

# **GIGABYTE<sup>TM</sup>**

## **S260-NF0 S260-NF1**

2U NVMe Over Fabric Storage

### **User Manual**

Rev. 1.0

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## **Documentation Classifications**

In order to assist in the use of this product, GIGABYTE provides the following types of documentation:

- User Manual: detailed information & steps about the installation, configuration and use of this product (e.g. motherboard, server barebones), covering hardware and BIOS.
- User Guide: detailed information about the installation & use of an add-on hardware or software component (e.g. BMC firmware, rail-kit) compatible with this product.
- Quick Installation Guide: a short guide with visual diagrams that you can reference easily for installation purposes of this product (e.g. motherboard, server barebones).

Please see the support section of the online product page to check the current availability of these documents.

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## Conventions

The following conventions are used in this user's guide:

	<b>NOTE!</b> Gives bits and pieces of additional information related to the current topic.
	<b>CAUTION!</b> Gives precautionary measures to avoid possible hardware or software problems.
	<b>WARNING!</b> Alerts you to any damage that might result from doing or not doing specific actions.

## Server Warnings and Cautions

Before installing a server, be sure that you understand the following warnings and cautions.



### **WARNING!**

#### **To reduce the risk of electric shock or damage to the equipment:**

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.



### **WARNING!**

#### **To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.**



### **WARNING!**

#### **This server is equipped with high speed fans. Keep away from hazardous moving fan blades during servicing.**



### **WARNING!**

#### **This equipment is not suitable for use in locations where children are likely to be present.**



### **CAUTION!**

- Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.
- Danger of explosion if battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

## Electrostatic Discharge (ESD)



### CAUTION!

ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTI-STATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges without any component and pin touching. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

**System power on/off:** To remove power from system, you must remove the system from rack. Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

**Hazardous conditions, devices and cables:** Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the cables attached to the system before servicing it. Otherwise, personal injury or equipment damage can result.

**Electrostatic discharge (ESD) and ESD protection:** ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface on the server) when handling parts.

**ESD and handling boards:** Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

**Installing or removing jumpers:** A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

**CAUTION!**

Risk of explosion if battery is replaced incorrectly or with an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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# Chapter 1    Hardware Installation

## 1-1    Installation Precautions

The motherboard/system contain numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the service guide and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

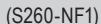
## 1-2 Product Specifications



### NOTE:

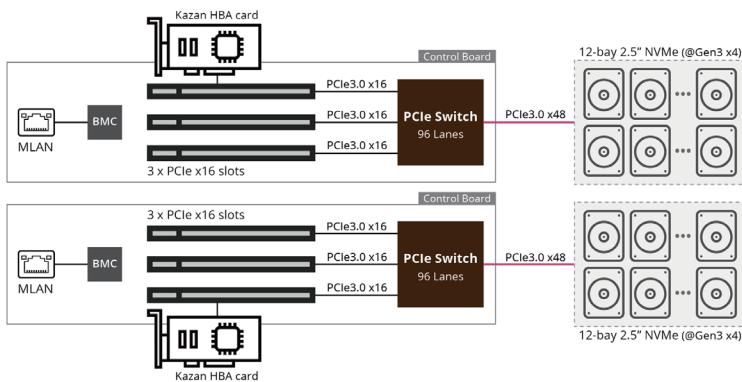
We reserve the right to make any changes to the product specifications and product-related information without prior notice.

	<b>System Dimension</b>	<ul style="list-style-type: none"><li>◆ 2U</li><li>◆ 440(W) x 87(H) x 695 (D) mm</li></ul>
	<b>Motherboard (S260-NF0)</b>	<ul style="list-style-type: none"><li>◆ 2 x CPBD530</li><li>◆ Embedded Microsemi PM8536B-FEI PICe switch with 96 Lanes</li><li>◆ Pre-installed 1 x Western Digital Onyx NVMe Host Bus Adapter* in each CPBD530</li><li>◆ Each CPBD530 board controls 12 x NVMe SSD devices with PCIe x4 bandwidth per port</li></ul>
		<p>*NOTE: Up to 3 x Western Digital Onyx NVMe Host Bus Adapters in each CPBD530 board</p>
	<b>(S260-NF1)</b>	<ul style="list-style-type: none"><li>◆ 2 x CPBD530</li><li>◆ Embedded Microsemi PM8536B-FEI PICe switch with 96 Lanes</li><li>◆ Pre-installed 1 x Western Digital Onyx NVMe Host Bus Adapter* in each CPBD530</li><li>◆ Each CPBD530 board controls 24 x NVMe SSD devices with PCIe x2 bandwidth per port</li></ul>
		<p>*NOTE: Up to 3 x Western Digital Onyx NVMe Host Bus Adapters in each CPBD530 board</p>
	<b>CPU</b>	<ul style="list-style-type: none"><li>◆ Western Digital Onyx NVMeOF Bridge ASIC</li></ul>
	<b>Socket</b>	<ul style="list-style-type: none"><li>◆ Embedded</li></ul>
	<b>LAN</b>	<ul style="list-style-type: none"><li>◆ 1 x 100Gb or 2 x 50Gb Ethernet port(s) via QSFP28 interface</li><li>◆ 1 x 10/100/1000 management LAN</li></ul>
	<b>Video</b>	<ul style="list-style-type: none"><li>◆ Integrated in Aspeed® AST2520</li></ul>
	<b>Expansion Slot</b>	<b>Per node:</b> <ul style="list-style-type: none"><li>◆ Total 3 x PCIe x16 slots (Gen3 x16) for Western Digital NVMeOF HBAs per node</li><li>◆ 2 x PCIe x16 (Gen3 x16 bus) Full height slots</li><li>◆ 1 x PCIe x16 (Gen3 x16 bus) Low profile slot</li></ul>
	<b>Storage</b>	<ul style="list-style-type: none"><li>◆ 24 x 2.5" NVMe hot-swappable SSD bays</li></ul>
	<b>Front Panel I/O</b>	<ul style="list-style-type: none"><li>◆ 1 x Power button with LED</li><li>◆ 1 x ID button with LED</li><li>◆ 1 x Reset button</li><li>◆ 1 x System status LED</li></ul>

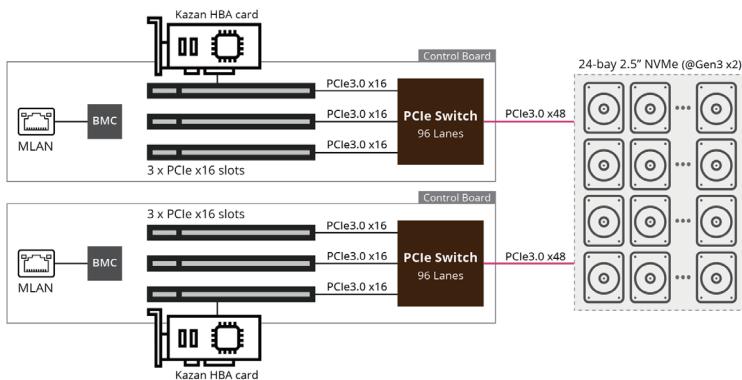
 Rear Panel I/O	<ul style="list-style-type: none"> <li>◆ 1 x QSFP28</li> <li>◆ 1 x LAN</li> <li>◆ 1 x Serial port</li> <li>◆ 1 x Power button with LED</li> <li>◆ 1 x ID button with LED</li> <li>◆ 1 x BMC Reset button</li> <li>◆ 1 x System Reset button</li> <li>◆ 1 x System status LED</li> </ul>
 Backplane I/O (S260-NF0)	<ul style="list-style-type: none"> <li>◆ Bandwidth: PCIe Gen3 x4 per port</li> </ul>
 (S260-NF1)	<ul style="list-style-type: none"> <li>◆ Bandwidth: PCIe Gen3 x2 per port</li> </ul>
 System Management	<ul style="list-style-type: none"> <li>◆ Aspeed® AST2520 management controller</li> </ul>
 Power Supply	<ul style="list-style-type: none"> <li>◆ 2 x 800W redundant PSUs</li> <li>◆ 80 PLUS Platinum</li> </ul>
AC Input:	
<ul style="list-style-type: none"> <li>◆ 100-240V~/ 10-4A, 50-60Hz</li> </ul>	
DC Input:	
<ul style="list-style-type: none"> <li>◆ 240Vdc/ 4.5A</li> </ul>	
DC output:	
<ul style="list-style-type: none"> <li>◆ 800W</li> <li>◆ +12V/ 66A</li> <li>◆ +12Vsb/ 2.5A</li> </ul>	
 Operating Properties	<ul style="list-style-type: none"> <li>◆ Operating temperature: 10°C to 35°C</li> <li>◆ Operating humidity: 8% to 80% (non-condensing)</li> <li>◆ Non-operating temperature: -40°C to 60°C</li> <li>◆ Non-operating humidity: 20% to 95% (non-condensing)</li> </ul>

## 1-3 System Block Diagram

### S260-NF0

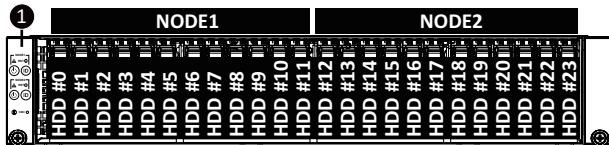


### S260-NF1



# Chapter 2 System Appearance

## 2-1 Front View

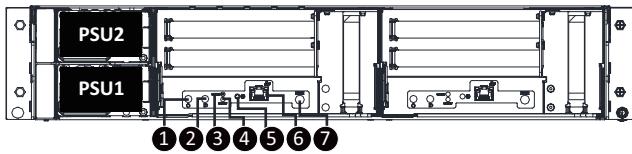


No.	Description
1.	Front Panel Buttons and LEDs
<b>Orange HDD Latches Support NVMe</b>	

- Refer to section **2-3 Front Panel LEDs and Buttons** for a detailed description of the function of the LEDs.



## 2-2 Rear View

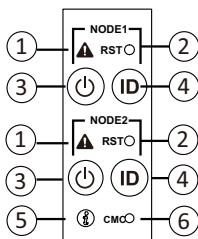


No.	Description
1.	Power Button
2.	ID Button
3.	System Reset Button
4.	BMC Reset Button
5.	System Status LED
6.	Server Management LAN Port
7.	COM Jack



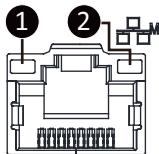
- For HDD Font Color, yellow indicates SATA, blue indicates NVMe.
- Refer to section **2-4 Rear System LAN LEDs** for a detailed description of the function of the LEDs.

## 2-3 Front Panel LEDs and Buttons



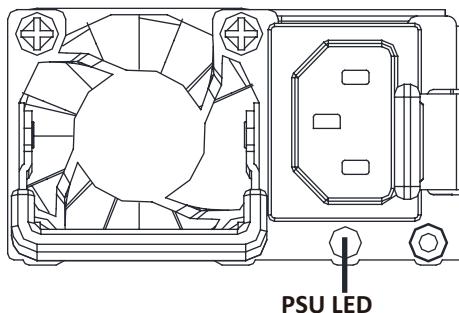
No.	Name	Color	Status	Description
1.	System Status LED	Amber	Green	On System is operating normally.
			On	Critical condition, may indicates: System fan failure System temperature
			Blink	Non-critical condition, may indicates: Redundant power module failure Temperature and voltage issue
			N/A	Non-critical condition, may indicates: Redundant power module failure Temperature and voltage issue
			Off	Redundant power module failure Temperature and voltage issue
2.	Reset Button	--	--	Press this button to reset the system.
3.	Power button with LED	Green	On	System is powered on
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	<ul style="list-style-type: none"> <li>System is not powered on or in ACPI S5 state (power off)</li> <li>System is in ACPI S4 state (hibernate mode)</li> </ul>
4.	ID Button with LED	Blue	On	System identification is active.
		N/A	Off	System identification is disabled.
5.	Enclosure	Amber	Green	On System is operating normally.
			On	Critical condition, may indicates: Power module failure System fan failure
			On	Power supply voltage issue System temperature
			Blink	Non-critical condition, may indicates: Redundant power module failure Temperature and voltage issue
			Off	
6.	CMC Reset Button	--	--	Press this button to reset the CMC.

## 2-4 Rear System LAN LEDs



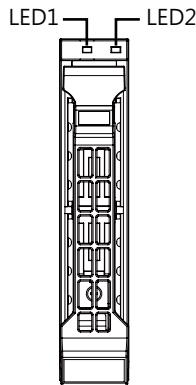
No.	Name	Color	Status	Description
1.	1GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1GbE Link/Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring

## 2-5 Power Supply Unit LED



State	Description
OFF	No AC power to all power supplies
1Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware update mode
Amber	AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power
	Power supply critical event causing shut down: failure, OCP, OVP, fan failure and UVP
1Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

## 2-6 Hard Disk Drive LEDs



RAID SKU		LED1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
No RAID configuration (via HBA)	Disk LED (LED on Back Panel)	Green	ON(*1)	OFF		BLINK (*2)	OFF
		Amber	OFF	OFF		OFF	OFF
	Removed HDD Slot (LED on Back Panel)	Green	ON(*1)	OFF		--	--
		Amber	OFF	OFF		--	--
RAID configuration (via HW RAID Card or SW RAID Card)	Disk LED	Green	ON	OFF		BLINK (*2)	OFF
		Amber	OFF	ON	(Low Speed: 2 Hz)	OFF	OFF
	Removed HDD Slot	Green	ON(*1)	OFF	(*3)	--	--
		Amber	OFF	ON	(*3)	--	--

LED 2	HDD Present	No HDD
Green	ON	OFF

NOTE:

\*1: Depends on HBA/Utility Spec.

\*2: Blink cycle depends on HDD's activity signal.

\*3: If HDD is pulled out during rebuilding, the disk status of this HDD is regarded as faulty.

## Chapter 3 System Hardware Installation



### Pre-installation Instructions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damage to your computer or injury to yourself.

- Always disconnect the computer from the power outlet whenever you are working inside the computer case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal system of the computer case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging until you are ready to use the component for the installation.

### 3-1 Installing the Hard Disk Drive

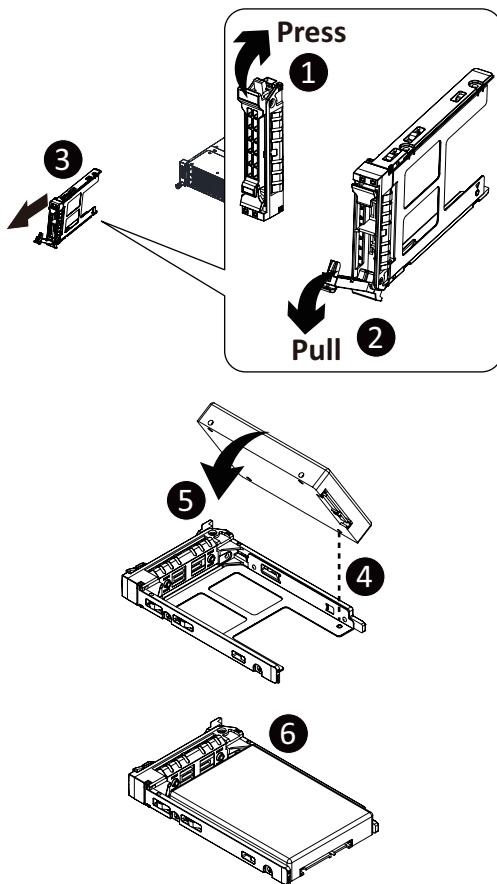


Read the following guidelines before you begin to install the Hard disk drive:

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.
- Make sure that the HDD is connected to the HDD connector on the backplane.

Follow these instructions to install the Hard disk drive:

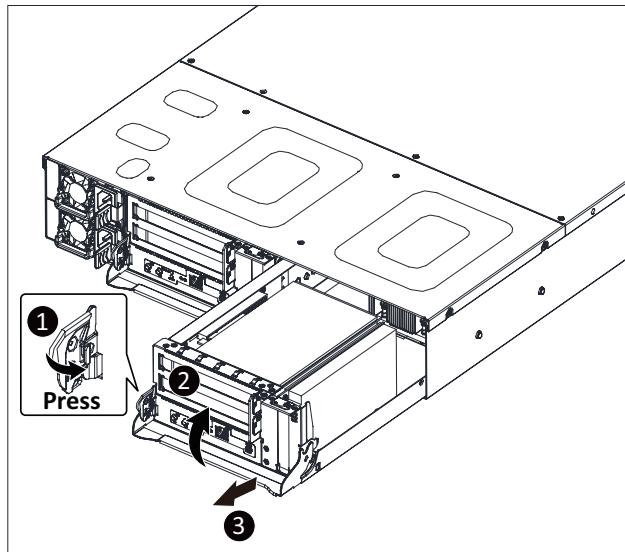
1. Press down the colored release button.
2. Pull out the black locking lever.
3. Use the black locking lever to slide out the HDD tray.
4. Place one side of the HDD at a 45 degree angle into the tray, and align the guiding stand-offs in the tray with the installation holes of the HDD.
5. Once aligned, push down the other side of the HDD and press it until it clicks.



## 3-2 Removing the Node

Follow these instructions to remove a node:

1. Press the release retaining clip on the left side of the node along the direction of the arrow.
2. Pulling out the node using its handle.



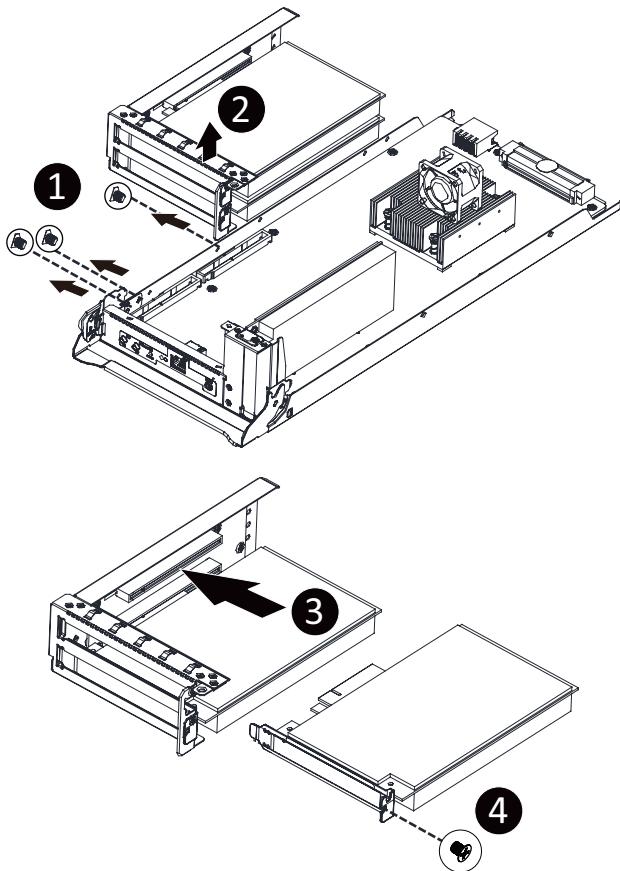
### 3-3 Installing the PCI Expansion Card



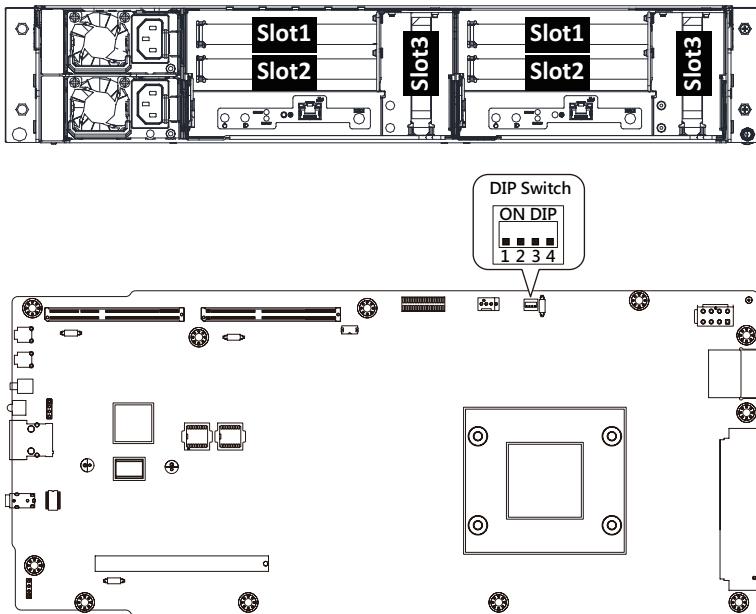
- The PCI riser assembly does not include a riser card or any cabling as standard. To install a PCI card, a riser card must be installed.

Follow these instructions to install the PCI Expansion card:

1. Remove the three screws securing the riser bracket to the system.
2. Lift up the riser bracket out of system.
3. Align the PCIe card to the riser guide slot and push in the direction of the arrow until the PCIe card sits in the PCI card connector.
4. Secure the PCIe card with a screw.
5. Reverse steps 1 - 3 to install the riser bracket back into the system.



### 3-3-1 PCIe Card Configuration



**S260-NF0**

DIP Switch	Card	Slot	PCIe Slot Configuration	NVMe HDD
 ON DIP 1 2 3 4	Kazan	Slot 3	x8	0~5
			x8	6~11
 ON DIP 1 2 3 4	Kazan	Slot 1	x8	0~2
			x8	3~5
		Slot 2	x8	6~8
			x8	9~11
 ON DIP 1 2 3 4	Kazan	Slot 1	x8	0, 1
			x8	2, 3
		Slot 2	x8	4, 5
			x8	6, 7
		Slot3	x8	8, 9
			x8	10, 11

## S260-NF1

DIP Switch	Card	Slot	PCIe Slot Configuration	NVMe HDD
	Kazan	Slot 3	x8	0~11
			x8	12~23
	Kazan	Slot 1	x8	0~5
			x8	6~11
		Slot 2	x8	12~17
			x8	18~23
	Kazan	Slot 1	x8	0~3
			x8	4~7
		Slot 2	x8	8~11
			x8	12~15
		Slot3	x8	16~19
			x8	20~23

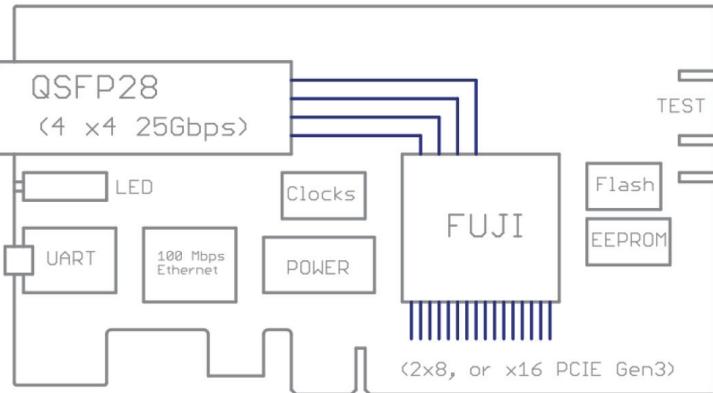
# Chapter 4 Western Digital NIC Configuration

## 4-1 Introduction

This chapter describes the evaluation and use of the Western Digital Networks NVMe-oF™ bridge adapter board codenamed Onyx, which contains the ASIC device codename Fuji.

## 4-2 Adapter Board Specification

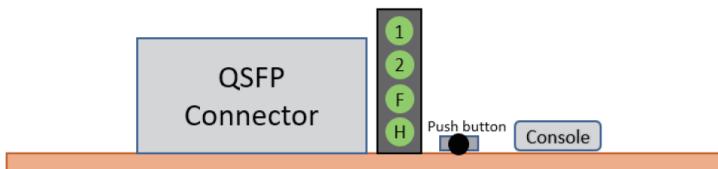
### 4-2-1 Adapter Block Diagram



<b>QSFP28</b>	Industry-standard Ethernet cage, designed to accept both copper and optical cables.
<b>Fuji</b>	Western Digital Networks' "Fuji" NVMe-oF Bridge ASIC.
<b>Flash</b>	This SPI flash device contains the firmware (FW) that Fuji requires to run.
<b>EEPROM</b>	The EEPROM on the Onyx board contains many board- and model-specific data, plus configuration parameters.
<b>Clocks</b>	System and I/O clock inputs to Fuji.
<b>UART</b>	This microUSB port enables users to monitor Fuji's console port.
<b>LED</b>	Onyx has 4 LEDs which enable the user to easily detect the general state of Fuji.
<b>TEST</b>	The upper right side of Onyx contains two "edge finger" connectors. There are for internal Western Digital testing only. No user-accessible information is present on these connectors.

## 4-3 Adapter Board LEDs

LEDs on the Onyx bulkhead indicate various board state and activity.



- LEDs labeled "1" and "2" indicate Ethernet lane activity.
- The LED labeled 'F' indicates the firmware state.
- The LED labeled 'H' indicates hardware and management state.

### 4-3-1 Firmware State LED

The following table describes the meaning of the "F" or FW State LED. Please note that solid fields in this table define a solid (non-blinking) LED state.

LED: F	Stage	Controlled by
Amber	Boot sequence started	boot
Amber	This SPI flash device contains the firmware (FW) that Fuji requires to run.	FW
Green	*Recovery/Golden Image Booted – FW will Blink the Amber LED while the Recovery Image is running during normal operation	FW
Amber	*Action Required (AR) Condition	FW
Red	Reset button has been depressed	FW
Green	Release Reset button to clear configuration	FW

\*Blink rate is once per second



#### NOTE!

- A sustained solid Amber indicates that the adapter must be shipped back to the factory (also known as a "bricked" state.)
  - This includes Power-On SelfTest ("POST") failure.
- FW change to blinking Amber if Attention Required ("AR"). Example causes:
  - Booted to Golden RTL

- Core Dumps in Flash
- Power-on Selftest (POST) Failure
- PCIe Link is up, not configured correctly
- Additional “attention” state where the user should access Fuji’s Management Interface for status

#### 4-3-2 Reset EMP LED

The secondary Ethernet Management Port (EMP) and reset state are represented on a dual LED in the same package. The reset function employs the green LED and the EMP employs the red LED. Combined they appear to the user as amber.

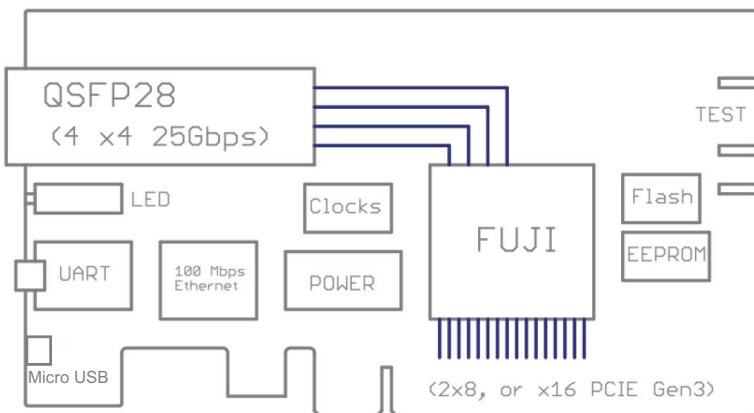
LED: H	Description	Controlled by
Off	Board is off or in held in reset	
Green	Board is out of reset and there is no EMP activity	HW
Blink	Green/yellow blink: EMP is active	EMP

## 4-4 Onyx Setup



### NOTE!

- Connect to the micro USB connector before starting Onyx Setup.



Onyx 2.0 shipped with the default configuration: Ethernet 2x50Gbps, PCIe 2x8.

While customers can change the settings as required, we changed the settings to be Ethernet 1x100Gbps, and set the IP address to be 3.3.3.1/24.

```
KazAn>set-autoneg 1 1 1 2 8
```

```
KazAn>set-autoneg 2 1 1 2 0
```

```
KazAn>set-ip 1 0 3.3.3.1 255.255.255.0 3.3.3.4 Port1
```

### **set-autoneg 1 1 1 2 8; set-autoneg 2 1 1 2 0**

Configure the Ethernet to be 100G RS FEC, here is a high-level description of these parameters:

`set-autoneg <Port> <TX> <RX> <FEC> <TECH>`

`<Port>` Set to 1 for Ethernet Port #1 and 2 for Ethernet Port #2

`<TX>` Set to 1 (enables TX Pause Flow Control)

`<RX>` Set to 1 (enables RX Pause Flow Control)

`<FEC>` Set to 1 for FC FEC and 2 for RS FEC (100G speed requires RS FRC to be enabled)

`<TECH>` Selects Ethernet speed (set to 4 for 50G, 8 for 100G. When configured for 100G, TECH parameter for Ethernet Port #2 must be set to 0 to disable the Port since Fuji supports a single 100G port)

## **set-ip 1 0 3.3.3.1 255.255.255.0 3.3.3.4 Port1**

Configure the IP address of the first Ethernet port.

Note: Refer to Appendix Fuji Profile Configuration for selecting different profile, Onyx boards are shipped with default profile 0, which supports up to 8 drives. To test 12 drives, please select profile 1. It needs reboot after profile changed.

```
KazAn> admin 1216                                --This enables all CLI commands.  
(admin)KazAn> fru-profile 1  
(admin)KazAn> fru-write                            -- Commit write above to EEPROM.
```

It's strongly recommended to check the Ethernet link status, PCIe link status and drives presented before further operations.

```
KazAn> show-version 1  
  
KazAn>show-pcie 0xff  
  
KazAn>show-port 0xff  
  
KazAn>show-present 0xff  
  
KazAn>show-drive 0xff
```

### **show-version 1**

Check the firmware version to make sure the firmware is up to date.

### **show-pcie 0xff**

Check the PCIe link status and also the number of drives discovered.

### **show-port 0xff**

Check the Ethernet link status.

### **show-present 0xff**

Display the present of NVMe drives in bitmap concept. For example, 0x0000001E means there are drives at slot#1, slot#2, slot#3 and slot#4.

### **show-drive 0xff**

Display the drive details of each slot.

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# Chapter 5 Appendix

## 5-1 Ethernet/PCIe Configuration

### Changing PCIe bifurcation mode:

To change the PCIe mode to either 2 x8 or 1 x16 (that is, either the PCIe interface is bifurcated in to 2 links, 8 lanes each or is not bifurcated and is a single link with 16 lanes), execute the appropriate fru\_bifurcate command shown below. The “show-version 1” command indicates the current setting of bifurcation (if Bifr is displayed as 1 then Fuji is in the 2 x8 mode and if Bifr is 0, it indicates that Fuji is in the 1 x16 mode). After, the fru\_bifurcate command completes, a fru\_write command must be executed to commit the operation to persistent memory in Fuji. A reset of the PCIe interface (typically performed by a power cycle) is required for the change to take effect.

```
(admin)KazAn> show-version 1
Version - Bridge Config MI:
+ INST: 1
+ BdSN: 903K1094120044
+ TEdw: 0x00010007
+ NEdw: 0x0001000A
+ EICw: 0x00000107
+ AchW: bld_a0_0 (586-0x2cf5a81)
+ GIFW: ONYXFW_12.rc8-17356
+ AcFW: ONYXFW_12.rc8-17356 (Jan 17 2019-18:13:26) Slot:7
+ SLT6: ONYXFW_12.rc8-17356
+ SLT7: ONYXFW_12.rc8-17356*
+ ExUa: 0
+ ExCk: 0
+ Bifr: 1
+ Prst: 0
+ Prfl: 0
+ Emp : 1
+ l4kl: 1
+ MRSz: 0
+ Port: 2
+ PCIe: 2
+ SSDs: 8
+ IOQs: 128
+ Cons: 160
+ VCtl: 32
```

**To select 2 x8 mode:**

```
(admin)KazAn> fru-bifurcate 0.
```

**To select 1 x16 mode:**

```
(admin)KazAn> fru-write.
```

### Commit the change to Fuji's persistent memory

**To select the different Ethernet speeds**

**50G FC FEC**

```
KazAn> set-autoneg 1 1 1 1 4.
```

```
KazAn> set-autoneg 2 1 1 1 4.
```

**100G RS FEC**

```
KazAn> set-autoneg 1 1 1 2 8.
```

```
KazAn> set-autoneg 2 1 1 2 0.
```

Here is a high-level description of these parameters:

set-autoneg <Port> <TX> <RX> <FEC> <TECH>

<Port> Set to 1 for Ethernet Port #1 and 2 for Ethernet Port #2

<TX> Set to 1 (enables TX Pause Flow Control)

<RX> Set to 1 (enables RX Pause Flow Control)

<FEC> Set to 1 for FC FEC and 2 for RS FEC (100G speed requires RS FRC to be enabled)

<TECH> Selects Ethernet speed (set to 4 for 50G, 8 for 100G. When configured for 100G, TECH parameter for Ethernet Port #2 must be set to 0 to disable the Port since Fuji supports a single 100G port)