

# RJ-460-08 USER GUIDE



Version 1.1

2022/3/15

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## 2 Introduction

### 2.1 Overview

In-Win's RJ-460-08 JBOD System is a high performance, reliable storage system with sensors to monitor system health and high-density 4U 60-bay enclosure. We provide state-of-the-art management functionality for users to monitor and manage JBOD systems efficiently and flexibly. Users can manage JBOD systems through serial port and/or Ethernet according to the system configuration on the system.

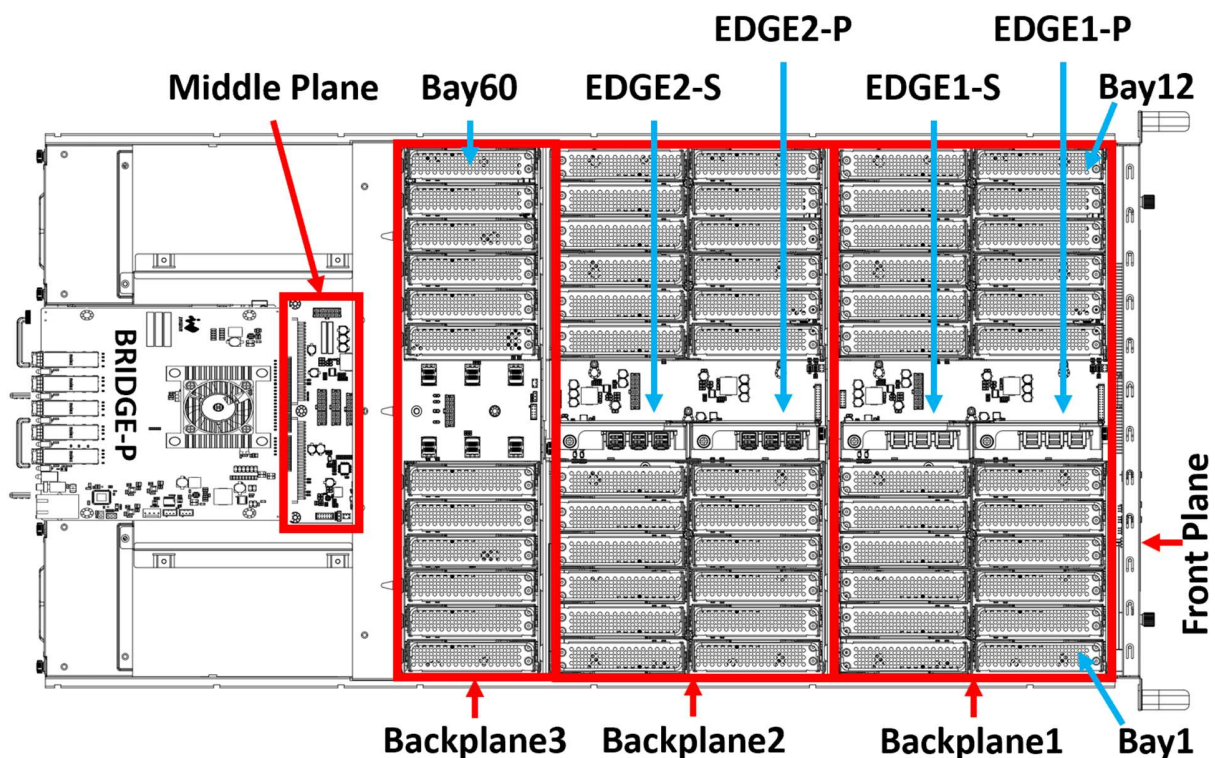


FIGURE 1 RJ-460-08 INTERNAL BACKPLANES

Figure 1 depicts the internal boards system. The backplanes, front panel and power suppliers are shared by primary (BRIDGE-P, EDGE1-P and EDGE2-P) and secondary domain (BRIDGE-S, EDGE1-S and EDGE2-S). The secondary domain is optional for redundant applications.

## 2.2 Key Features

- **Reliable High Data Rate Support (up to 12Gbps)**
  - SAS3 12Gbps support and SATA3 6Gbps support to provide a reliable high-performance data rate.
- **Dual SAS3 Domain Support**
  - System can accommodate dual domain expanders to support data redundancy capability.
- **Power Redundancy**
  - System can accommodate 2 sets of power modules as redundancy. Either power module could work independently while the peer is out of order or not selected.
- **Hot-swappable Modules**
  - The PSUs are hot-swappable. System can keep operating during PSU replacement.
  - The fan modules are hot-swappable. System can keep operating during fan module replacement.
  - The HDDs are hot-swappable. No need to shut down the system for HDD installation and/or replacement when needed.
- **TCP/IP Network Support**
  - Support ethernet 10/100/1000Mb TELNET/TFTP/HTTP network. User can use ethernet port to enter console and control the system.
- **Faulty System Alarm**
  - The Faulty System red LED indicator on the front panel illuminates along with a beeping sound while there is faulty part(s) in the system. The buzzing alarm can be muted by pressing the mute button on the front panel.
- **Smart Fan Control**
  - The fan modules possess a smart control feature set by the providing seven levels of speed RPM according to the detected system temperature.
- **Zoning**
  - This system support feature dividing disk drives into two or three different groups depending on the system preference. Each group can own users-configurable number of HDDs independently. This feature enables single JBOD to serve multiple hosts.
- **Cascading**
  - There are cascading ports for cascading another JBOD system to expand disk space when more space is required

## 2.3 SAS Topology

Tree topology reduces the number of cascade levels (or hops), avoiding or reducing the unfair arbitration that can affect the far-end devices in cascade topology. RJ-460-08 uses tree topology to reduce the number of cascade levels, avoiding or reducing the unfair arbitration. There are 3 expanders to extend the number of devices in a SAS domain. Bridge expander is the root and two edge expanders cascaded. Figure 2 depicts the topology.

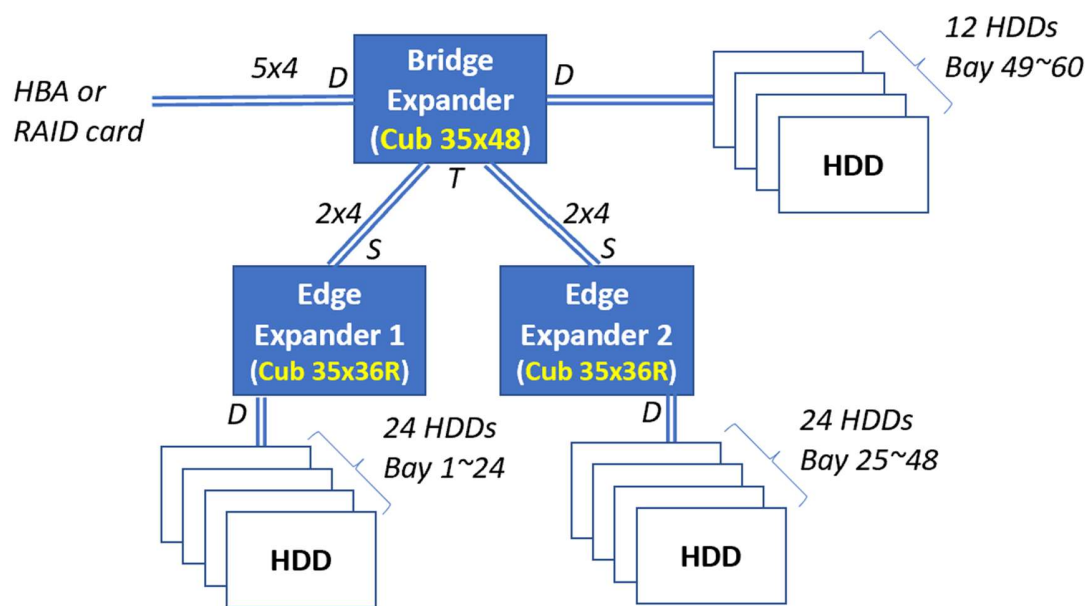


FIGURE 2 RJ-460-08 SAS TOPOLOGY

RJ-460-08 can support path redundancy applications. It constructs path-redundant topologies using multi-ported devices as the Figure 3 illustrates. This topology is suitable for high-availability systems since it can fail over to a different path when one path fails.

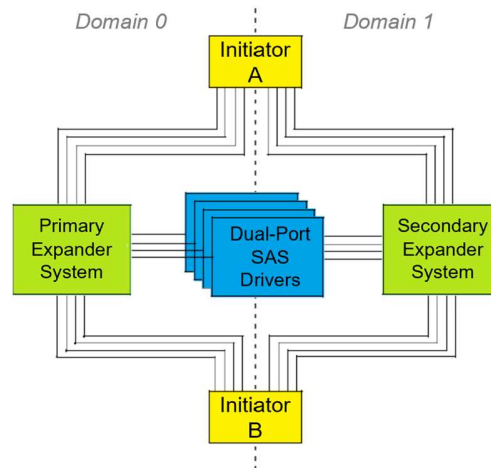
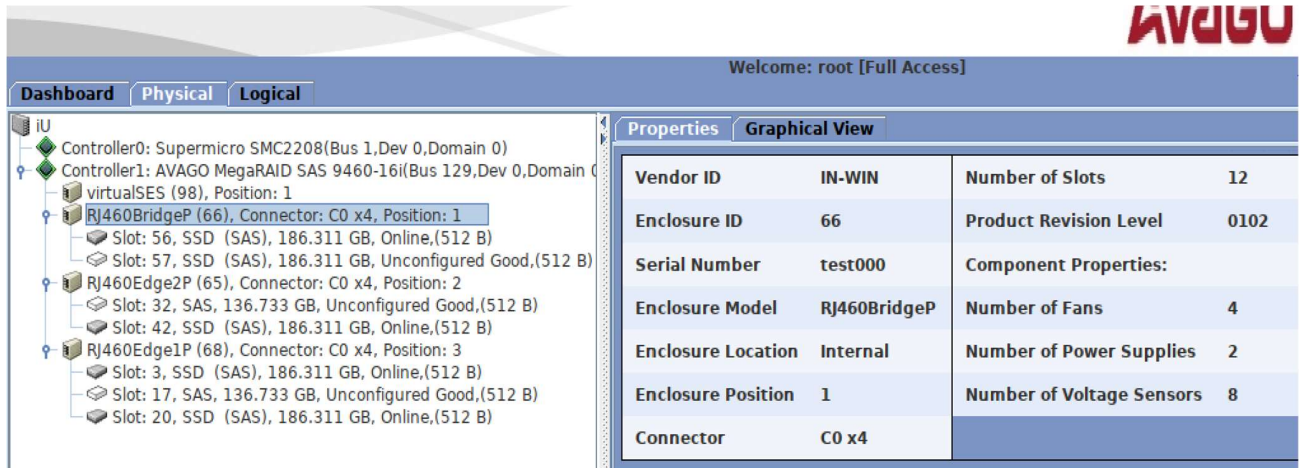


FIGURE 3 REDUNDANT SAS SYSTEM

RJ-460-08 system is a 60-bays redundant JBOD system. There is a SAS-3 path-redundancy topology and is suitable for high availability system. Each SAS-3 domain has three expanders. One is called **bridge** expander and the others are called **edge** expander. HDD bay 1~24 are controlled by **edge1**, 25~48 are controlled by **edge2** and 49~60 are controlled by **bridge**. Bridge expander connects both edges (downstream) and RAID or HBA card (upstream from host side).

Figure 4 and 5 show examples of the RAID application view with 7 HDDs case. RJ460BridgeP expander has slot56, slot57 SATA SSD hard disks installed. RJ460Edge2P expander has slot32 SAS, slot42 SATA SSD hard disks installed. RJ460Edge1P expander has slot3 SATA SSD, slot17 SAS, slot20 SATA SSD hard disks installed.



Welcome: root [Full Access]

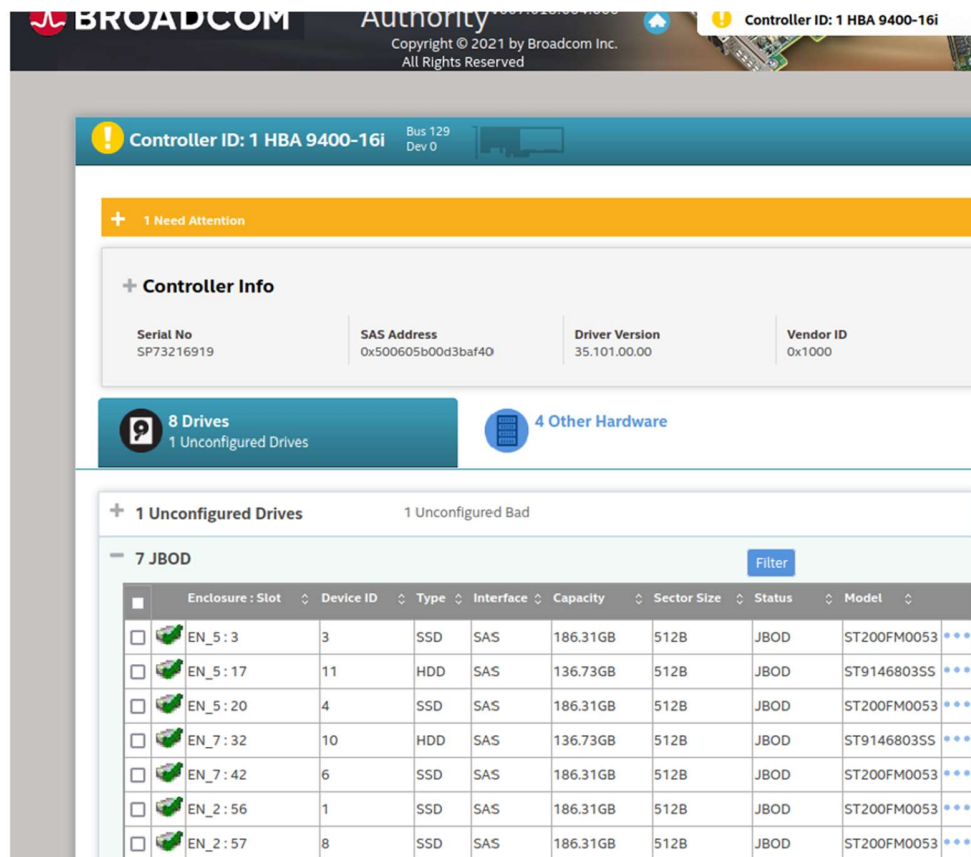
**Physical** **Logical**

**Properties** **Graphical View**

|                    |              |                           |      |
|--------------------|--------------|---------------------------|------|
| Vendor ID          | IN-WIN       | Number of Slots           | 12   |
| Enclosure ID       | 66           | Product Revision Level    | 0102 |
| Serial Number      | test000      | Component Properties:     |      |
| Enclosure Model    | RJ460BridgeP | Number of Fans            | 4    |
| Enclosure Location | Internal     | Number of Power Supplies  | 2    |
| Enclosure Position | 1            | Number of Voltage Sensors | 8    |
| Connector          | C0 x4        |                           |      |

**Controller0:** Supermicro SMC2208(Bus 1,Dev 0,Domain 0)  
**Controller1:** AVAGO MegaRAID SAS 9460-16i(Bus 129,Dev 0,Domain 0)  
**virtualSES (98), Position: 1**  
**RJ460BridgeP (66), Connector: C0 x4, Position: 1**  
Slot: 56, SSD (SAS), 186.311 GB, Online,(512 B)  
Slot: 57, SSD (SAS), 186.311 GB, Unconfigured Good,(512 B)  
**RJ460Edge2P (65), Connector: C0 x4, Position: 2**  
Slot: 32, SAS, 136.733 GB, Unconfigured Good,(512 B)  
Slot: 42, SSD (SAS), 186.311 GB, Online,(512 B)  
**RJ460Edge1P (68), Connector: C0 x4, Position: 3**  
Slot: 3, SSD (SAS), 186.311 GB, Online,(512 B)  
Slot: 17, SAS, 136.733 GB, Unconfigured Good,(512 B)  
Slot: 20, SSD (SAS), 186.311 GB, Online,(512 B)

FIGURE 4 MEGARAID EXAMPLE



**BROADCOM** Authority  
Copyright © 2021 by Broadcom Inc. All Rights Reserved  
Controller ID: 1 HBA 9400-16i

**Controller ID: 1 HBA 9400-16i** Bus 129 Dev 0

**1 Need Attention**

**Controller Info**

|                         |                                   |                                |                     |
|-------------------------|-----------------------------------|--------------------------------|---------------------|
| Serial No<br>SP73216919 | SAS Address<br>0x500605b00d3ba140 | Driver Version<br>35.101.00.00 | Vendor ID<br>0x1000 |
|-------------------------|-----------------------------------|--------------------------------|---------------------|

**8 Drives** 1 Unconfigured Drives **4 Other Hardware**

**1 Unconfigured Drives** 1 Unconfigured Bad

**7 JBOD** [Filter](#)

|                          | Enclosure : Slot | Device ID | Type | Interface | Capacity | Sector Size | Status | Model           |
|--------------------------|------------------|-----------|------|-----------|----------|-------------|--------|-----------------|
| <input type="checkbox"/> | EN_5 : 3         | 3         | SSD  | SAS       | 186.31GB | 512B        | JBOD   | ST200FM0053 *** |
| <input type="checkbox"/> | EN_5 : 17        | 11        | HDD  | SAS       | 136.73GB | 512B        | JBOD   | ST9146803SS *** |
| <input type="checkbox"/> | EN_5 : 20        | 4         | SSD  | SAS       | 186.31GB | 512B        | JBOD   | ST200FM0053 *** |
| <input type="checkbox"/> | EN_7 : 32        | 10        | HDD  | SAS       | 136.73GB | 512B        | JBOD   | ST9146803SS *** |
| <input type="checkbox"/> | EN_7 : 42        | 6         | SSD  | SAS       | 186.31GB | 512B        | JBOD   | ST200FM0053 *** |
| <input type="checkbox"/> | EN_2 : 56        | 1         | SSD  | SAS       | 186.31GB | 512B        | JBOD   | ST200FM0053 *** |
| <input type="checkbox"/> | EN_2 : 57        | 8         | SSD  | SAS       | 186.31GB | 512B        | JBOD   | ST200FM0053 *** |

FIGURE 5 LSI STORAGE AUTHORITY EXAMPLE

## 3 System Interface

### 3.1 Overview

The RJ-460-08 system components includes:

- Front panel with power, ID, and mute buttons and HDD status, system status and ID LED.
- Rear side with fan, bridge expander and CRPS modules
- Inside of the chassis with edge expander modules, HDD trays and other backplanes.

### 3.2 Front Panel

Figure 6 shows the buttons, LEDs detail on front panel.

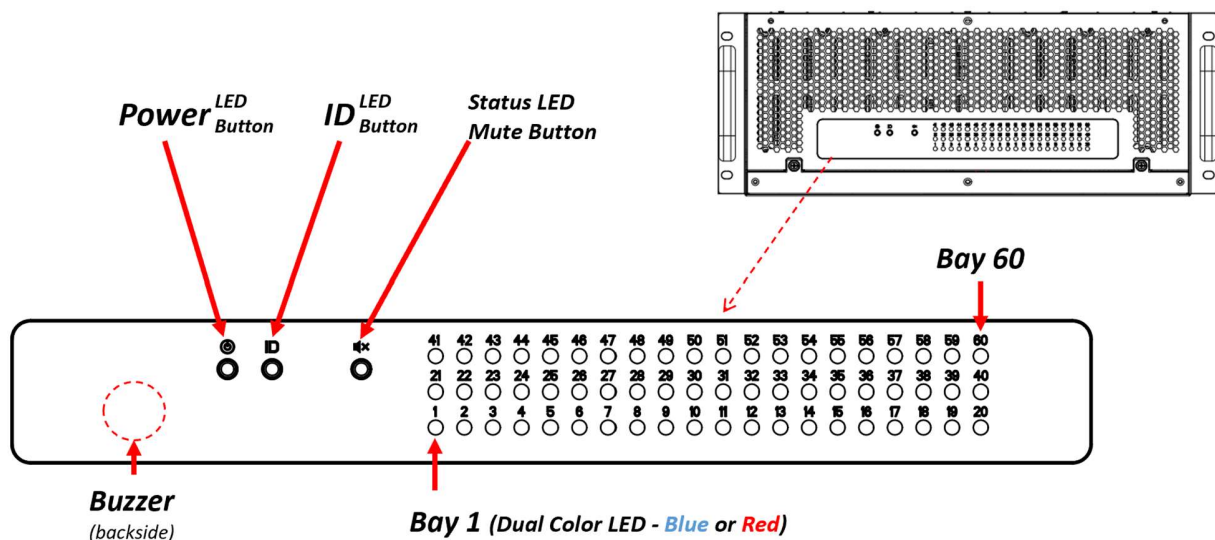


FIGURE 6 FRONT PANEL DETAIL

#### 3.2.1 LED

The system is equipped with LEDs to provide status information for indicating component current state.

#### Power LED (blue color)

- Power is applied to the system(PSU). LED is illuminated when system is in operating.

#### Bay LED (dual color)

- Indicates hard disk current state. There are dual color LED that blue is used for operational and red is used for warning, error or failure.
  - Blue LED steady ON – hard disk is installed and powered
  - Blue LED in 4 Hz blinking – hard disk is accessed or in activity
  - Red LED steady ON – hard disk is failed
  - Red LED in 0.5 Hz blinking – hard disk is identified (LOCATE)
  - Red LED in 1 Hz blinking – hard disk is in RAID rebuild state

#### Status LED (red color)

- System current status
  - Steady ON – System overheats
  - 1 Hz blinking – System fans in error condition

#### ID LED (green color)

- Push button and turn on to identify the enclosure

### 3.2.2 Button Control

There are three push-buttons on front panel and two push-buttons on rear side (on bridge expander module).

#### Power button

- The button is for applying or removing power from the power supply to the system
  - Turn on – Press and hold for more than 3 seconds to power on system
  - Turn off – Press and hold for more than 3 seconds to shutdown system

#### ID button

- Press the button to toggle the ID LED ON and OFF

#### Mute button

- Press the button to toggle the buzzer beeping or silence

### 3.2.3 Advance Button Control

| Feature       | Description                                                                                                                                                                                                                                 |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auto Power-ON | Press <b>ID + Power</b> buttons simultaneously to toggle this feature. Power LED blinks when this feature is engaged.                                                                                                                       |
| Cooling Mode  | Press and hold <b>ID</b> button for more than <b>5</b> seconds to change mode in turns. There are three fan cooling modes to setup - <b>quiet, normal, aggressive</b> . Default is normal mode. ID LED blinks when cooling mode is engaged. |
| Mute Mode     | Press and hold <b>Mute</b> button for more than <b>5</b> seconds to toggle mute feature. Status LED blinks when feature engaged.                                                                                                            |

### 3.2.4 Buzzer

The buzzer is to notify system warning states

| System Status       | Description                                                                    |
|---------------------|--------------------------------------------------------------------------------|
| Fan Error           | 0.25s beep and 1.75s silence repeatedly. (slow beeps)                          |
| Thermal Error       | 0.25s beep, 0.25 silence, 0.25 beep and 1.25s silence repeatedly. (fast beeps) |
| Fan & Thermal Error | Alter 'Fan Error' and 'Thermal Error' repeatedly                               |
| PSU Error           | continuous beep                                                                |

## 3.3 Rear Panel

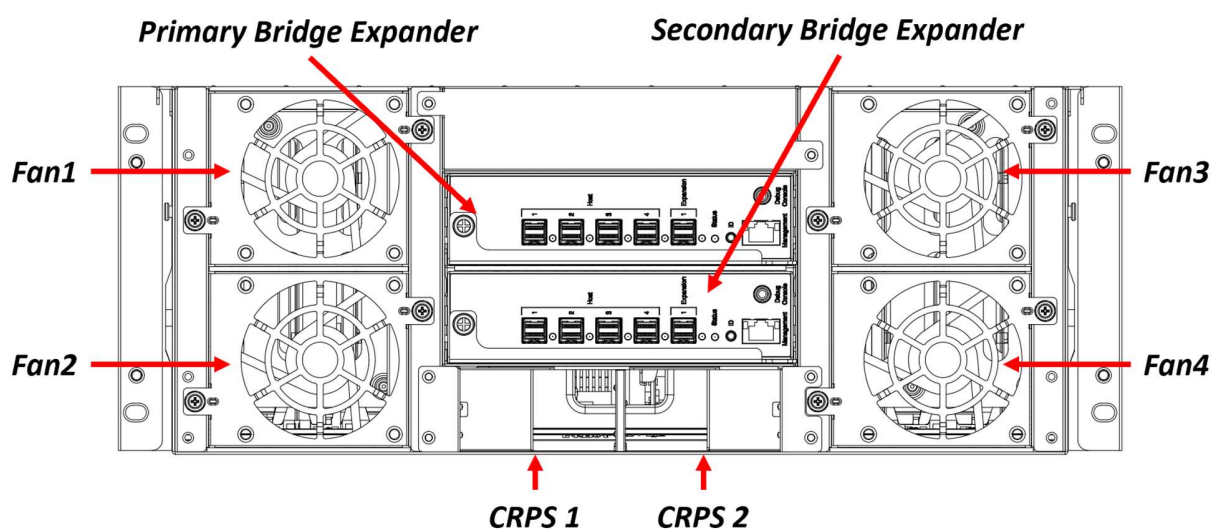


FIGURE 7 BACKSIDE DETAIL

Fan modules, bridge expanders and PSU modules can be plug-in/out on the backside (rear-side). Figure 7 depicts the location of the components.

### 3.4 Bridge Expander Module

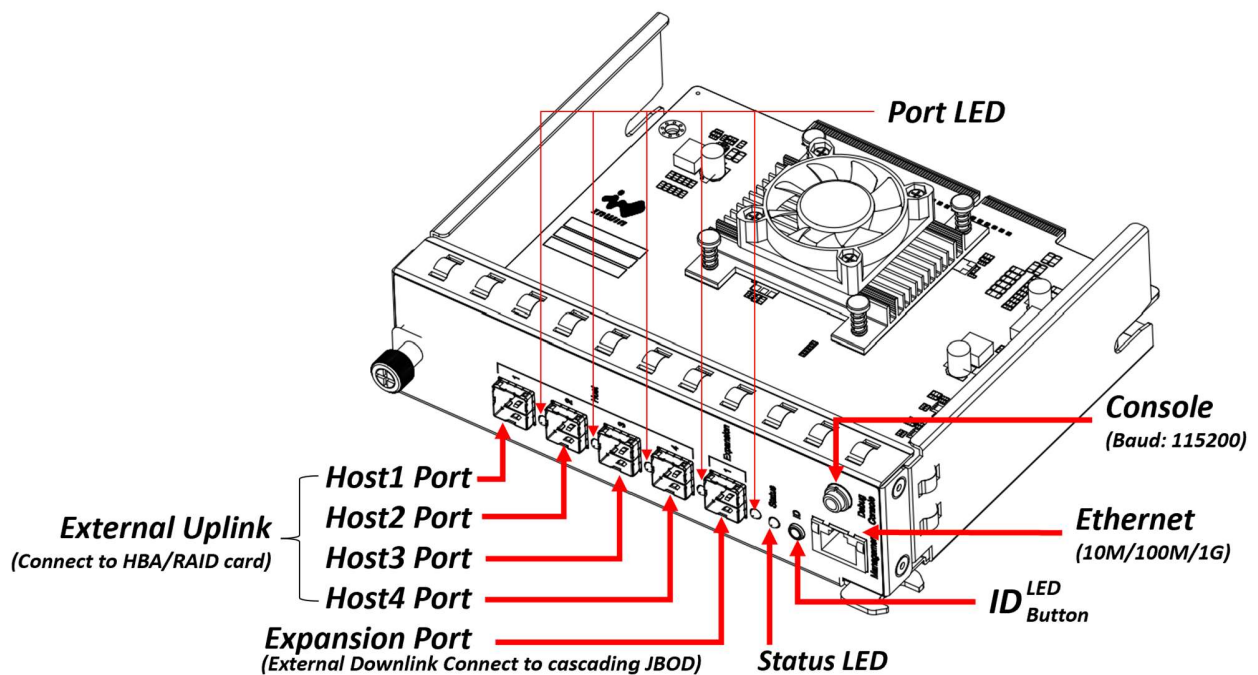


FIGURE 8 BRIDGE EXPANDER MODULE

Bridge expander module (Figure 8) is the main component that controls and manages the RJ-460-08 JBOD system. Users can use ethernet or RS-232 console cable to connect to the bridge module using telnet or some console applications to command it by CLI.

Host port (SFF-8644)

- External uplink port
- RAID or HBA card connect to the bridge module
- There are 4 ports (Host1, Host2, Host3 and Host4) for host connection

Expansion port (SFF-8644)

- External downlink port to cascade another expander

### Status LED

- Works like front panel status LED
- Indicates the system current state
  - Steady ON – the system overheats
  - 1 Hz blinking – the system fans in error condition

### Port LED

- There are Host1, Host2, Host3, Host4 and Expansion port LEDs
- Illuminated LED Indicates host port connection (from RAID or HBA) or expansion expander is physically connected

### ID LED

- Works synchronously with front panel ID LED
- Illuminate to identify the chassis

### ID button

- Works synchronously with front panel ID button
- Press to toggle the ID LED ON/OFF

### UART Console

- The RS-232 port on the Bridge Expander module provides a serial connection for users to manage the JBOD system with terminal application such as Tera Term, Hyper Term...etc. To manage the JBOD system through the serial port, configure the terminal console as per the settings below to connect it.

| <b>Parameter</b> | <b>Value</b> |
|------------------|--------------|
| Baud Rate        | 115200       |
| Data             | 8 bit        |
| Parity           | None         |
| Stop Bit         | 1 bit        |
| Flow Control     | None         |

### Ethernet

- Support 10M/100M/1G bps ethernet PHY
- Support TCP/IP protocol
- Support Telnet CLI
- Support Webpages (http). IP address could be check from CLI then view the webpages for system information on a web browser. Figure 9-12 are the examples of the web pages.

## Management Board

|                  |                      |
|------------------|----------------------|
| Model            | RJ-460               |
| Board ID         | RJ-460 Bridge(P)     |
| Serial Number    | test000              |
| SAS Address      | 5FAE190A_000015FF    |
| MAC Address      | FA.E1.90.15.00.00    |
| Hardware Version | 1.0                  |
| Firmware Version | 2.1.2.0              |
| MFG Version      | 2.1.1.0              |
| Build Date       | Aug 23 2021 07:02:00 |

## Enclosure

|                  |      |
|------------------|------|
| Enclosure Height | 4U   |
| Bay Number       | 60   |
| HDD Type         | 3.5" |

## Expander 1 (HDD 1-24)

|                  |                   |
|------------------|-------------------|
| Board ID         | RJ-460 Edge(1P)   |
| Serial Number    | test000           |
| SAS Address      | 5FAE190A_0000157F |
| Hardware Version | 1.0               |

FIGURE 9 VERSION PAGE

## Management Board

|                  |                      |
|------------------|----------------------|
| Model            | RJ-460               |
| Board ID         | RJ-460 Bridge(P)     |
| Serial Number    | test000              |
| SAS Address      | 5FAE190A_000015FF    |
| MAC Address      | FA.E1.90.15.00.00    |
| Hardware Version | 1.0                  |
| Firmware Version | 2.1.2.0              |
| MFG Version      | 2.1.1.0              |
| Build Date       | Aug 23 2021 07:02:00 |

## Enclosure

|                  |      |
|------------------|------|
| Enclosure Height | 4U   |
| Bay Number       | 60   |
| HDD Type         | 3.5" |

## Expander 1 (HDD 1-24)

|                  |                   |
|------------------|-------------------|
| Board ID         | RJ-460 Edge(1P)   |
| Serial Number    | test000           |
| SAS Address      | 5FAE190A_0000157F |
| Hardware Version | 1.0               |

FIGURE 10 SYSTEM PAGE



**RJ-460**

Version

System

**Network**

HardDisk

## Network Status

|                           |                       |
|---------------------------|-----------------------|
| Physical Address          | fa:e1:90:15:00:00     |
| Ethernet Link Status      | Up                    |
| Ethernet Link Speed       | 1000 Mbps             |
| Ethernet Link Duplex Mode | Full                  |
| DHCP Enabled              | Yes                   |
| AUTOIP Enabled            | No                    |
| IP Address                | 192.168.173.153       |
| Subnet Mask               | 255.255.255.0         |
| Default Gateway           | 192.168.173.250       |
| Host Name                 | CUB_fa:e1:90:15:0:0 □ |
| VLAN Enabled              | No                    |
| VLAN CFI/PCP/ID           | 0/6/ffe               |

FIGURE 11 NETWORK PAGE



**RJ-460**

Version

System

Network

**HardDisk**

## Disk Slot Status

| Bay# | ExpanderID | Link | SAS Address       | Disk Type |
|------|------------|------|-------------------|-----------|
| 1    | Edge1      | 12G  | 5000C500_3014A841 | SAS       |
| 2    | Edge1      | 12G  | 5000C500_3014A579 | SAS       |
| 3    | Edge1      | 12G  | 5000C500_3014B349 | SAS       |
| 4    | Edge1      |      |                   |           |
| 5    | Edge1      | 12G  | 5000C500_3014A835 | SAS       |
| 6    | Edge1      |      |                   |           |
| 7    | Edge1      |      |                   |           |
| 8    | Edge1      |      |                   |           |
| 9    | Edge1      |      |                   |           |

FIGURE 12 HARD DISK PAGE

### 3.5 Edge Expander Module

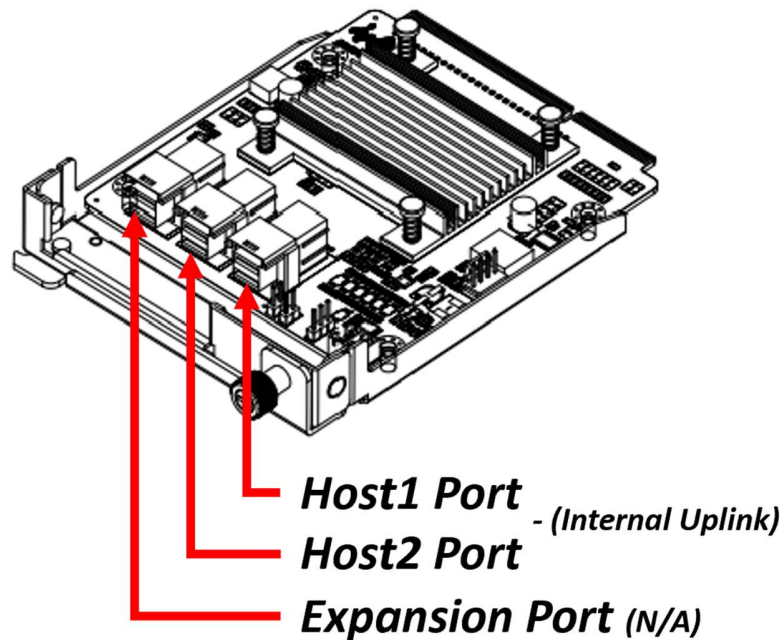


FIGURE 13 EDGE EXPANDER MODULE

This edge expanders are connected to the bridge expander module by internal SFF-8643 cables. they are controlled by bridge expander. User may manage it through bridge CLI interface (ethernet or RS-232).

Host port (SFF-8643)

- Internal uplink port
- There are 2 ports (Host1 and Host2) connecting to middle plane. Host1 port must connect to middle plane CN6 and Host2 must connect to middle plane CN7.

Expansion port (SFF-8643)

- Not applicable

## 4 Command Line Interface (CLI)

The RJ-460-08 system provide flexible and useful commands to monitor and manage hard disk, expanders and backplane system. Users can use telnet or console applications to manage the system with CLI commands.

### 4.1 help

List all command list and the usage

Syntax

```
help [Command]
- X means a mandatory argument described as x
- [X] means an optional argument
- <X> means replace argument with value
- X(D) means a decimal value
- X(H) means a hexadecimal value
- X(*) means special formatting is specified
- X(s) means a decimal value in seconds
- X(ms) means a decimal value in milliseconds
- opt1|opt2|opt3 means literally specify "opt1", "opt2", or "opt3"
- X1 X2 ... means a variable number of arguments
```

Example

```
Bridge >help

=====

Description          Command
=====

Show Sensors          sensor
Remote Command 2      edge2
Remote Command 1      edge1
Remote Command 0      bridge
...

Bridge >help fd1

=====

Description          Command
=====

File download         fd1 <BufferID(H)> <Offset(H)> <Erase(*)>
- Erase is replaced with "Y" or "N"
```

```
=====
```

## 4.2 rev

Show vendor ID, product ID, active firmware and firmware version information

### Syntax

```
rev
```

### Example

```
Bridge >rev

=====
Hardware Revision Information:-
=====

Vendor ID                :IN-WIN
Product ID               :RJ-460 Bridge(P)
Product Revision Level   :Minor = 0x01, Unit = 0x02
Component Type           :Cub
Component ID             :0x0238 (Bond Option :48)
Component Revision Level :1      (B0)

=====
Firmware Revision Information:-
=====

Active Firmware: Firmware Copy 2

Boot Image:
  Revision: 2.1.0.0
  Platform Name:  IN-WIN Cub Expander System
  Version Name:   SAS35xFW-02.01.00.00 07/17/20
  Firmware Family: 0  OemFamily: 0
  Fast Boot: Yes  Image Address: 0x10000000

Firmware Copy 1:
  Revision: 2.1.2.0
  Platform Name:  IN-WIN Cub Expander System
  Version Name:   SAS35xFW-02.01.02.00 08/04/21
  Firmware Family: 0  OemFamily: 0
  Fast Boot: Yes  Image Address: 0x10180000

Firmware Copy 2:
  Revision: 2.1.2.0
  Platform Name:  IN-WIN Cub Expander System
  Version Name:   SAS35xFW-02.01.02.00 08/04/21
  Firmware Family: 0  OemFamily: 0
  Fast Boot: Yes  Image Address: 0x10300000

=====
SDK Revision:-
=====
```

```

HAL      Revision: 0.16.0.0
SES      Revision: 0.16.0.0
SCE      Revision: 0.16.0.0
Spico Fw Revision: 0x8a69_014f
CSWLib   Revision: 0.0.17.0

```

```

=====
Current Toolchain Revision:-

```

```

=====
ARM RVDS v.410713

```

### 4.3 showmfg

Show manufacture configuration version information

#### Syntax

```
showmfg
```

#### Example

```

Bridge >showmfg
=====
Manufacturing Image Version Information:-
=====
Product ID :                3
Platform ID:                3
Associated Firmware Revision: 0:11:0:0
Mfg Revision:               2:1:1:0
Product Name:               RJ-460 Bridge(P)
Platform Name:               Expander Cub x48
Mfg Image Creation time stamp: 8/18/21 7:27 (mm/dd/yy hr:min)

```

### 4.4 sasaddr

display expander's SAS address

#### Syntax

```
sasaddr
```

#### Example

```

Bridge >sasaddr

Expander SAS Addresses -

SxP Port 0 SAS Address: 0x500605B0000272BD
SxP Port 1 SAS Address: 0x500605B0000272BF
SxP Port 2 SAS Address: 0x0000000000000000

```

## 4.5 date

Show or set current date time. There are no RTC in system. System always starts up at incorrect date. System log will record event with datetime. User can set datetime and broadcast the new value to other expanders by 'date send'

### Syntax

```
date [ set <newdate(*)> | send [<SasAddrHi(H)> <SasAddrLow(H)>] |
                                     recv [<SasAddrHi(H)> <SasAddrLow(H)>] ]
- no arguments, output local expander date/time and uptime
- 'set <newdate(*)>' Set local expander date/time using format for <newdate> of
  YYYYMMDDHHMMSS
- 'send [sas_addr]' If sas_addr set then set the remote expander's clock using the
  local expander's current clock value. If sas_addr not specified then set clock
  for all expanders in the domain.
- 'recv [sas_addr]' If sas_addr set then fetch the remote expander's current clock
  and output the result. If sas_addr not specified then get and output the current
  clock for all expanders in the domain.
```

### Example

```
Bridge >date
Wed Jan  1 00:00:32 2020

Current expander uptime is 0 days, 0 hours, 16 minutes, 26 seconds

Bridge >date set 20210910103000
Expander date/time set to Fri Sep 10 10:30:00 2021

Bridge >date send
Result sending SET TIMESTAMP to 5fae190a0000167d: SUCCESS

Bridge >edge1 date
>>>edge1:

Fri Sep 10 10:30:26 2021

Current expander uptime is 0 days, 0 hours, 16 minutes, 59 seconds
```

## 4.6 showlogs

Show the current system logs

### Syntax

```
showlogs [hex|detail|default]
```

## Example

```
Bridge >showlogs
<Jul 14 2021 02:59:35.328>:SES Log:SES cfg pg (id EE04) is unreadable

<Jul 14 2021 02:59:35.332>:PLATFORM:Firmware initialization started

<Jul 14 2021 02:59:36.668>:EXP:FW COPY 1 REGION: FW image missing

<Jul 14 2021 02:59:36.670>:EXP:FW COPY 2 REGION: FW image missing

<Jul 14 2021 02:59:36.670>:CONFIG:Expander MFG image is not valid
...
```

## 4.7 clearlogs

Clear the system logs

### Syntax

```
clearlogs
```

## Example

```
Bridge >clearlogs

Bridge >showlogs

Bridge >
```

## 4.8 showpost

Show POST (Power-On-Self-Test) status of expander

### Syntax

```
showpost
```

## Example

```
Bridge >showpost

POST status of expander on-chip devices

=====

On-Chip Device          POST Status

=====

Smart Serial            :PASS
Watchdog Timer          :PASS
Timer 1                 :PASS
```

```

Timer 2           :PASS
Timer 3           :PASS
Timer 4           :PASS
PLLs              :PASS
Interrupt         :PASS
Phy Loopback      :PASS
ISTWI Channel 00  :PASS
ISTWI Channel 01  :PASS
ISTWI Channel 02  :PASS
ISTWI Channel 03  :PASS
ISTWI Channel 04  :PASS
ISTWI Channel 05  :PASS
ISTWI Channel 06  :PASS
ISTWI Channel 07  :PASS
ISTWI Channel 08  :PASS
ISTWI Channel 09  :PASS
ISTWI Channel 10  :PASS
ISTWI Channel 11  :PASS
True Random Num Generator:PASS
Internal RAM Test  :PASS
Forced ECC Error Test :PASS
SXP Port Buffers Test :PASS
=====

```

## 4.9 sesinfo

Display SES-2 devices information

### Syntax

```
sesinfo
```

### Example

```

Bridge >sesinfo
Show SES Enclosure Elements

Current Fan Level(1~8):
Fan01      FanSpd: 2700  SpdCode: 1  Fail: 0
Fan02      FanSpd: 2700  SpdCode: 1  Fail: 0
Fan03      FanSpd: 2700  SpdCode: 1  Fail: 0
Fan04      FanSpd: 2700  SpdCode: 1  Fail: 0
BridgeDie.C  Fail: 0  Tempt: 41      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
MP Left.C    Fail: 0  Tempt: 28      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
MP Right.C   Fail: 0  Tempt: 29      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP3 Left.C   Fail: 0  Tempt: 24      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP3 Right.C  Fail: 0  Tempt: 25      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP2 Left.C   Fail: 0  Tempt: 25      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP2 Right.C  Fail: 0  Tempt: 24      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP1 Left.C   Fail: 0  Tempt: 24      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
BP1 Right.C  Fail: 0  Tempt: 24      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
FP Left.C    Fail: 0  Tempt: 25      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
FP Right.C   Fail: 0  Tempt: 25      UTWarn: 0      UTFail: 0      OTWarn: 0      OTFail: 0
PdbVoltage3.3V 330
PdbVoltage 5V  510
PdbVoltage 12V 1240
MPVoltage 5V    510
MPVoltage 12V   1230
BP3 Voltage 5V  510
BP2 Voltage 5V  510
BP1 Voltage 5V  510

```

|                      |   |
|----------------------|---|
| PowerSupplyElement00 | 1 |
| PowerSupplyElement01 | 1 |

## 4.10 sensor

Display backplane system sensor information

Syntax

```
sensor
```

Example

```
Bridge >sensor

BP Description: RJ-460,HW:2.0,SW:2.0.4,1
Status: 5(SMBus)      00(BP)  00(FAN)
Expander Installed: 03(MP)      03(BP1) 03(BP2)
CRPS: 00(Status)      02(Installed)
Temperature: (C)
  ExpDie: 41, 48, 42
  MP: 28.5, 29.2
  BP3: 24.2, 25.2
  BP2: 25.5, 24.0
  BP1: 24.7, 24.5
  FP: 25.5, 25.5
Voltage: (V)
  PDB: 3.3, 5.1, 12.4
  MP: 1.8, 5.1, 12.3
  BP3: 5.1, 12.4
  BP2: 5.1, 5.1
  BP1: 5.1, 5.1
  FP: 5.1
Fan RPM:
  2643, 2645, 2640, 2637,
Fan PWM:
  56, 56, 56, 56, 0, 0, 0, 0,
```

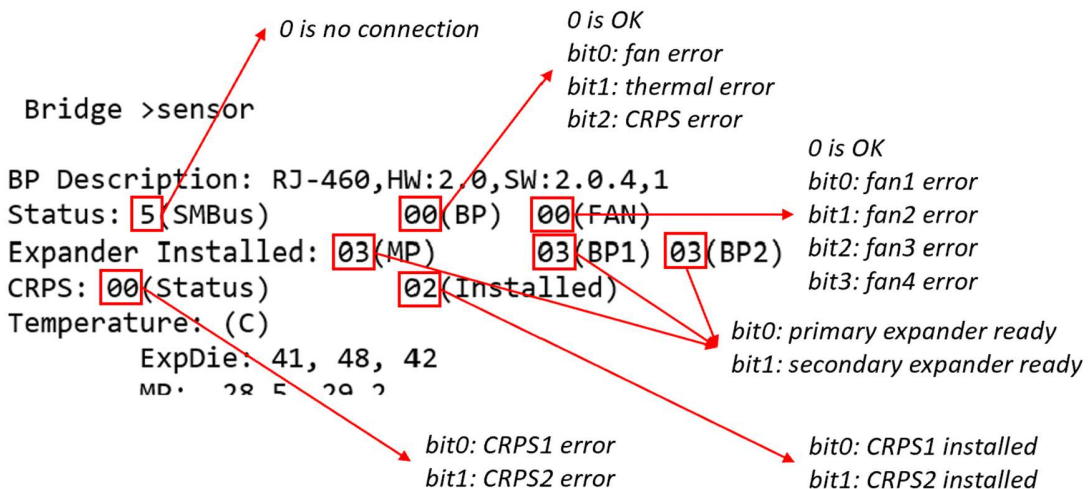


FIGURE 14 SENSOR INFORMATION DETAIL

## 4.11 hdd

Display 60 bays hard disk PHY information

Syntax

```
Hdd
```

Example

```
Bridge >hdd
```

| HDD No | DEV TYPE | PHY CNG NLR CNT | ATTACHED SAS ADDR | ROUTE TYPE | ZONE GRP | ZONE CTRL BUS | CONN TYPE | CONN ELEM INDX | CONN PHY LINK | CONN MAP PHY ID |
|--------|----------|-----------------|-------------------|------------|----------|---------------|-----------|----------------|---------------|-----------------|
| 1      | END      | 12G 0x03        | 5000C500_94D5CBBA | D          | 0x01     | 0x04          | 0x20      | 0x01           | 0x00          | 000             |
| 2      | END      | 12G 0x03        | 5000C500_94D5C7E6 | D          | 0x01     | 0x04          | 0x20      | 0x02           | 0x00          | 001             |
| 3      | END      | 12G 0x03        | 5000C500_94D5CA9A | D          | 0x01     | 0x04          | 0x20      | 0x03           | 0x00          | 002             |
| 4      | END      | 12G 0x03        | 5000C500_94D5C6E2 | D          | 0x01     | 0x04          | 0x20      | 0x04           | 0x00          | 003             |
| 5      | END      | 12G 0x03        | 5000C500_94D5CB0A | D          | 0x01     | 0x04          | 0x20      | 0x05           | 0x00          | 004             |
| 6      | END      | 12G 0x03        | 5000C500_94D5D486 | D          | 0x01     | 0x04          | 0x20      | 0x06           | 0x00          | 005             |
| 7      | END      | 12G 0x03        | 5000C500_94D5D11A | D          | 0x01     | 0x04          | 0x20      | 0x07           | 0x00          | 006             |
| 8      | END      | 12G 0x03        | 5000C500_94D5D21E | D          | 0x01     | 0x04          | 0x20      | 0x08           | 0x00          | 007             |
| 9      | END      | 12G 0x03        | 5000C500_94D5D44A | D          | 0x01     | 0x04          | 0x20      | 0x09           | 0x00          | 008             |
| 10     | END      | 12G 0x03        | 5000C500_94D5D16A | D          | 0x01     | 0x04          | 0x20      | 0x0A           | 0x00          | 009             |
| 11     | END      | 12G 0x03        | 5000C500_94D5CBDA | D          | 0x01     | 0x04          | 0x20      | 0x0B           | 0x00          | 010             |
| 12     | END      | 12G 0x03        | 5000C500_94D5D782 | D          | 0x01     | 0x04          | 0x20      | 0x0C           | 0x00          | 011             |
| 13     | END      | 12G 0x03        | 5000C500_94D5C8A2 | D          | 0x01     | 0x04          | 0x20      | 0x0D           | 0x00          | 012             |
| 14     | END      | 12G 0x03        | 5000C500_94D5CBFA | D          | 0x01     | 0x04          | 0x20      | 0x0E           | 0x00          | 013             |
| 15     | END      | 12G 0x03        | 5000C500_94D5D37A | D          | 0x01     | 0x04          | 0x20      | 0x0F           | 0x00          | 014             |
| 16     | END      | 12G 0x03        | 5000C500_94D5CC7A | D          | 0x01     | 0x04          | 0x20      | 0x10           | 0x00          | 015             |
| 17     | END      | 12G 0x03        | 5000C500_94D5D79E | D          | 0x01     | 0x04          | 0x20      | 0x11           | 0x00          | 016             |
| 18     | END      | 12G 0x03        | 5000C500_94D5D106 | D          | 0x01     | 0x04          | 0x20      | 0x12           | 0x00          | 017             |
| 19     | END      | 12G 0x03        | 5000C500_94D5C906 | D          | 0x01     | 0x04          | 0x20      | 0x13           | 0x00          | 018             |
| 20     | END      | 12G 0x03        | 5000C500_94D5CA02 | D          | 0x01     | 0x04          | 0x20      | 0x14           | 0x00          | 019             |
| 21     | END      | 12G 0x03        | 5000C500_94D5D2AE | D          | 0x01     | 0x04          | 0x20      | 0x15           | 0x00          | 020             |
| 22     | END      | 12G 0x03        | 5000C500_94D5D41A | D          | 0x01     | 0x04          | 0x20      | 0x16           | 0x00          | 021             |
| 23     | END      | 12G 0x03        | 5000C500_94D5D2CE | D          | 0x01     | 0x04          | 0x20      | 0x17           | 0x00          | 022             |
| 24     | END      | 12G 0x03        | 5000C500_94D5CE02 | D          | 0x01     | 0x04          | 0x20      | 0x18           | 0x00          | 023             |
| 25     | END      | 12G 0x03        | 5000C500_94D5CDF2 | D          | 0x01     | 0x04          | 0x20      | 0x19           | 0x00          | 000             |
| 26     | END      | 12G 0x03        | 5000C500_94D5CA1A | D          | 0x01     | 0x04          | 0x20      | 0x1A           | 0x00          | 001             |
| 27     | END      | 12G 0x03        | 5000C500_94D5D6F6 | D          | 0x01     | 0x04          | 0x20      | 0x1B           | 0x00          | 002             |
| 28     | END      | 12G 0x03        | 5000C500_94D5CCEE | D          | 0x01     | 0x04          | 0x20      | 0x1C           | 0x00          | 003             |
| 29     | END      | 12G 0x03        | 5000C500_94D5C9D2 | D          | 0x01     | 0x04          | 0x20      | 0x1D           | 0x00          | 004             |
| 30     | END      | 12G 0x03        | 5000C500_94D5CDE2 | D          | 0x01     | 0x04          | 0x20      | 0x1E           | 0x00          | 005             |
| 31     | END      | 12G 0x03        | 5000C500_94D5CDFA | D          | 0x01     | 0x04          | 0x20      | 0x1F           | 0x00          | 006             |
| 32     | END      | 12G 0x03        | 5000C500_94D5C76E | D          | 0x01     | 0x04          | 0x20      | 0x20           | 0x00          | 007             |
| 33     | END      | 12G 0x03        | 5000C500_94D5D132 | D          | 0x01     | 0x04          | 0x20      | 0x21           | 0x00          | 008             |
| 34     | END      | 12G 0x03        | 5000C500_94D5D112 | D          | 0x01     | 0x04          | 0x20      | 0x22           | 0x00          | 009             |
| 35     | END      | 12G 0x03        | 5000C500_94D5D406 | D          | 0x01     | 0x04          | 0x20      | 0x23           | 0x00          | 010             |
| 36     | END      | 12G 0x03        | 5000C500_94D5C8C6 | D          | 0x01     | 0x04          | 0x20      | 0x24           | 0x00          | 011             |
| 37     | END      | 12G 0x03        | 5000C500_94D5D1EA | D          | 0x01     | 0x04          | 0x20      | 0x25           | 0x00          | 012             |
| 38     | END      | 12G 0x03        | 5000C500_94D5D096 | D          | 0x01     | 0x04          | 0x20      | 0x26           | 0x00          | 013             |
| 39     | END      | 12G 0x03        | 5000C500_94D5D01E | D          | 0x01     | 0x04          | 0x20      | 0x27           | 0x00          | 014             |
| 40     | END      | 12G 0x03        | 5000C500_94D5D26E | D          | 0x01     | 0x04          | 0x20      | 0x28           | 0x00          | 015             |
| 41     | END      | 12G 0x03        | 5000C500_94D5D56A | D          | 0x01     | 0x04          | 0x20      | 0x29           | 0x00          | 016             |
| 42     | END      | 12G 0x03        | 5000C500_94D5CA0A | D          | 0x01     | 0x04          | 0x20      | 0x2A           | 0x00          | 017             |
| 43     | END      | 12G 0x03        | 5000C500_94D5CA8E | D          | 0x01     | 0x04          | 0x20      | 0x2B           | 0x00          | 018             |
| 44     | END      | 12G 0x03        | 5000C500_94D5D28E | D          | 0x01     | 0x04          | 0x20      | 0x2C           | 0x00          | 019             |
| 45     | END      | 12G 0x03        | 5000C500_94D5CADE | D          | 0x01     | 0x04          | 0x20      | 0x2D           | 0x00          | 020             |
| 46     | END      | 12G 0x03        | 5000C500_94D5C8BE | D          | 0x01     | 0x04          | 0x20      | 0x2E           | 0x00          | 021             |

|    |     |     |      |                   |   |      |      |      |      |      |     |
|----|-----|-----|------|-------------------|---|------|------|------|------|------|-----|
| 47 | END | 12G | 0x03 | 5000C500_94D5D4BE | D | 0x01 | 0x04 | 0x20 | 0x2F | 0x00 | 022 |
| 48 | END | 12G | 0x03 | 5000C500_94D5D1C6 | D | 0x01 | 0x04 | 0x20 | 0x30 | 0x00 | 023 |
| 49 | END | 12G | 0x03 | 5000C500_94D5C80E | D | 0x01 | 0x04 | 0x20 | 0x31 | 0x00 | 000 |
| 50 | END | 12G | 0x03 | 5000C500_94D5CB62 | D | 0x01 | 0x04 | 0x20 | 0x32 | 0x00 | 001 |
| 51 | END | 12G | 0x03 | 5000C500_94D5CF52 | D | 0x01 | 0x04 | 0x20 | 0x33 | 0x00 | 002 |
| 52 | END | 12G | 0x03 | 5000C500_94D5D14A | D | 0x01 | 0x04 | 0x20 | 0x34 | 0x00 | 003 |
| 53 | END | 12G | 0x03 | 5000C500_94D5CB92 | D | 0x01 | 0x04 | 0x20 | 0x35 | 0x00 | 004 |
| 54 | END | 12G | 0x03 | 5000C500_94D5D366 | D | 0x01 | 0x04 | 0x20 | 0x36 | 0x00 | 005 |
| 55 | END | 12G | 0x03 | 5000C500_94D5D55E | D | 0x01 | 0x04 | 0x20 | 0x37 | 0x00 | 006 |
| 56 | END | 12G | 0x03 | 5000C500_94D5D206 | D | 0x01 | 0x04 | 0x20 | 0x38 | 0x00 | 007 |
| 57 | END | 12G | 0x03 | 5000C500_94D5CD6A | D | 0x01 | 0x04 | 0x20 | 0x39 | 0x00 | 008 |
| 58 | END | 12G | 0x03 | 5000C500_94D5CF7A | D | 0x01 | 0x04 | 0x20 | 0x3A | 0x00 | 009 |
| 59 | END | 12G | 0x03 | 5000C500_94D5CFFE | D | 0x01 | 0x04 | 0x20 | 0x3B | 0x00 | 010 |
| 60 | END | 12G | 0x03 | 5000C500_94D5D2BE | D | 0x01 | 0x04 | 0x20 | 0x3C | 0x00 | 011 |

## 4.12 console

Switch RS-232 UART control to bridge, edge1 or edge2 expander.

Syntax

```
console <0|1|2>
```

Example

```
Bridge >console 1
Switch Smart Console to Edge1

Edge1 >
Edge1 >console 0
Switch Smart Console to Bridge

Edge1 >
Bridge > console 2
Switch Smart Console to Edge2

Edge2 >
Edge2 >console 0
Switch Smart Console to Bridge

Edge2 >
Bridge >
```

## 4.13 bpsys

Display backplane system control parameters that are saved in persistent storage (flash)

Syntax

```
Bpsys
```

Example

```
Bridge >bpsys
```

```
BP System NVRAM Config:
  Fan Speed Profile: Normal
  Auto Power UP: 0
  Mute Enable: 0
  Fan Control Temperature Base: 42
  Zone Config: 0 (Disable)

BP System Running Status:
  Test Enable: 0
  ID LED Enable: 0
```

**bpsys power <0|1>**

set backplane system auto power-on and startup after power suppliers ready. Default value 0 requires users to press power button for more than 3 seconds to power up system.

**Syntax**

```
bpsys power <0|1>
```

**Example**

```
Bridge >bpsys power 1
Set Auto Power UP: 1
```

**bpsys default <0>**

reset backplane system configuration to default

**Syntax**

```
bpsys default <0>
```

**Example**

```
Bridge >bpsys default 0
Reset bpsys to default configuration!
Reboot system to use the new setting

Bridge >reset

Performing POST for Smart Serial
...
```

bpsys fan <0|1|2>

Set backplane system fan control mode. There are 3 modes for fan speed profile.  
Default value is 1 (Normal)

| Mode ID | Name       | Description                                                |
|---------|------------|------------------------------------------------------------|
| 0       | Quiet      | 8 fan PWM levels – 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% |
| 1       | Normal     | 8 fan PWM levels – 40%, 50%, 60%, 70%, 78%, 86%, 93%, 100% |
| 2       | Aggressive | 8 fan PWM levels – 50%, 60%, 70%, 80%, 85%, 90%, 95%, 100% |

Syntax

```
bpsys fan <0|1|2>
```

Example

```
Bridge >bpsys fan 0
Set Fan Speed Profile: 0
```

bpsys thermal <37~52>

Set maximum temperature (Celsius) for fan speed maximum level control. Default value is 42 (Celsius). Fan controller get thermal sensors' readings in Celsius and use the maximum value to map the SES fan level for PWM control. Below table is 'bpsys thermal 42' case

| SES Level        | Temperature (Celsius) |      | RPM (Rdiff = Rmax-Rmin, Rmax: fan full speed, Rmin: fan lowest speed) |                 |                 |
|------------------|-----------------------|------|-----------------------------------------------------------------------|-----------------|-----------------|
|                  | Low                   | High | Quiet Mode                                                            | Normal Mode     | Aggressive Mode |
| 7 Highest        | 39.9                  | 42.0 | Rmin+Rdiff*100%                                                       | Rmin+Rdiff*100% | Rmin+Rdiff*100% |
| 6 Second Highest | 37.8                  | 39.9 | Rmin+Rdiff*90%                                                        | Rmin+Rdiff*93%  | Rmin+Rdiff*95%  |
| 5 Third Highest  | 35.6                  | 37.8 | Rmin+Rdiff*80%                                                        | Rmin+Rdiff*86%  | Rmin+Rdiff*90%  |
| 4 Interim        | 33.5                  | 35.6 | Rmin+Rdiff*70%                                                        | Rmin+Rdiff*78%  | Rmin+Rdiff*85%  |
| 3 Third Lowest   | 31.4                  | 33.5 | Rmin+Rdiff*60%                                                        | Rmin+Rdiff*70%  | Rmin+Rdiff*80%  |
| 2 Second Lowest  | 29.3                  | 31.4 | Rmin+Rdiff*50%                                                        | Rmin+Rdiff*60%  | Rmin+Rdiff*70%  |
| 1 Lowest         | 27.1                  | 29.3 | Rmin+Rdiff*40%                                                        | Rmin+Rdiff*50%  | Rmin+Rdiff*60%  |
| 0 ---            | 25.0                  | 27.1 | Rmin+Rdiff*30%                                                        | Rmin+Rdiff*40%  | Rmin+Rdiff*50%  |
|                  | 10                    | 25.0 |                                                                       |                 |                 |

Syntax

```
bpsys thermal <37~52>
```

Example

```
Bridge >bpsys thermal 45
Set Fan Control Max Temperature (37C~52C): 45
```

bpsys zone <0|1|2>

Set PHY zone mode. There are 2 zone enabling mode (1 or 2). Default (0) is zone disabled. Refer to Figure 15 for mode=1 (3 zones – zone1 is bay1-24, zone2 is bay25-48, zone3 is bay49-60), Figure 16 for mode=2 (2 zones – zone1 is bay1-48, zone2 is bay49-60)

### 3 Zones Configuration – 24/24/12 (mode:1)

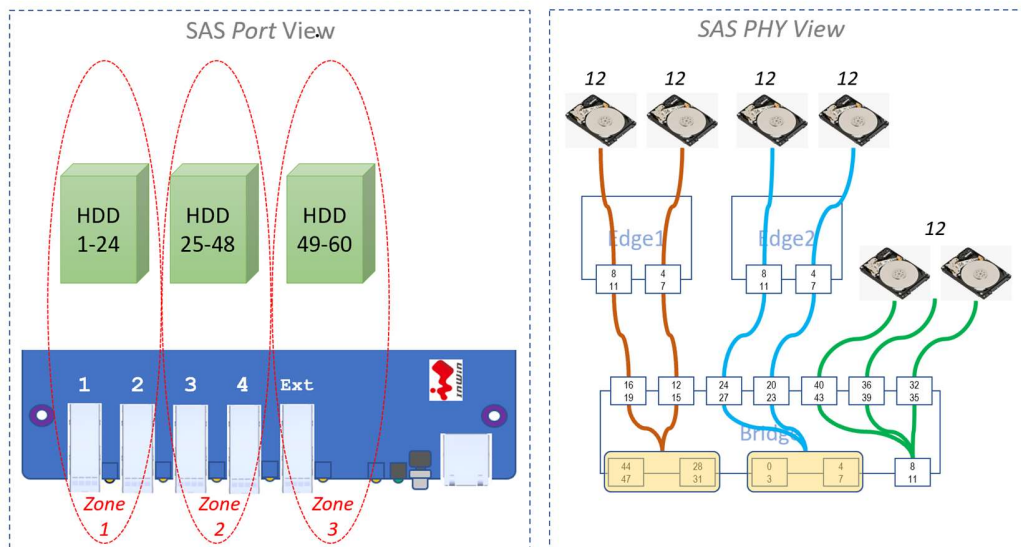


FIGURE 15 3 ZONES CONFIGURATION

## 2 Zones Configuration – 48/12 (mode:2)

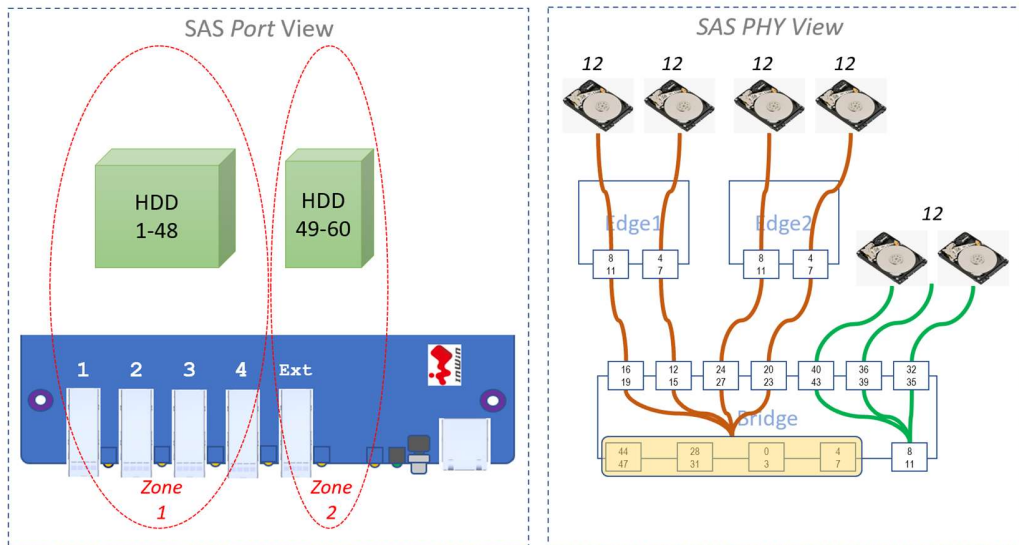


FIGURE 16 2 ZONES CONFIGURATION

### Syntax

```
bpsys zone <0|1|2>
```

### Example

```
Bridge >bpsys zone 1
Set Zone Profile: 1
```

### bpsys mute <0|1>

Set backplane system buzzer to mute mode. Default (0) is to enable beeping when system occurs some errors.

### Syntax

```
bpsys mute <0|1>
```

### Example

```
Bridge >bpsys mute 1
Set Mute Enable: 1
```

### bpsys id <0|1>

Turn backplane system ID LED on or off. The value is not saved to storage. Default (0) is to turn off ID LED. This command enable user to turn on ID LED from remote.

### Syntax

```
bpsys id <0|1>
```

### Example

```
Bridge >bpsys id 1  
ID LED Enable: 1
```

### bpsys test <0|1>

Set backplane system to test mode that blinks all LEDs and play buzzer for test. The value is not saved to storage. Default (0) is to quit the test mode.

### Syntax

```
bpsys test <0|1>
```

### Example

```
Bridge >bpsys test 1  
Test Enable: 1
```

### bpsys reset <1>

Make backplane system to reset all backplanes, expanders, front panel, middle plane and PDB. The command will power down all expanders, front panel, BP1, BP2, BP3. Then reset middle plan and PDB modules. System will then power on BP1, BP2, BP3 and front panel in few seconds, and wait another few seconds to power on expanders and HDDs.

### Syntax

```
bpsys reset <1>
```

### Example

```
Bridge >bpsys reset 1  
Reset MCU System  
  
Bridge >  
Performing POST for Smart Serial  
...
```

## 4.14 ipconfig

Show or configure network interface IP address for RJ-460-08 bridge board.

ipconfig [verbose]

Display bridge expander module ethernet port configuration that are saved in persistent storage (flash). Default setting is static IP address (192.168.100.1).

Syntax

```
ipconfig [verbose]
```

Example

```
Bridge >ipconfig
```

```
=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
IP Address . . . . . : 192.168.100.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====
```

```
Bridge >ipconfig verbose
```

```
=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
IP Address . . . . . : 192.168.1.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.254
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
Ethernet speed/duplex initial setting: 0
Host Name . . . . . : CUB_fa:e1:90:0:15:ff
VLAN Enabled . . . . . : No
VLAN CFI/PCP/ID . . . . . : 0/6/ffe
WakeLan Magic Packet Wakeup Enabled : No
WakeLan Unicast Packet Wakeup Enabled: No
=====
```

ipconfig dhcp

configure ethernet port IP address to DHCP mode.

## Syntax

```
ipconfig dhcp
```

## Example

```
Bridge >ipconfig dhcp

Please reboot for new setting

Bridge >reset

...
Bridge >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : Yes
AUTOIP Enabled . . . . . : No
IP Address . . . . . : 192.168.173.153
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.173.250
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====
```

`ipconfig static <ip_addr> <netmask> <gateway>`

Configure ethernet port to static mode and assign the IP address, netmask and gateway.

## Syntax

```
ipconfig static <IP_addr> <Netmask> <Gateway>
```

## Example

```
Bridge >ipconfig static 192.168.1.1 255.255.255.0 192.168.1.254

Please reboot for new setting

Bridge >reset

...
Bridge >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : No
IP Address . . . . . : 192.168.1.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.254
=====
```

```

Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====

```

## ipconfig auto

Configure ethernet port to auto IP mode.

## Syntax

```
ipconfig auto
```

## Example

```

Bridge >ipconfig auto

Please reboot for new setting

Bridge >reset

...
Bridge >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : No
AUTOIP Enabled . . . . . : Yes
IP Address . . . . . : 169.254.125.78
Subnet Mask . . . . . : 255.255.0.0
Default Gateway . . . . . : 0.0.0.0
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====

```

## ipconfig dhcp\_auto

Configure ethernet port to DHCP and auto IP mode that system will try to get IP address from DHCP. If no DHCP server exist, system will use auto IP mode.

## Syntax

```
ipconfig dhcp_auto
```

## Example

```

Bridge >ipconfig dhcp_auto

Please reboot for new setting

```

```
Bridge >reset

...
Bridge >ipconfig

=====
Physical Address . . . . . : FA-E1-90-00-15-FF
DHCP Enabled . . . . . : Yes
AUTOIP Enabled . . . . . : Yes
IP Address . . . . . : 192.168.173.156
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.173.250
Ethernet Link Status . . . . . : Up
Ethernet Link Speed . . . . . : 1000 Mbps
Ethernet Link Duplex Mode . . . . . : Full
=====
```

## 4.15 fdl

fdl <0|1> <0> <y>

Download firmware or manufacture config (MFG) image from console or telnet. The download protocol is XMODEM, refer to Figure 17

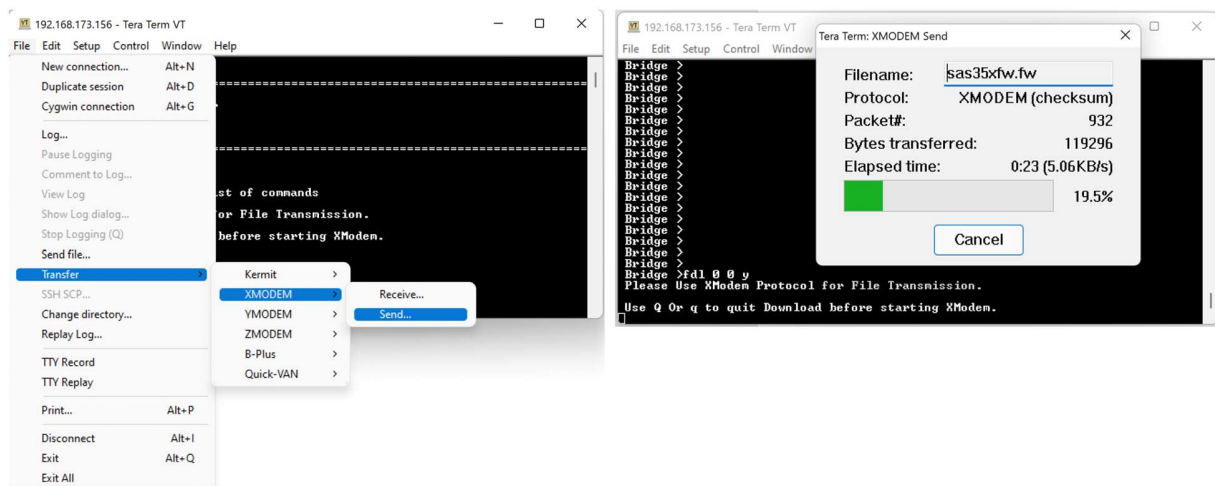


FIGURE 17 FIRMWARE UPGRADE BY XMODEM

Syntax – Download Firmware

```
fdl 0 0 y
```

Syntax – Download MFG

```
fdl 1 0 y
```

Example

```
Bridge >fdl 0 0 y
Please Use XModem Protocol for File Transmission.

Use Q Or q to quit Download before starting XModem.

Received 612736Bytes
Buffer Download Complete
Start downloading to Edge Expanders ...
Edge1 Download Successfully!
Edge2 Download Successfully!

Bridge >fdl 1 0 y
Please Use XModem Protocol for File Transmission.

Use Q Or q to quit Download before starting XModem.

Received 49152Bytes
Buffer Download Complete
Start downloading to Edge Expanders ...
Edge1 Download Successfully!
Edge2 Download Successfully!
```

## 4.16 tftpd32

tftpd32 <0|1> <0> <y> <tftp\_server\_ip> <filename>

To upgrade firmware through TFTP, open a TFTP server (Figure 18) on your console host and specify the path in TFTP server to the directory where the firmware is stored. Please be sure the TFTP server is reachable to the JBOD system.

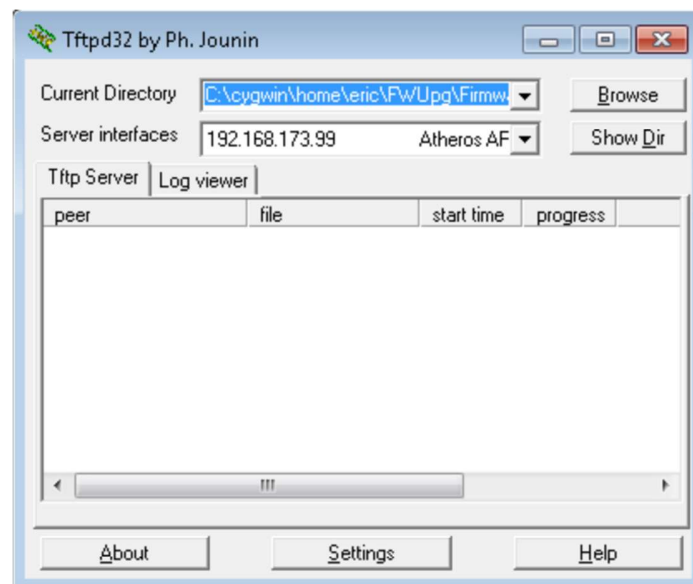


FIGURE 18 TFTP SERVER FOR UPGRADE

### Syntax – Download Firmware through TFTP

```
tftpfdl 0 0 y <tftp_server_ip> <fw_filename>
```

### Syntax – Download MFG through TFTP

```
tftpfdl 1 0 y <tftp_server_ip> <mfg_filename>
```

### Example

```
Bridge >tftpfdl 0 0 y 192.168.173.139 RJ460-1.0.0.fw  
  
Received 612776Bytes  
Firmware Download Complete  
  Start downloading to Edge Expanders ...  
  Edge1 Download Successfully!  
  Edge2 Download Successfully!
```