PCI4-ENC16G-24UM

PCIe Gen4 2U 24-Bay NVMe JBOF

User’s Manual

REV 1.0

Edit in July.

1. Package Checklist

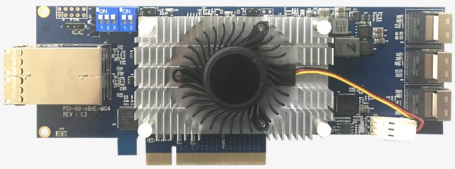
Before the installation of the enclosure, verify that the items below are included in the package:

。1. US_PM4-2425 enclosure × 1
。2. U.2 SSD drive tray (already installed in US_PM4-2425) × 24
。3. U.2 SSD mounting screw × 96
。4. Power cords × 2
。5. Rack mounting rail kits × 1

Optional: (number of host cards and cables depends on which mode selected; see section 4)

。6. PCIe Host Adapter cards

a.) PCI4-AD-X16HE-BG4

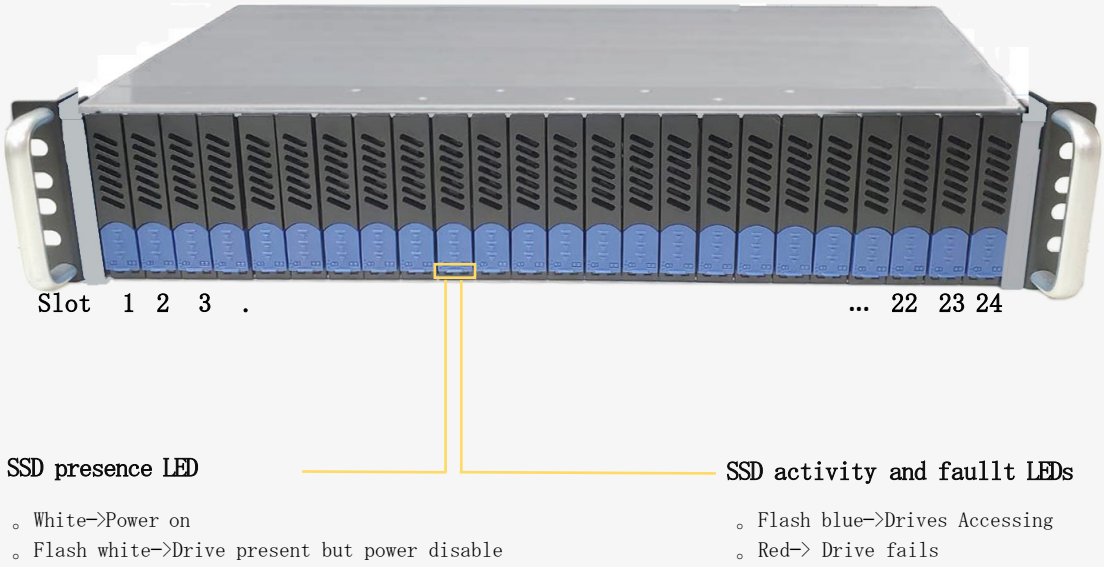


b.) PCI4-AD-X8HE-MG4

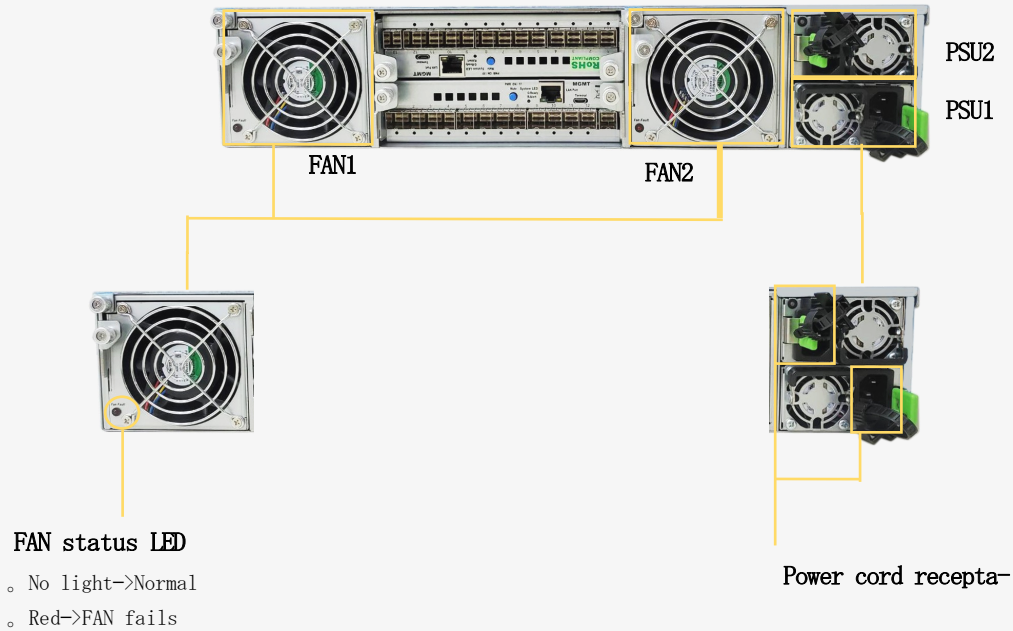
。7. MiniSAS HD SFF8674 to SFF8674 cables

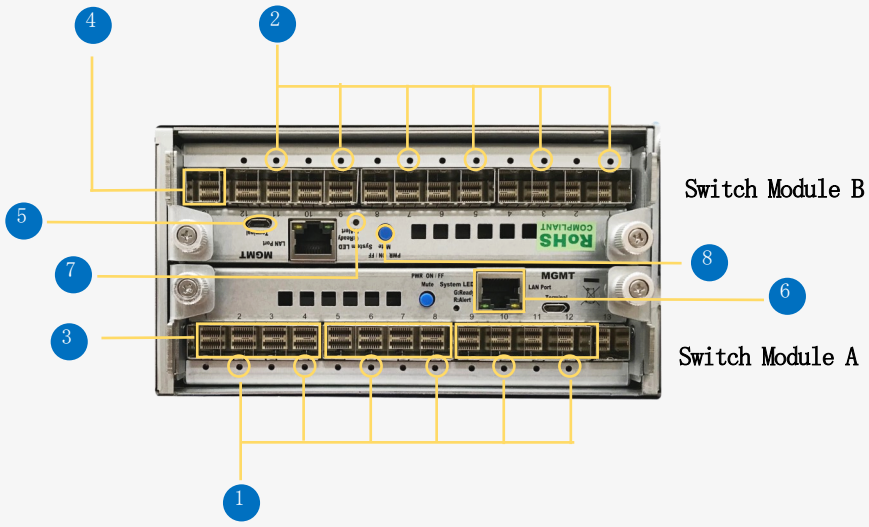
2. JBOF Enclosure Descriptions

2.1 Front Panel



2.2 Rear Panel





1. Upstream/Cascaded port indicator LEDs
   - Solid blue->Upstream port
   - Flashing blue->Cascaded port
2. Link width matching LEDs
   - Solid Red->Link width doesn't match with configured width
   - No light->Link width matching
3. Quad ports HD mini-SAS connectors

   SFF8674 connectors
4. Single port HD mini-SAS connector (Reserved)

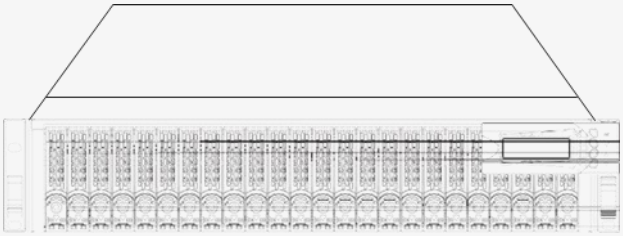
   SFF8674 connectors
5. Micro-USB port

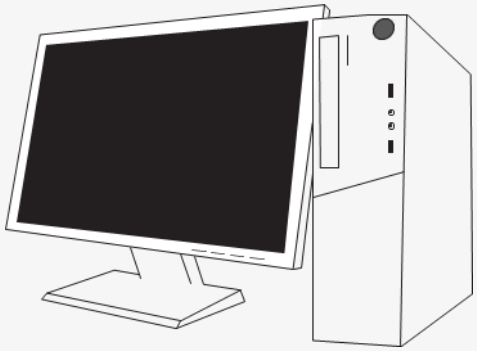
   CLI Management
6. RJ45 LAN port

   CLI Management
7. System LED
   - Green->Normal
   - Red->failure events occurred
8. Mute/Power button
   - One time mute the beeping for existing failure events
   - Power ON->Press over 2sec
   - Power OFF->Press over 5sec

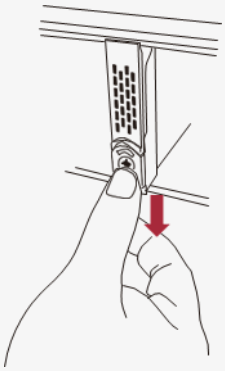
3. Enclosure Installation

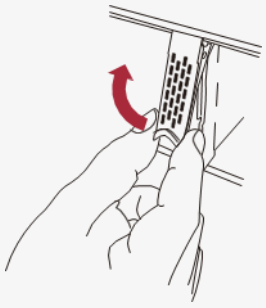
1. Remove the UStorage US_PM4-2425 enclosure from its packaging, and place the enclosure next to computer, server, or workstation.





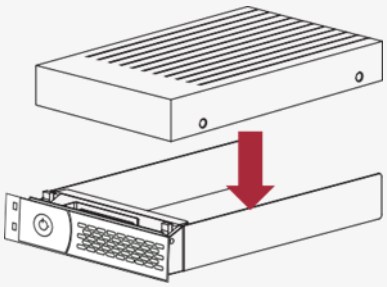
2. Hold one of the U.2 drive trays from the enclosure and push its button downward for the release of the lever until the lever pops out.





3. Place a U.2 drive tray on a flat and level surface, and then attach the 2.5" U.2

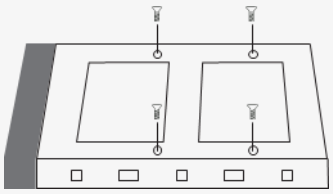
NVMe SSD into the tray.



4. Adopt four of the screws provided, and fasten the U.2 NVMe SSD on the tray.

Tighten each screw to fasten the U.2 NVMe SSD snugly to the drive tray. Do not tighten the

screws overly.

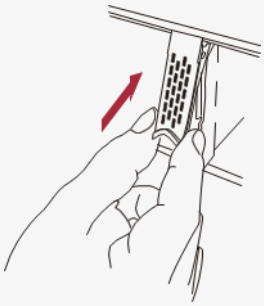


※ You must verify the heads of the four screws are level with the U.2 drive tray while the 2.5" U.2 NVMe SSD is attached to the tray; otherwise, a screw may take hold of the tray from the bottom side and prevent you to pull the tray out of the enclosure.

5. Insert the U.2 drive module into the US_PM4-2425 enclosure correctly until its

lever appears to shut, and then press the lever to close until it clicks to ensure that the U.2 drive

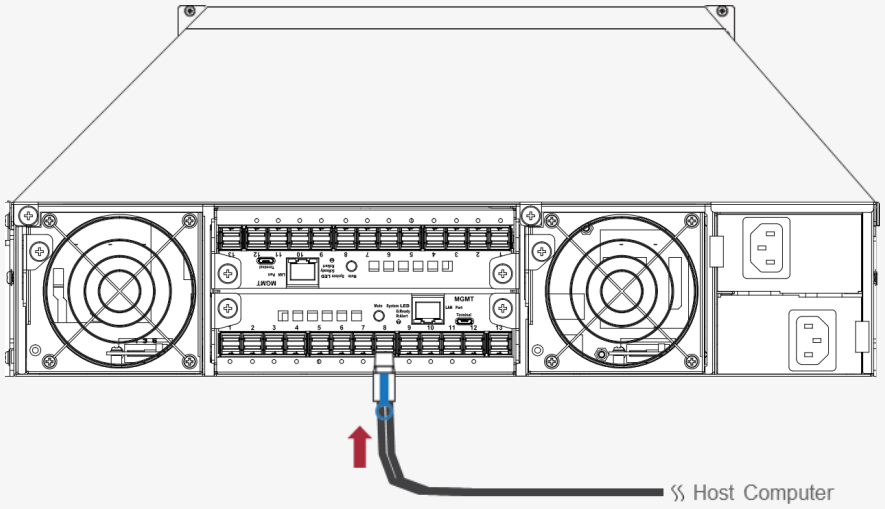
module is within the enclosure.



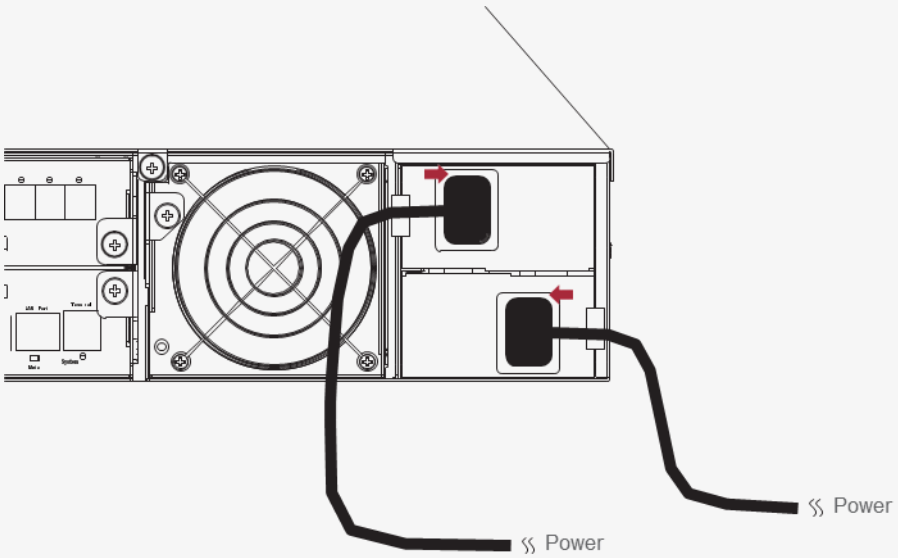
※ Do not force the levers to close while you insert U.2 drive modules into the enclosure. If a lever does not close smoothly, draw out and insert the U.2 drive module again, and then press the lever to close.

6. Repeat steps 2 to 5 for further U.2 NVMe SSD drives.

7. Connect US_PM4-2425 enclosure to the host card in server/computer through the HD mini-SAS (SFF-8674) to HD mini-SAS (SFF-8674) cables. Connection types between US_PM4-2425 and host servers are shown at section 4 of the user's manual.



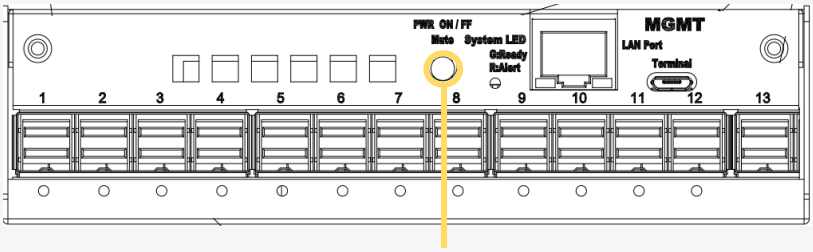
8. The US_PM4-2425 enclosure is with redundant PSU, so connect one end of the two power cords to the two power receptacles at rear of US_PM4-2425 enclosure, and then connect the other end of the two power cords to the power outlets.



9. After the two power cords are connected, you can press the mute button in either switch board

for 2 seconds or have CLI commands “syspwr on” thru Ethernet or USB port to power on the NVMe

JBOF enclosure, and then power on the server/computer.



Power button

10. Visit the website below for how install the rail kits to JBOF and into rack.

https://www.youtube.com/watch?v=s41XnpJoAmA

4. Switch Bifurcations And Connections

Users can use CLI command to set the switch mode. PCI4-ENC16G-24UM NVMe JBOF provides 7 modes for selection in support of application.

Modes	Bifurcations per switch board			Model Support
	Host / width	Cascaded / width	Devices	
1	One/x16	Two/ x16	Host can access x2 of dual port drives in 24 slots	
2	Two/x16	Two/ x8	Each host can access x2 of dual port drives in 12 slots	
3	Three/x16	None	Each host can access x2 of dual port drives in 8 slots	
4	One/x16	Two/ x16	Host can access x4 of single port drives in 12 slots	
5	Two/x16	Two/ x8	Each host can access x4 of single port drives in 6 slots	
6	Three/x16	None	Each host can access x4 of single port drives in 4 slots	
7	One/x16	Two/ x16	Host can access 2x2 of dual port drives in 12 slots	

1. The last char of module name,

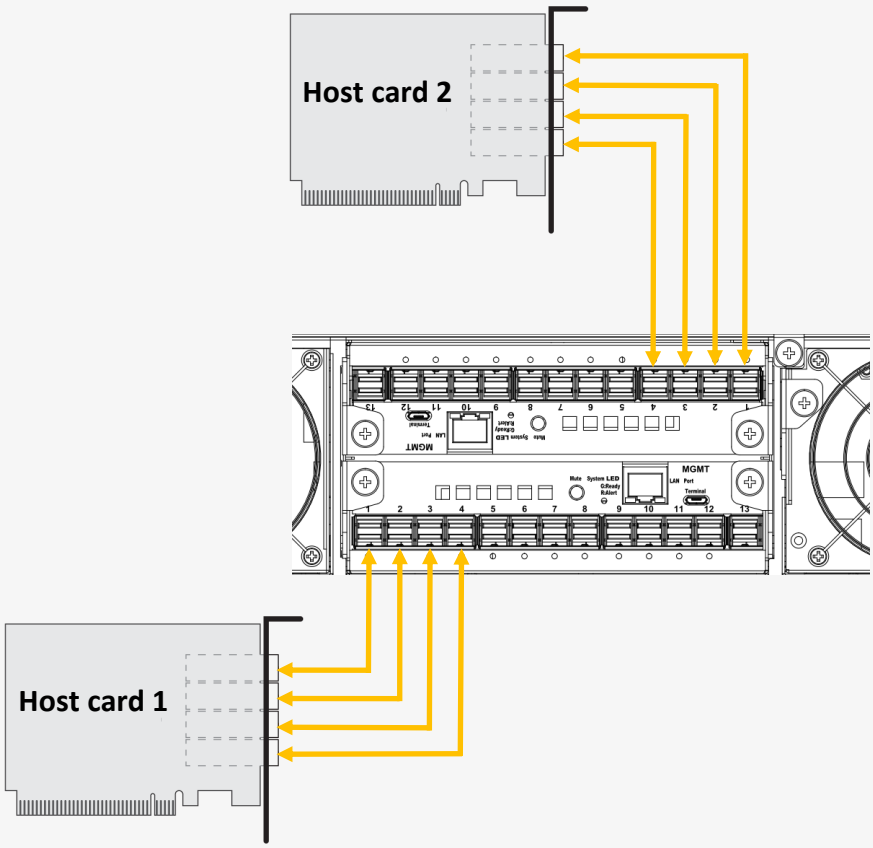
a.) D means installed with "dual port back plane board"

b.) S mean installed with "single port back plane board"

2. Mode 7 support in US_PM4-2425-FS, but all of lanes in dual port drive come from single switch board.

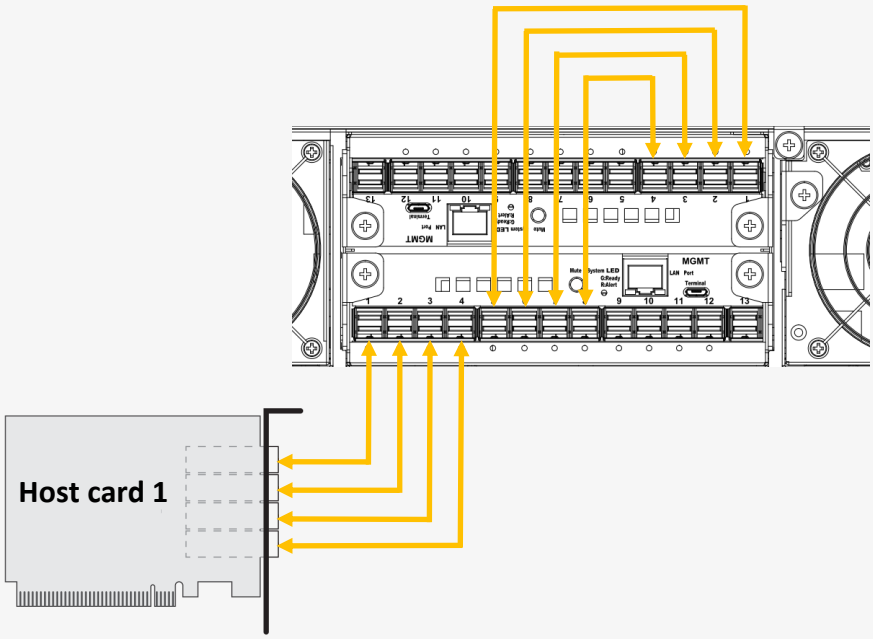
4.1 Mode 1_Connection A

Requirement	Host card x2, cables x8.
Bandwidth	PCIe Gen4 ×16, 256 Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 can assess the 1st x2 of dual port drives from slot 1 to slot 24. b.) Host card 2 can access the 2nd x2 of dual port drives from slot 1 to slot 24.



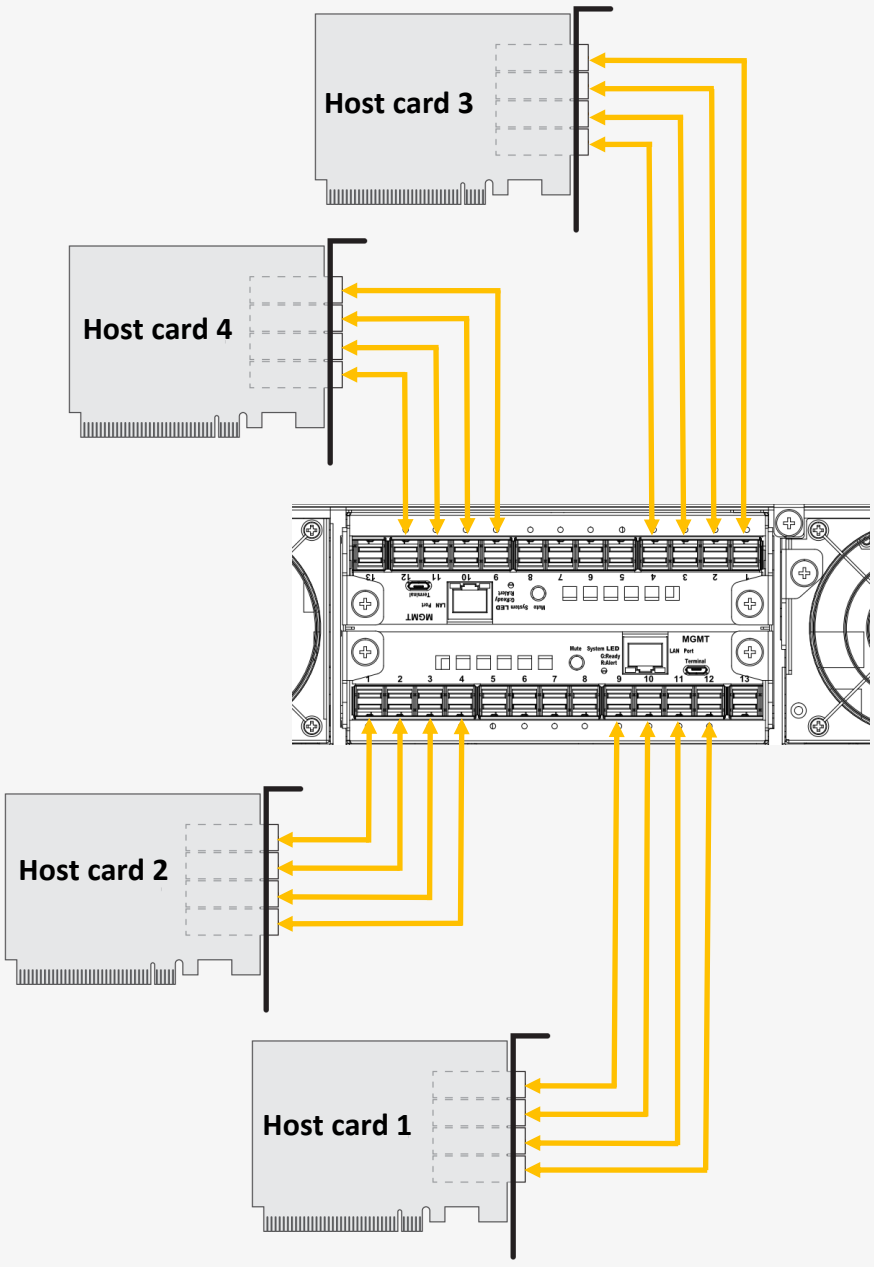
4.1 Mode 1_Connection B

Requirement	Host card x1, cables x8.
Bandwidth	PCIe Gen4 ×16, 256 Gbps (PCIe switch board A+ B)
NVMe SSDs	Host card 1 can assess the 1st and 2nd x2 of dual port drives from slot 1 to slot 24.



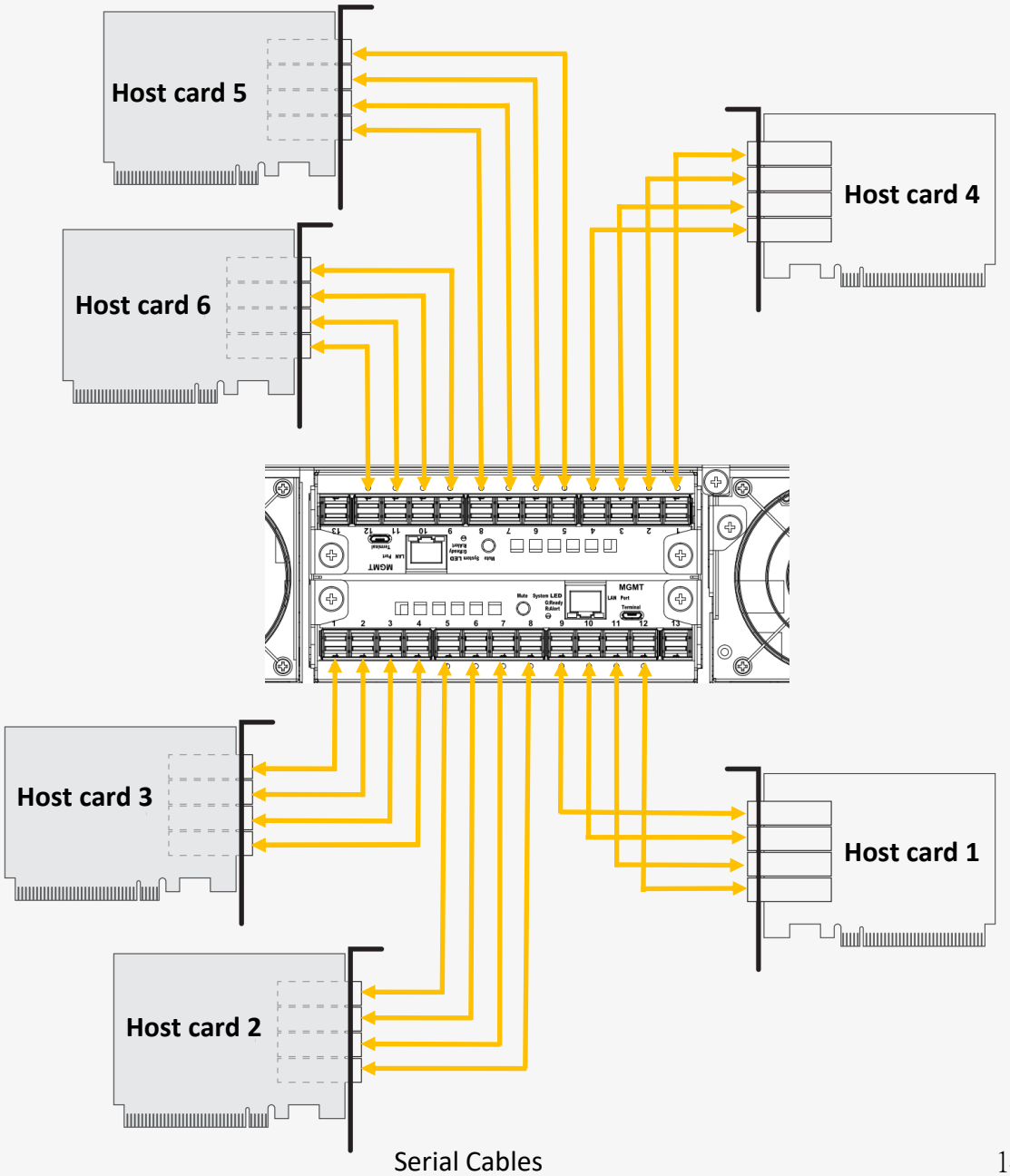
4.2 Mode 2

Requirement	Host card x4, cables x16.
Bandwidth	PCIe Gen4 ×32, 384Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 and 3 can assess the 1st and 2nd x2 of dual port drives from slot 1 to slot 12. b.) Host card 2 and 4 can access the 1st and 2nd x2 of dual port drives from slot 13 to slot 24.



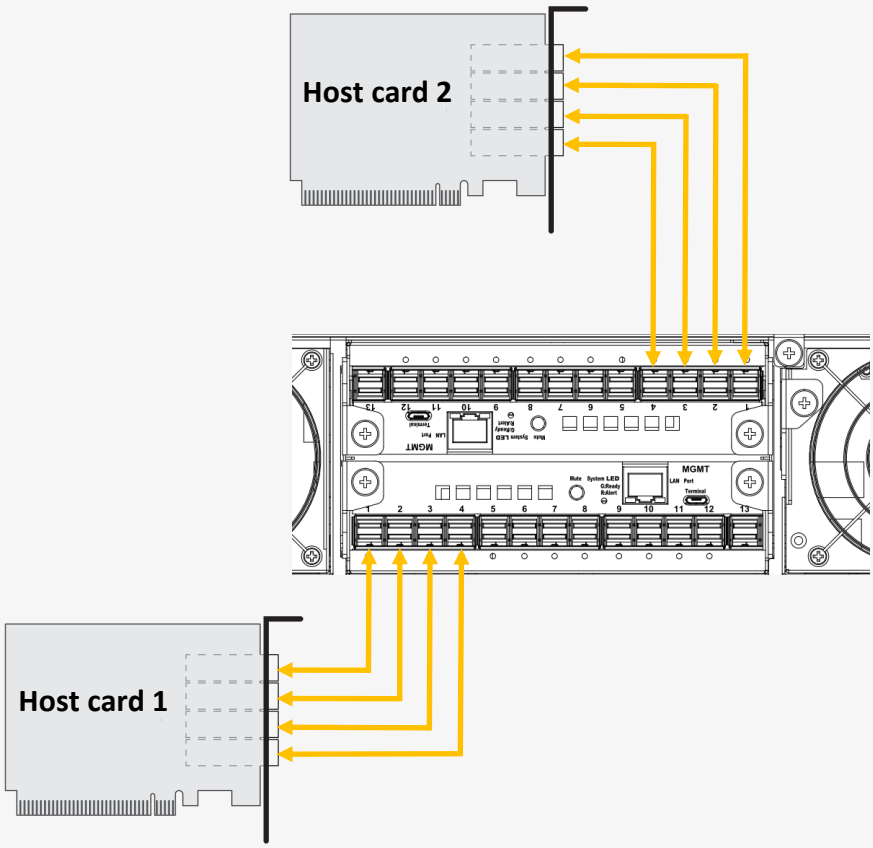
4.3 Mode 3

Requirement	Host card x6, cables x24.
Bandwidth	PCIe Gen4 ×48, 768Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 and 4 can assess the 1st and 2nd x2 of dual port drives from slot 1 to slot 8. b.) Host card 2 and 5 can access the 1st and 2nd x2 of dual port drives from slot 9 to 16. c.) Host card 3 and 6 can access the 1st and 2nd x2 of dual port drives from slot 17 to 24.



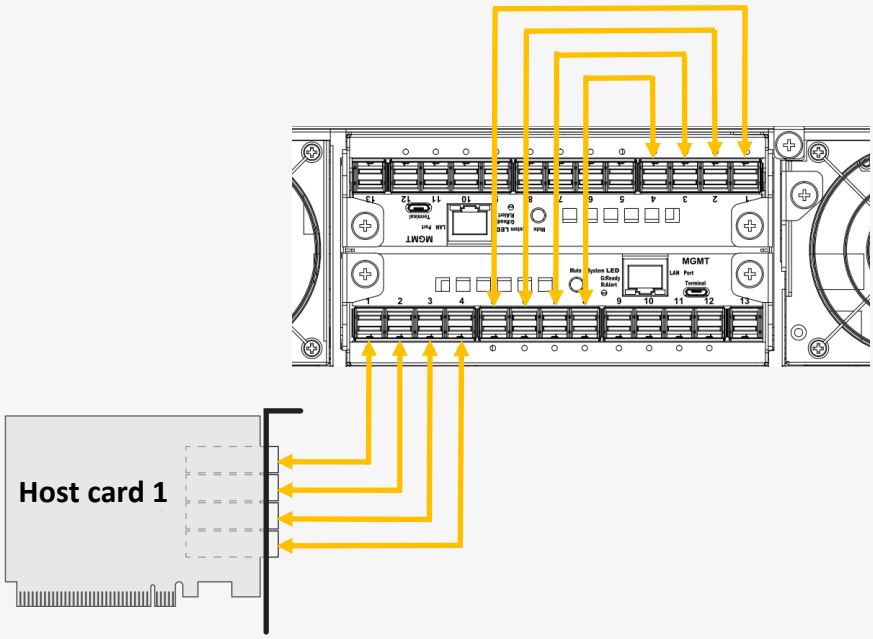
4.4 Mode 4_Connection A

Requirement	Host card x2, cables x8.
Bandwidth	PCIe Gen4 ×16, 256 Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 can assess x4 single port drives from slot 1 to slot 12. b.) Host card 2 can assess x4 single port drives from slot 13 to slot 24.



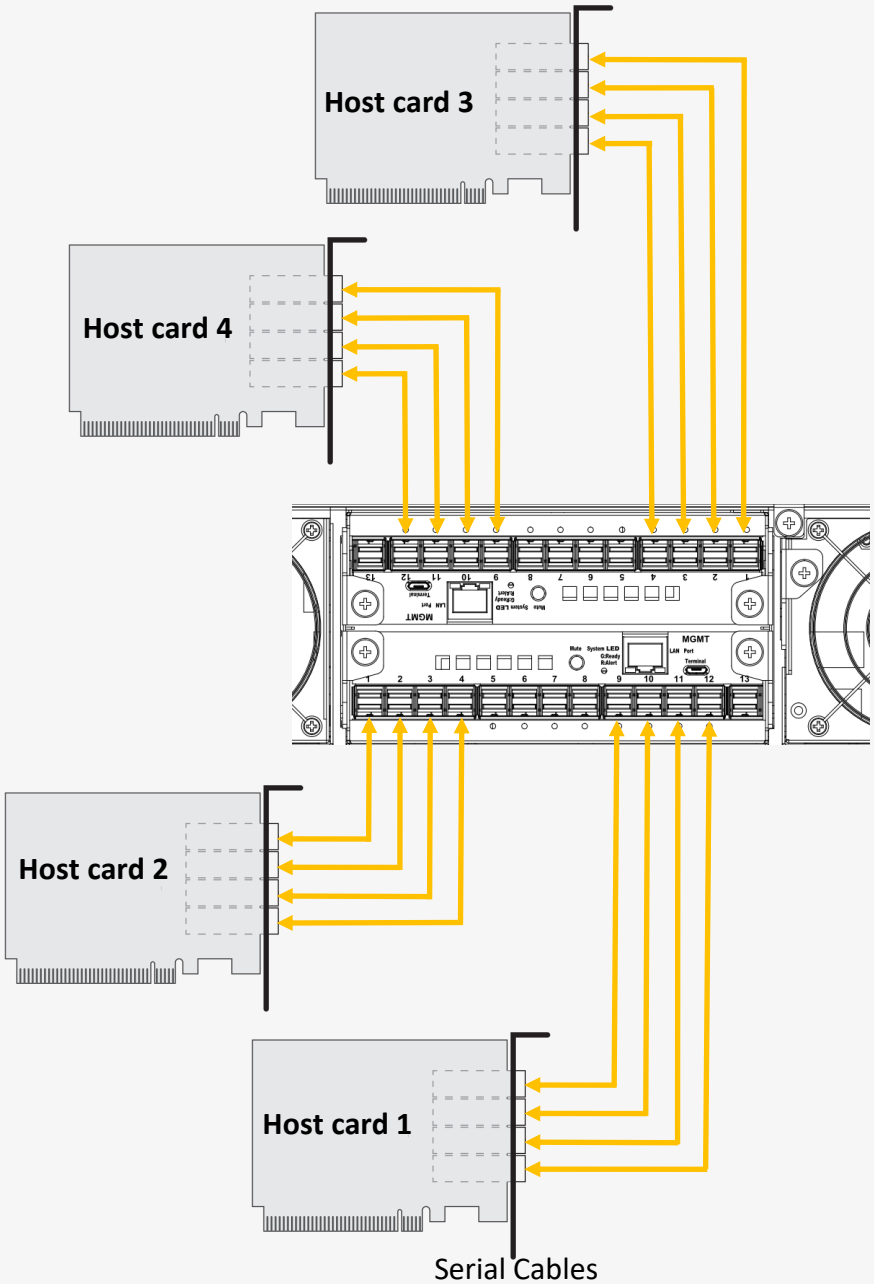
4.4 Mode 4_Connection B

Requirement	Host card x1, cables x8.
Bandwidth	PCIe Gen4 ×16, 256 Gbps (PCIe switch board A+ B)
NVMe SSDs	Host card 1 can assess x4 single port drives from slot 1 to slot 24.



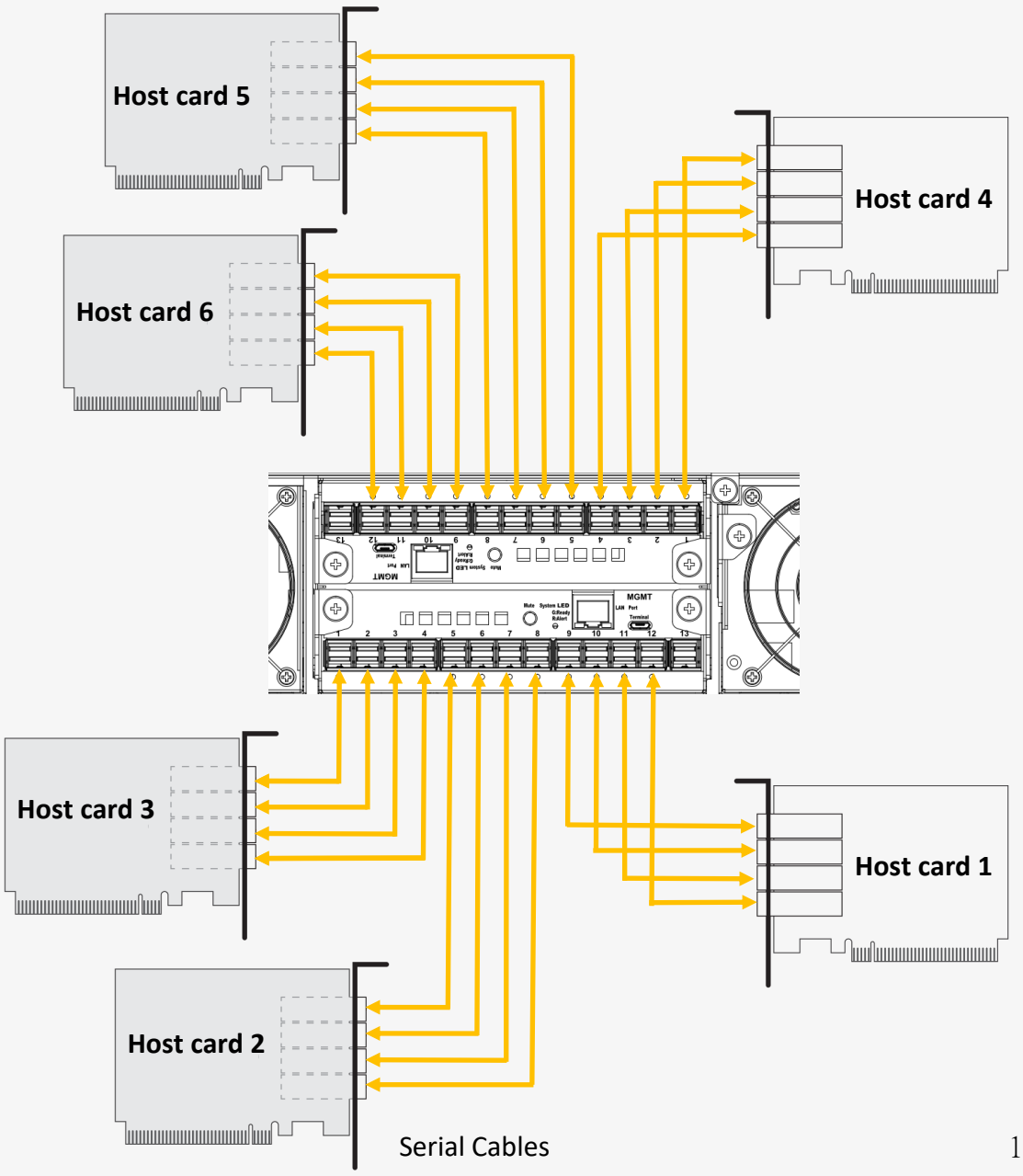
4.5 Mode 5

Requirement	Host card x4, cables x16.
Bandwidth	PCIe Gen4 ×32, 384Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 can assess x4 single port drives from slot 1 to slot 6. b.) Host card 2 can assess x4 single port drives from slot 7 to slot 12. c.) Host card 3 can assess x4 single port drives from slot 13 to slot 18. d.) Host card 4 can assess x4 single port drives from slot 19 to slot 24.



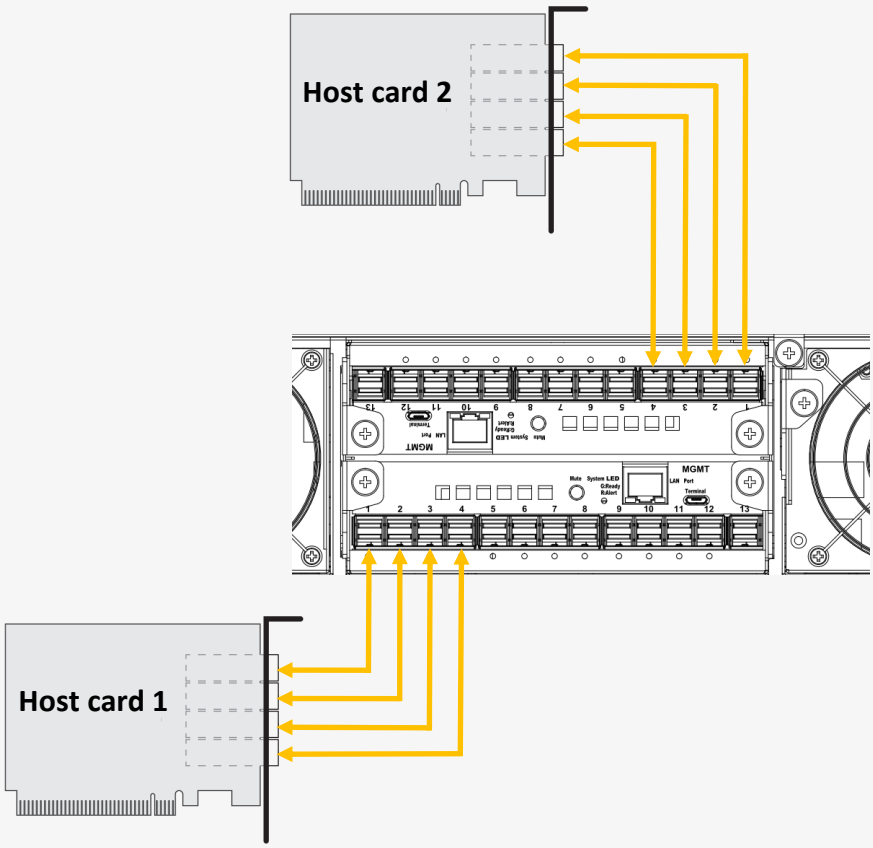
4.6 Mode 6

Requirement	Host card x6, cables x24.
Bandwidth	PCIe Gen4 ×48, 768Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 can assess x4 single port drives from slot 1 to slot 4. b.) Host card 2 can assess x4 single port drives from slot 5 to slot 8. c.) Host card 3 can assess x4 single port drives from slot 9 to slot 12. d.) Host card 4 can assess x4 single port drives from slot 13 to slot 16. c.) Host card 5 can assess x4 single port drives from slot 17 to slot 20. d.) Host card 6 can assess x4 single port drives from slot 21 to slot 24.



4.7 Mode 7

Requirement	Host card x2, cables x8.
Bandwidth	PCIe Gen4 ×16, 256Gbps (per PCIe switch board)
NVMe SSDs	a.) Host card 1 can assess the 1st and 2nd x2 of dual port drives from slot 1 to slot 12. a.) Host card 2 can assess the 1st and 2nd x2 of dual port drives from slot 13 to slot 24.



5. CLI manager

Users can use the Command Line Interface (CLI) via USB or Ethernet ports for NVMe JBOF enclosure management.

5.1 CLI setup

＊Notice: Download the Tera term program in the link below.

https://tera-term.en.lo4d.com/

Via USB port

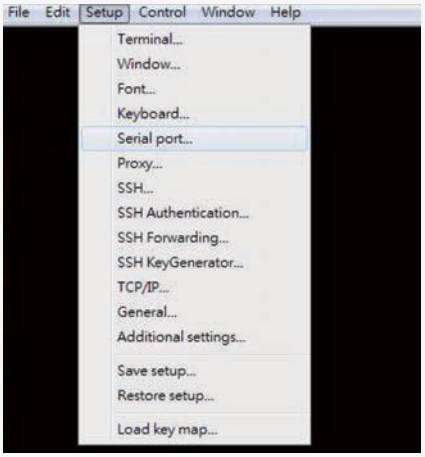
US_PM4-2425 NVMe JBOF utilizes the USB port as the serial port interface.
Please use USB Type-A to Micro-USB cable to connect between US_PM4-2425's switch controller and the computer/workstation; the operation system will detect a new USB-to-Serial COM Port.

＊Notice: Windows 10 and Linux all integrated the USB driver of MCU, for older Windows version, please download the driver in website below.

https://www.serialcables.com/wp-content/uploads/2018/11/SynergyUSBCDC_20180518.rar

Step 1. Install and launch Tera Term program.

Step 2. Press "setup" in menu options and select the "Serial port"

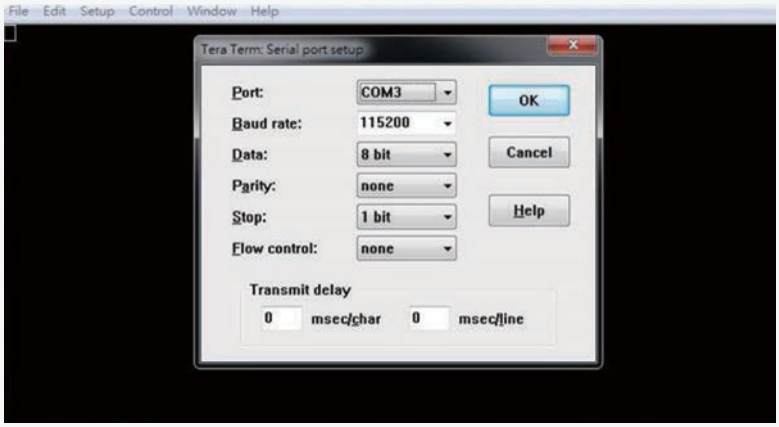


Step 3.

Sselect port as **COM3**.
(COM3 is the example; actual COM number will depend on the COM port that is used on the host computer)

Select 115200 for **"Baud rate"**, 8bit for **"Data"**, none for **"Parity"**, 1bit for **"STOP"**

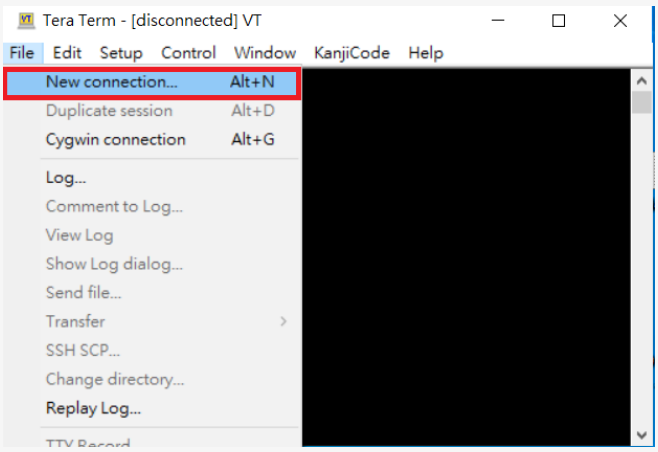
None for **"Flow control"**. Clock OK to start using CLI



Via Ethernet port

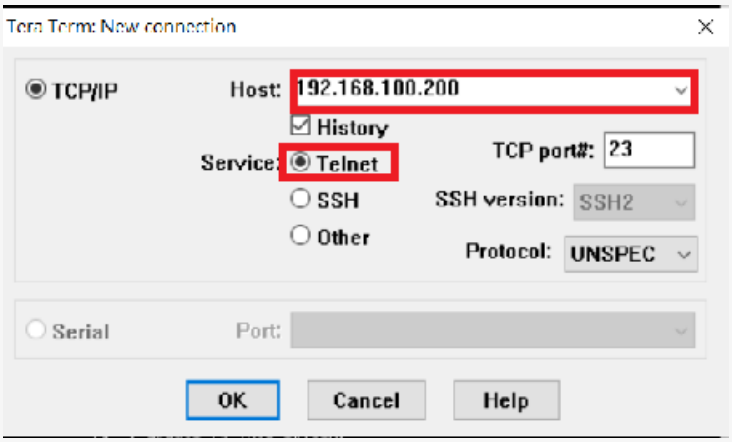
PCI4-ENC16G-24UM NVMe JBOF also utilizes the Ethernet port as the serial port interface. Please use Ethernet cable to connect between PCI4-ENC16G-24UM's switch controller and the computer/workstation.

Step 1. Press **"File"** in menu to create **"new connection"**



Step 2. Type the IP **"192.168.100.20" (default)** in the host option

Select "Telnet" in service option, press **"OK"** to start the telnet connection.



5.2 CLI Commands

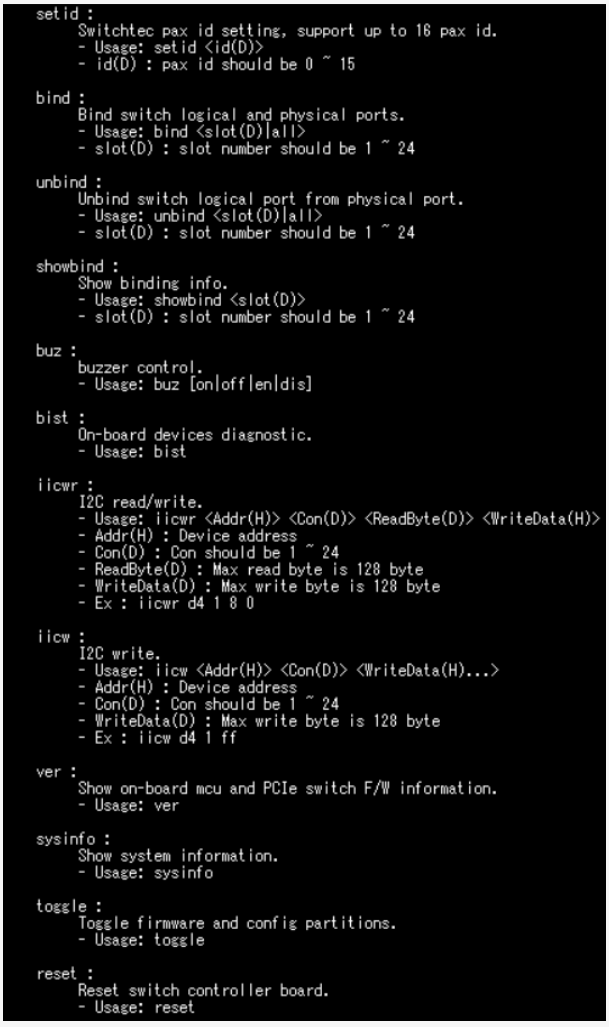
This section provides detailed information about PCI4-ENC16G-24UM NVMe JBOF CLI

Commands	Description
help	Show list of commands
syspwr	NVMe JBOF enclosure power ON/OFF control
eth	Ethernet IP configuration
dhcp	Ethernet DHCP function control
setmac	Set Ethernet MAC address
fdl	Update PCIe switch config/FW or MCU FW
lsd	Show environmental info, including temperatures, FANs, PSUs, voltages.
ssdpwr	Control the power of each U.2 slot.
ssdrst	To reset each U.2 NVMe SSD
pwrdis	set PWRDIS in U.2 as “H” or “L” state.
showmode	Show configuration mode for each PCIe switch board
setmode	Set configuration mode for PCIe switch board
setid	support in fabric JBOF SKU.
bind	Bind switch logical and physical ports
unbind	Unbind switch logical port from physical port
showbind	Show switch ports binding info
buz	Control the buzzer of PCIe switch board
bist	On-board I2C devices diagnostic
iicwr	SMBus data read per slot, support MCTP and NVMe-MI
iicw	SMBus data write per slot, support MCTP and NVMe-MI
ver	Show on-board MCU and PCIe switch F/W information
sysinfo	Dump NVMe JBOF enclosure informatioin
toggle	Toggle firmware and config partitions
reset	reset switch controller board

help Command

This command provides an online table of contents, providing brief description of the supported command groups and built-in commands.

-Usage: help



syspwr Command

NVMe JBOF enclosure power control.

This command allows users to remote power ON/OFF the NVMe JBOF enclosure from either switch controller board.

-Usage: syspwr [on|off]

```
Cmd>syspwr on
```

Power on the JBOF enclosure.

```
Cmd>syspwr off
```

Power off the JBOF enclosure.

eth Command

Ethernet IP configuration

Shows the Ethernet port configuraiton , etc. MAC address, IP address, link status, gateway, MTU, DHCP.

-Usage: eth

```
Cmd>eth

============================================================
    Physical Address . . . . . : 84-81-D2-8E-22-23
    Ethernet Link Status . . . . . : Up
    IP Address . . . . . : 192.168.100.200
    Subnet Mask  . . . . . : 255.255.255.0
    Gateway  . . . . . : 192.168.100.253
    MTU  . . . . . : 1500
    DHCP . . . . . : OFF
============================================================
```

dhcp Command

Ethernet DHCP function control

Enable or disable DHCP function support for Ethernet port.

-Usage: dhcp [on|off]

```
Cmd>dhcp on

 Set Ethernet - save configuration ok
Cmd>eth


============================================================
    Physical Address . . . . . . . . . : 84-81-D2-8E-22-23
    Ethernet Link Status . . . . . . . : Up
    IP Address . . . . . . . . . . . . : 192.168.1.225
    Subnet Mask  . . . . . . . . . . . : 255.255.255.0
    Gateway  . . . . . . . . . . . . . : 192.168.1.1
    MTU  . . . . . . . . . . . . . . . : 1500
    DHCP . . . . . . . . . . . . . . . : ON
============================================================
```

setmac Command

Setting the MAC address to the Ethernet

To program any MAC address for testing purpose. The new MAC address will be applied after MCU reset or switch controller board power cycle.

-Usage: sage: setmac <xx:xx:xx:xx:xx:xx>

```
Cmd>setmac 00:11:22:33:44:55

 MacAddress[0]  0

 MacAddress[1] 11

 MacAddress[2] 22

 MacAddress[3] 33

 MacAddress[4] 44

 MacAddress[5] 55

 Set MAC - save configuration ok
```

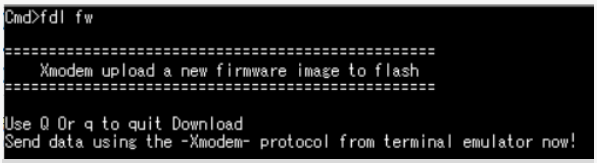
Set MAC address to 00:11:22:33:44:55

fdl Command

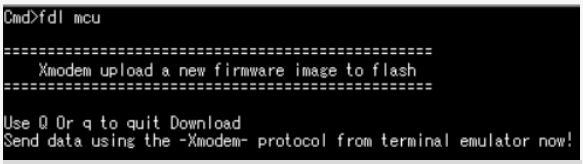
Update PCIe switch config/FW or MCU FW

1. *fdl fw command is used to update the config or FW into Switchtec PCIe switch.*
2. *fdl mcu command is for on-board MCU FW upgrading.*

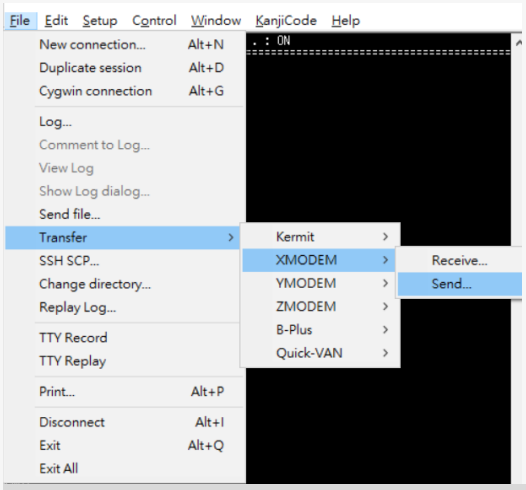
- Usage: fdl <fw|mcu>
- fw : update fw into switch.
- mcu : update on-board mcu fw.



Update PCIe switch FW or config file.



Update MCU FW.



Sending the new FWs via XMODEM.

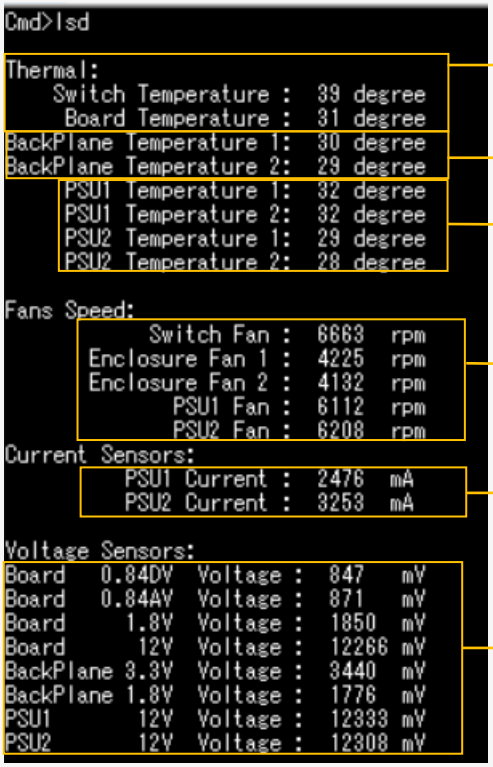
It will take few minutes for switch FW updating,

A few seconds for switch config or MCU FW updating.

lsd Command

Show environmental info, including temperature, FANs, PSUs, voltages.

- Usage: lsd



- *Switch temp is switch die temperature*
- *Board temp is the sensor in switch module.*
- *Two temp sensors located in back plane board.*
- *Two temp sensors inside PSU*
- *Switch FAN is the FNA for PCIe switch*
- *Fan1/Fan2 are the FANs located in the rear of enclosure*
- *It also integrates FAN in PSU*
- *The 12Votls current output per PSU*
- *Four major voltages in PCIe switch module*
- *Two major voltages in Back Plane Board*
- *12Volts output monitoring per PSU*

ssdpwr Command

The command is for controlling the 12 volts power of each U.2 NVMe drive slot.

- Usage: ssdpwr [<slot(D|all)> <on|off>]
- slot(D) : slot number should be 1 ~ 24

```
Cmd>ssdpwr 1 off
Slot 01 turn off success.
```

Power off slot 1

```
Cmd>ssdpwr 1 on
Slot 01 turn on success.
```

Power on slot 1.

```
Cmd>ssdpwr all off
Slot 01 turn off success.
Slot 02 turn off success.
Slot 03 turn off success.
Slot 04 turn off success.
Slot 05 turn off success.
Slot 06 turn off success.
Slot 07 turn off success.
Slot 08 turn off success.
Slot 09 turn off success.
Slot 10 turn off success.
Slot 11 turn off success.
Slot 12 turn off success.
Slot 13 turn off success.
Slot 14 turn off success.
Slot 15 turn off success.
Slot 16 turn off success.
Slot 17 turn off success.
Slot 18 turn off success.
Slot 19 turn off success.
Slot 20 turn off success.
Slot 21 turn off success.
Slot 22 turn off success.
Slot 23 turn off success.
Slot 24 turn off success.
```

Power on for all slots.

ssdrst Command

To reset each U.2 NVMe SSD .

To generate an around 350ms "L" duration in PERST# signals in U.2 slot.

A channel means ePERST0# in U.2 Pin E5 for 1st PHY of dual port drives.

B channel means ePERST1# in U.2 Pin E4 for 2nd PHY of dual port drives.

- Usage: ssdrst <slot(D)|all> [channel(C)]
- slot(D) : slot number should be 1 ~ 24
- channel(C) : channel should be a or b

```
Cmd>ssdrst 1
Reset con 1 success
```

Issue PERST# to both of A and B channels in slot

```
Cmd>ssdrst 1 a
Reset channel a of con 1 success
```

Issue PERST# to both A channel in slot 1.

```
Cmd>ssdrst all
Reset all con success
```

issue PERST# to both of A and B channels in all

pwrdis Command

Set pwrdis in slot pin3 level to high/low.

Set PWRDIS to "H" state to disable SSD power.

Set PWRDIS to "L" state to enable SSD power

- Usage: pwrdis [<slot(D)|all> <h/l>(C)]
- slot(D) : slot number should be 1 ~ 24
- h(C) : disable SSD power
- l(C) : enable SSD power

```
Cmd>pwrdis all h

Set slot 1 pwrdis level to high success.
Set slot 2 pwrdis level to high success.
Set slot 3 pwrdis level to high success.
Set slot 4 pwrdis level to high success.
Set slot 5 pwrdis level to high success.
Set slot 6 pwrdis level to high success.
Set slot 7 pwrdis level to high success.
Set slot 8 pwrdis level to high success.
Set slot 9 pwrdis level to high success.
Set slot 10 pwrdis level to high success.
Set slot 11 pwrdis level to high success.
Set slot 12 pwrdis level to high success.
Set slot 13 pwrdis level to high success.
Set slot 14 pwrdis level to high success.
Set slot 15 pwrdis level to high success.
Set slot 16 pwrdis level to high success.
Set slot 17 pwrdis level to high success.
Set slot 18 pwrdis level to high success.
Set slot 19 pwrdis level to high success.
Set slot 20 pwrdis level to high success.
Set slot 21 pwrdis level to high success.
Set slot 22 pwrdis level to high success.
Set slot 23 pwrdis level to high success.
Set slot 24 pwrdis level to high success.
```

Set PWRDIS to "H" state for all slots.

```
Cmd>pwrdis 1 h

Set slot 1 pwrdis level to high success.
```

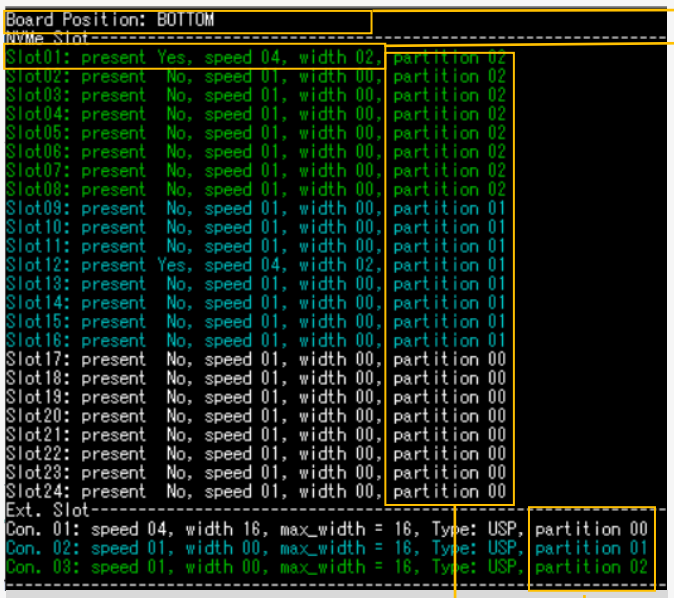
Set PWRDIS to "H" state in slot 1.

showport Command

Show link status for USP/DSP and slot.

The USP/DSP/slot information will be different based on port bifurcation and victual switch setting, also the back plane board type.

Usage: showport



Example in Mode 3

☐ Shows the switch board location

☐ Present: Yes, A drive plugging in slot 1

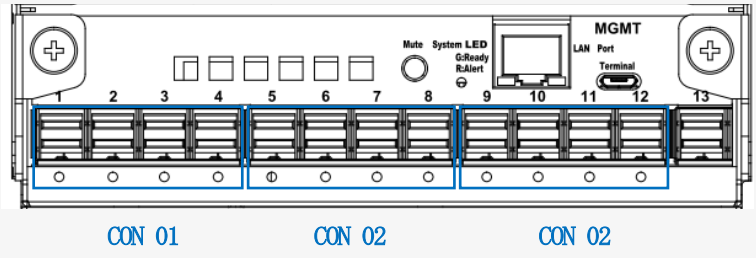
☐ Speed 04, negotiated link speed in Gen4

Mode 3 supports 3 hosts

☐ slot 17:24 belong to USP CON 01 in partition 00

☐ slot 9:16 belong to USP CON 02 in partition 01

☐ slot 1:8 belong to USP CON 03 in partition 02



```
NVMe Slot----------------------------------------------------------
Slot01: present Yes, speed 04, width 02, partition 01
Slot02: present  No, speed 01, width 00, partition 01
Slot03: present  No, speed 01, width 00, partition 01
Slot04: present  No, speed 01, width 00, partition 01
Slot05: present  No, speed 01, width 00, partition 01
Slot06: present  No, speed 01, width 00, partition 01
Slot07: present  No, speed 01, width 00, partition 01
Slot08: present  No, speed 01, width 00, partition 01
Slot09: present  No, speed 01, width 00, partition 01
Slot10: present  No, speed 01, width 00, partition 01
Slot11: present  No, speed 01, width 00, partition 01
Slot12: present Yes, speed 04, width 02, partition 01
Slot13: present  No, speed 01, width 00, partition 00
Slot14: present  No, speed 01, width 00, partition 00
Slot15: present  No, speed 01, width 00, partition 00
Slot16: present  No, speed 01, width 00, partition 00
Slot17: present  No, speed 01, width 00, partition 00
Slot18: present  No, speed 01, width 00, partition 00
Slot19: present  No, speed 01, width 00, partition 00
Slot20: present  No, speed 01, width 00, partition 00
Slot21: present  No, speed 01, width 00, partition 00
Slot22: present  No, speed 01, width 00, partition 00
Slot23: present  No, speed 01, width 00, partition 00
Slot24: present  No, speed 01, width 00, partition 00
Ext. Slot----------------------------------------------------------
Con. 01: speed 04, width 16, max_width = 16, Type: USP, partition 00
Con. 02: speed 01, width 00, max_width = 8 , Type: DSP, partition 00
Con. 03: speed 01, width 00, max_width = 8 , Type: DSP, partition 01
Con. 04: speed 01, width 00, max_width = 16, Type: USP, partition 01
```

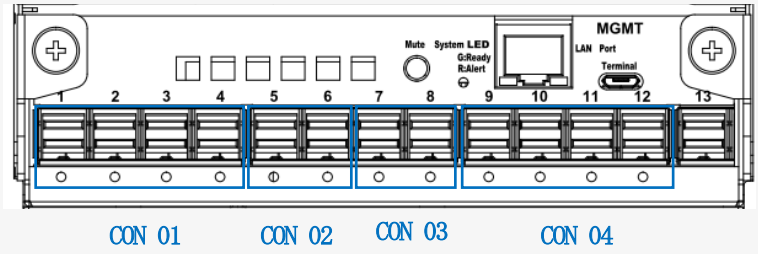
Example in Mode 2

Mode 2 supports 2 hosts

☐ slot 17:24 belong to USP CON 01 and DSP CON 02 in partition 00

☐ slot 1:12 belong to USP CON 04 and DSP CON 03 in partition 01

DPS CON 02/03 are used for cascaded with x8 link width



showmode Command

Show configuration mode for each PCIe switch board

Usage: showmode

setmode Command

Set bifurcation mode of switch controller board.

See section4 for more detail descriptions in mode configuration

- Usage: setmode <mode(D)>
- mode(D) : mode number should be 1 ~ 7

setid Command

Support in Fabric JBOF only

bind Command

Bind switch logical and physical ports

All slots are bind to switch in all of bifurcation modes.

- Usage: bind <slot(D)|all>
- slot(D) : slot number should be 1 ~ 24

```
Cmd>bind 1
Bind slot 1 success.
```

Bind drive in slot 1 to PCIe switch

```
Cmd>bind all
Bind slot 1 success.
Bind slot 2 success.
Bind slot 3 success.
Bind slot 4 success.
Bind slot 5 success.
Bind slot 6 success.
Bind slot 7 success.
Bind slot 8 success.
Bind slot 9 success.
Bind slot 10 success.
Bind slot 11 success.
Bind slot 12 success.
Cmd>bind all
Bind slot 1 fail.
Bind slot 2 fail.
Bind slot 3 fail.
Bind slot 4 fail.
Bind slot 5 fail.
Bind slot 6 fail.
Bind slot 7 fail.
Bind slot 8 fail.
Bind slot 9 fail.
Bind slot 10 fail.
Bind slot 11 fail.
Bind slot 12 fail.
```

bind command applying when the slot is in "unbind" state. It will show "fail" if the

unbind Command

Unbind switch logical port from physical port

Unbind is used to disable the link between drive and PCIe switch.

- Usage: unbind <slot(D)|all>
- slot(D) : slot number should be 1 ~ 24

```
Cmd>unbind 1
UnBind slot 1 success.
```

unbind drive in slot 1 to PCIe switch

```
Cmd>unbind all
UnBind slot 1 success.
UnBind slot 2 success.
UnBind slot 3 success.
UnBind slot 4 success.
UnBind slot 5 success.
UnBind slot 6 success.
UnBind slot 7 success.
UnBind slot 8 success.
UnBind slot 9 success.
UnBind slot 10 success.
UnBind slot 11 success.
UnBind slot 12 success.
Cmd>unbind all
UnBind slot 1 fail.
UnBind slot 2 fail.
UnBind slot 3 fail.
UnBind slot 4 fail.
UnBind slot 5 fail.
UnBind slot 6 fail.
UnBind slot 7 fail.
UnBind slot 8 fail.
UnBind slot 9 fail.
UnBind slot 10 fail.
UnBind slot 11 fail.
UnBind slot 12 fail.
```

unbind command applying when the slot is in “bind” state. It will show “fail” if the slot is unbind

showbind Command

Show binding info

- Usage: showbind <slot(D)>
- slot(D) : slot number should be 1 ~ 24

```
Cmd>showbind 1
Slot 1: partition = 255, physical = 0, logical = 255, status = Unbound.
```

Drive in slot 1 is “unbound”, no partition and logical port

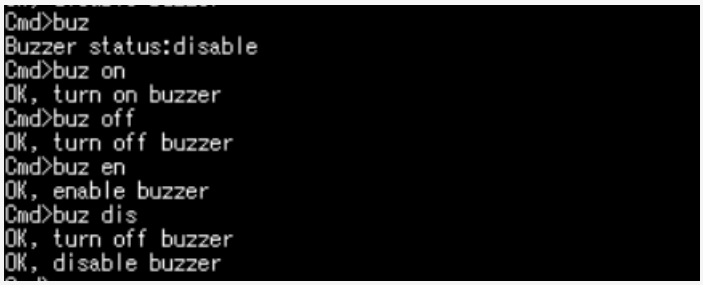
```
Cmd>Cmd>showbind
Slot 01: partition =   0, physical =   0, logical =   1, status = Bound.
Slot 02: partition =   0, physical =   2, logical =   2, status = Bound.
Slot 03: partition =   0, physical =   4, logical =   3, status = Bound.
Slot 04: partition =   0, physical =   6, logical =   4, status = Bound.
Slot 05: partition =   0, physical =   8, logical =   5, status = Bound.
Slot 06: partition =   0, physical =  10, logical =   6, status = Bound.
Slot 07: partition =   0, physical =  12, logical =   7, status = Bound.
Slot 08: partition =   0, physical =  14, logical =   8, status = Bound.
Slot 09: partition =   0, physical =  16, logical =   9, status = Bound.
Slot 10: partition =   0, physical =  18, logical =  10, status = Bound.
Slot 11: partition =   0, physical =  20, logical =  11, status = Bound.
Slot 12: partition =   0, physical =  22, logical =  12, status = Bound.
```

All drives are “Bound”, it also shows the logical port number

buz Command

Buzzer control

- Usage: buz <on|off|en|dis>
- [en]: enable the buzzer function
- [dis]: disable the buzzer function
- [on]: set buzzer to beep in one time
- [off]: mute buzzer beeping

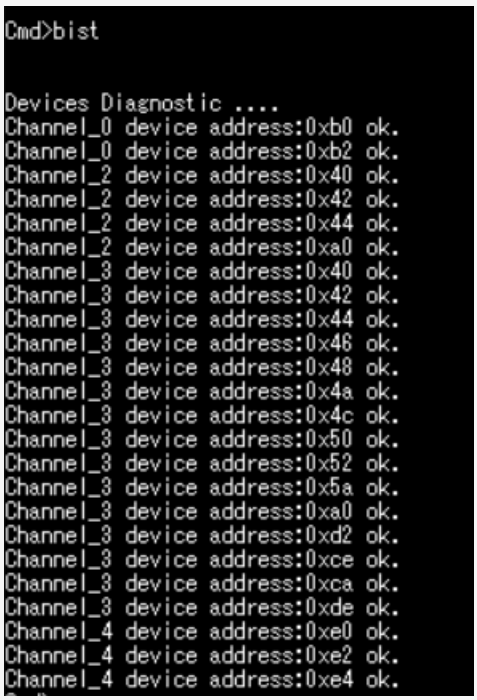


bist Command

On-board devices diagnostic

bist command is for NVMe enclosure diagnostic

- Usage: bist



iicwr Command

SMBus data read per slot, support MCTP and NVMe-MI

- Usage: iicwr <Addr(H)> <Con(D)> <ReadByte(D)> <WriteData(H)>
- Addr(H) : Device address
- Con(D) : Con should be 1 ~ 24
- ReadByte(D) : Max read byte is 128 byte
- WriteData(D) : Max write byte is 128 byte

Read 8 bytes data starts from register “0” from I2C slave address

iicw Command

SMBus data write per slot, support MCTP and NVMe-MI

- Usage: iicw <Addr(H)> <Con(D)> <WriteData(H)...>
- Addr(H) : Device address
- Con(D) : Con should be 1 ~ 24
- WriteData(D) : Max write byte is 128 byte

```
Cmd>iicw d4 1 ff

Write Data [0] = ff
```

Write

ver Command

Show on-board MCU and PCIe switch F/W information

- Usage: ver

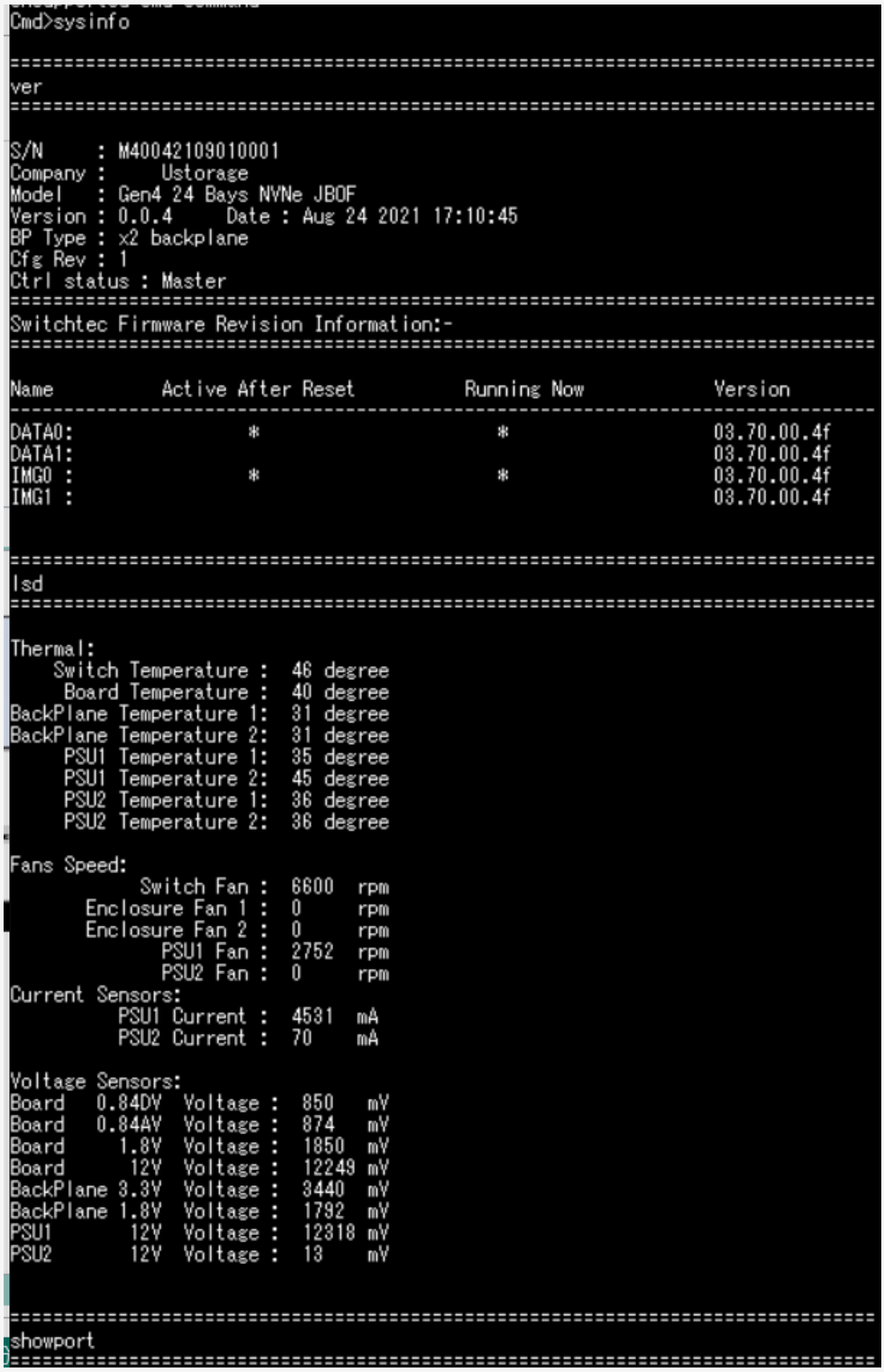
```
Cmd>ver

S/N     : M40042109010001
Company :     Ustorage
Model   : Gen4 24 Bays NVNe JBOF
Version : 0.0.4     Date : Aug 24 2021 17:10:45
BP Type : x2 backplane
Cfg Rev : 1
Ctrl status : Master
================================================================================
Switchtec Firmware Revision Information:-
================================================================================

Name          Active After Reset          Running Now           Version
--------------------------------------------------------------------------------
DATA0:                *                       *                 03.70.00.4f
DATA1:                                                          03.70.00.4f
IMG0 :                *                       *                 03.70.00.4f
IMG1 :                                                          03.70.00.4f
```

sysinfo Command

Show system information

Sysinfo command is for JBOF enclosure diagnostic, it combines ver, lsd, ssdpwr, pwrdis, showport, bist, showport command

- Usage: sysinfo



toggle Command

Toggle firmware and config partitions

The toggle command is used for the version of config file doesn't match with FW version

- Usage: toggle

reset Command

reset switch controller board

MCU reset and the MCU will have PCIe switch power on reset.

- Usage: reset