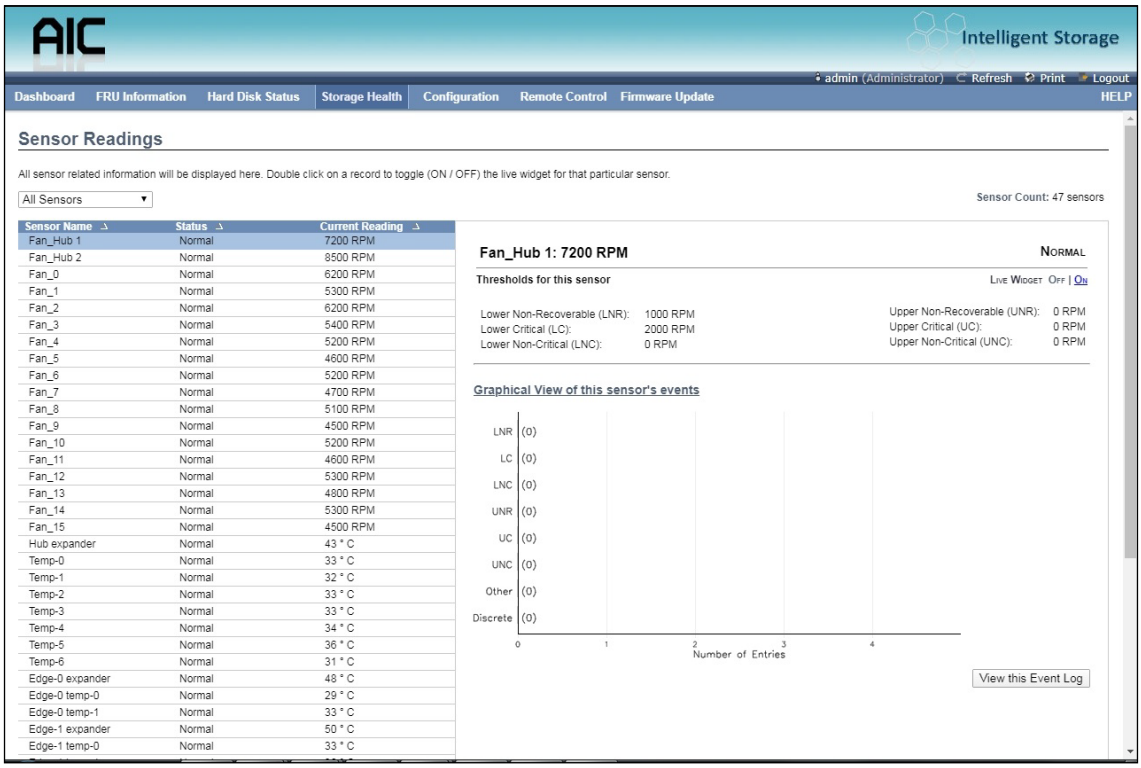
Power On
Select a HDD to turn it power on.

Power off
Select a HDD to turn it power off.

Icon status
Green: This slot inserted HDD and host linked.
Blue: This slot inserted HDD and host did not link.
Red: This slot inserted HDD and got fail.
Gray: This slot not inserted HDD.

4.4.4 Storage Heath

4.4.4.1 Sensor Readings



A list of sensor readings will be displayed here. Click on a record to show more information about that particular sensor, including thresholds and a graphical representation of all associated events. Double click on a record to toggle (ON / OFF) the live widget for that particular sensor. You can filter the list to view particular sensors only using the drop-down listbox.

NOTE: N/A represents Not Applicable.

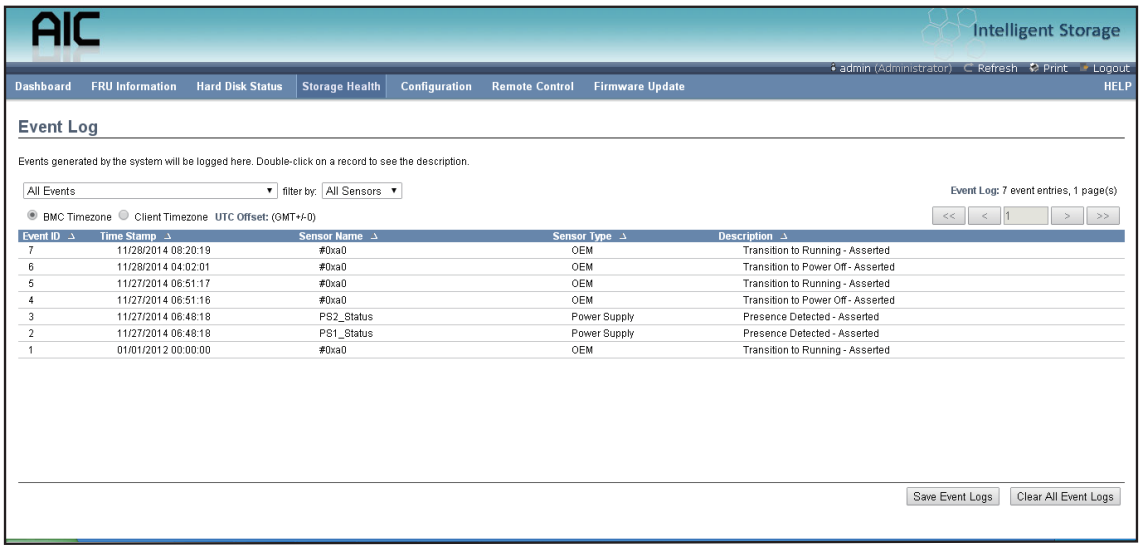
Live Widget

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.

4.4.4.2 Event Log



This page displays the list of events incurred by different sensors on this device. Double click on a record to see the details of that entry. You can also sort the list of entries by clicking on any of the column headers. You can 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.

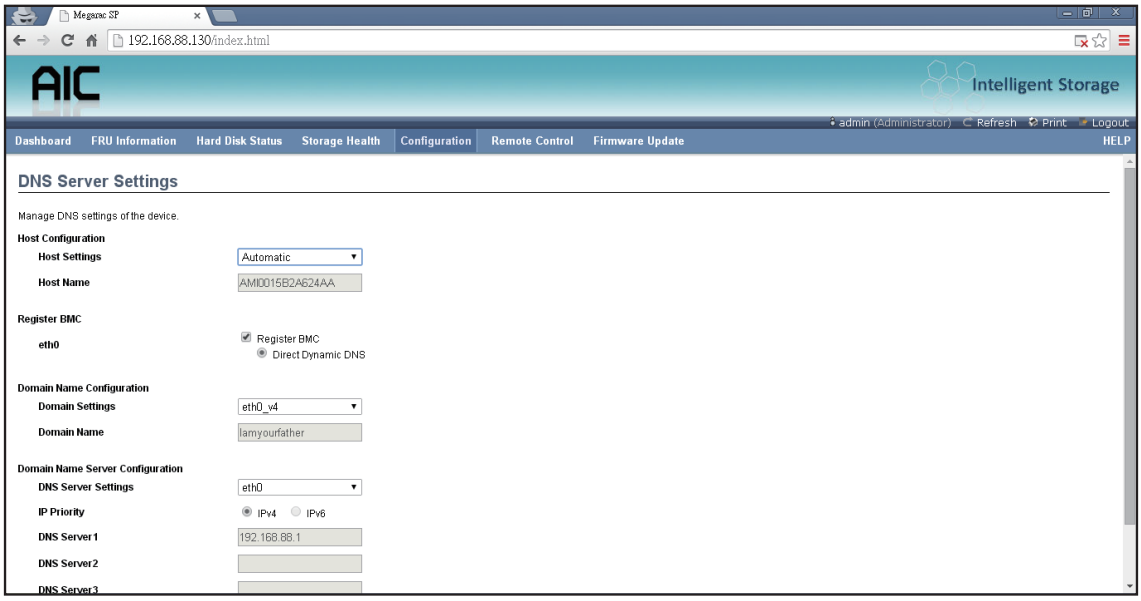
UTC Offset
Displays the current UTC Offset value based on which event Time Stamps will be updated. Navigational arrows can be used to selectively access different pages of the Event Log.

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.

4.4.5 Configuration

4.4.5.1 DNS



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

Host configuration

Host Settings

Choose either Automatic or Manual settings.

Host Name

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

Register BMC

Choose the BMC's network port to register with the DNS settings. Check the option 'Register BMC' to register with the DNS settings. Choose the option 'Direct Dynamic DNS' to register with direct dynamic DNS or choose '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 Configuration

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.

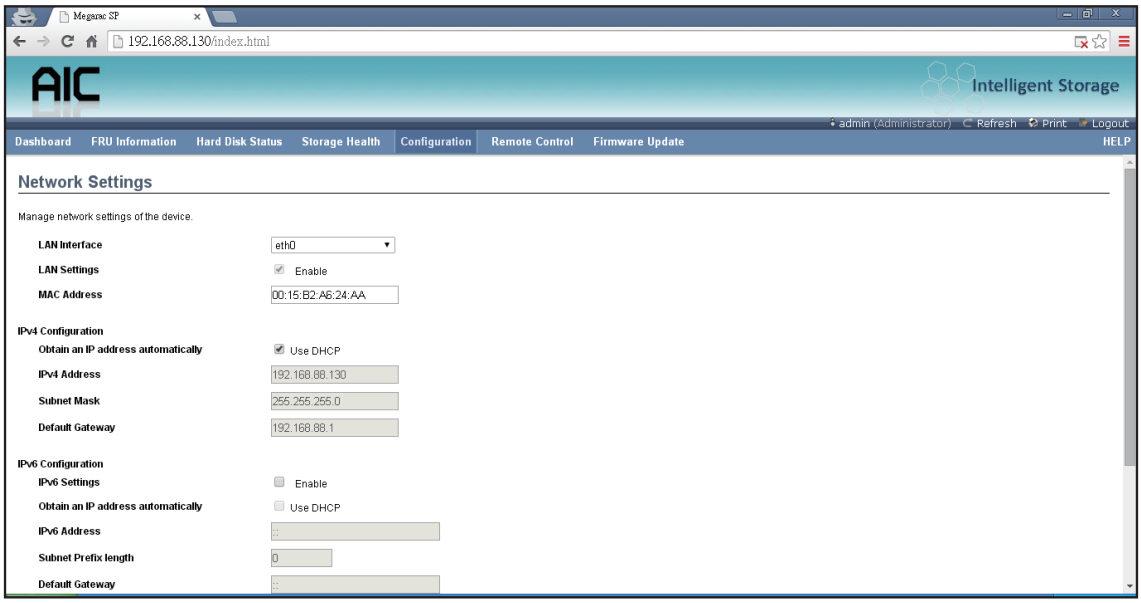
DNS Server 1, 2 & 3
Specify the DNS (Domain Name System) server address to be configured for the BMC.
• An IPv4 Address is made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx".
• Each number ranges from 0 to 255.
• The first number must not be 0.

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.

4.4.5.2 Network Settings



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.

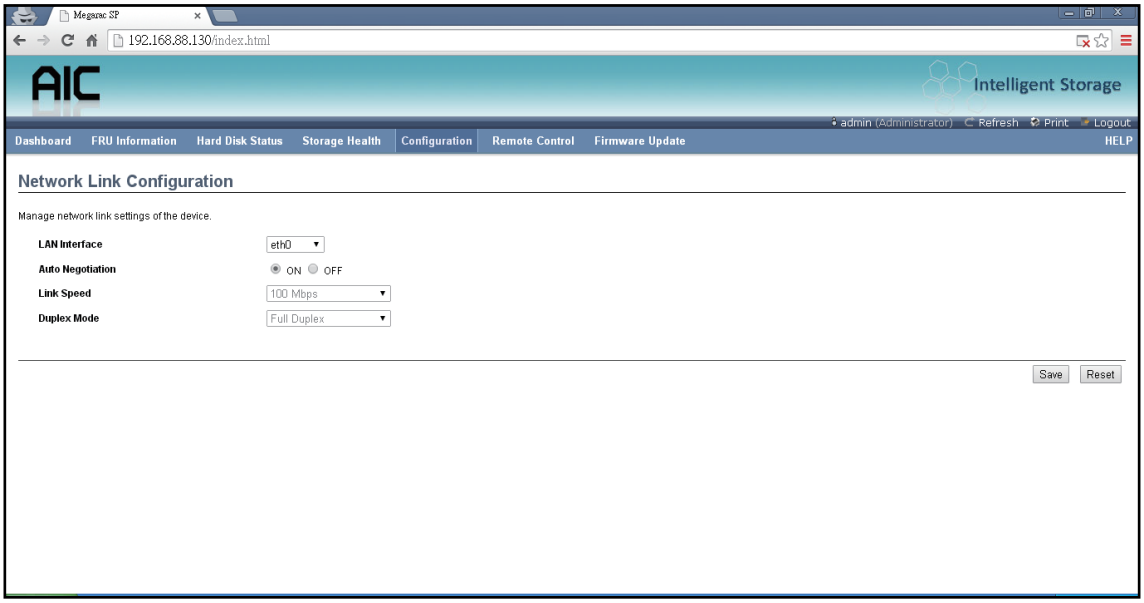
Subnet Prefix length
Specify the subnet prefix length for the IPv6 settings.
• Value ranges from 0 to 128.

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.

4.4.5.3 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.

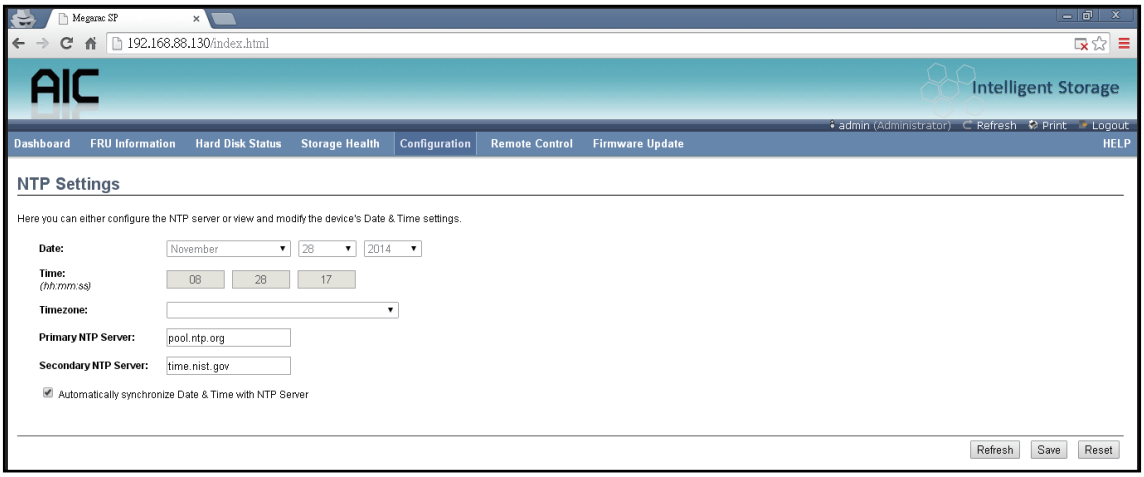
Link Speed
Link speed will list all the supported capabilities of the network interface. It can be 10/100/1000 Mbps.

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.

4.4.5.4 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.

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.

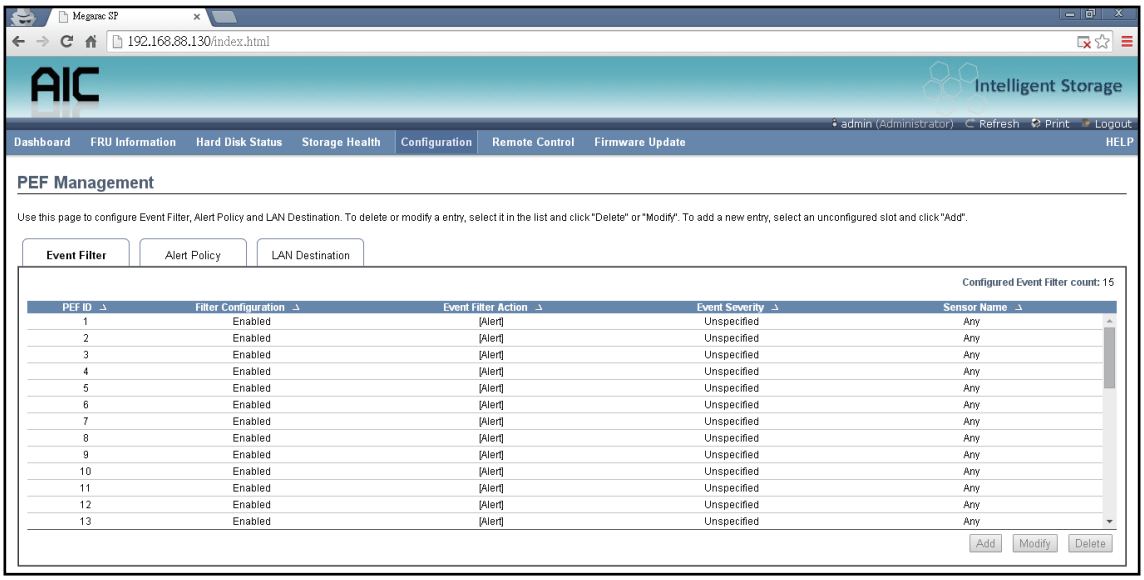
Automatically synchronize
Check this option to automatically synchronize Date and Time with the NTP Server.

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.

4.4.5.5 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.

NOTE: Free slots are denoted by '~' in all columns for the slot. For more information, refer 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.

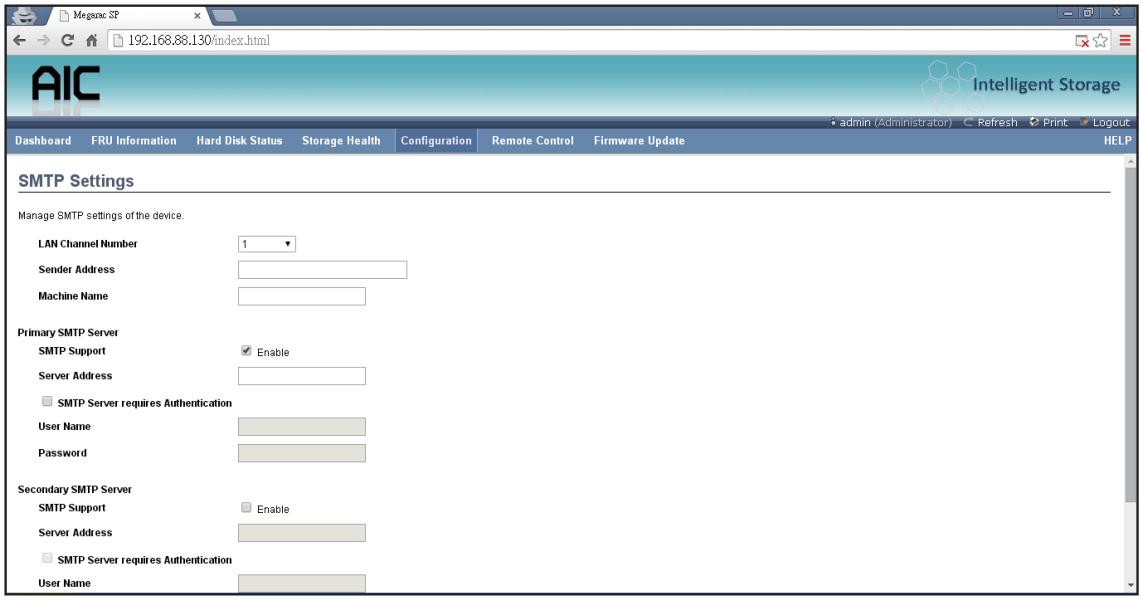
NOTE: Test alerts can be sent only with SMTP configurations set to enabled. SMTP suppport can be enabled under Configuration->SMTP.

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.'

4.4.5.6 SMTP



This page is used to configure the SMTP settings.

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-MD5
• 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.

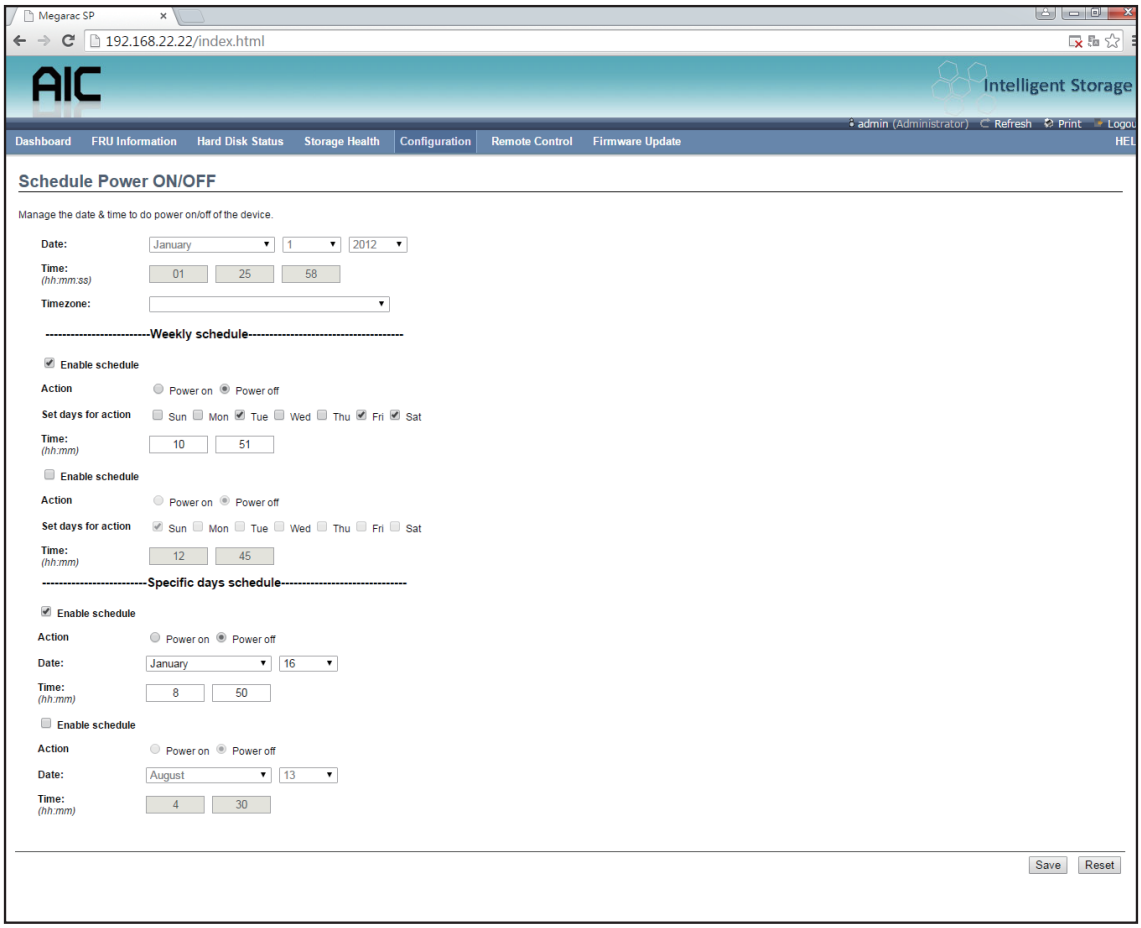
NOTE: This field will not allow more than 64 characters.

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.

4.4.5.7 Schedule Power ON/OFF



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.

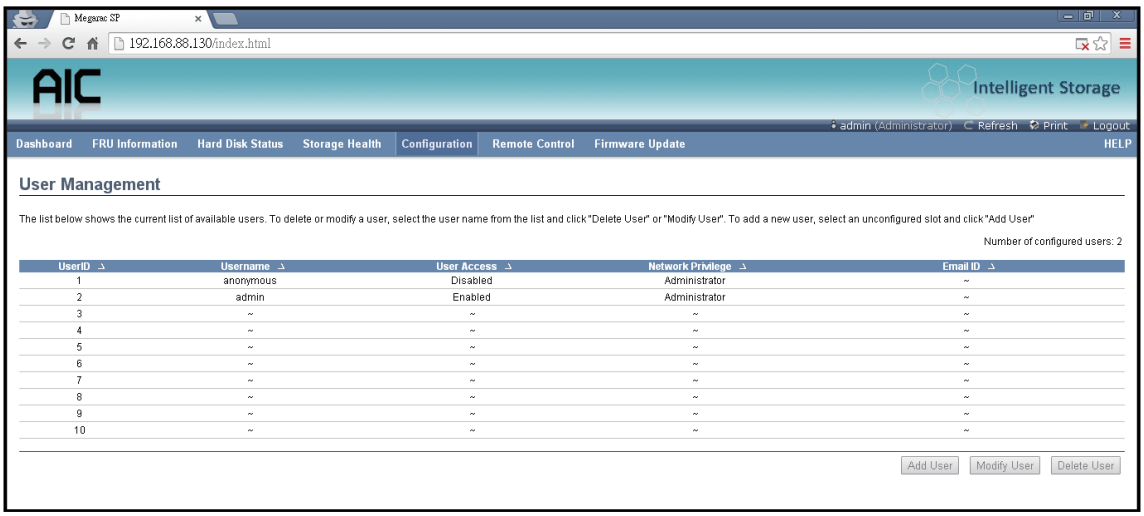
ACTIONS
Enable schedule
Check this option for enable/disable the schedule.

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.

4.4.5.8 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.

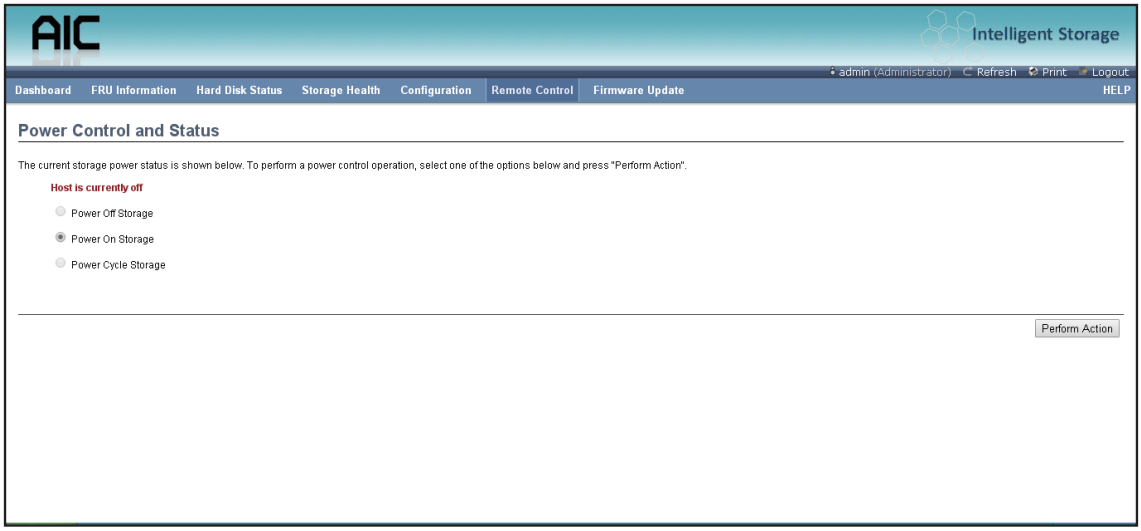
Add User
Select a free slot and click 'Add User' to add a new user to the device. Alternatively, double click on a free slot to add a user.

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'

4.4.6 Remote Control

4.4.6.1 Storage power control



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

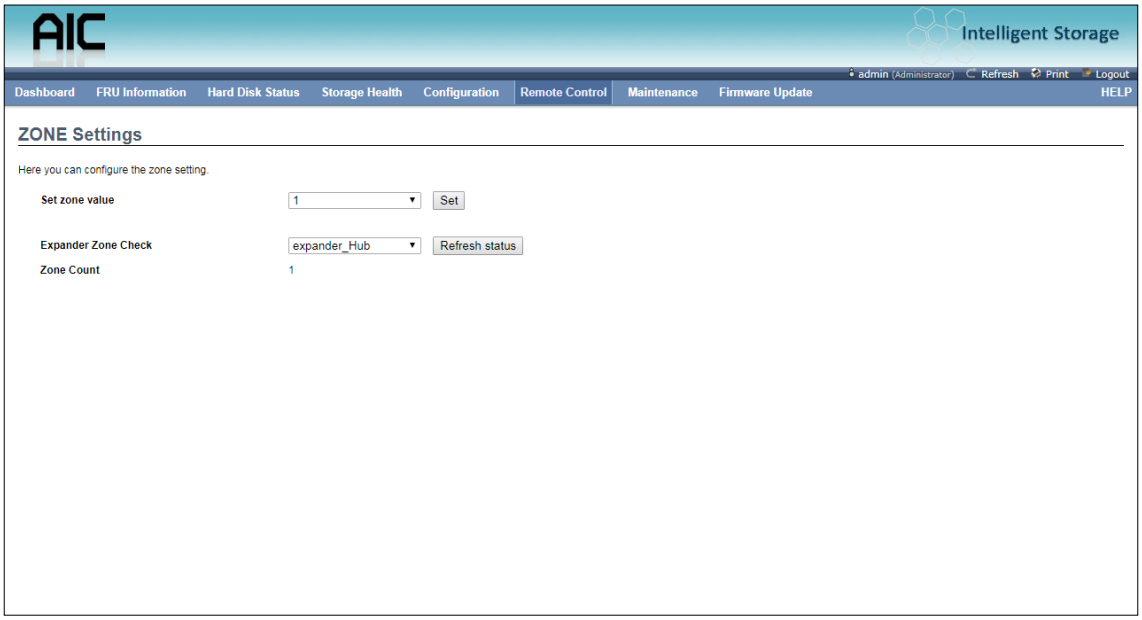
Power Off Storage
Select this option to immediately power off the storage.

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.

4.4.6.2 Zone Settings



You can setup and check the zone count setting in this page.

Set zone value
You can set a zone count value and press the SET button. BMC will setup all the hub and edge expander.

Refresh status
Select an expander location and press refresh for the zone count status to display.

Zone Count
This shows the current zone count value.

NOTE
Follow the steps below to configure your zone count:
1. Set the zone count via BMC Web GUI.
2. Re-read and confirm the zone count on each expander after the zone count is set.
3. Power cycle the JBOD in order for the zone count to take effect.

Below command is for ipmitool use.

GET ZONE COUNT

NetFN 36

Command Code: 52h

Message	Byte	Data Field
Request	1	Expander select 01h: Hub 02h: Edge_0 03h: Edge_1 04h: Edge_2
Response	1	Completion Code 00h Success
	2	zone count value

#ipmitool –I lanplus –H <BMC IP> -U admin –P admin raw 0x36 0x52 0x1

SET ZONE COUNT

NetFN 36

Command Code: 53h

Message	Byte	Data Field
Request	1	Expander select 00h: Set all expander 01h: Hub 02h: Edge_0 03h: Edge_1 04h: Edge_2
	2	zone count value
Response	1	Completion Code 00h Success CCh Invalid value data

#ipmitool –I lanplus –H <BMC IP> -U admin –P admin raw 0x36 0x53 0x0 0x1

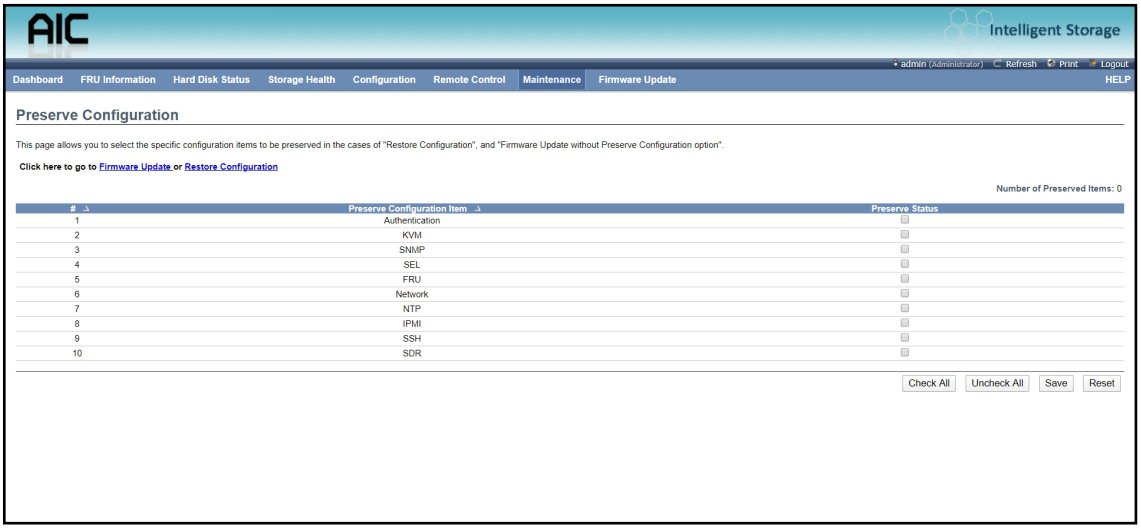
4.4.7 Maintenance Control

4.4.7.1 Preserve Configuration

This page allows the user to configure the preserve configuration items, which will be used by the Restore factory defaults to preserve the existing configuration without overwriting with defaults/ Firmware Upgrade configuration.

To open Preserve Configuration page, click Maintenance Group > Preserve Configuration from the menu bar. A sample screenshot of Preserve Configuration page is shown below.

> **NOTE**
> You can navigate to the Firmware Update Page and Restore Factory Defaults by clicking the respective links.



Preserve Status
To check/uncheck a check box to preserve/overwrite the configuration for your system.

Check All
To check the entire configuration list.

Uncheck All
To uncheck the entire configuration list.

Save
To save any changes made.

> **NOTE**
> This configuration is used by Restore Factory Defaults process.

Reset
To reset the modified changes.

The preserved files for dependency configurations are listed below as follows.

> **NOTE**
> Dependency configuration designates that the option you choose to select may have a subordinate option for you to configure in order for the system to function.
>
> For example, when you select "**SEL**," you must also select "**IPMI**" for the system to operate.

SDR

The sensor data record information that is used in IPMI.

No Dependency

FRU

The logical field replaceable unit data that are used by IPMI.

Dependency Configurations: SDR

SEL

The system event logs that are being logged by the IPMI. Following files will be preserved when Delete SEL reclaim space is enabled.

Dependency Configurations: IPMI

IPMI

The keys that are used to decrypt the passwords. When the user password option is enabled in the MDS project configuration, this file will be preserved.

No Dependency

Network

Configure the channel ID, package ID for the NCSI interface.

Configure the link speed, duplex and MTU value for the specified interface.

Store the pre IPv4 address.

Dependency Configurations: IPMI

NTP

The correct time zone in the system time zone directly.

Dependency Configurations: IPMI

SNMP

The SNMP users privilege levels such as ro user and rw user.

No Dependency

SSH

The public parts of the host keys.

No Dependency

KVM & VMedia

The image name and the remote machine information like IP address, user name, password, domain name and share type.

No Dependency

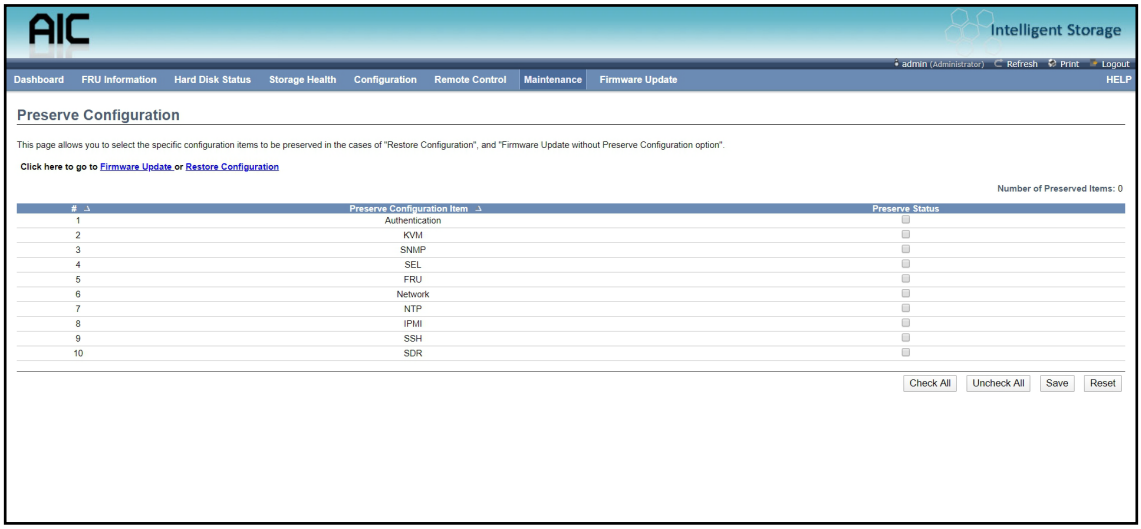
Authentication

The radius server IP address, port number, secret, timeout, privilege etc.

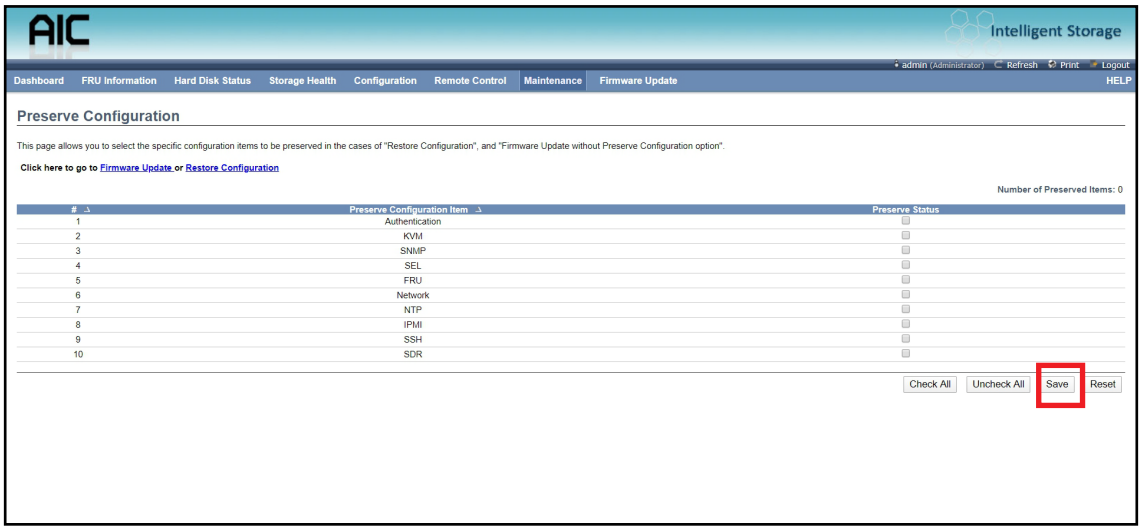
No Dependency

To Preserve your changes:

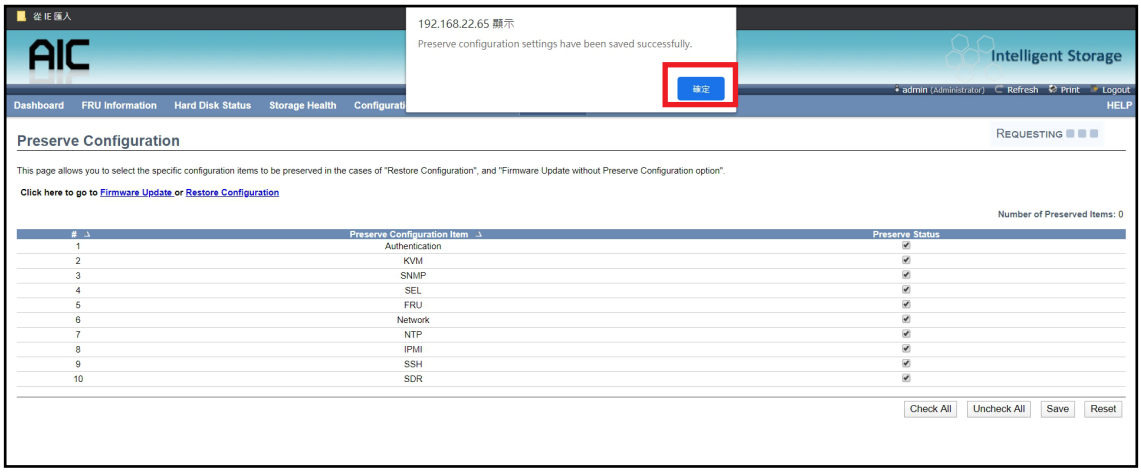
1. Select the required Preserve Configuration items by either selecting the items individually by ticking the check boxes or by selecting all or none using **Check All** or **Uncheck All** buttons respectively.



2. Click **Save** to save the changes.



3. The pop up screen "Preserve configuration settings have been saved successfully" appears. Click **OK** to complete.

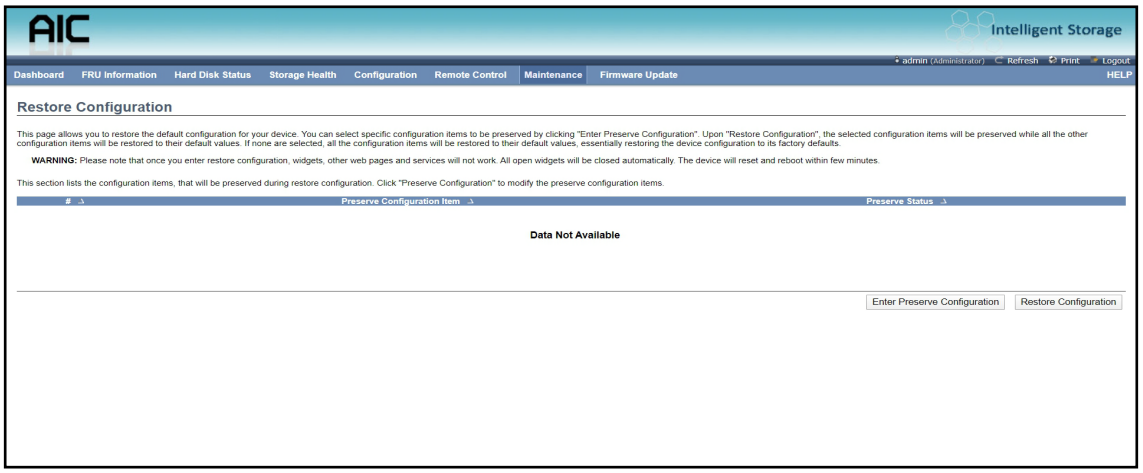


4.4.7.2 Restore Configuration

This option is used to restore the factory defaults of the device firmware. This section lists the configuration items that will be preserved during restore factory default configuration.

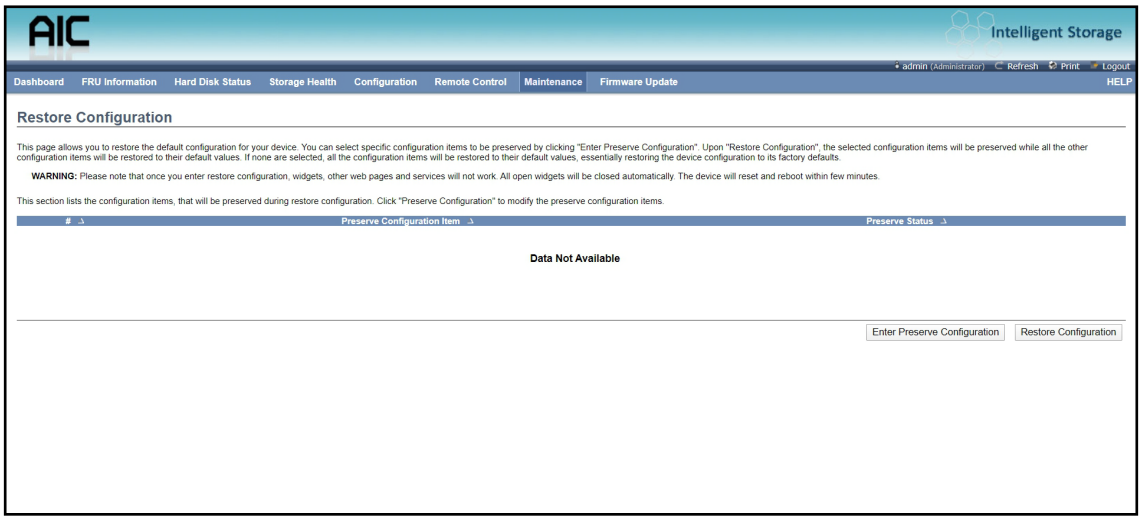
> **NOTE**
> Please note that after entering restore factory widgets, other web pages and services will not work. All open widgets will be closed automatically. The device will reset and reboot within few minutes.

To open Restore Factory Defaults page, click Maintenance > Restore Factory Defaults from the menu bar. A sample screenshot of Restore Factory Defaults Page is shown below.

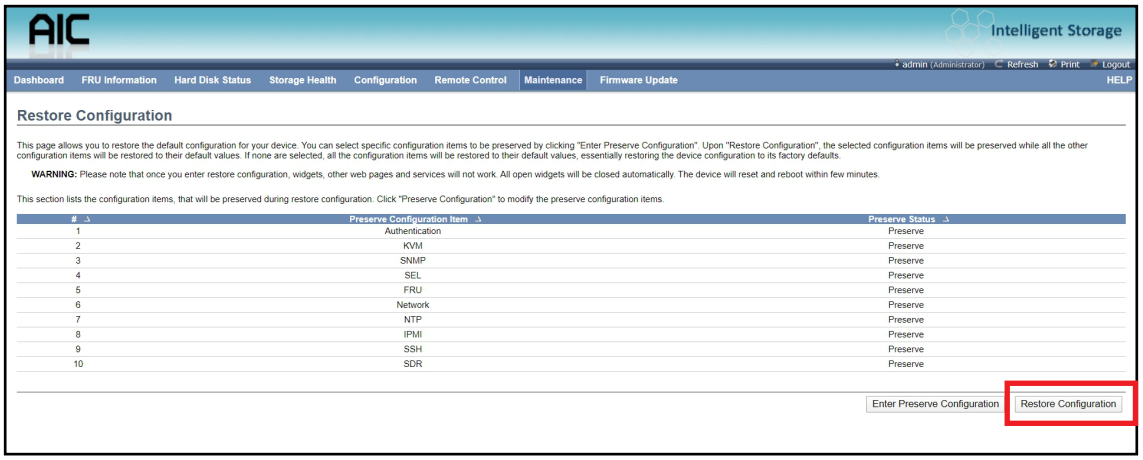


To restore your configuration:

1. Click **Enter Preserve Configuration** to redirect to Preserve Configuration page, which is used to preserve the particular configuration not to be overwritten by the default configuration.

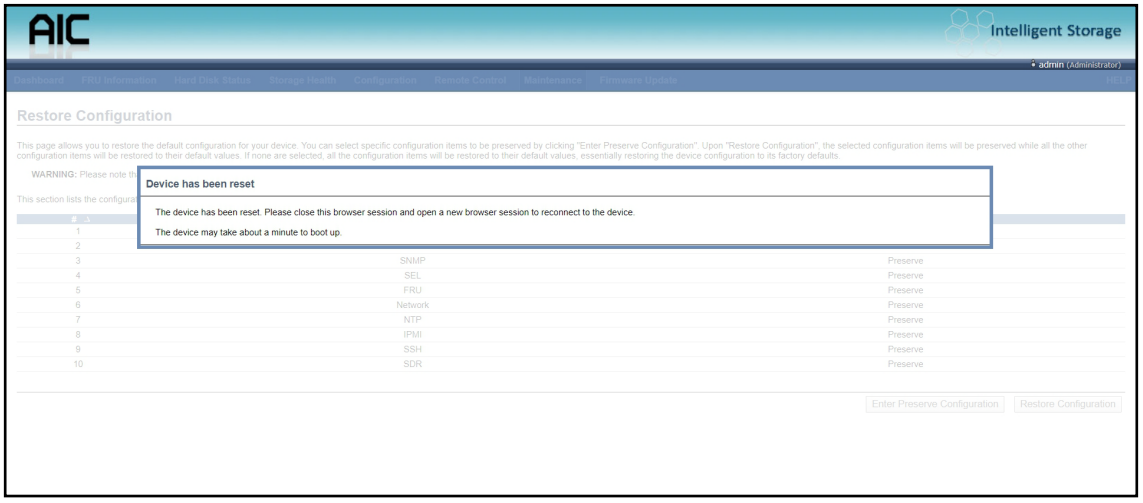


2. Click **Restore Configuration** to restore the factory defaults of the device firmware.



3. Click **OK** to confirm.

4. The factory defaults of the device has been reset.



4.5 BMC Firmware Update

4.5.1 Requirement

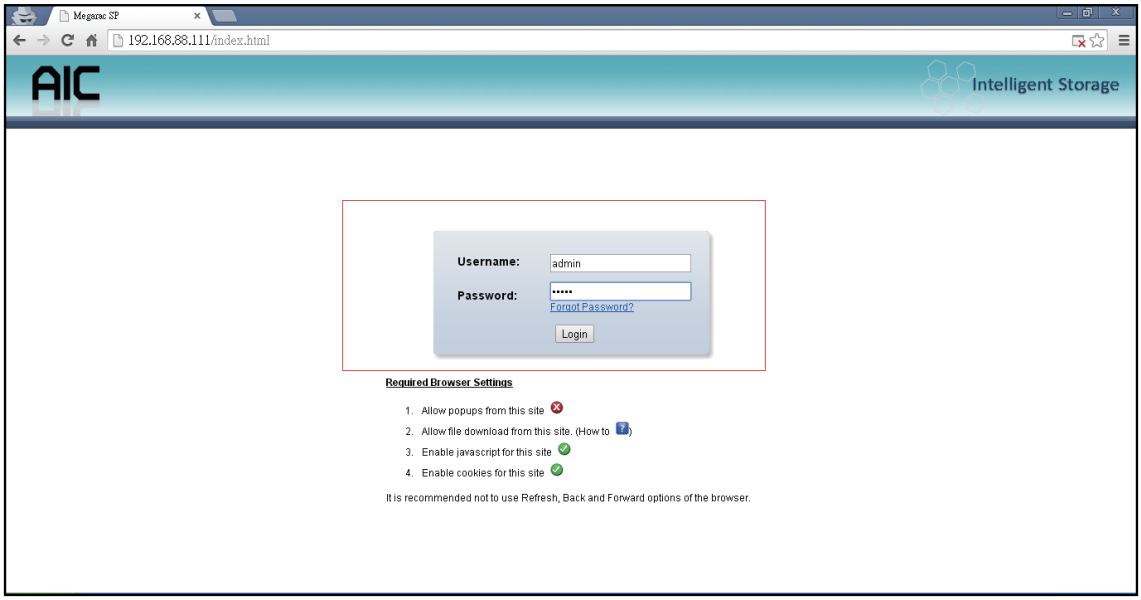
Browsers: FireFox 24.0 or later version
Chrome 35.0 or later version
I.E. 7.0 or later version
Linux: Redhat 6.4

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

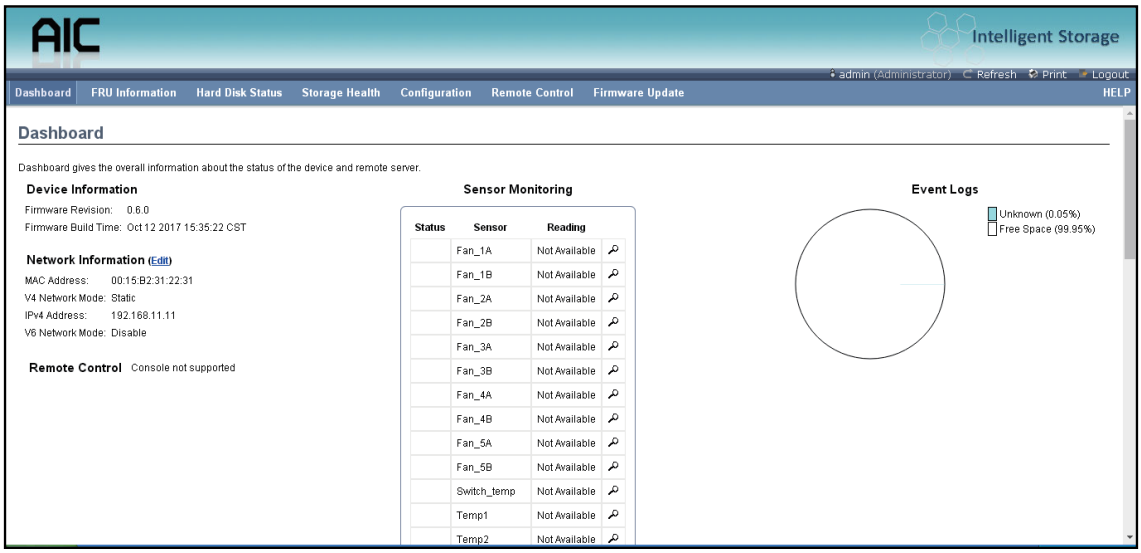
4.5.2 Web update

1. Check if the BMC IP is valid.

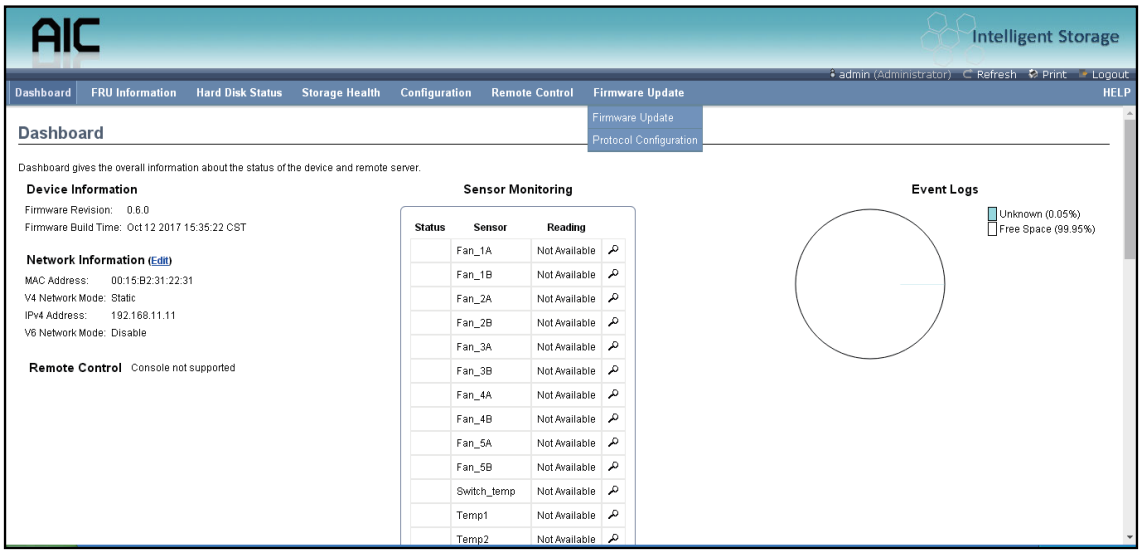
2. Open a browser and type in the BMC IP. It will show the BMC web UI. Type in the default account or use the administrator privileged account.
   Username: admin
   Password: admin



3. This is login main page.

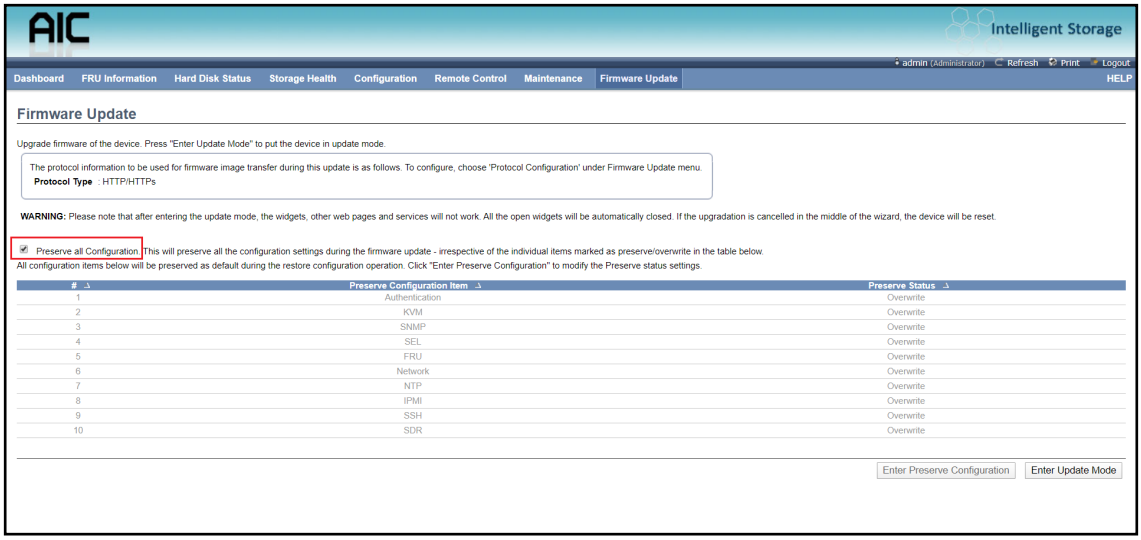


4. Click the “Firmware Update” and it will pop a drop-down menu. Click “Firmware Update.”

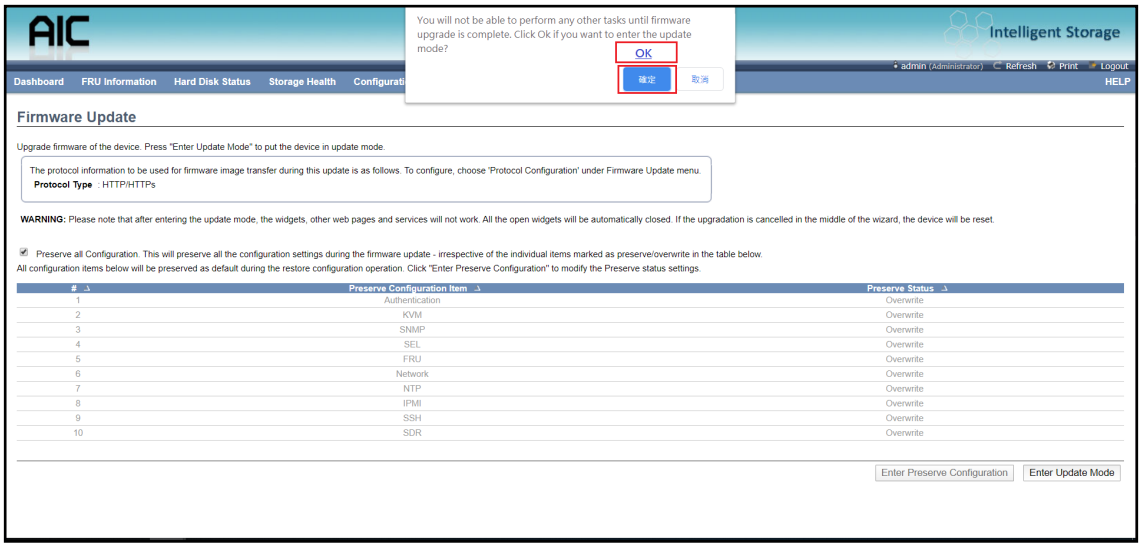


5. If you need to preserve all the configurations settings during the expander update process including during the IP address, user account password and ect, click "Preserve all Configuration" and then click "Enter Update Mode." If you do not need to preserve all configurations, click "Enter Update Mode" to proceed to the next step.

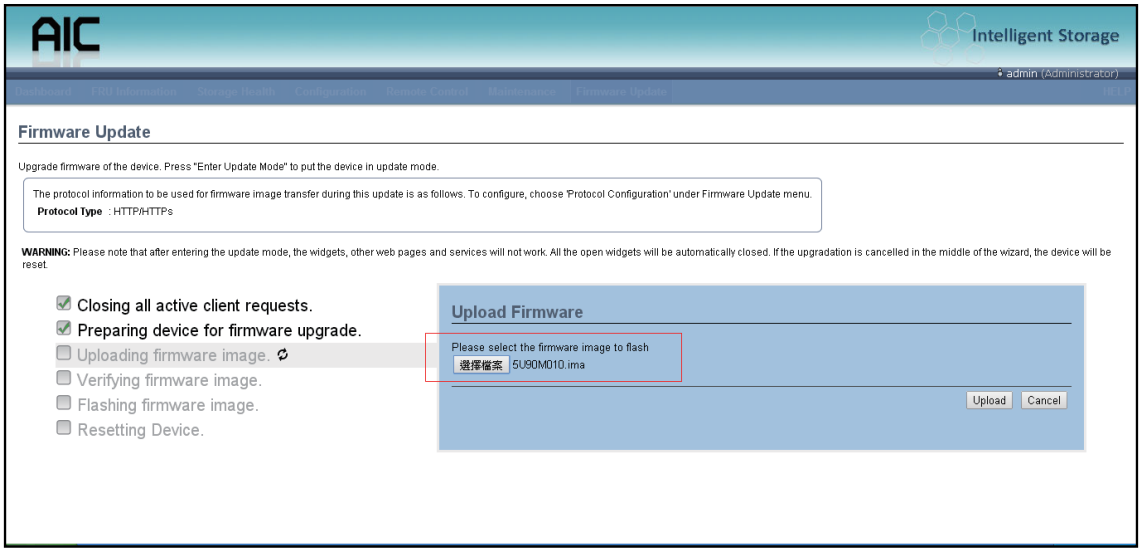
NOTE
Please refer to section 4.5.2.1 for further details on preserve configuration.



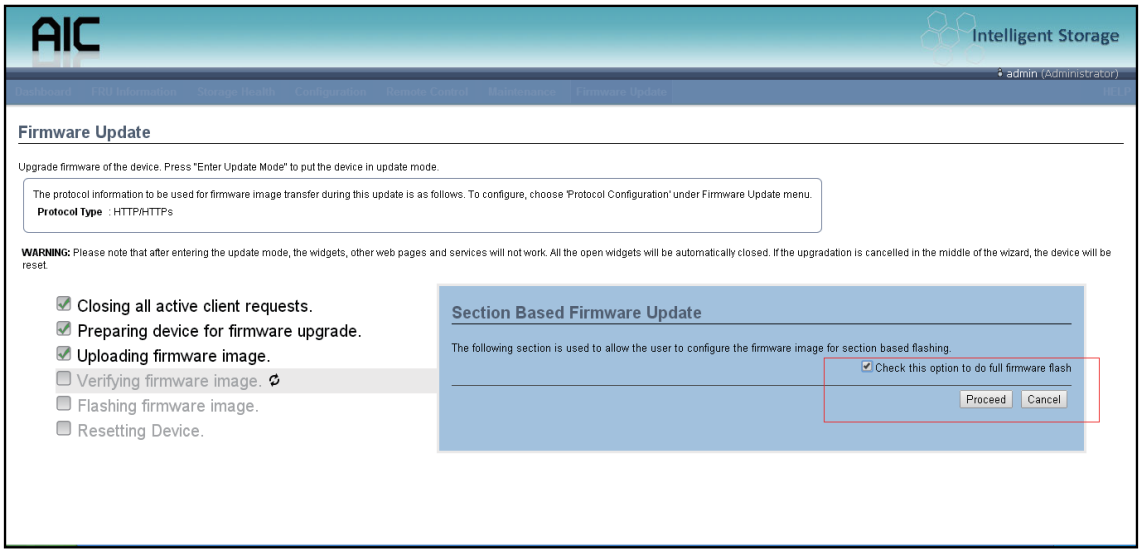
6. Click "Ok" to continue update.



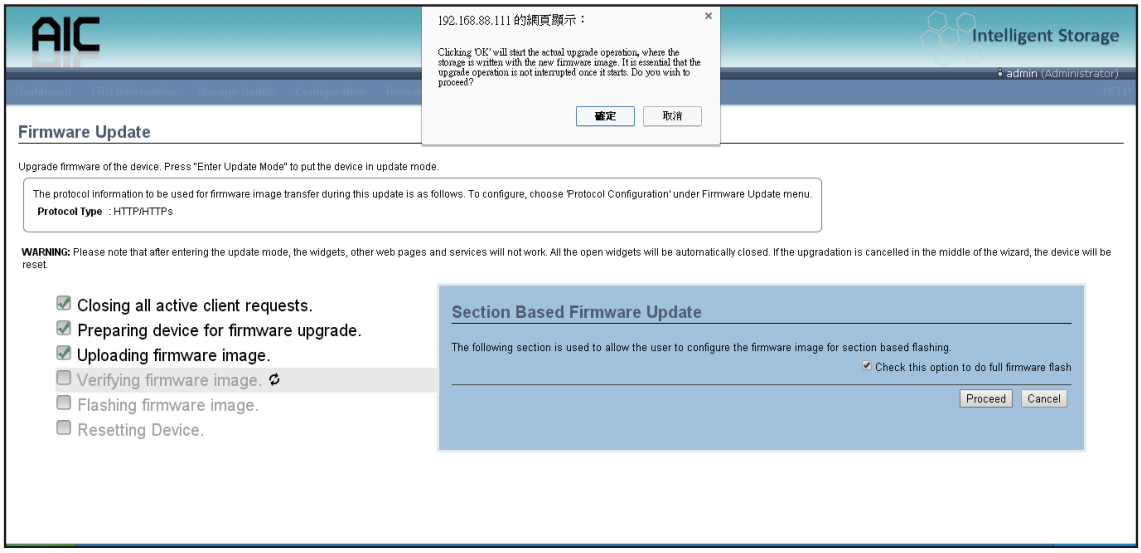
7. Wait a few minutes and a window will pop up. Click “Select file” to upload the firmware file that you want to update.



8. Wait a few minutes and the window that checks the update section will pop up. Check the “Check this option to do all full firmware flash” option.

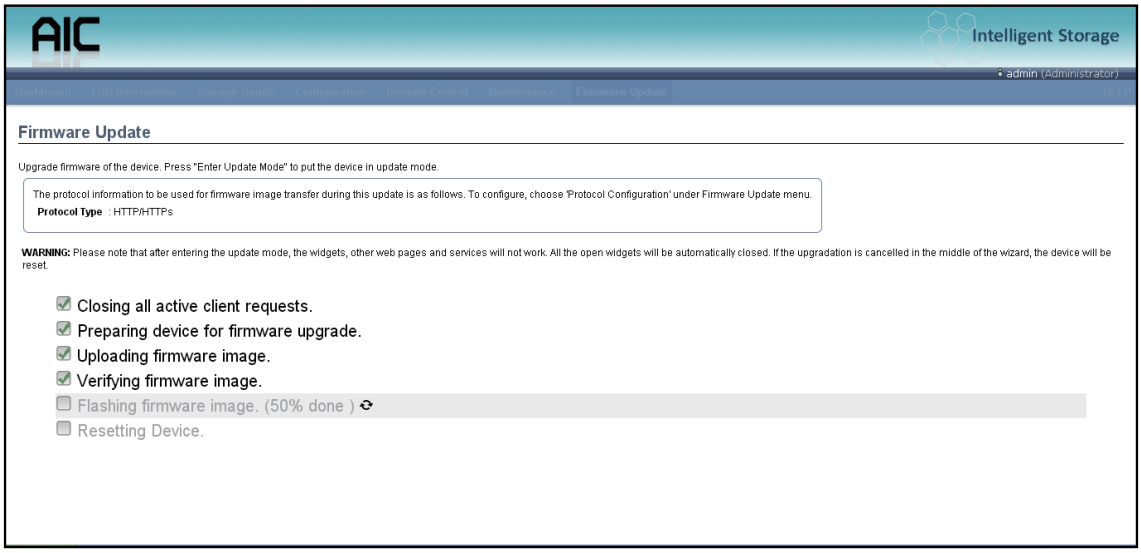


9. Click “OK” and the firmware will start the update process.

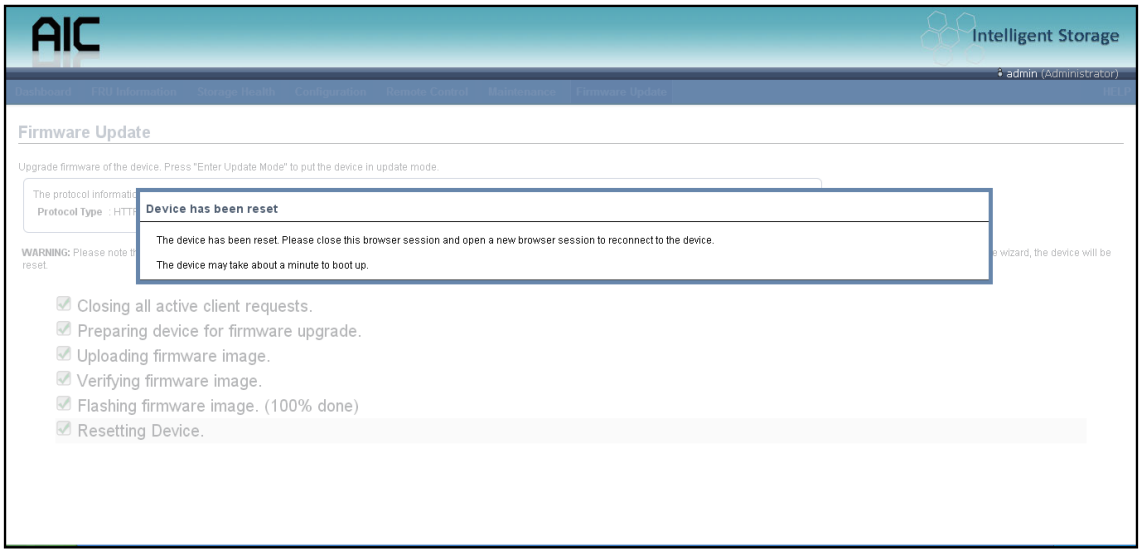


10. In the update process, it will take 3~5 minutes.

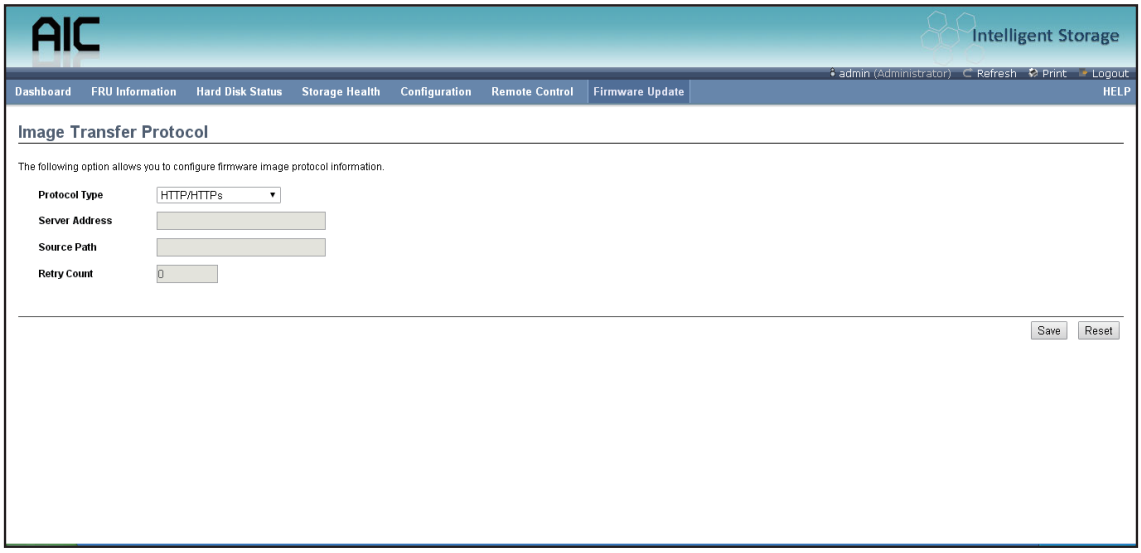
NOTE
Please do not close this web page! Closing the web page may cause firmware to crash.



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



4.5.3 Image Transfer Protocol



This page is used to configure the firmware image protocol information.

ACTIONS

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

Server Address
Address of the server where the firmware image is stored.
IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx".
Each number ranges from 0 to 255.
First number must not be 0.

Source Path
Full Source path (including image filename) to its location on server.

Retry Count
Number of times to be retried in case a transfer failure occurs. Retry count ranges from 0 to 255.

Save
Click 'Save' to save the configured settings.

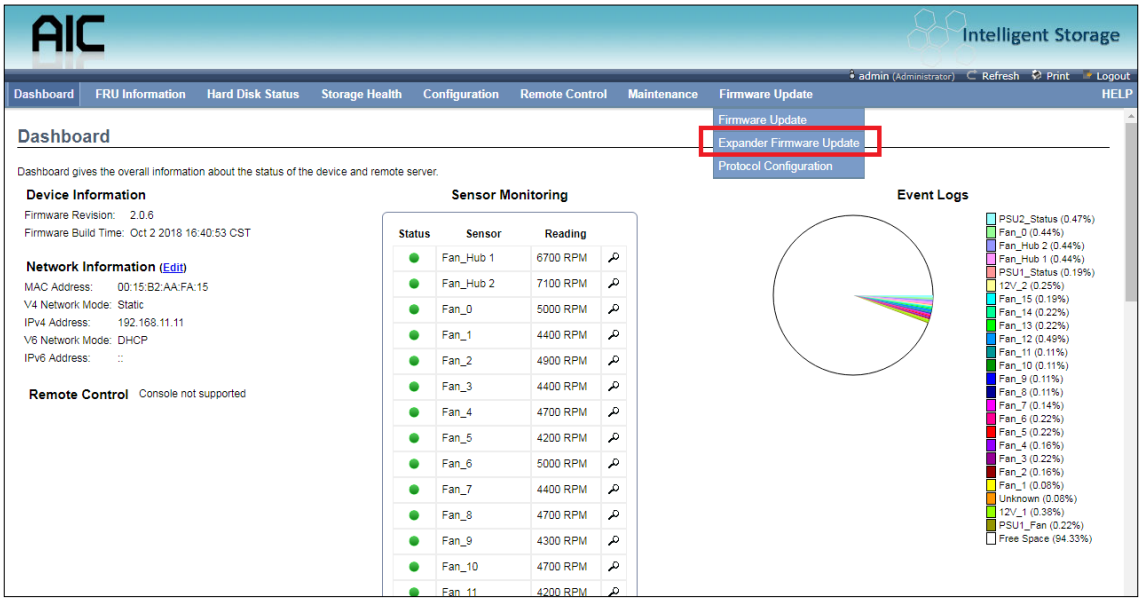
Reset
Click 'Reset' to reset the modified changes.s

4.6 Expander Firmware/MFG Update

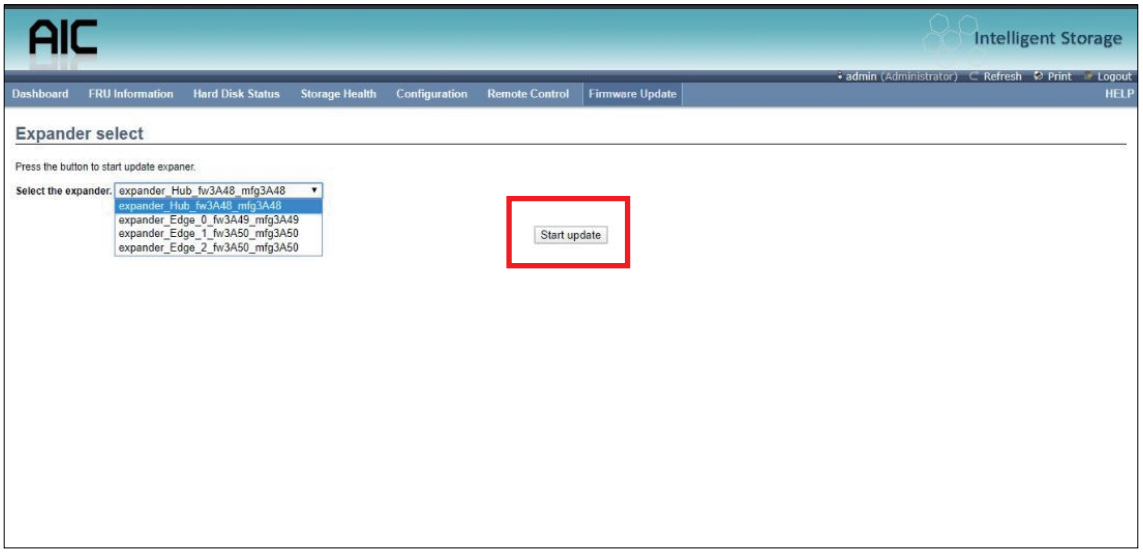
For systems with dual expander modules, please repeat the following steps below to successfully operate both primary and secondary expander.

NOTE
Support browser:
Chrome with incognito mode.

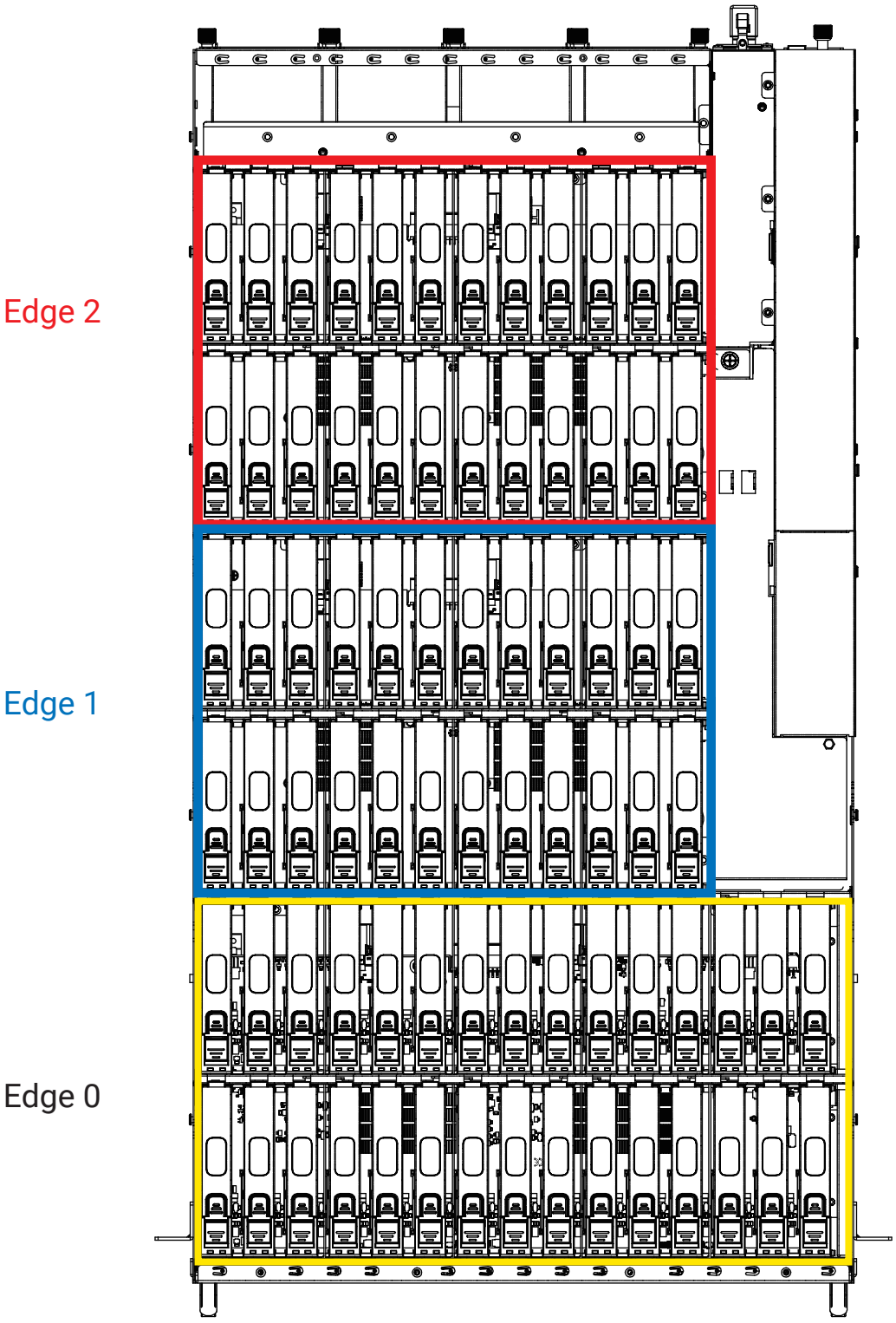
1. Click **Firmware Update** > **Expander Firmware Update** in your BMC menu bar.



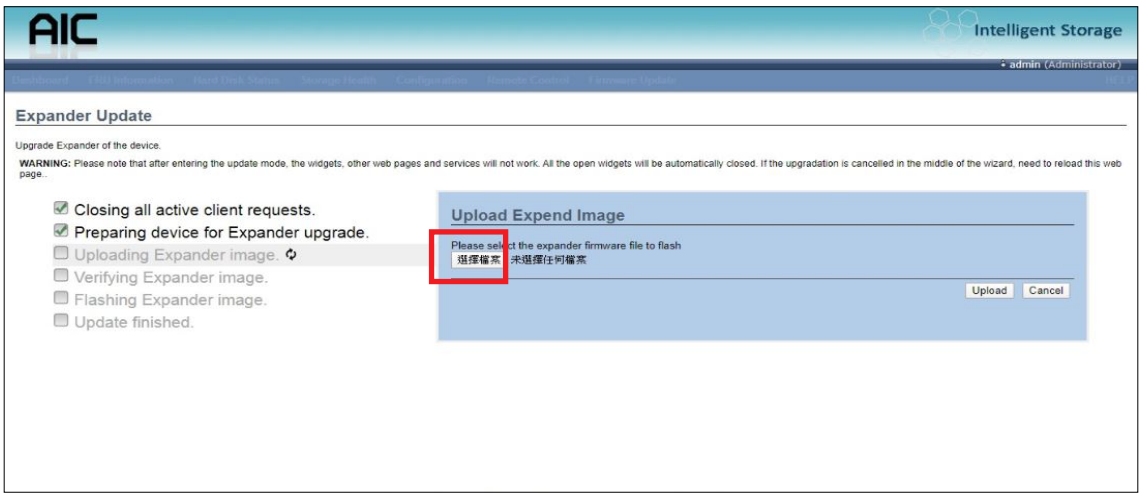
2. Under "Select the expander," choose an expander and click **Start update**.



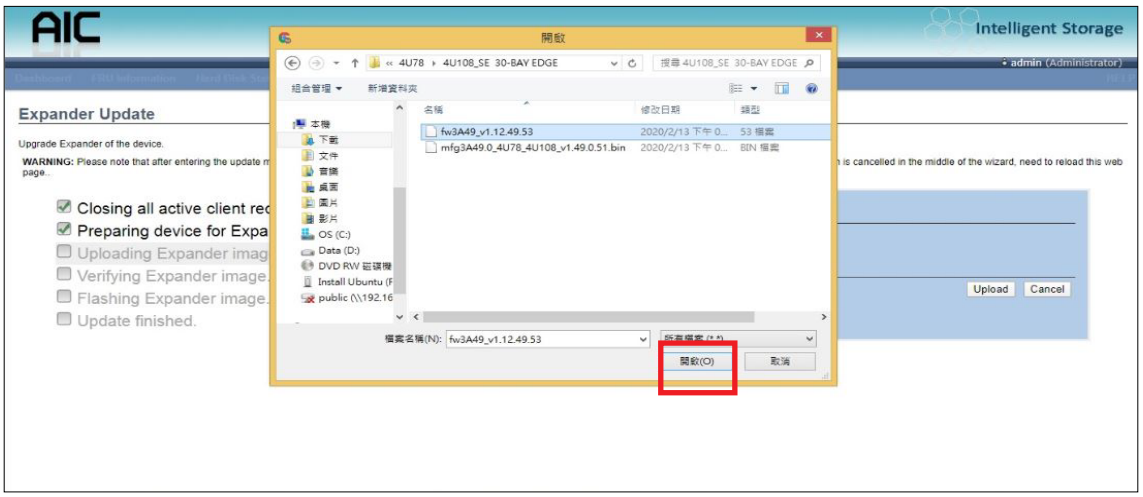
Edge 0, Edge 1, Edge 2 Top View Location



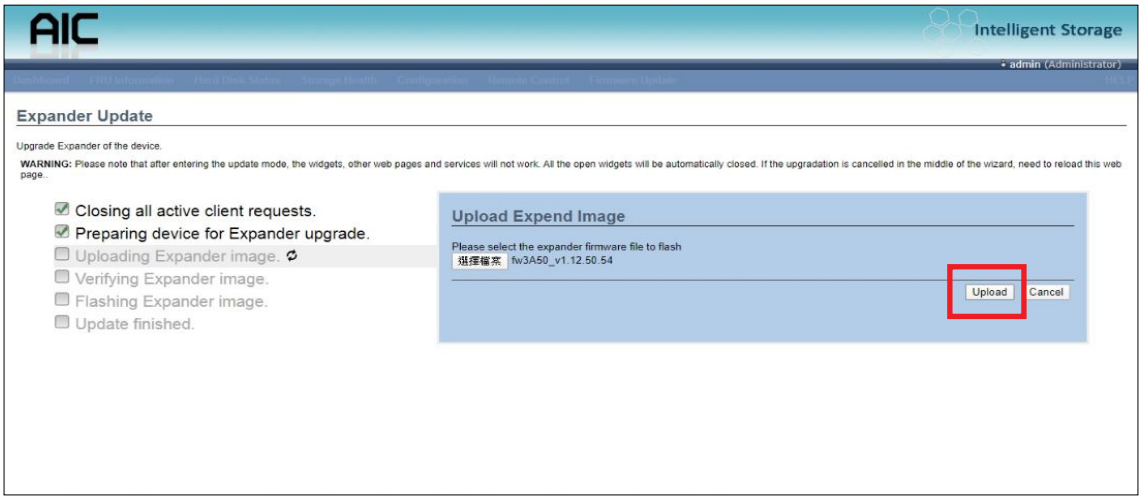
3. Click **Choose File**.



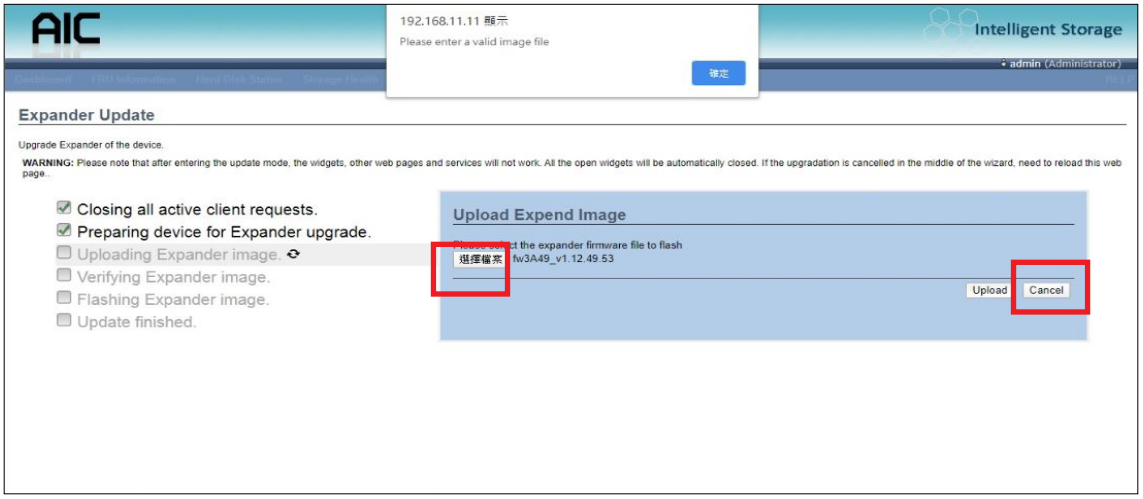
4. Select your expander image and click **Open**.



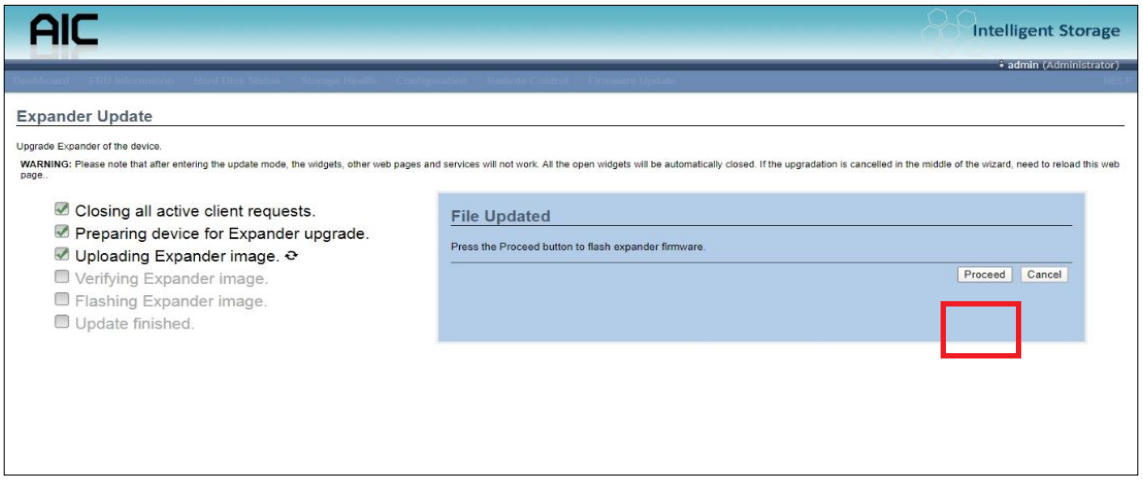
4. Click **Upload**.



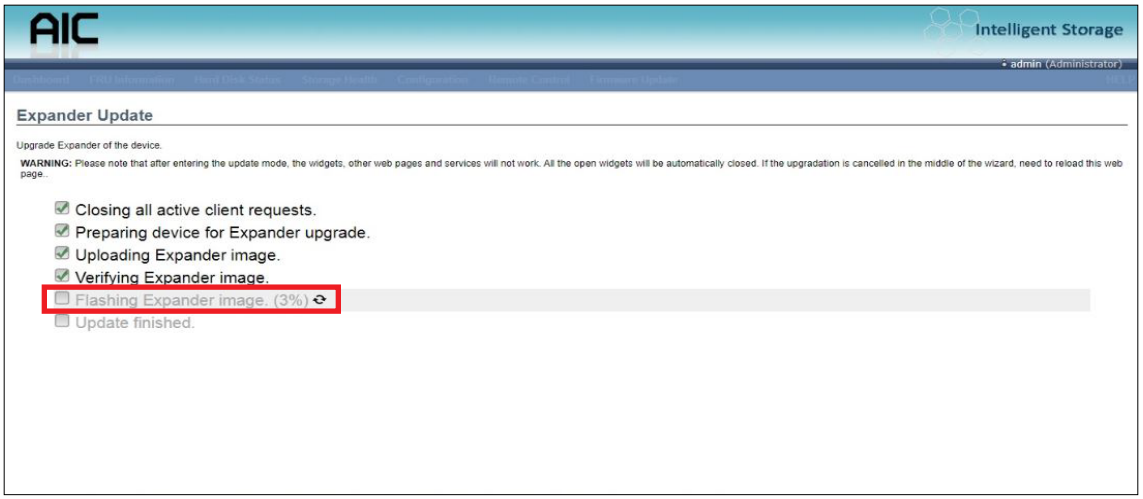
NOTE
If an error message appears after you clicked uplaod, please reselect an expander image or press **Cancel**.



5. Under "File Updated," click **Proceed**.

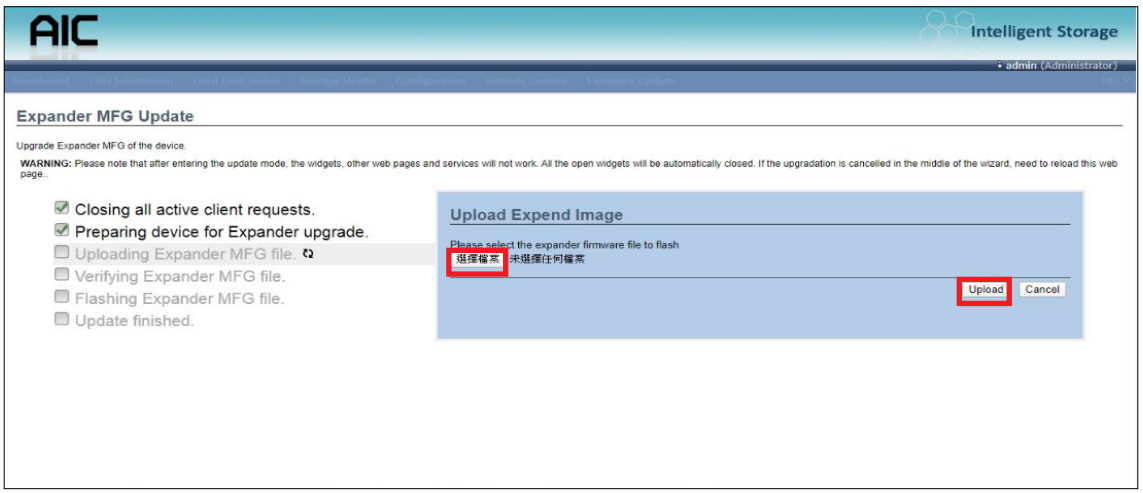


6. Wait a few seconds for the system to confirm that expnader image upload is complete.

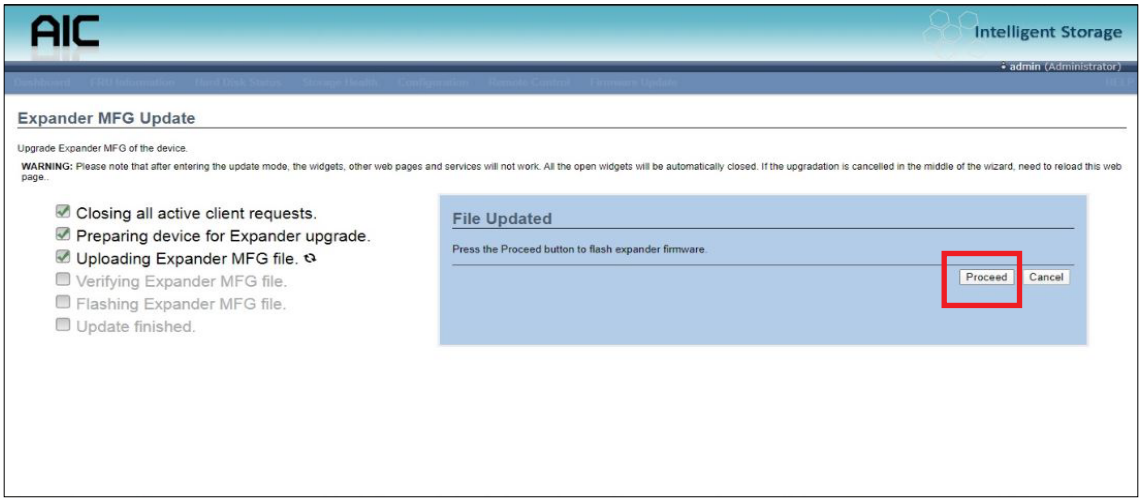


NOTE
For steps 7 and 8, do not wait for more than 5 minutes to process. After 5 minutes, the system will fail to update the expander.

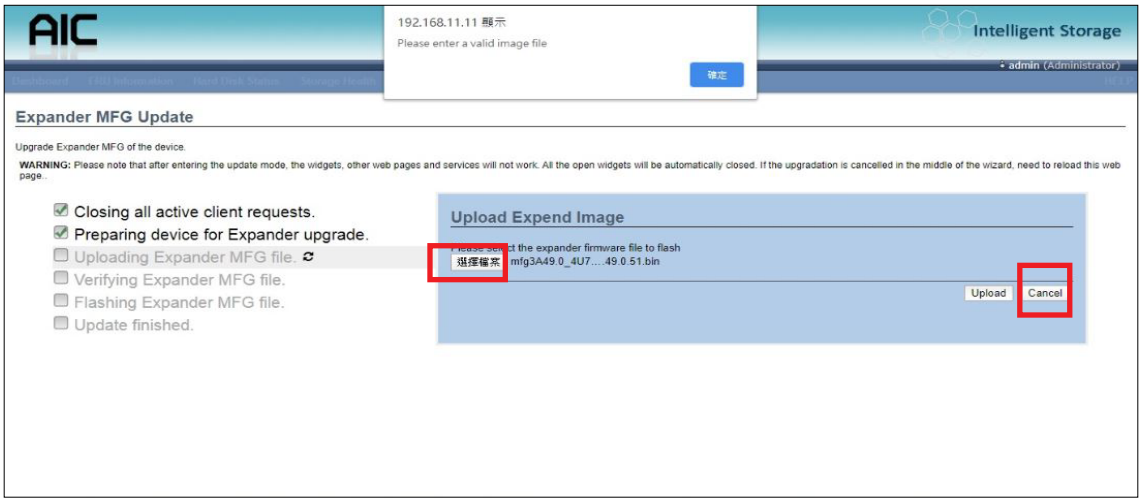
7. The screen automatically jumps to Expander MFG Update page after FW expander image has been updated. Under "Upload Expander image," select a MFG image and click **Upload**.



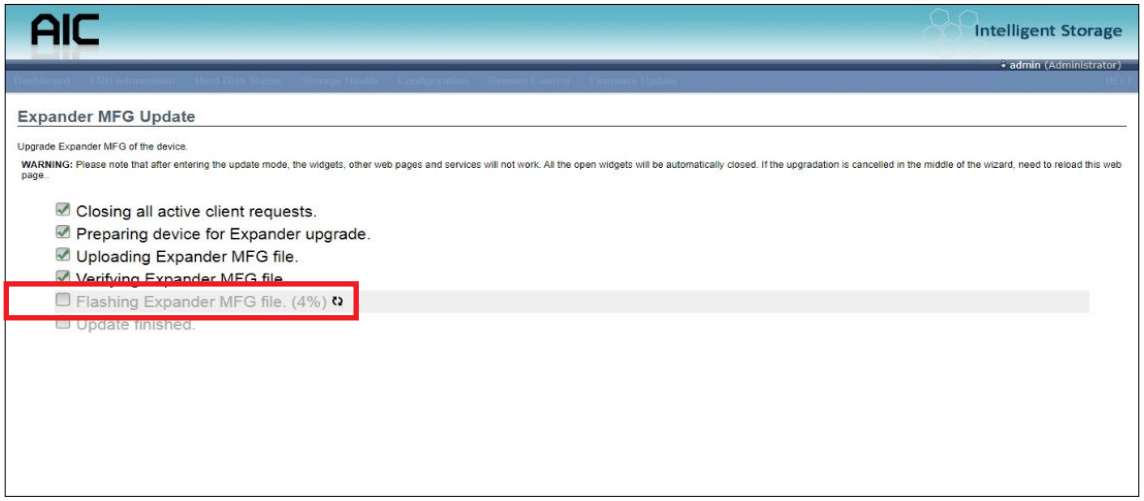
8. Under "File Updated," click **Proceed** to continue.



NOTE
If an error message appears after you clicked uplaod, please reselect an expander image or press **Cancel**.



9. Wait a few seconds for the system to confirm that **Flashing MGF Image** is complete.



10. The message "Expander has been updated" appears.

11. Close the browser page and power cycle the system to complete update.

Chapter 5. Technical Support

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