



ORION HF310-G4

User Manual



About this User Manual

This user manual provides the information on Installation and maintenance of the Orion HF310-G4.

 **Caution:** Experienced technicians should perform the Installation and maintenance.

Document title: **ORION HF310-G4**

Document number:

Document update date: **September 2020**

The following Notes, Cautions and Warnings might appear in this user manual.

 **Note:** Explains an important point or tip to help you to better use of the product.

 **Caution:** Indicates the potential damage to hardware or loss of data, security problems, or performance issues and tells you to avoid the problem.

 **Warning:** Indicates that an action or step can result in physical harm, property or hardware damage.

To avoid damaging your server, perform the following steps before you begin working inside the server.

1. Ensure that you follow the Safety Instruction.
2. Ensure that your work surface is flat and clean to prevent the server cover from being scratched.
3. Turn off your server.
4. Disconnect all network cables from the server.

CAUTION: To disconnect a network cable, first unplug the cable from your server and then unplug the cable from the network device. After you finish working inside the server, replace all covers, panels, and screws before connecting to the power source.

Safety instructions

Use the following safety guidelines to protect your server from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

You have read the safety information that shipped with your server.

A component can be replaced or, if purchased separately, installed by performing the removal procedure in the reverse order.

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1. ORION HF310-G4 Specifications

The ORION HF310-G4 is a single socket, 1U rackmount form factor server and supports the following specification.

Form Factor	1U
Chipset	Intel® X299
Processor	Intel® Core™ i9-7980XE - 18 Cores Overclocked Up to 4.8GHz, 24.75MB Cache, LGA2066 Intel® Core™ i9-10980XE - 18 Cores Overclocked Up to 5.0GHz*, 24.75 MB Cache, LGA2066
Cooling System	High Performance Liquid Cooled System, Closed Loop and Maintenance Free
Memory	i9-7980XE - Up to 128GB (8 x 16GB) DDR4-3200MHz non-ECC, Quad Channel Low Latency CAS Memory i9-10980XE - Up to 128GB (8 x 16GB) DDR4-3600MHz non-ECC or Up to 256GB (8 x 32GB) DDR4-3200MHz non-ECC, Quad Channel Low Latency CAS Memory
Network Controller	(2) Intel® i350 1GbE RJ45 Port + (1) Dedicated Management 1GbE RJ45 Port
Storage Controller	Onboard Intel® X299 Express Chipset SATA 6Gbps Controller Support RAID 0, 1, 5 and 10 Intel® Rapid Storage Technology (Optional Hardware RAID)
Drive Bays	(2) 2.5" SATA 6Gbps hot-swap drives HDD/SSD (2) 2.5" SATA 6Gbps or U.2 NVMe internal fixed drives HDD/SSD (2) M.2 PCIe 3.0 x4 NGFF-2242/2280/22110 (42mm, 80mm or 110mm)
Expansion Slots	(1) PCIe 3.0 x16 (FHFLDW) or (2) PCIe 3.0 x8 (HHHL) (1) PCIe 3.0 x16 Full Height Half Length (FHHL) (1) PCIe 3.0 x8 OCP 1.0
Validated Network Adapters	SolarFlare / Xilinx: Flaeron Series & X2 Series Mellanox: ConnectX-3, 4, 5 & 6 Series ExaBlaze: ExaNIC X10, X25 & X40 Series
Validated FPGA Adapters	Xilinx: Vintex & Kintex Series Nallatech: 385A Series ExaBlaze: ExaNIC V5P & V9P Series Intel®: Arria 10 Series
I/O Ports	(1) VGA, (2) USB 3.0, (2) 1GbE RJ45 LAN, (1) 1GbE RJ45 Management LAN
System Management	AST2500 Advanced Graphics & Remote Management Processor, IPMI 2.0 and Redfish 1.6 Compliant, Web-based user interface for remote management & iKVM, Remote, unblocked, BIOS-level access & control
Chassis Features	Toolless mounting motherboard and toolless rail kit, QCode for easy troubleshooting, Exclusive leak detection technology
Power Supply	1000W Redundant (1+1) High Efficiency 80 PLUS® Platinum Certified
Environment	Operating: 10°C to 25°C (50°F to 77°F) @ 8% to 90% (non-condensing) Non-operating: -20°C to 70°C (-4°F to 158°F) @ 5% to 95% (non-condensing)
Dimensions (DxWxH)	30.0 in x 17.5 in x 1.75 in (762 mm x 444 mm x 44 mm)
Estimated Weight	40 lbs (18 kg)
Warranty	CIARA's limited hardware warranty includes a one year, parts and labour with return to CIARA USA or Canada. Customers may purchase an extended warranty of up to 3 years on parts and labour with different support levels. Please contact CIARA at 1-877-242-7272 for complete warranty details including limitations and transferability.
OS Support	Microsoft® Windows® Server 2016 R2, Microsoft® Windows® Server 2019, Linux® RHEL 7.5 (minimum KERNEL: 3.10.0-862.el7), CentOS™ 7.5 (minimum KERNEL: 3.10.0-862.el7), Debian 9.5 (minimum KERNEL: 4.15), Ubuntu 18.04 (minimum KERNEL: 4.15), support for other versions available upon request.
Notes	*Maximum clock speed may vary depending on applications and workloads.

2. Chassis Overview

The following illustrations are the Orion HF310-G4 chassis Front, Back and Side views.

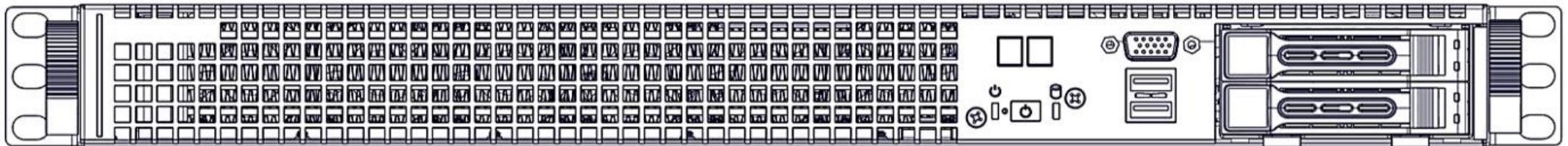


Figure 1: FRONT

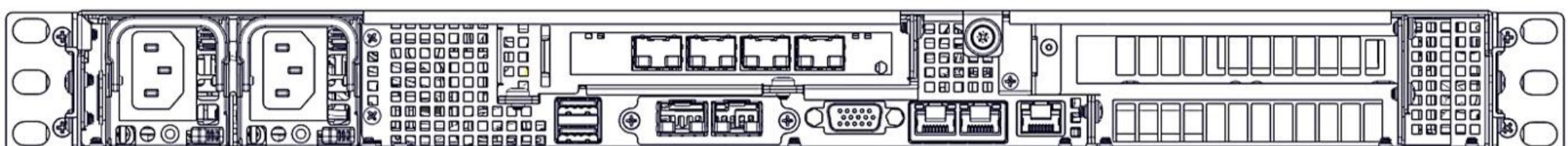
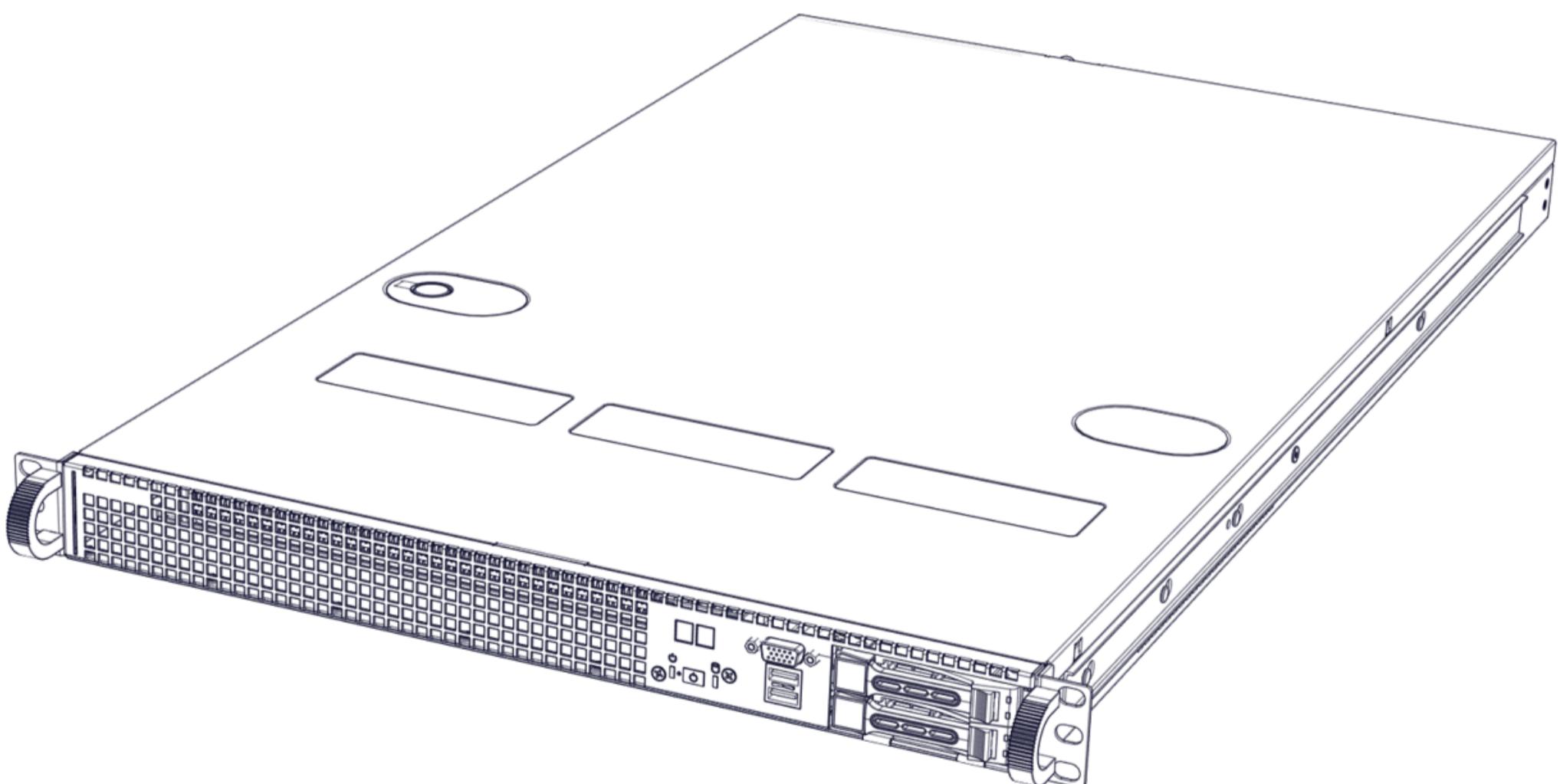
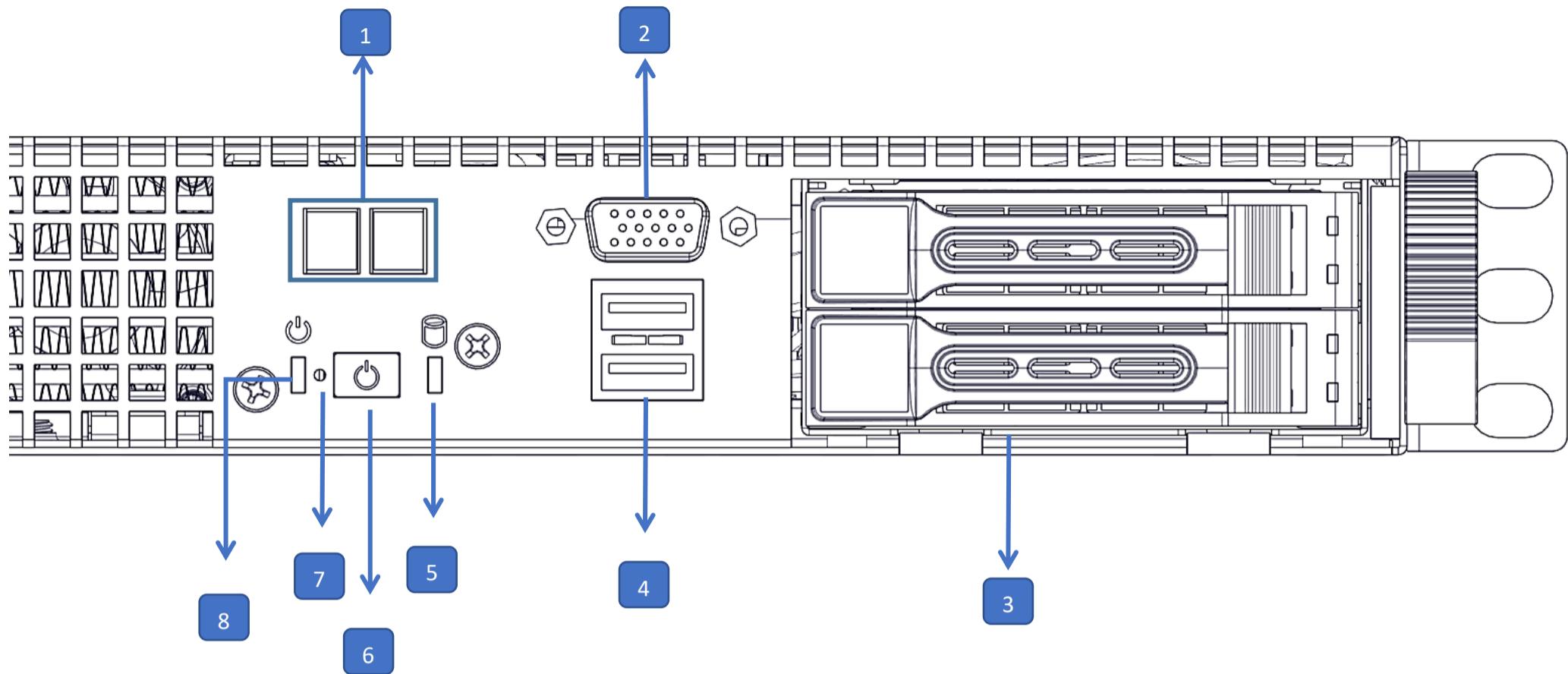


Figure 2: BACK

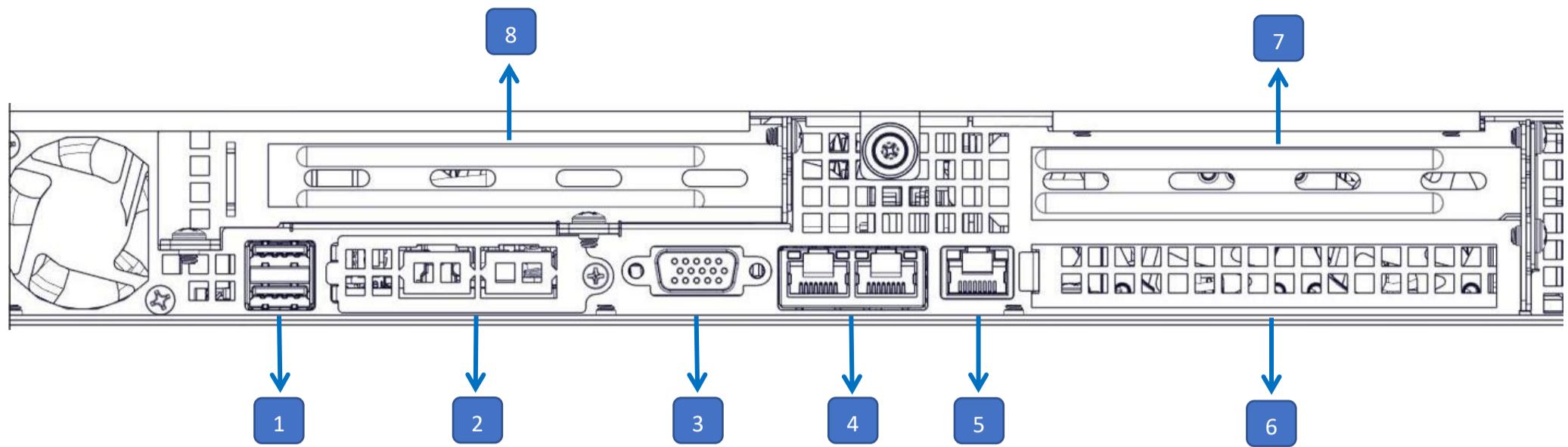


3. Front Panel Components



ITEM	DESCRIPTION
1	Q code
2	VGA
3	2X Drive Bays
4	2x USB 2.0
5	HDD LED
6	Power Button
7	Reset
8	Power LED

4. Back Panel Components

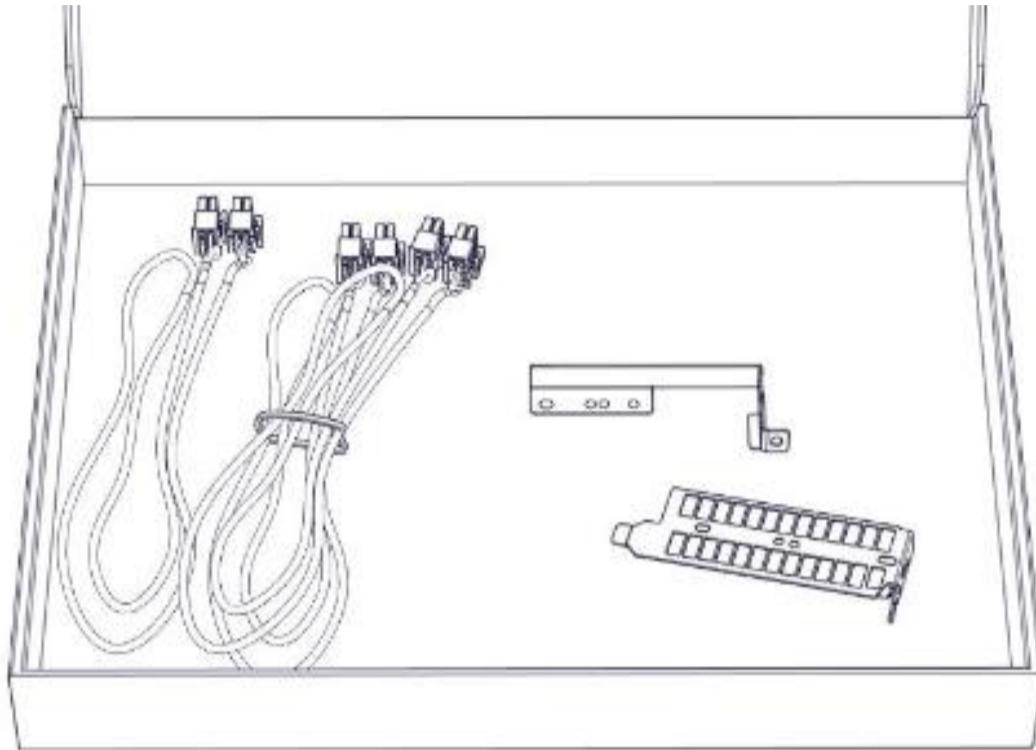


ITEM	DESCRIPTION
1	2x USB 3.0
2	OCP x8
3	VGA
4	2 x 1G LAN
5	Management LAN (BMC)
6	Low profile PCIe slot (Possible with our request)
7	PCIe x 16 (FH/FL/DW)
8	PCIe x 16

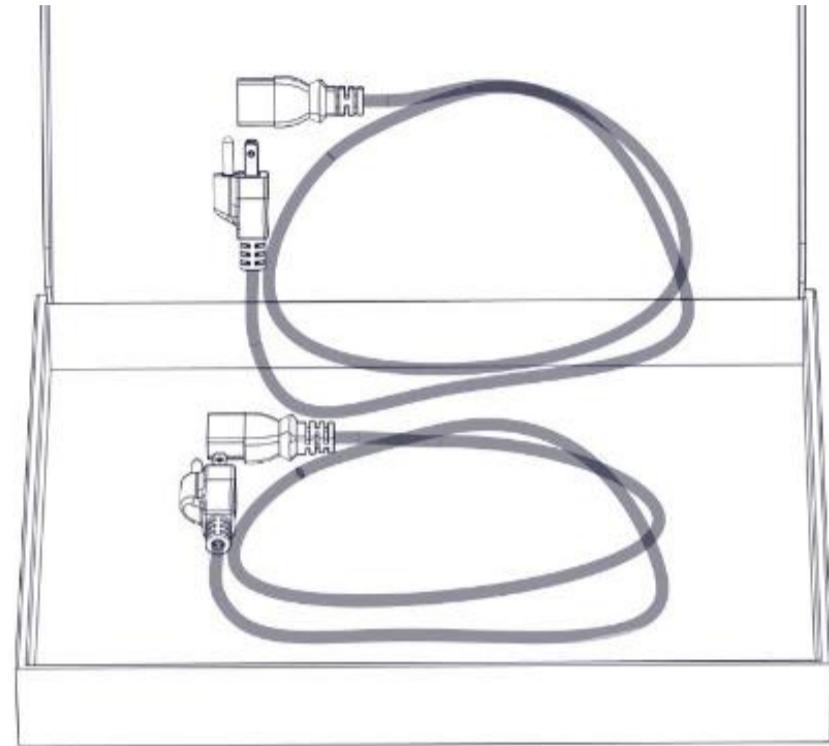
5. Accessory Boxes & Rails

The Orion HF310-G4 server includes (2) accessory boxes:

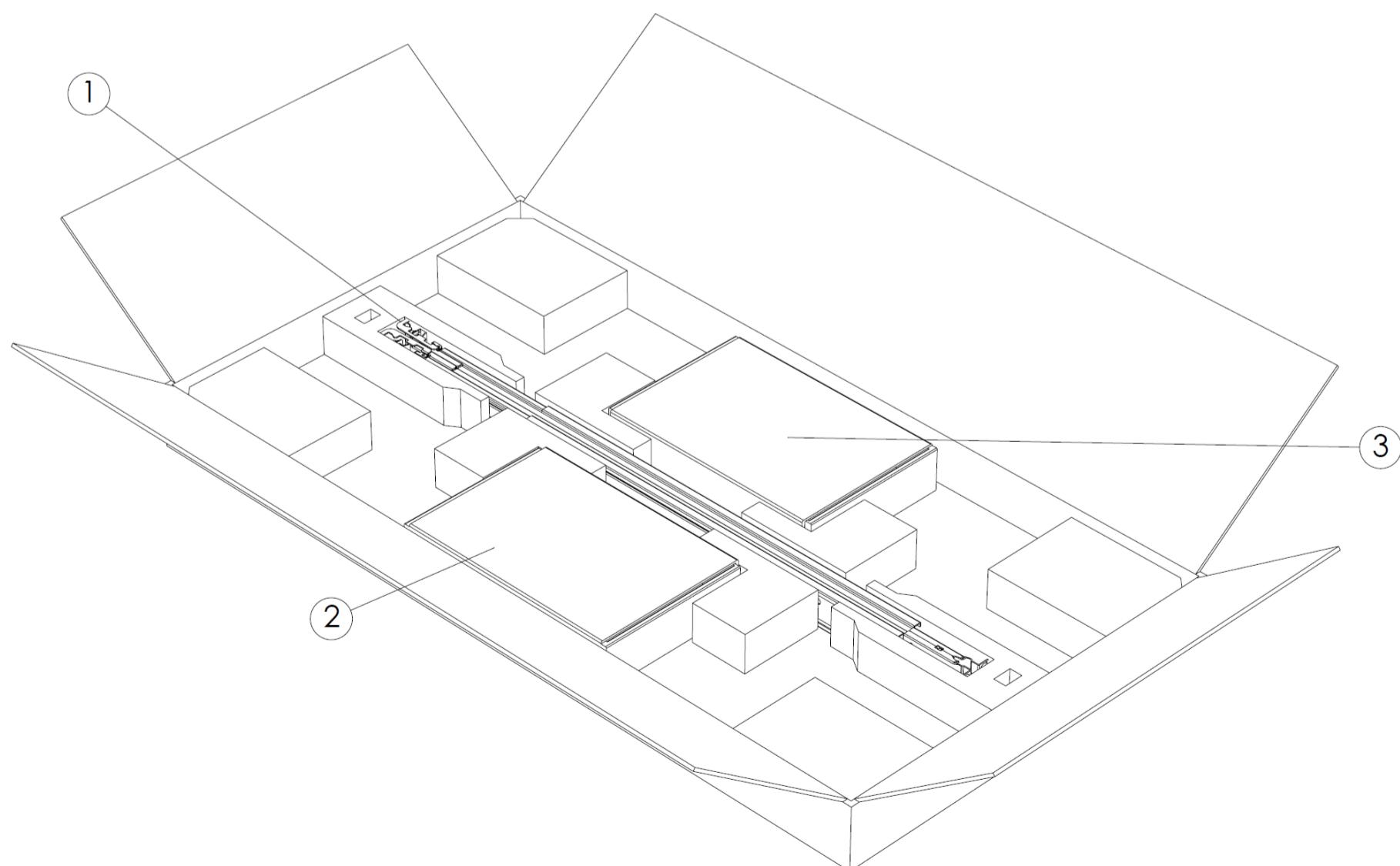
Accessory Box #1 with GPU Cables and Brackets



Accessory Box #2 with (2) Power Cables



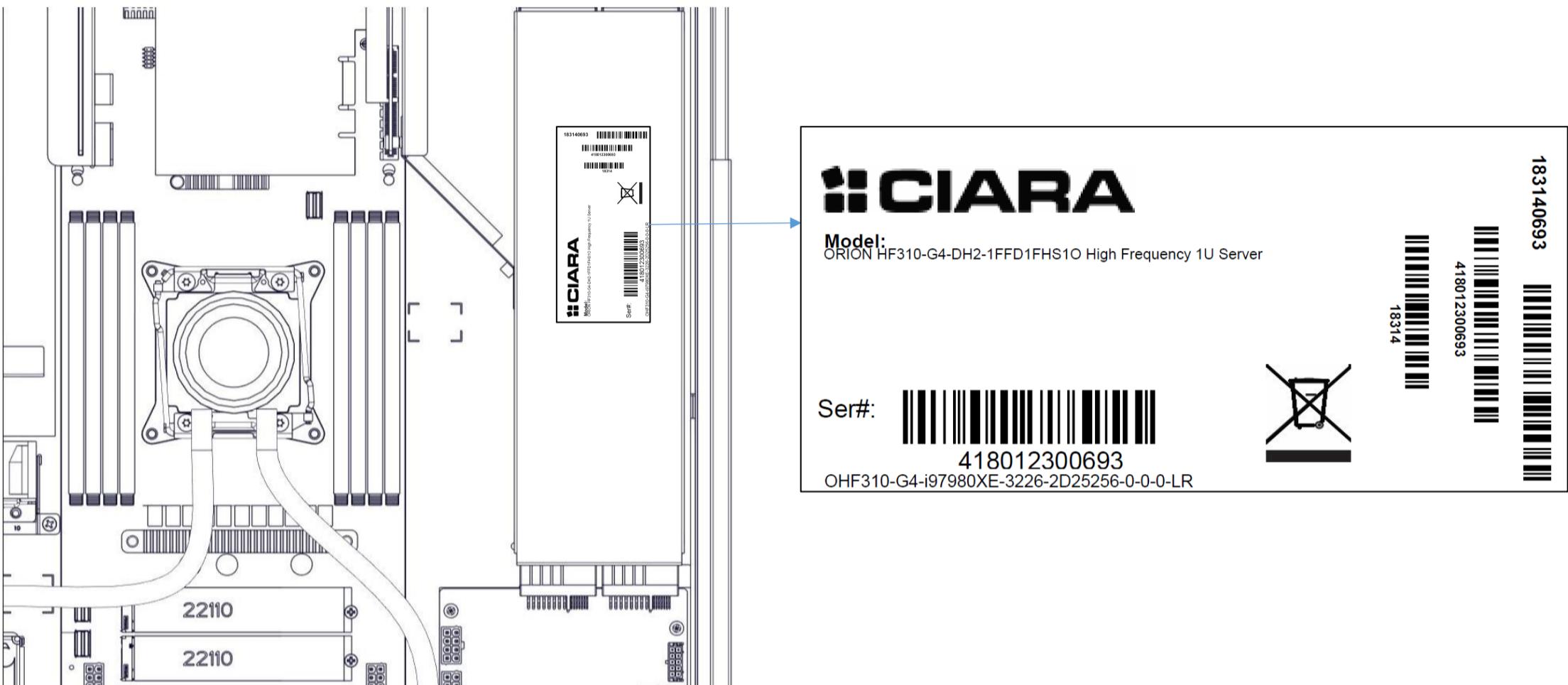
The rails and both accessory boxes are placed as shown below in the box with the server.



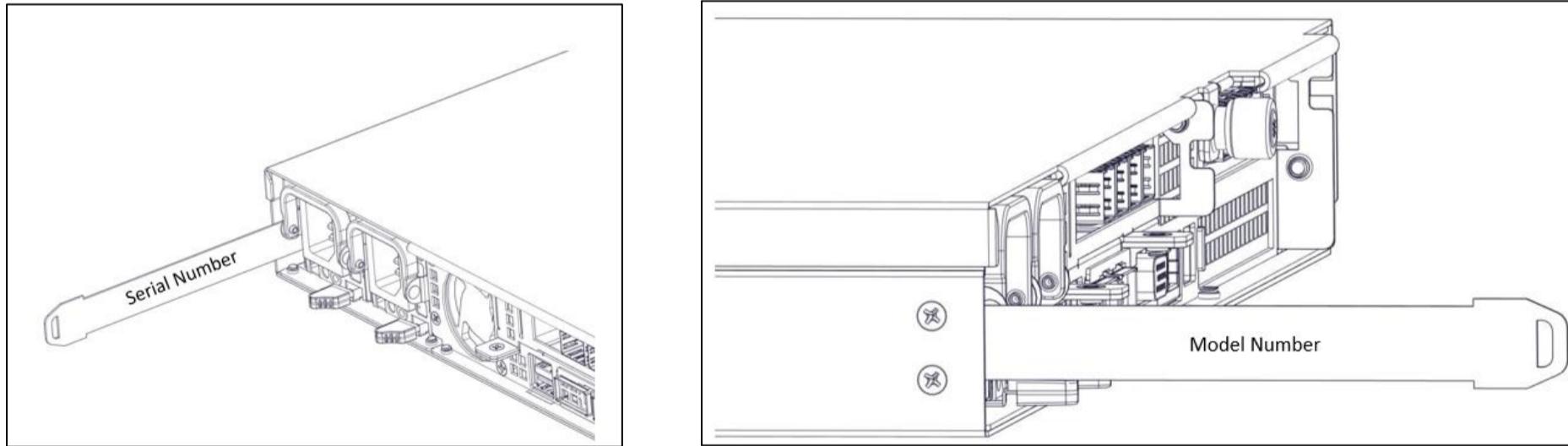
6. Labelling

This section provides information on the different labels found on the server.

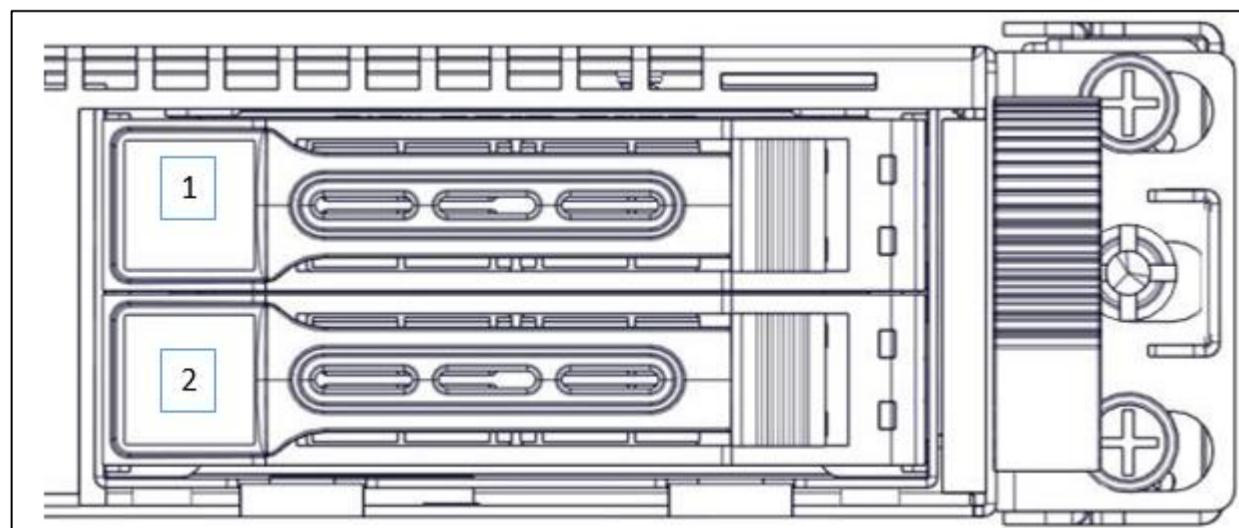
6.1 Power supplies cage



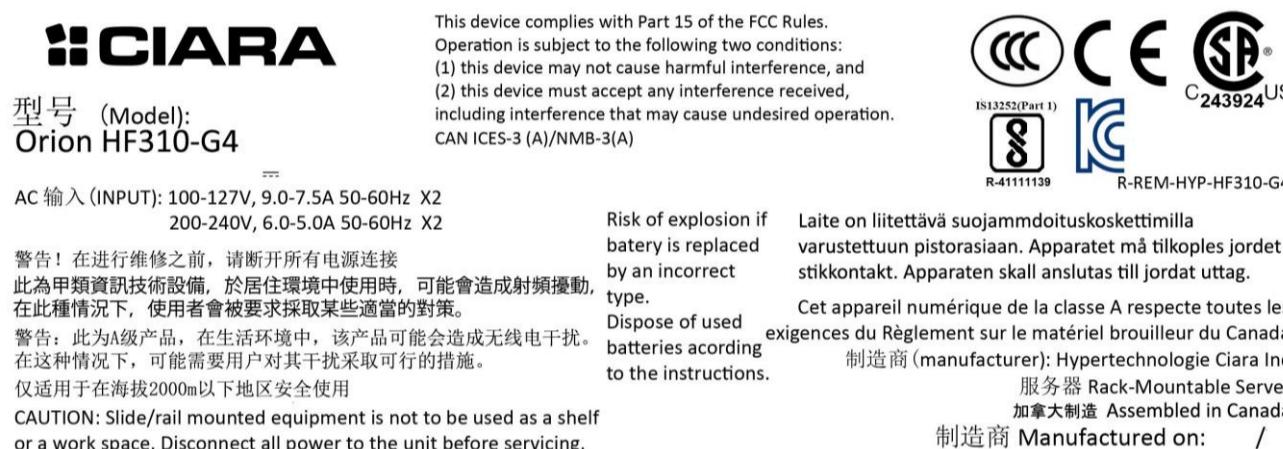
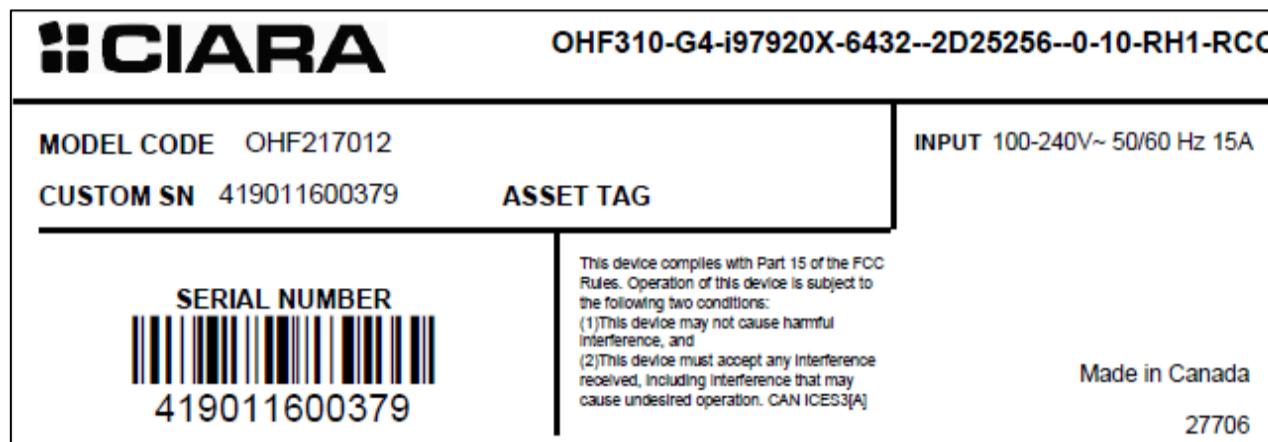
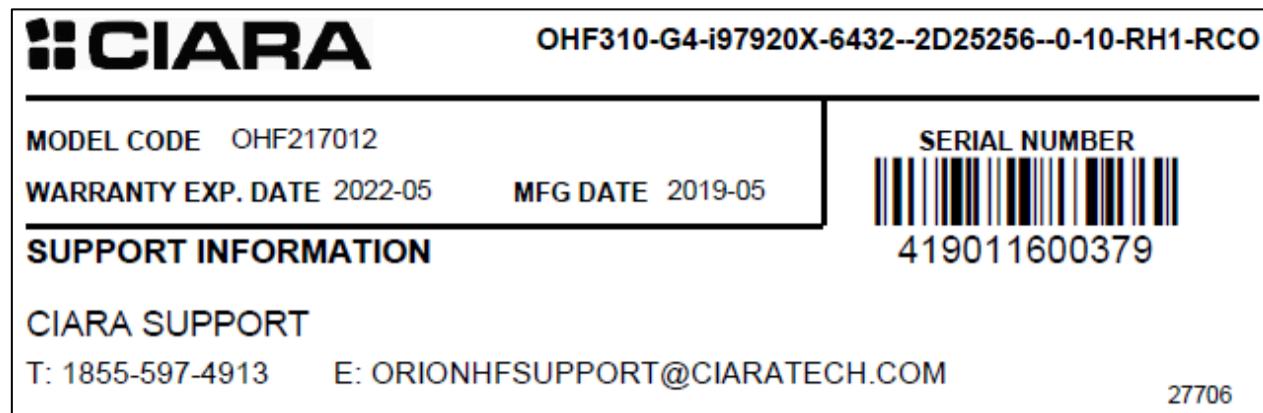
6.2 Serial Number and Model Number Labels on Mylar



6.3 HDD trays

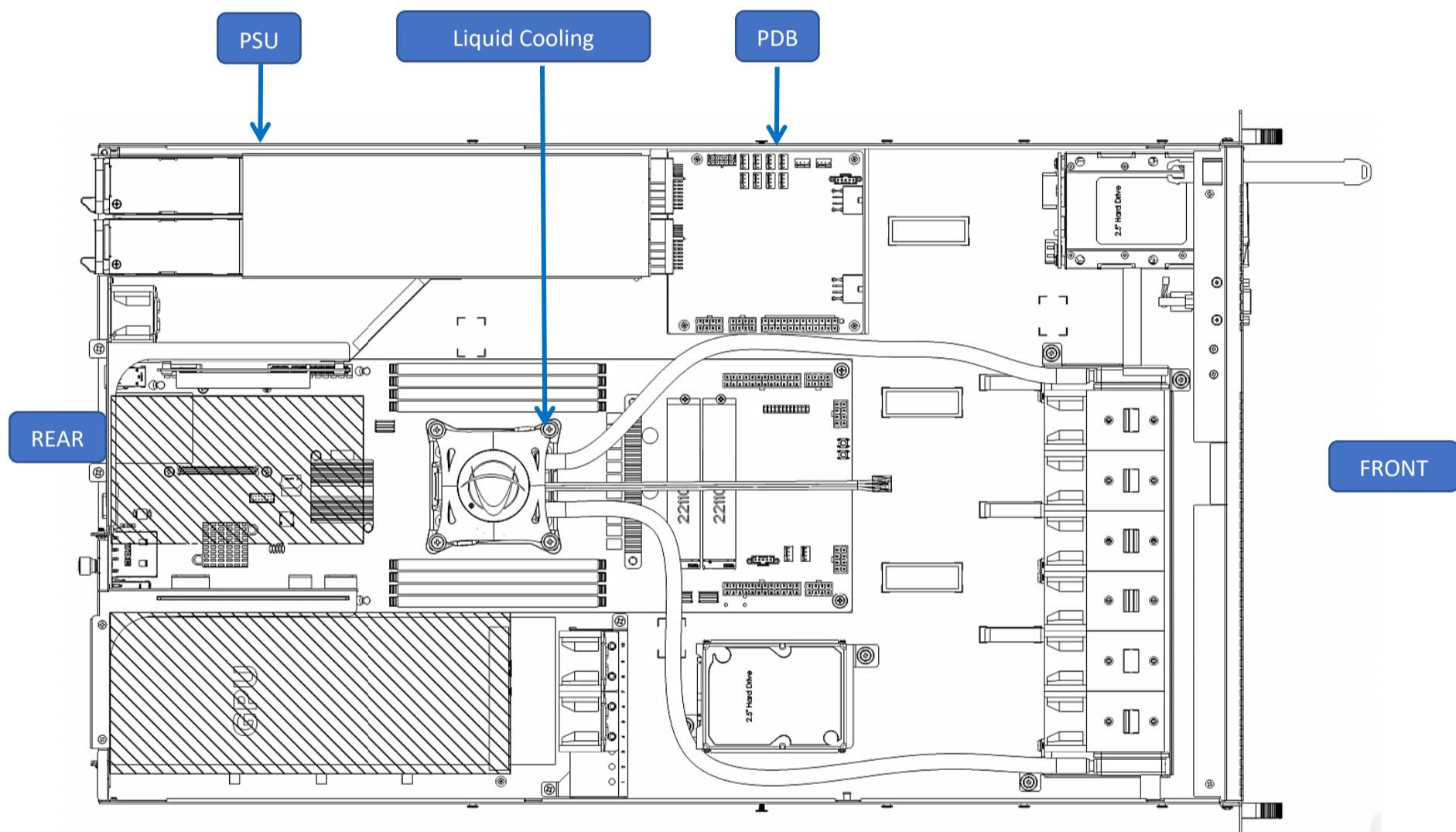


6.4 Support and Certification Labels

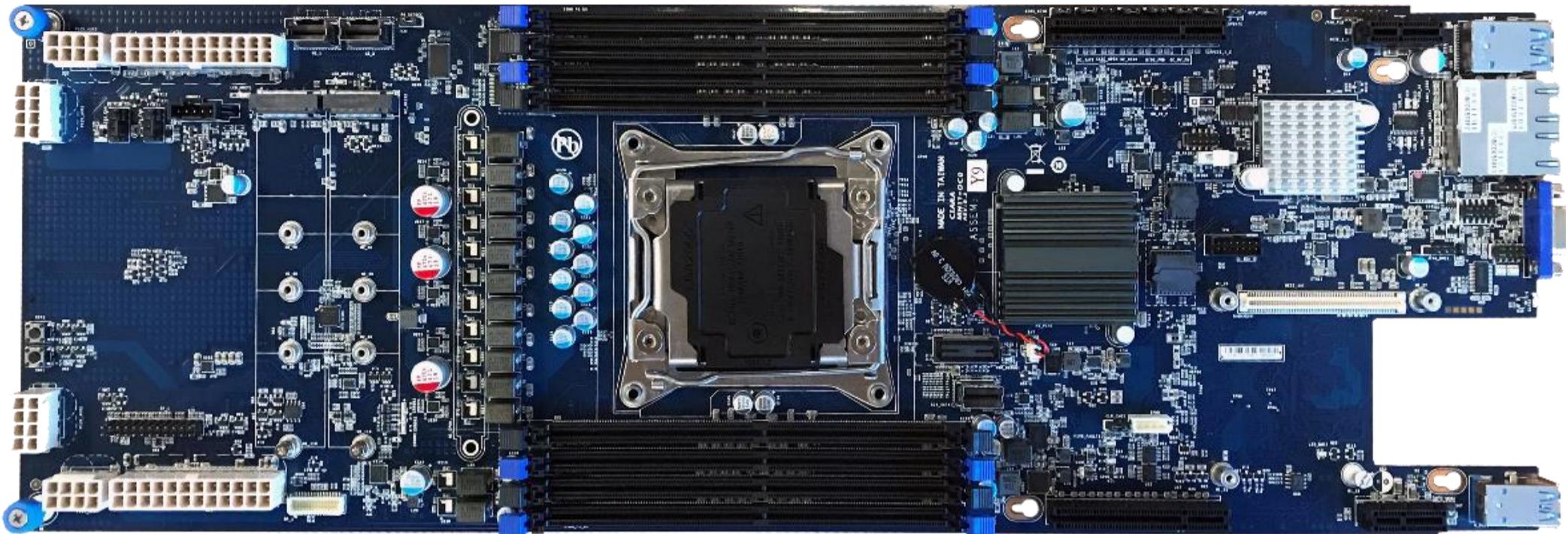


7. Chassis Layout

The following illustration shows inside of the ORION HF310-G4 system.

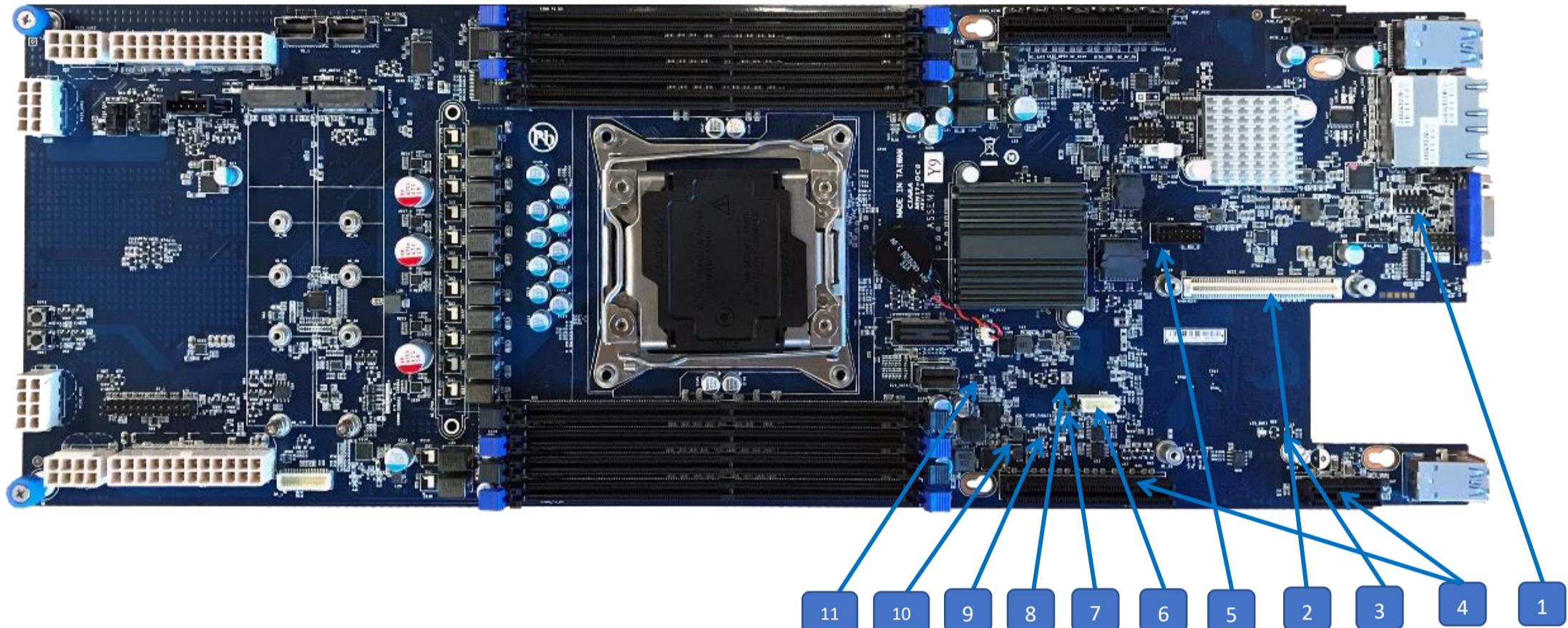


8. Motherboard Layout



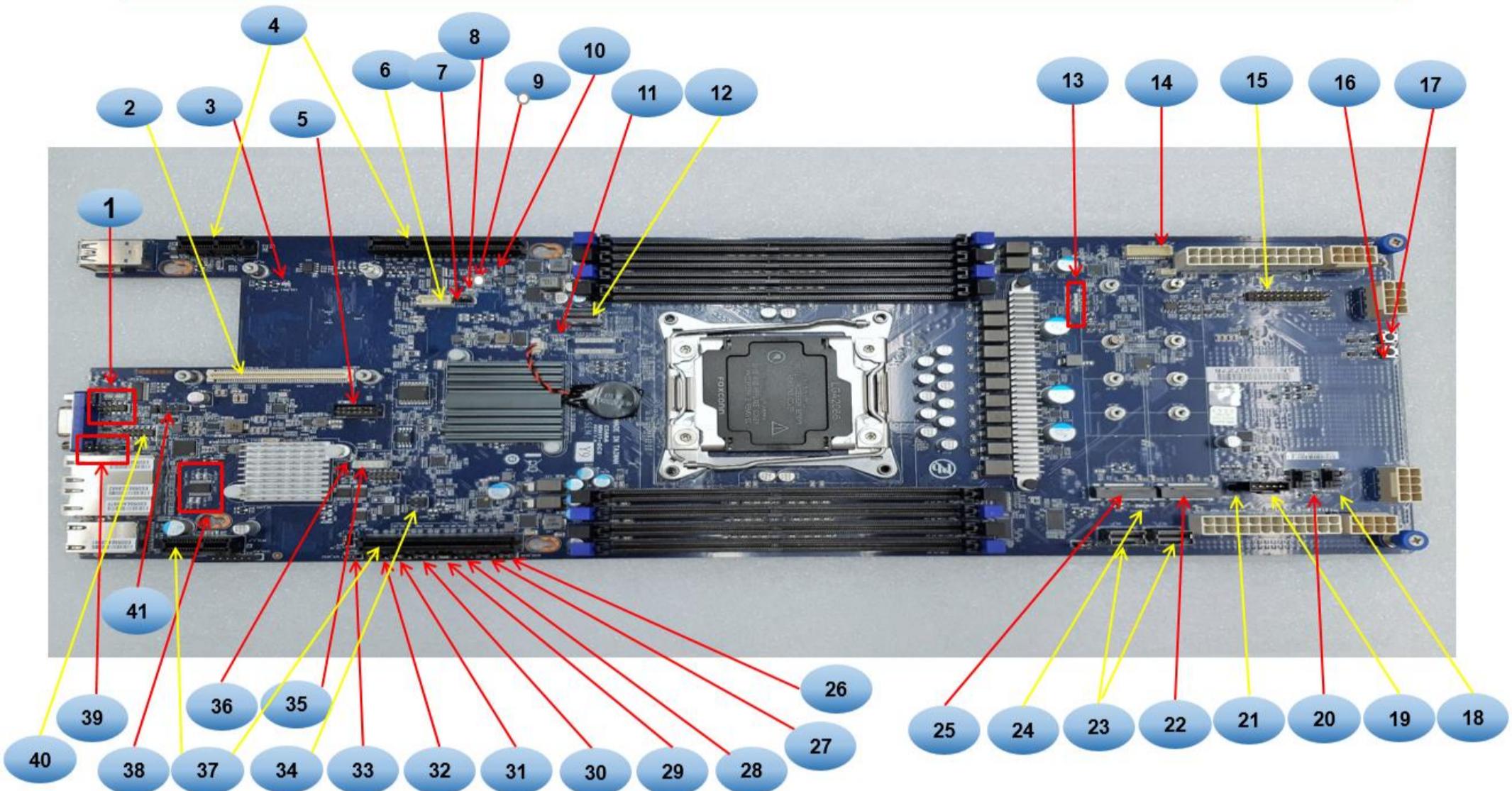
Feature	Specification
Form factor	17.5" x 6.65" (444.5mm x 169mm)
Processor Support	Intel Core-X 2066 Socket R4
Chipset	X299
Memory	8 x DIMM slots support (2 DIMM/channel) Up to 128GB (8 x 16GB) DDR4 3200 MHz non-ECC Up to 64GB (8 x 8GB) DDR4 3600 MHz non-ECC
LAN	Dual GbE LAN Intel I350 1 x Management LAN 10/100/1G
VGA / VRAM	Integrated in BMC with DDR4 128MB VRAM 1920x1200@60Hz 32bpp
BMC	ASPEED AST2500
Expansion Slot	2x PCIe 3 x16 (@Gen3 PCIe_1, PCIe_2) from CPU 1x PCIe 3 x8 (@Gen3 OCP Mezz) from CPU 2x PCIe 3 x4(@Gen3 M.2 slot)from PCH
Storage	4 x SATA III
Rear IO Connector	1 x VGA, 2x USB3.0 2 x 1G LAN, 1 x MLAN
Internal Connector	Front panel connector

9. Detailed Motherboard Layout



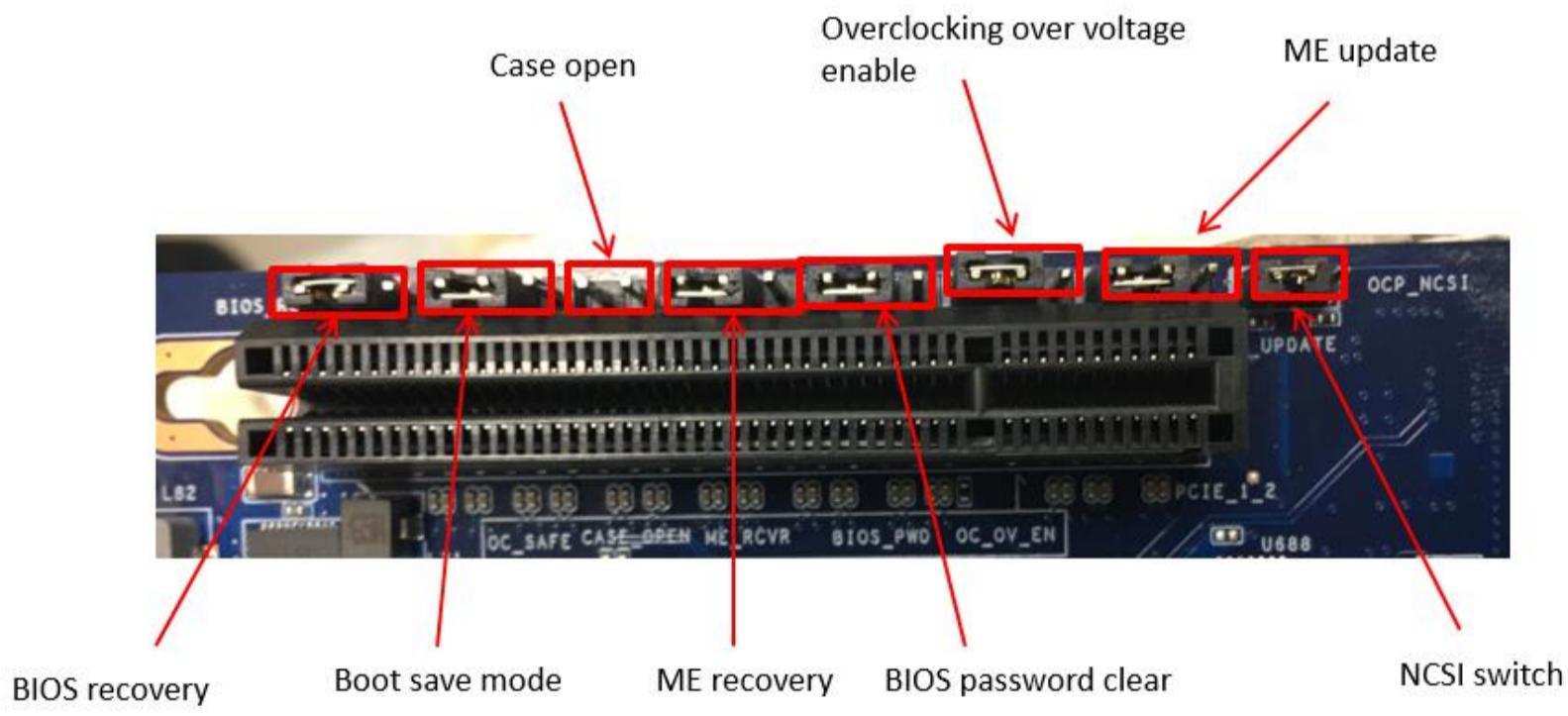
- | | |
|---|--------------------------------------|
| 1. COM 1 | 26. BIOS RECOVERY |
| 2. OCP PCIE 3.0 X8 | 27. BOOT SAVE MODE |
| 3. BMC LED | 28. CASE OPEN |
| 4. PCIE_2 PCIE 3.0 X16 | 29. ME RECOVERY |
| 5. TPM (TRUSTED PLATFORM MODULE) | 30. BIOS PASSWORD CLEAR |
| 6. IPMB (INTELLIGENT PLATFORM MANAGEMENT BUS) | 31. OVERCLOCKING OVER VOLTAGE ENABLE |
| 7. CLEAR CMOS | 32. ME UPDATE |
| 8. FIVR FAULT LED | 33. NCSI SWITCH |
| 9. CPU THERMALTRIP LED | 34. SW RAID KEY |
| 10. PROCESSOR HOT LED | 35. GBT DEBUG |
| 11. DEBUG LED | 36. CPU CATERROR LED |
| 12. 4X SATA III (SFF-8654) | 37. PCIE_1 PCIE 3.0 X16 |
| 13. CPU ERROR LED | 38. MEMORY ERROR LED |
| 14. BACKPLANE PANEL HEADER | 39. Q CODE HEADER |
| 15. FRONT PANEL HEADER | 40. VGA PORT |
| 16. RESET BUTTON | 41. JTAG BMC HEADER |
| 17. POWER BUTTON | |
| 18. SYSTEM FAN HEADER | |
| 19. PMBUS HEADER | |
| 20. CPU FAN HEADER | |
| 21. M.2 PORT 1 LED ACTIVITY | |
| 22. M.2 PORT 1 | |
| 23. U.2 PORTS | |
| 24. M.2 PORT 2 LED ACTIVITY | |
| 25. M.2 PORT 2 | |

Motherboard Layout



Detailed Jumpers Layout

All the jumpers (except the “Clear CMOS” Jumper) are located next to the PCIe 3.0 x16 Slot 1. The following illustration shows the jumpers.



The “Clear CMOS” Jumper is located near the PCIe 3.0 x16 Slot 2 illustrated below.



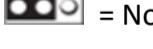
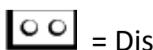
LED, Jumpers & Buttons and Connectors Functionality

See the page 14, the “Detailed Motherboard Layout” for the item numbers.

7.1 LED Functionality

Item	LED	Status
3	BMC LED	Flashing Green = Activated
8	FIVR Fault LED	Solid Green = Normal No Light = Power board Error
9	CPU Thermaltrip LED	Off = Normal Solid Red = Error
10	Processor Hot LED	Off = Normal Solid Red = Error
14	CPU Error LED	Off = Normal Solid Red = Error
22	M.2 Port 1 LED	Off = No activity Flashing Green = Activity
25	M.2 Port 2 LED	Off = No activity Flashing Green = Activity
36	CPU CAT Error LED	Off = Normal Solid Red = Error
38	Memory Error LED	Off = Normal Solid Red = Error

7.2 Jumpers & Buttons Functionality

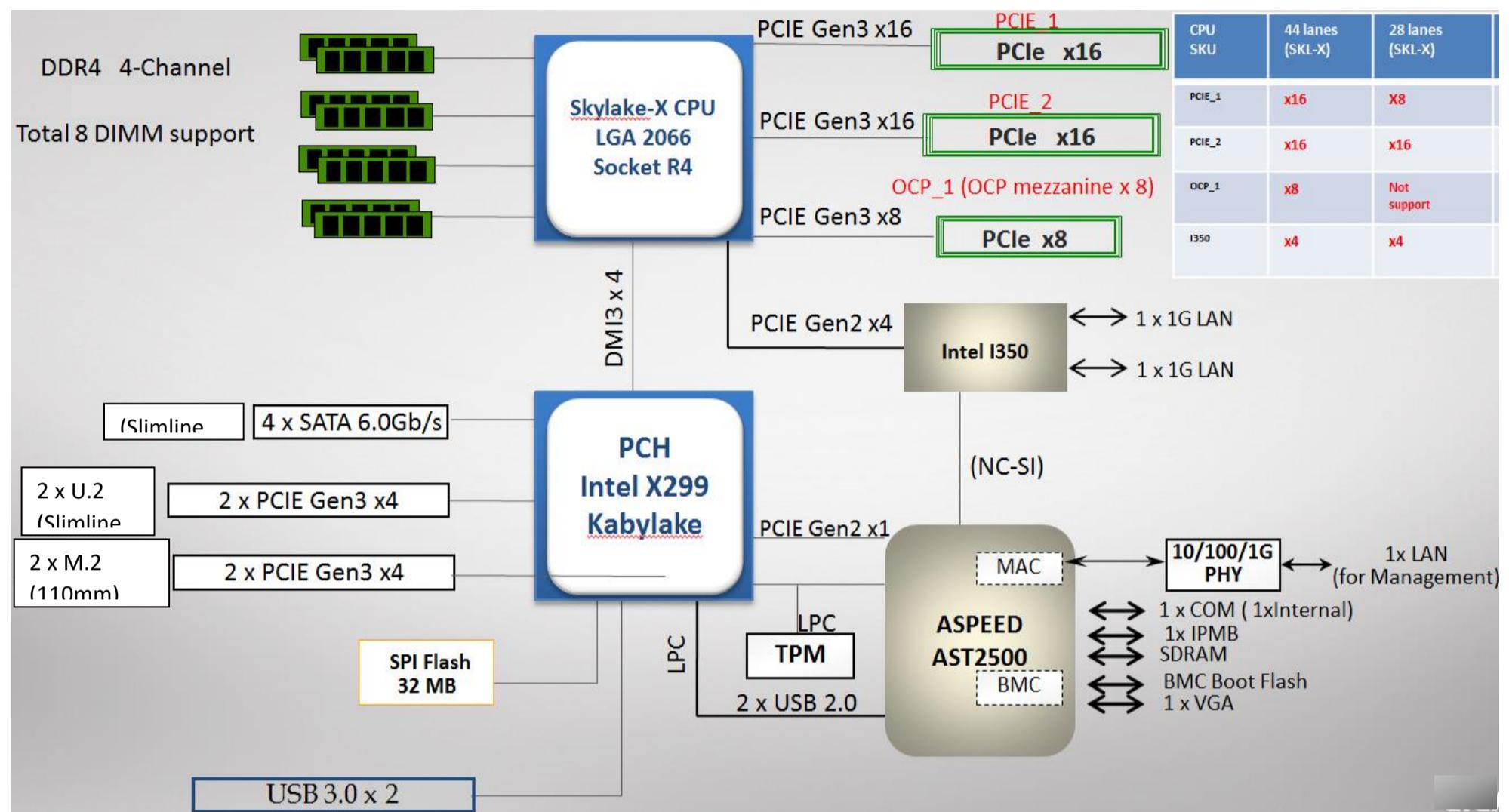
Item	Jumper / Button	Description
7	Clear CMOS	Clear CMOS Jumper See Page 16 - (How to clear the CMOS with battery and jumper)
16	Reset Button	System board reset
17	Power Button	System board power
	BIOS Recovery	If Bios flash fails or system cannot boot up, this feature could flash BIOS using Bios setup menu.  = Normal Mode (Default)  = Recovery Mode
	Boot Save Mode	Allow the CPU to wake up safely by disabling all the clock gating and is a debug signal.  = Normal Mode (Default)  = Disabled All clocks
	Case Open	Allows the Case Open sensors information to enable.  = Disabled Mode (Default)  = Enabled the Case Open Sensors
	ME Recovery	ME entering recovery mode

		 = Normal Mode (Default)  = Recovery Mode
	BIOS Password Clear	Clear BIOS Password.  = Normal Mode  = Clear BIOS Password
	Overclocking Over Voltage Enable	Overclocking voltage jumper.  = Over voltage enabled (Default Mode)  = Clear BIOS Password
	ME Update	ME update flash security.  = Enable ME Flash security  = Disabled ME flash security
	NCSI Switch	Onboard LAN or OCP cards switch.  = Onboard LAN (i350) NCSI (default)  = OCP LAN card NCSI

7.3 Connector Functionality

Item	Connector	Description
1	COM 1	COM1 connector
2	OCP PCIe 3.0 x8	Network or RAID OCP card connector
4	PCIE_2 PCIe 3.0 x16	Network or Mega RAID card connector
5	TPM	Trusted Platform Module
6	IPMB	Intelligent Platform Management Bus
12	4x SATA III (SFF-8654)	SATA connector
14	Backplane Panel Header	Backplane Panel connector
15	Front Panel Header	Front Panel connector
19	PMBUS Header	Power Management Bus
22	M.2 Port 1	M.2 connector
23	U.2 Port	U.2 Connector
25	M.2 Port 2	M.2 connector
37	PCIE_1 PCIe 3.0 x16	Network Card
39	Q Code Header	Q Code Connector
40	VGA Port	VGA Connector

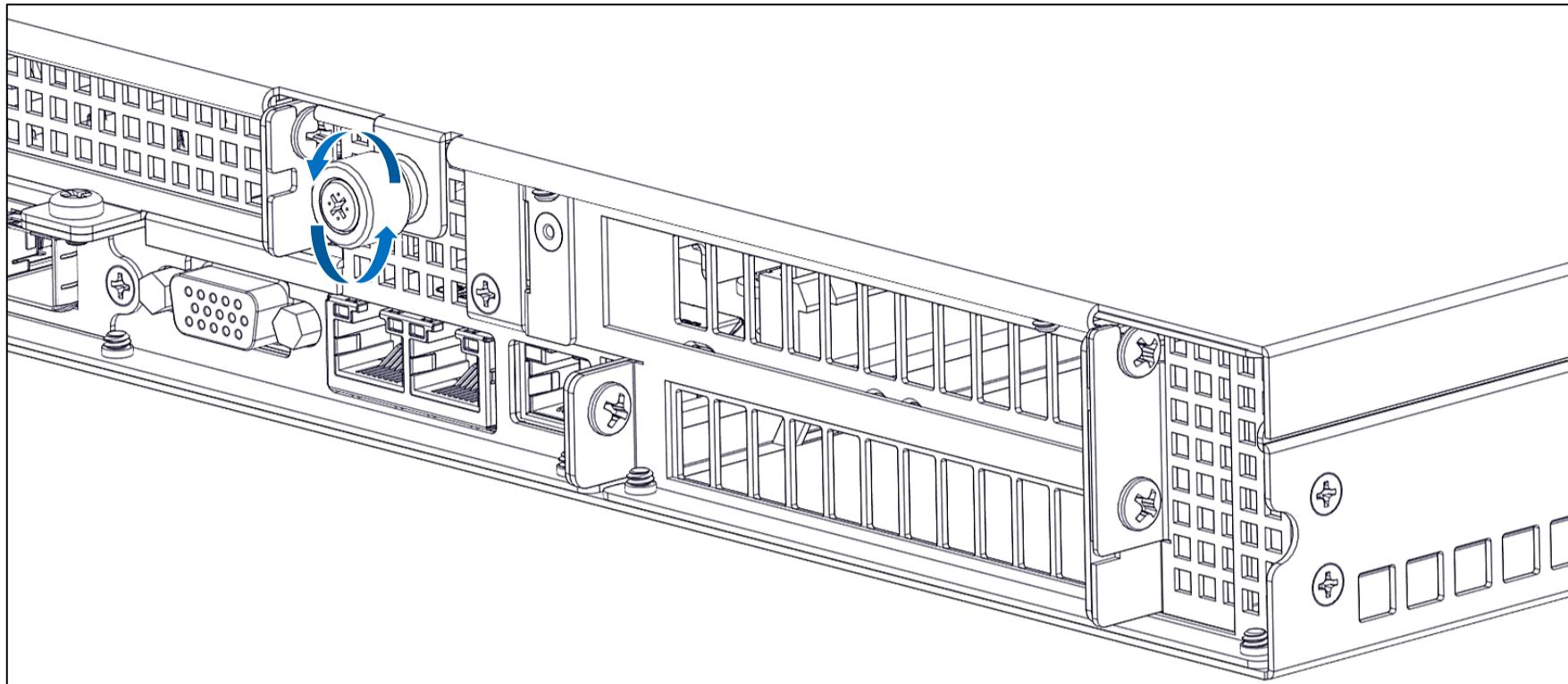
Skylake-X Block Diagram



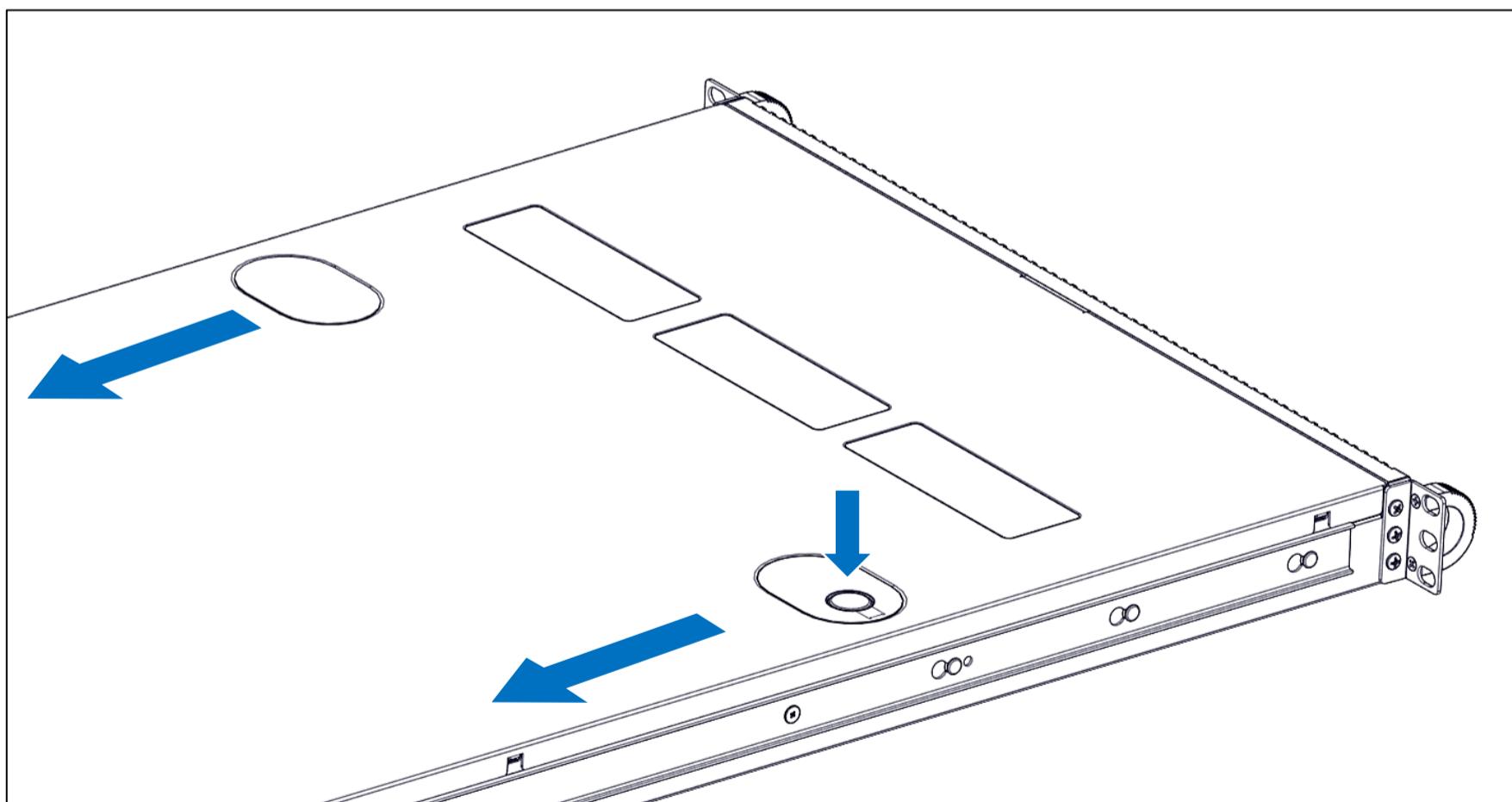
10. Removing the Chassis Cover

This section provides information on how to remove the chassis cover from the system.

Step 1: Turn the Knob anti-clockwise by using Philips screwdriver type 2.



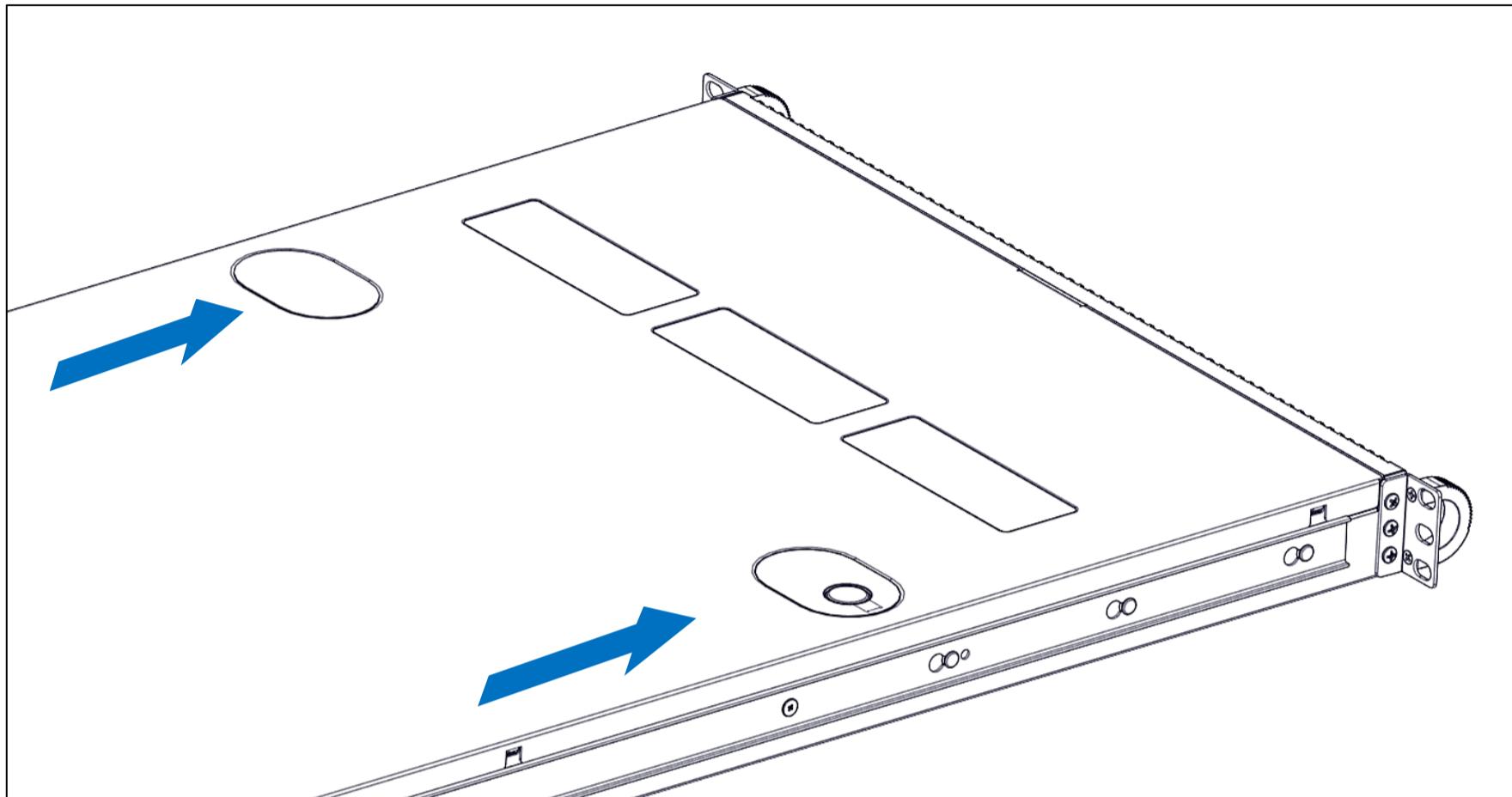
Step 2: Press the button and slide the cover towards the back of the system to release the cover.



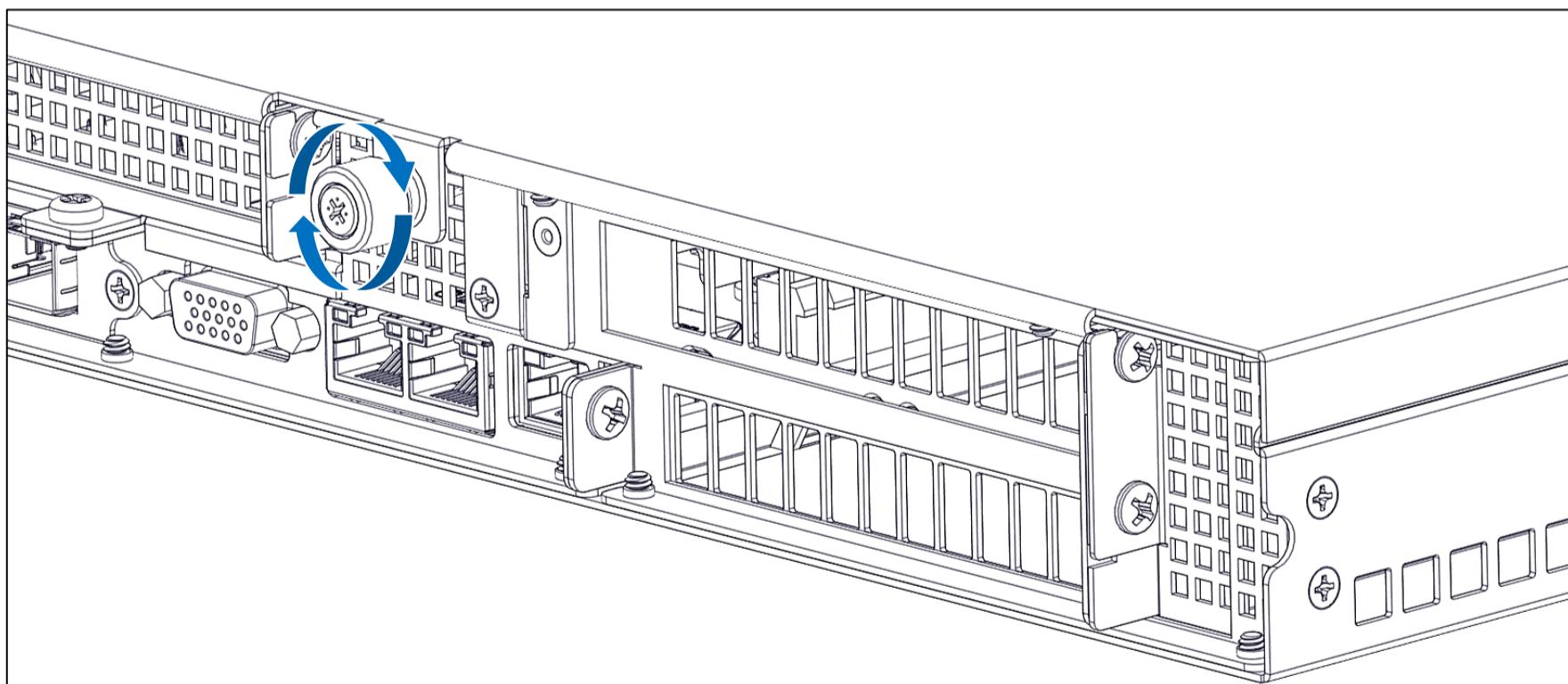
12. Installing the Chassis Cover

This section provides information on how to install the Chassis cover in the system.

Step 1: Slide the cover towards the front of the system to close the cover.

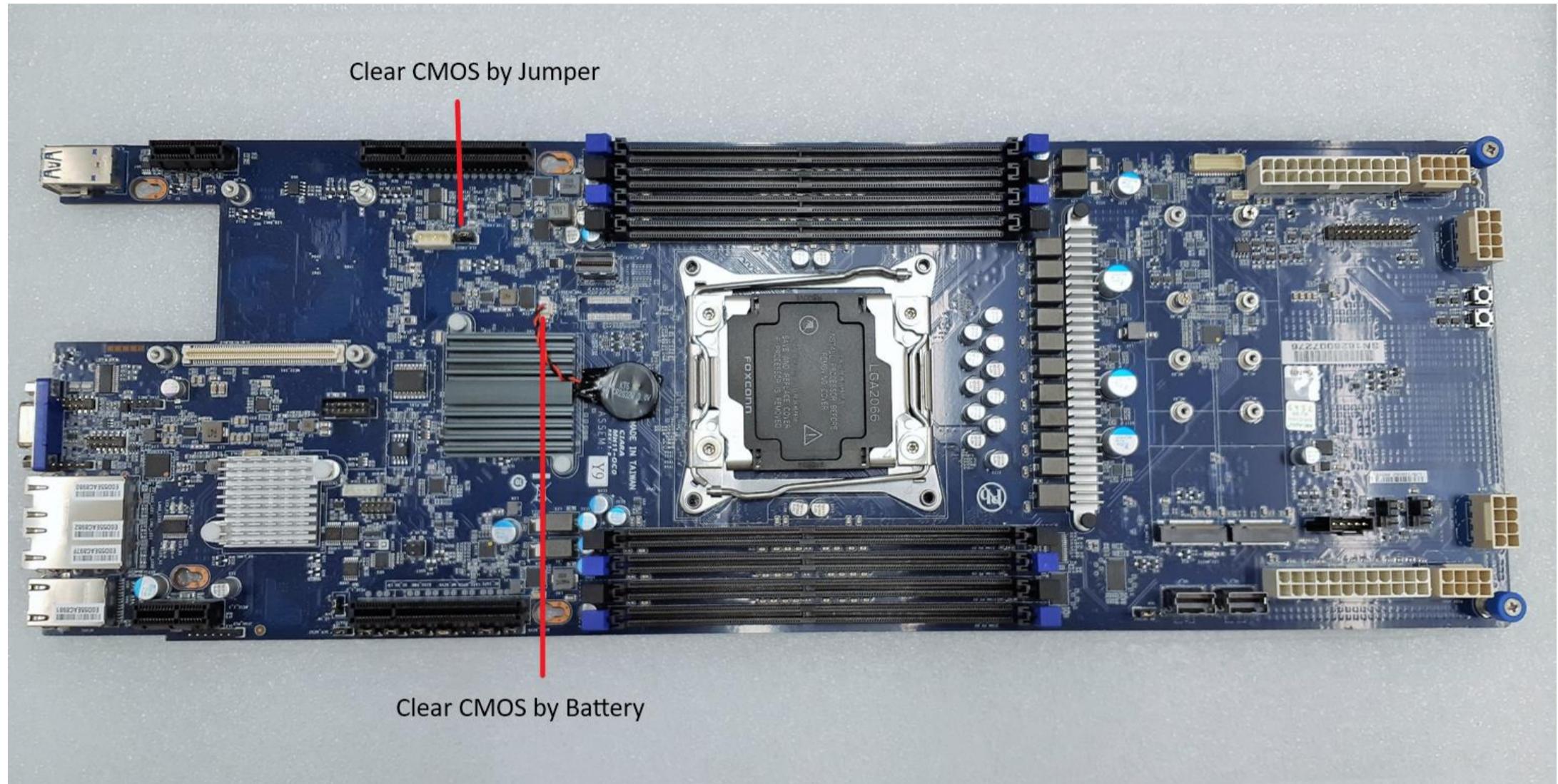


Step 2: Turn the Knob clockwise by using Philips screwdriver type 2.



13. How to clear the CMOS with jumper and battery.

This section provides information on how to clear the CMOS by jumper and battery.



Clear CMOS by Jumper

- Power system off
- Unplug power from system
- Move jumper from PIN 1-2 to 2-3



- Wait 5-10 seconds
- Move jumper back from PIN 2-3 to PIN 1-2



- Plug power back in
- Turn system ON
- Allow system to go through a complete power cycle in order to initialize all components
- NOTE: ALL BIOS settings will be erased after clearing CMOS (Customer will need to re-upload)

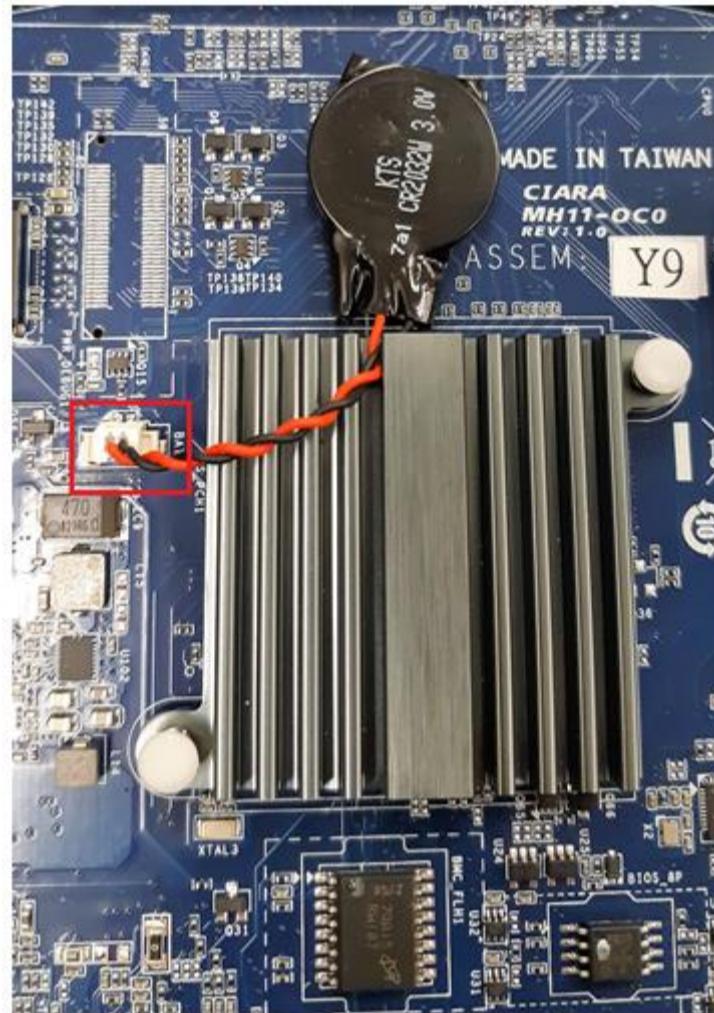
Clear CMOS by Battery

- Power system off
- Unplug power from system
- Remove CMOS battery connector from motherboard
- Wait 5-10 seconds
- Plug CMOS battery connector back onto motherboard
- Plug power back in
- Turn system ON
- Allow system to go through a complete power cycle in order to initialize all components

14. How to replace the CMOS battery:

This section provides information on how to replace the CMOS battery in the system.

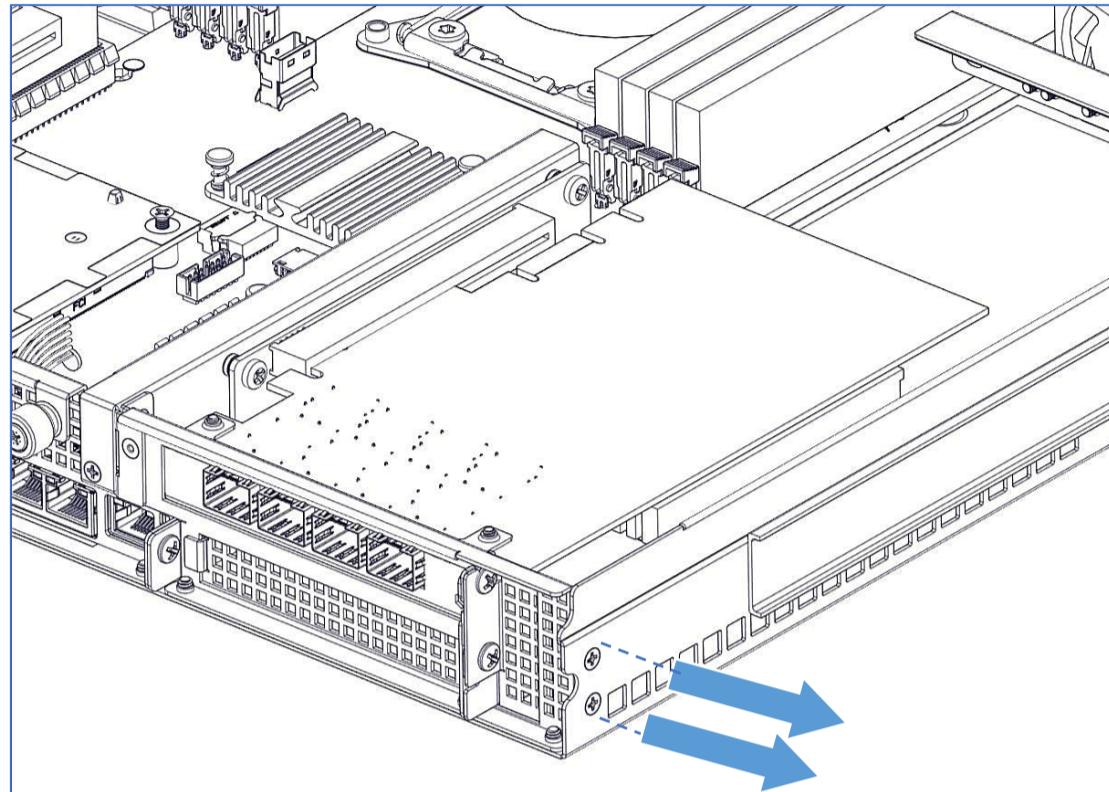
- a. Power system off
- b. Unplug power from system
- c. Remove CMOS battery connector from motherboard (Battery is held onto motherboard by sticky tape)
- d. Gently pull battery off motherboard and replace with new battery (new battery should have come with connector already attached to battery)
- e. Plug power back in
- f. Turn system ON
- g. Allow system to go through a complete power cycle in order to initialize all components



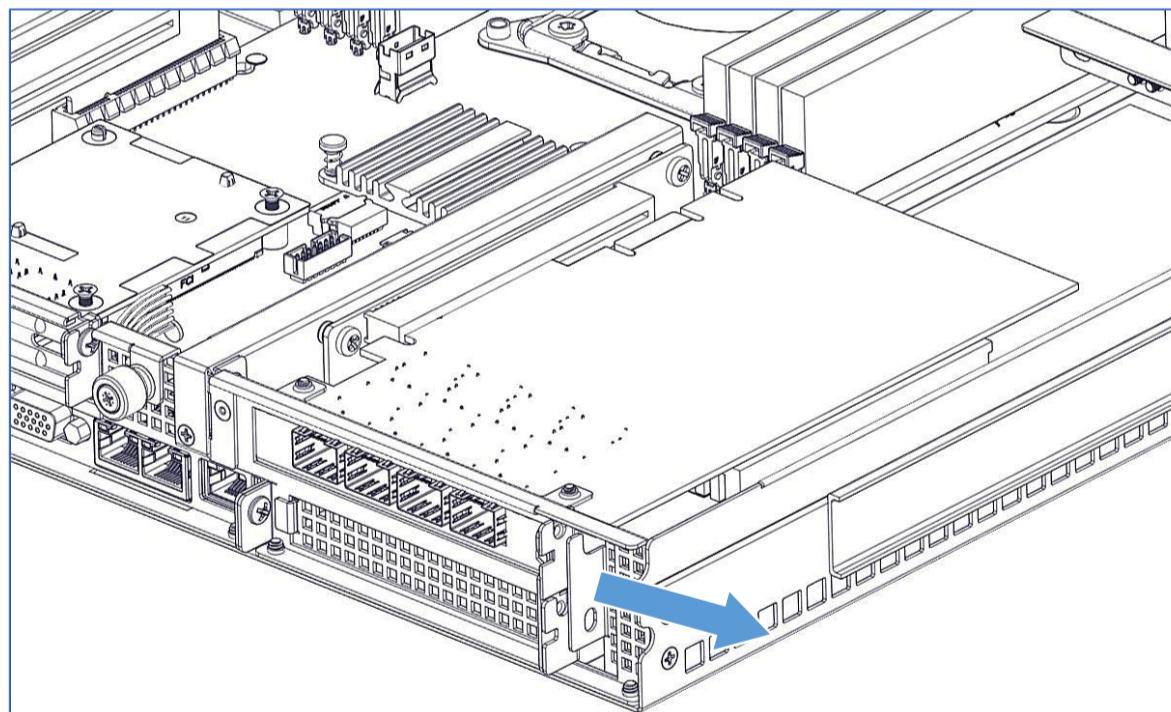
15. Replacing PCIE 1 Card

This section provides information on how to replace the PCIE 1 card.

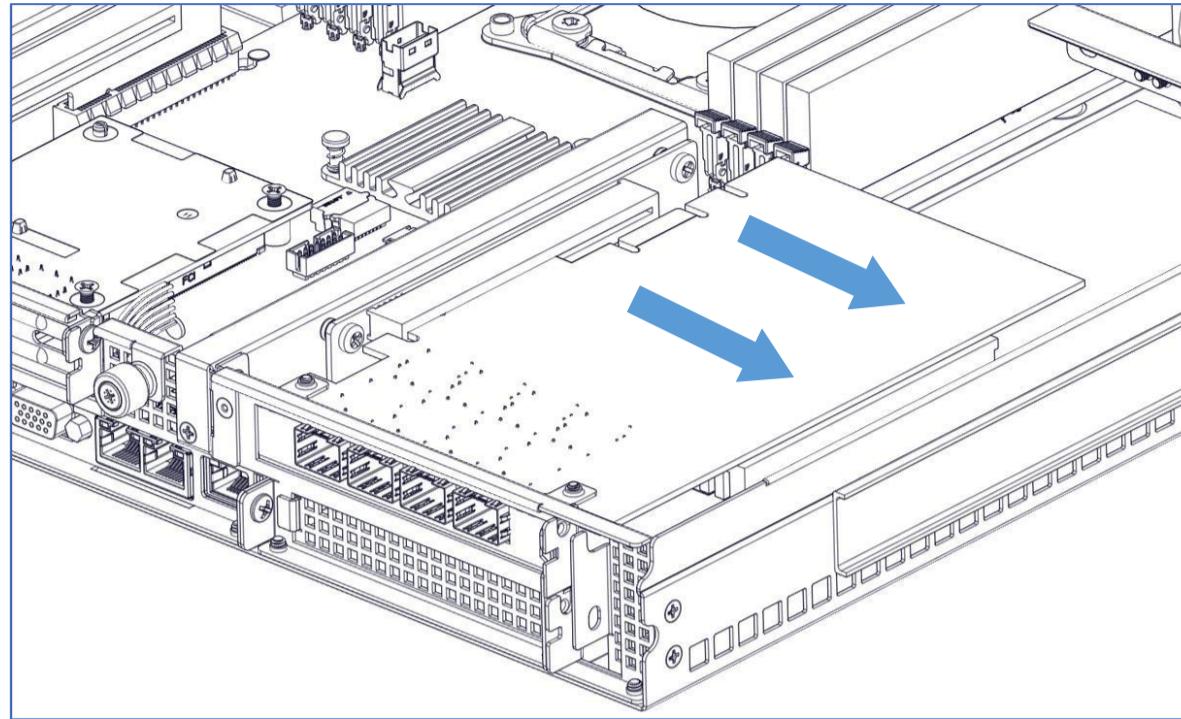
Step 1: Unfasten the screws below using Philips screwdriver type 2.



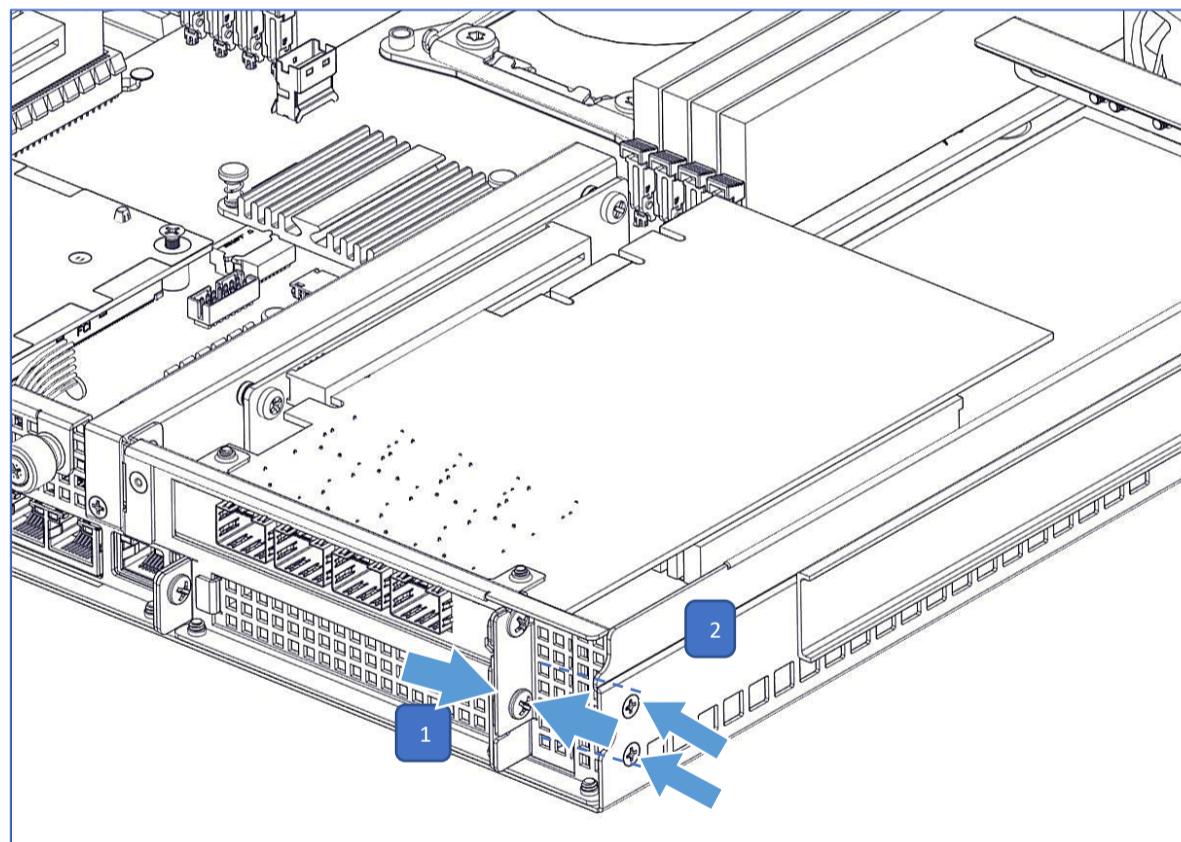
Step 2: Remove this plate as illustrated below.



Step 3: Remove card from the riser and replace the card.



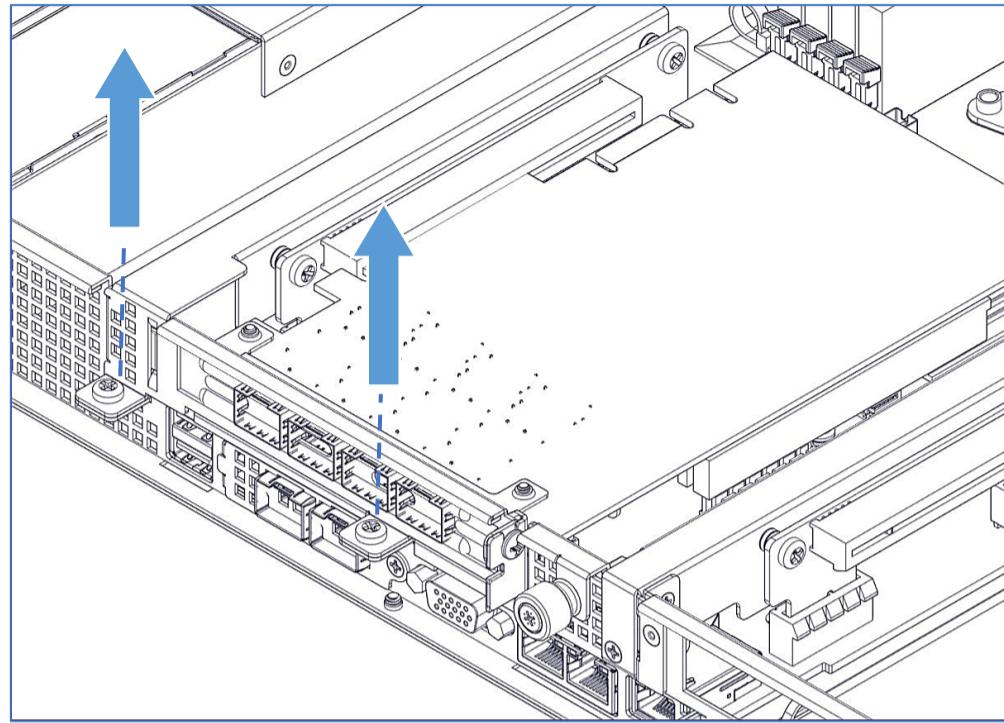
Step 4: Hold and press plate and card bracket together. Then, fasten with the screws.



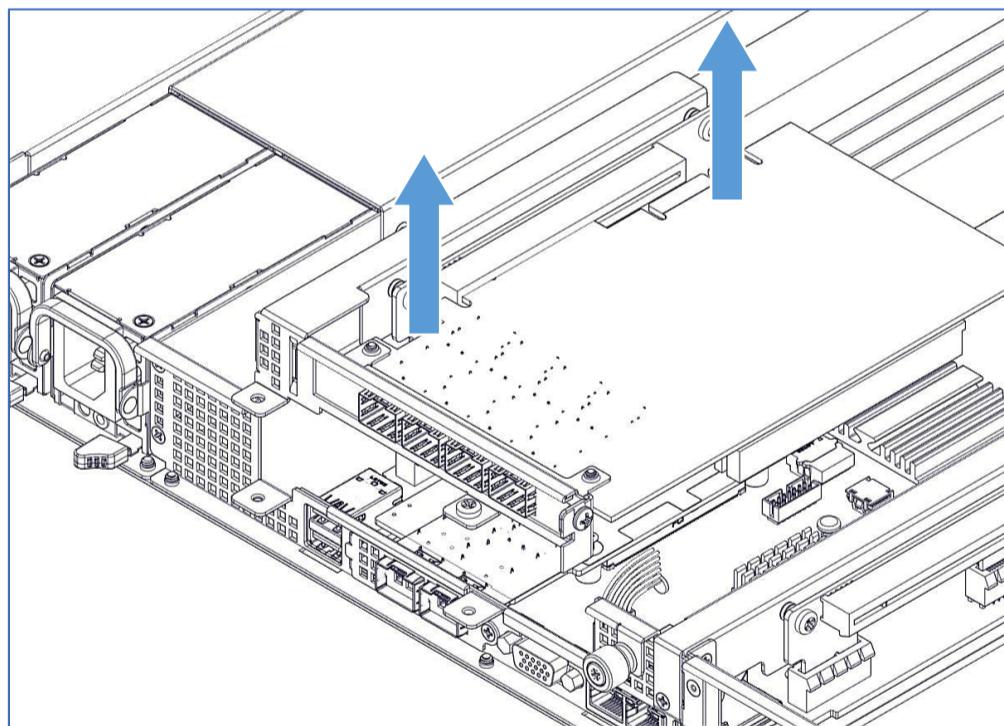
16. Replacing PCIE 2 Card

This section provides information on how to replace the PCIE 2 card.

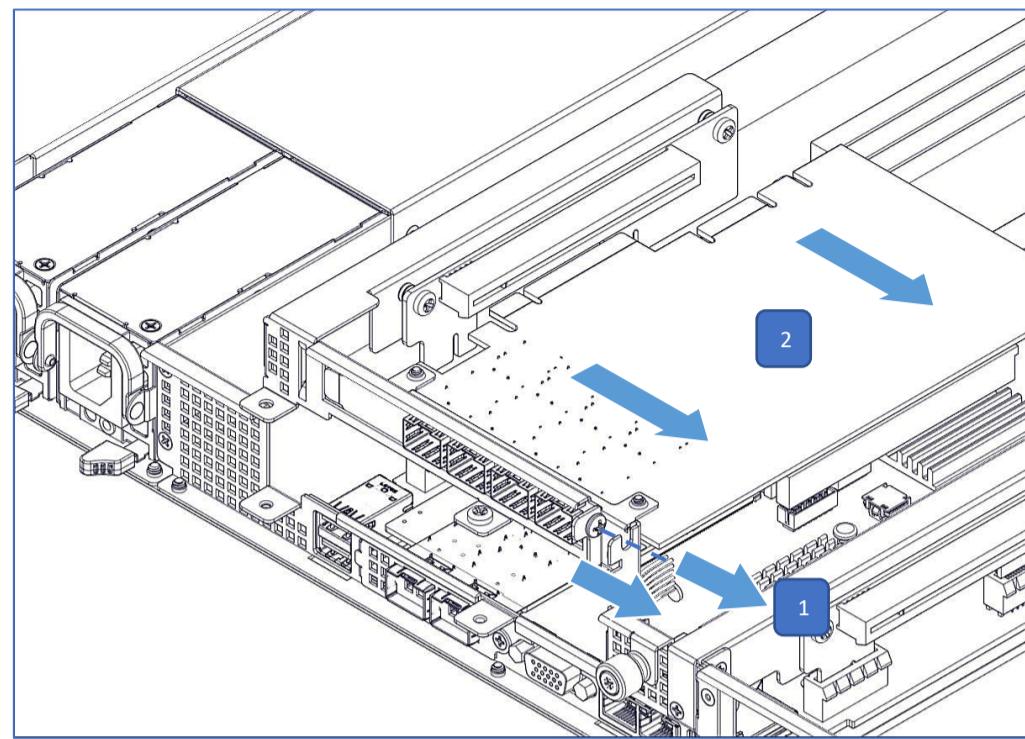
Step 1: Unfasten the two screws using Philips screwdriver type 2.



Step 2: Remove the riser card from the motherboard.



Step 3: Unfasten the screw that secures the card to the bracket, and slide the card out of the riser.



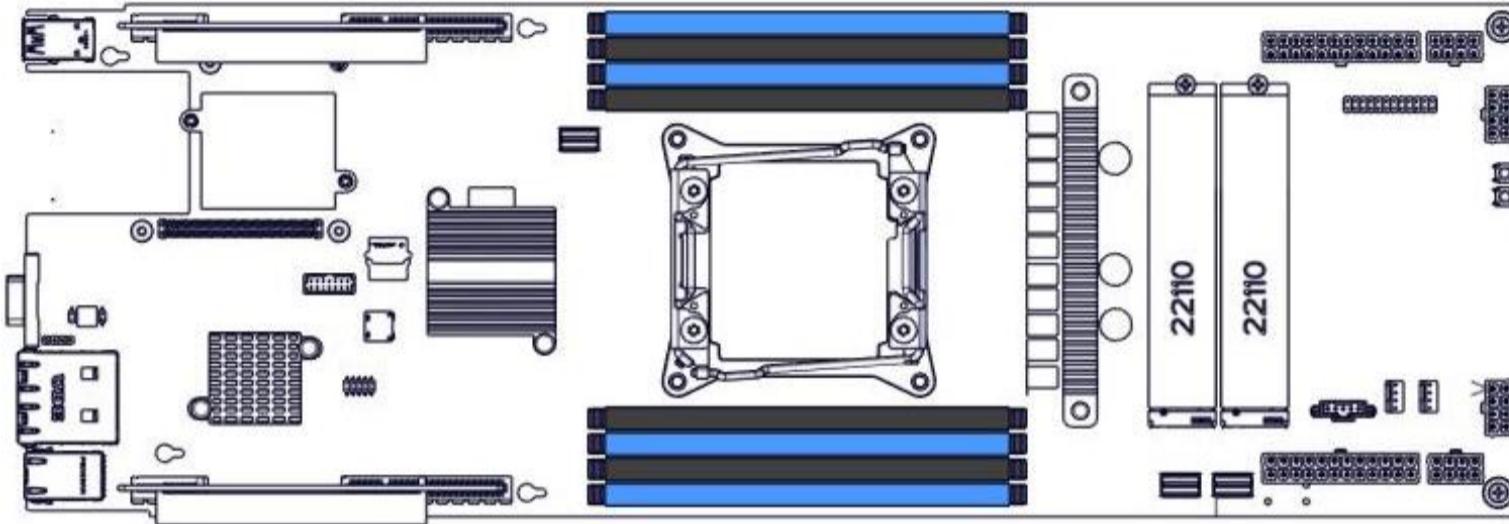
17. Removing and Installing Memory Modules

This section provides information on how to remove and install the Memory Modules.

128 GB: 8x16GB memories in all slots

64 GB: 8x8GB memories in all slots

32 GB: 4x8GB memories in blue slots



 **Caution:** Handle each memory module only by the memory card's edges, ensuring not touching the middle of memory module or metallic contacts.

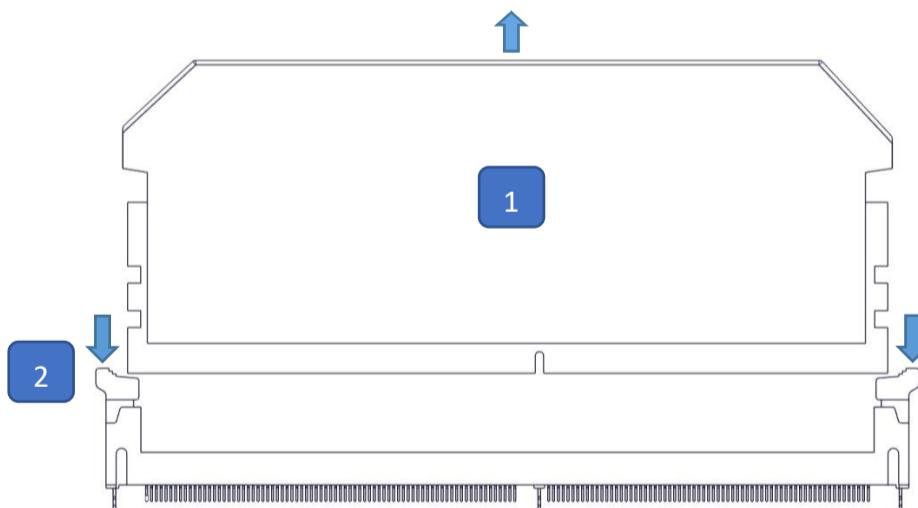
Removing Memory Module

Step 1: Identify the memory module socket.

Step 2: Press the Memory Module Ejectors (2) on both ends of the memory module socket as shown below.

Step 3: Lift the memory module (1) from the memory socket.

1. Memory Module
2. Memory Module Ejector

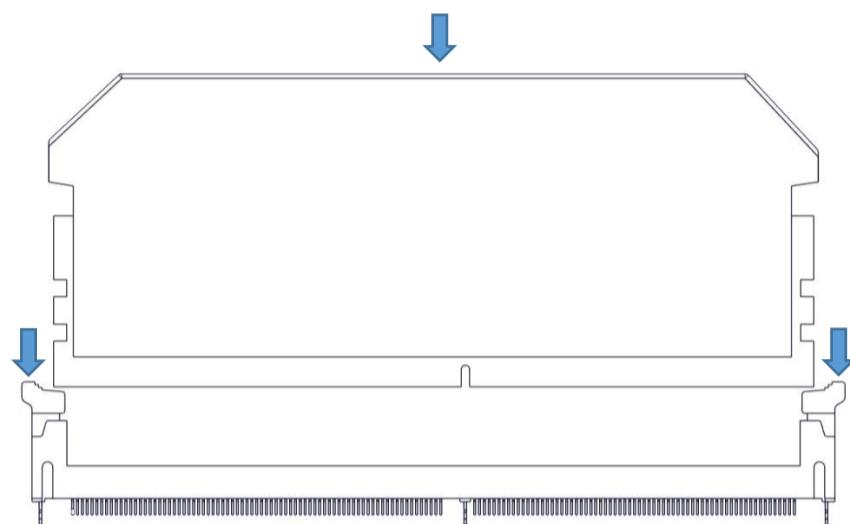


Installing Memory Module

Step 1: Identify the memory module socket.

Step 2: Make sure that the Memory Module Ejectors on both ends are released.

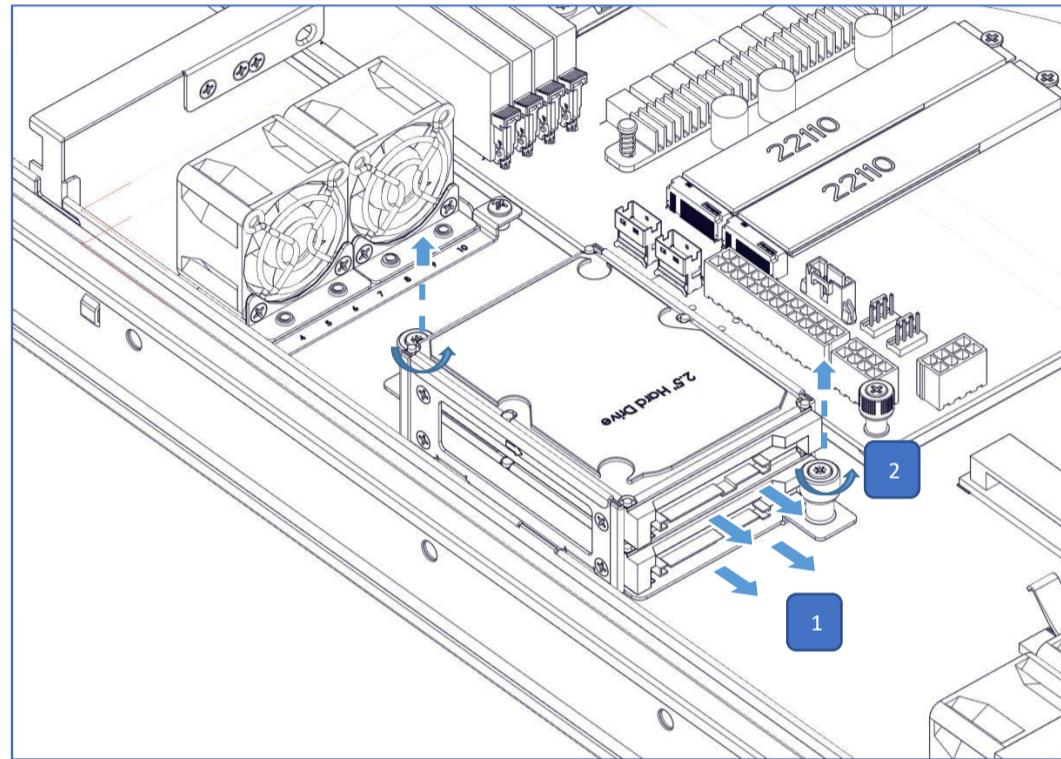
Step 3: Vertically press the memory module with your thumbs until the memory sits firmly in the memory socket.



18. Replacing Fixed SSD

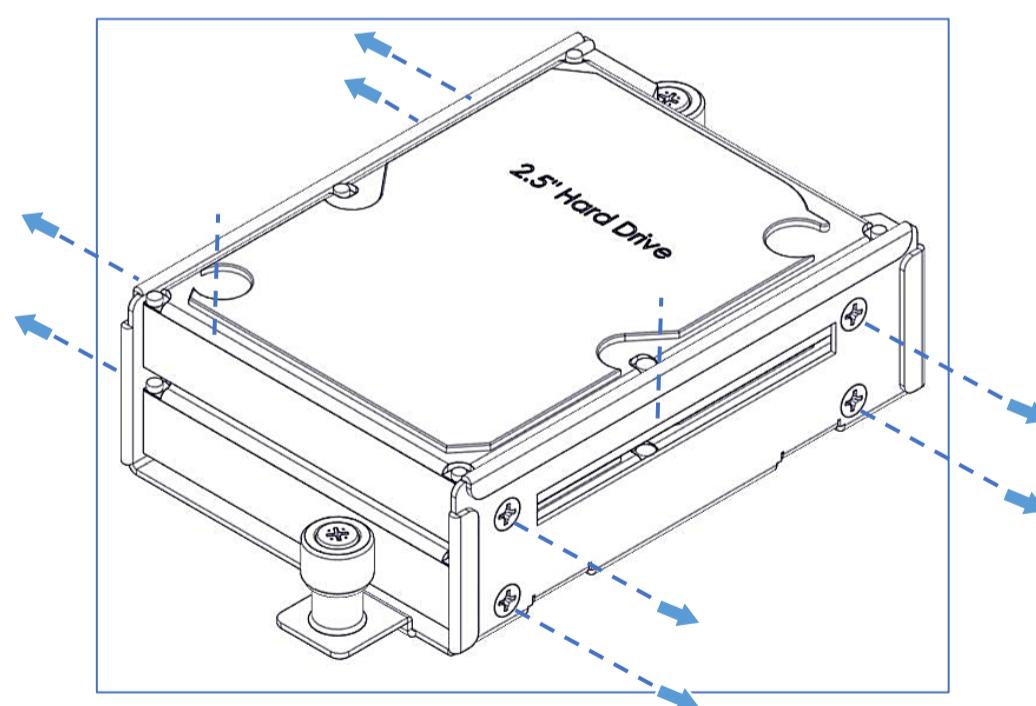
This section provides information on how to replace the fixed 2.5-inch SSD in the Orion HF310-G4 system.

Step 1: Remove the SATA and power cables. Then, turn thumbscrews anticlockwise to unscrew with Philips screwdriver type 2.

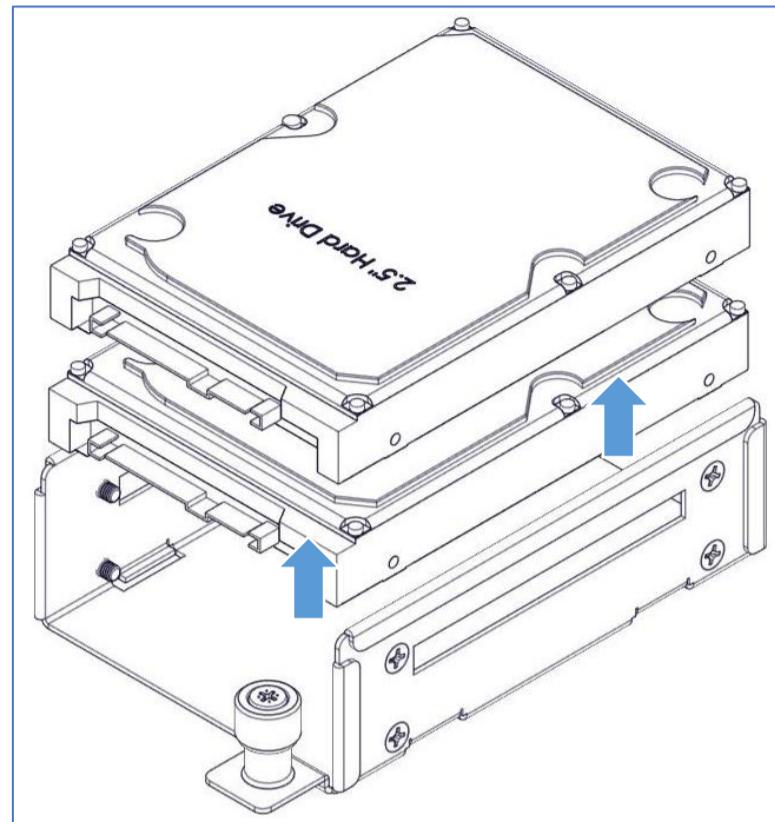


Step 2: Unscrew these screws as illustrated below.

Note: To access the lower hard drive, the top hard drive needs to be removed first.



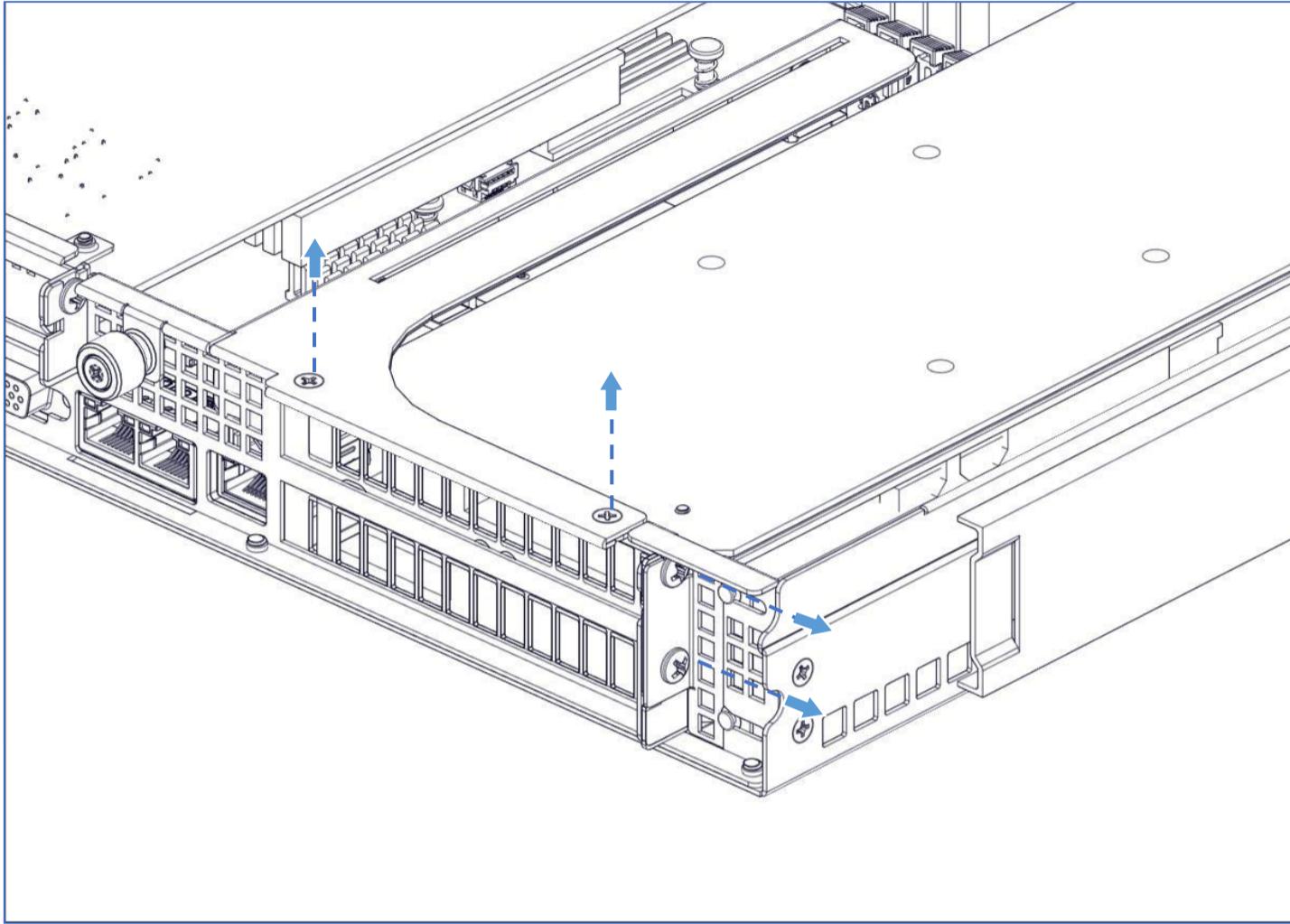
Step 3: Replace the hard drive(s).



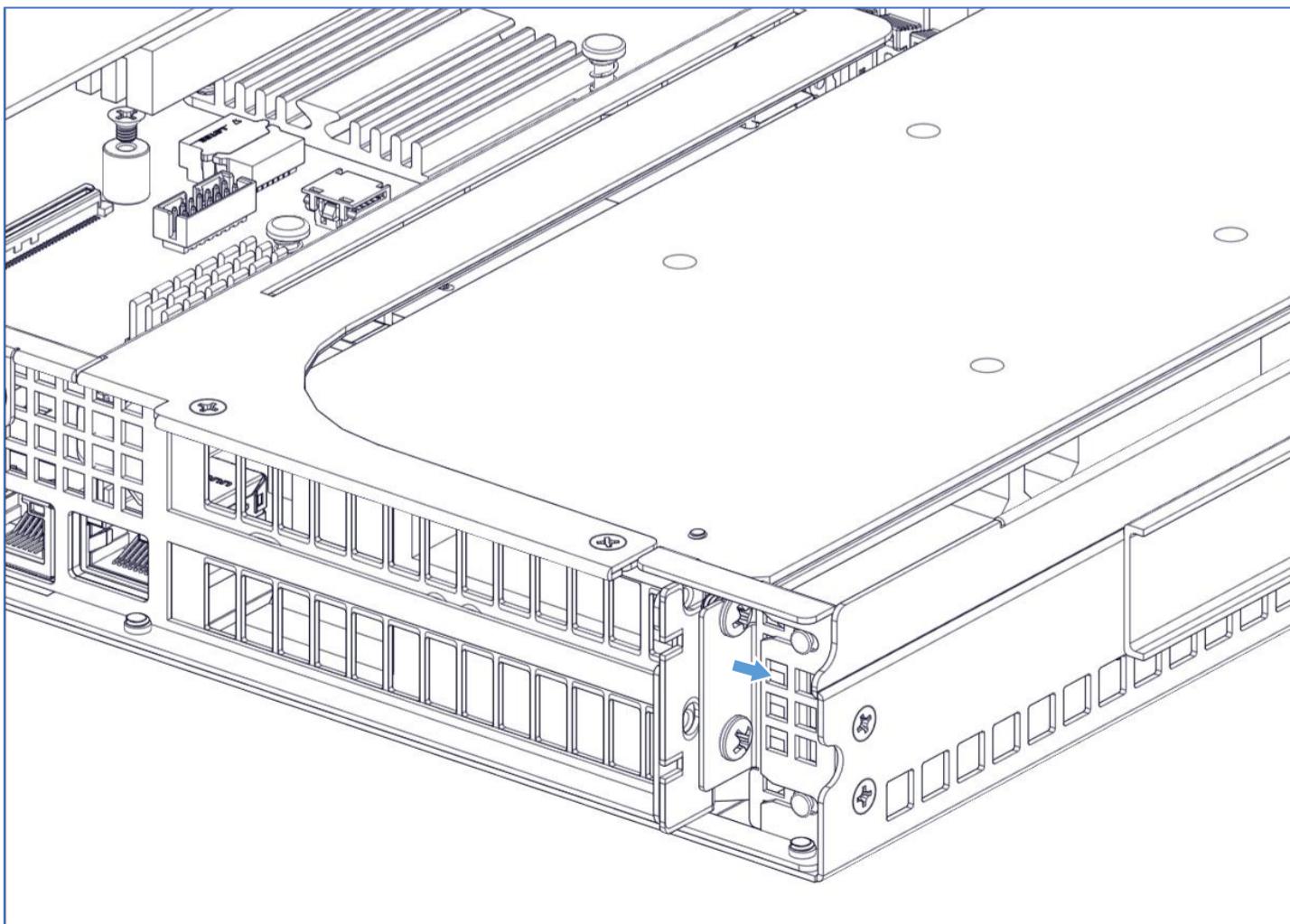
19. Replacing GPU

This section provides information on how to replace the GPU in the Orion HF310-G4 system, in the PCIE 1 expansion slot.

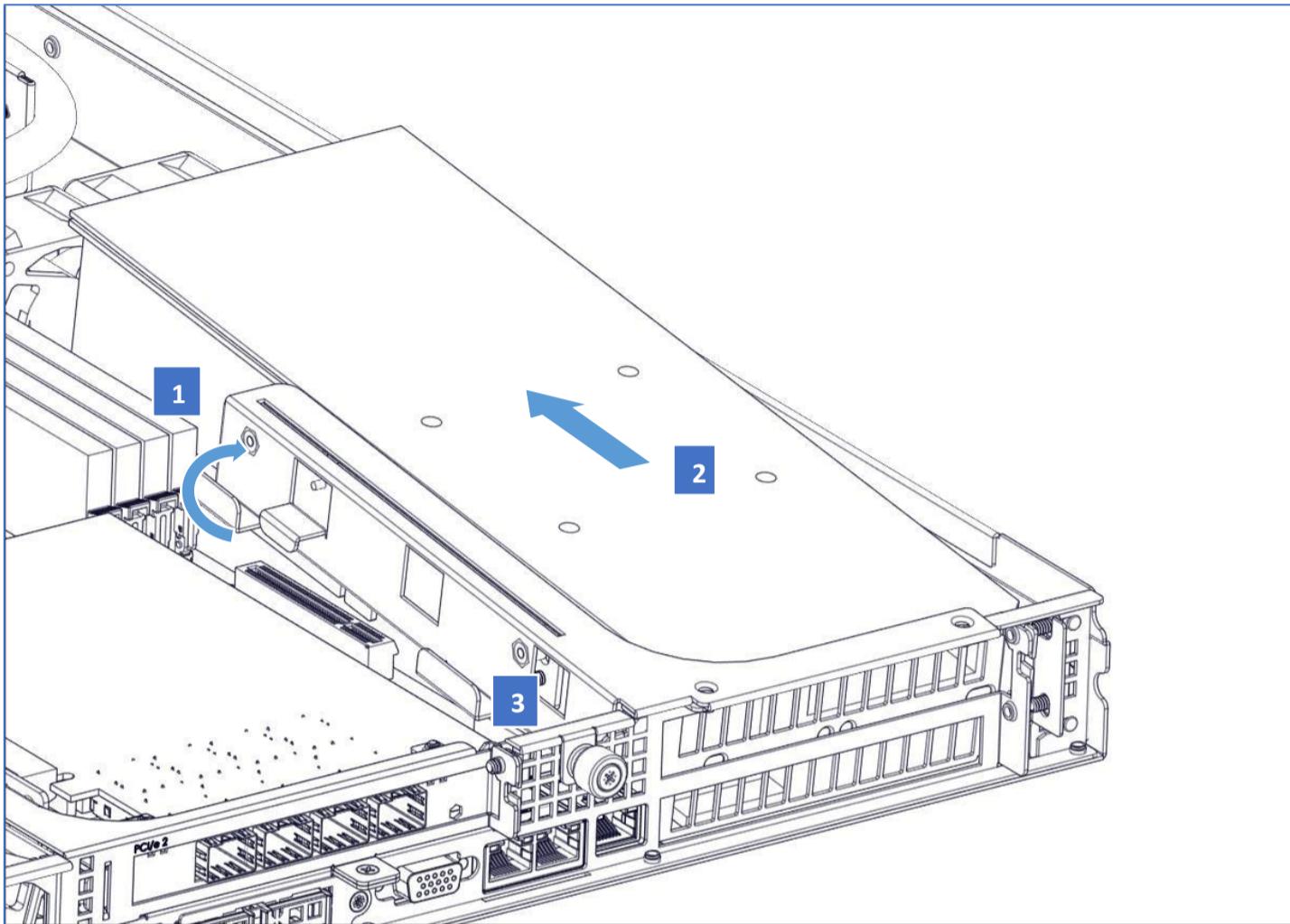
Step 1: Remove the power cables, and then unscrew the four screws as illustrated below.



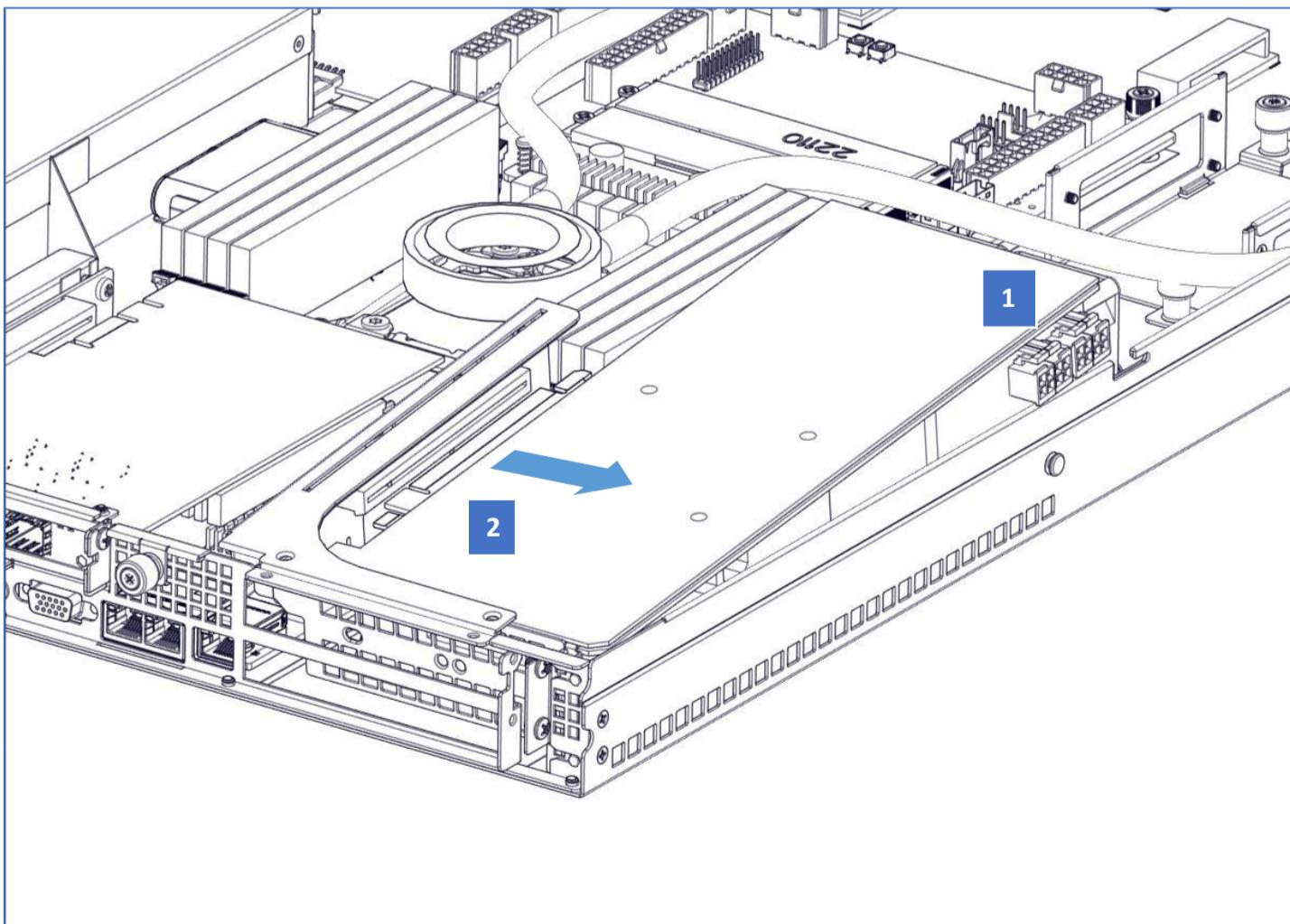
Step 2: Remove the plate.



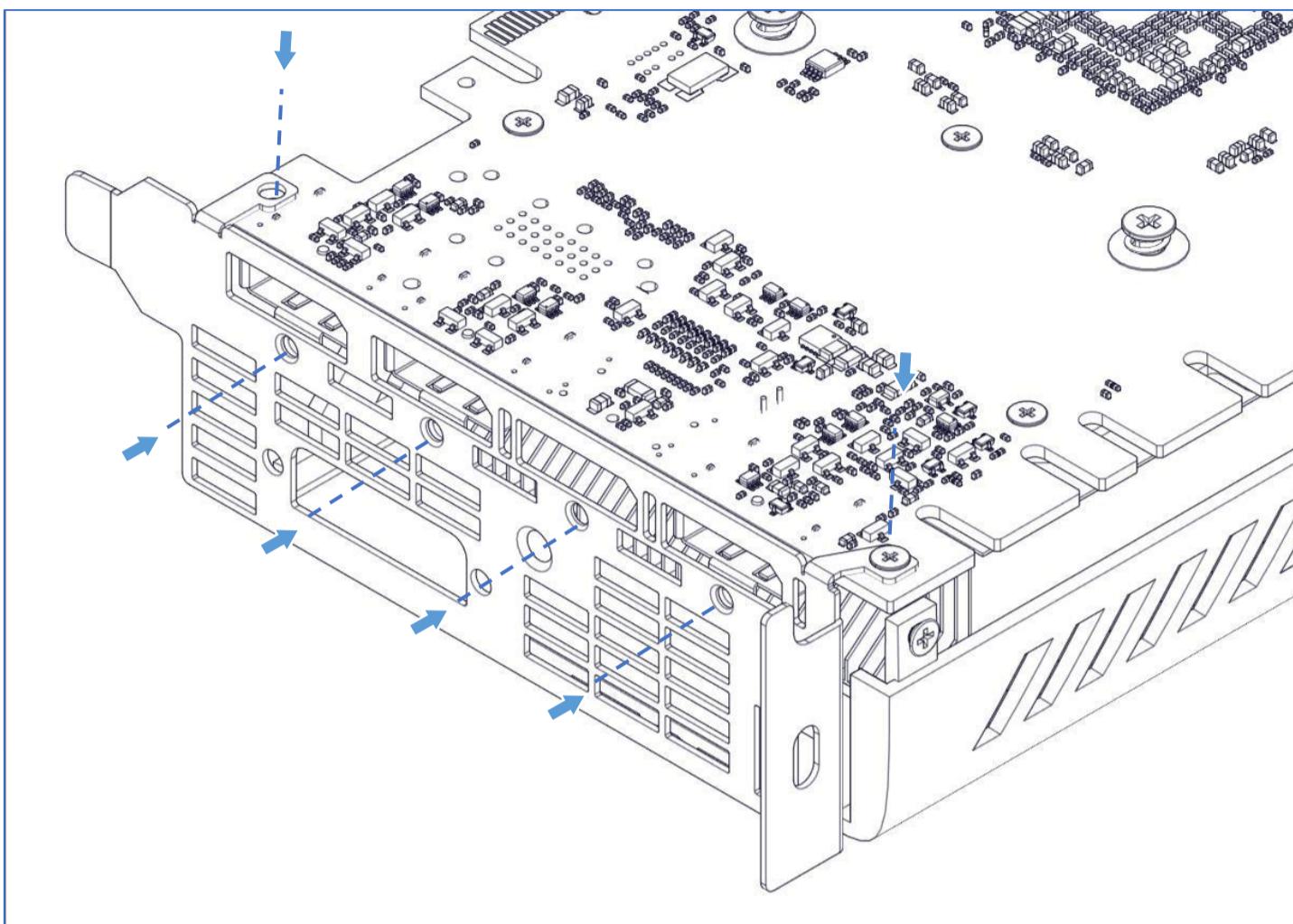
1. **Step 3:** Carefully lift the riser card bracket by tilting it, and slide the riser card bracket out of the rear panel. Please ensure that the cables connected to the motherboard are not disconnected.



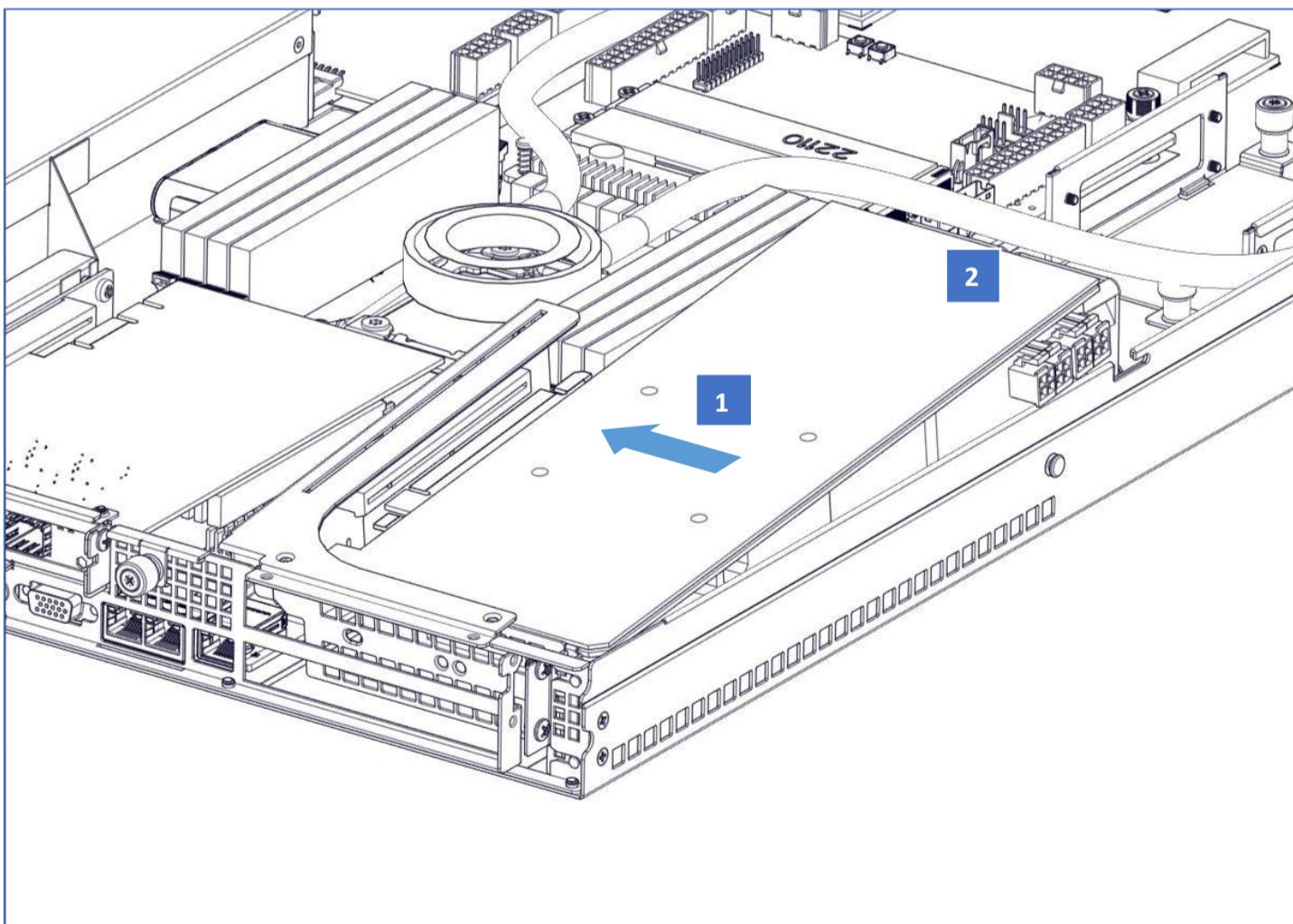
Step 4: Once the GPU cable connectors are out, proceed to slowly slide out the GPU.



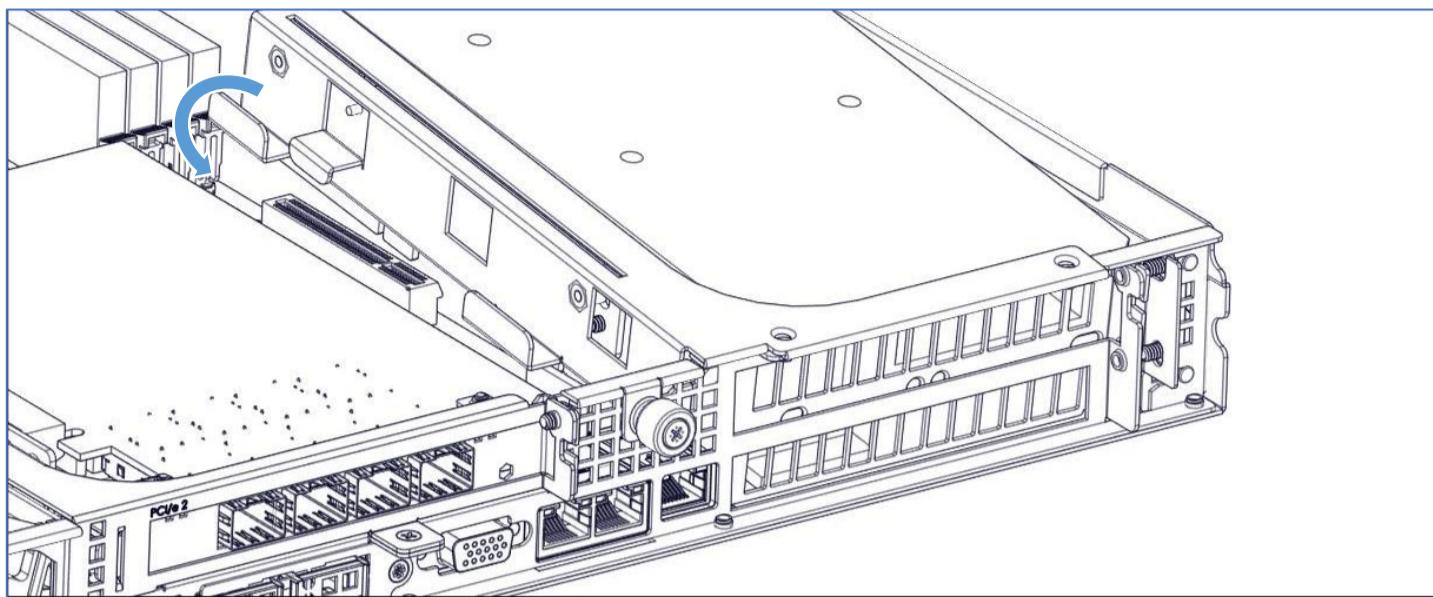
Step 5: Remove the original card bracket on the new GPU and replace with the custom bracket supplied in the accessory box.



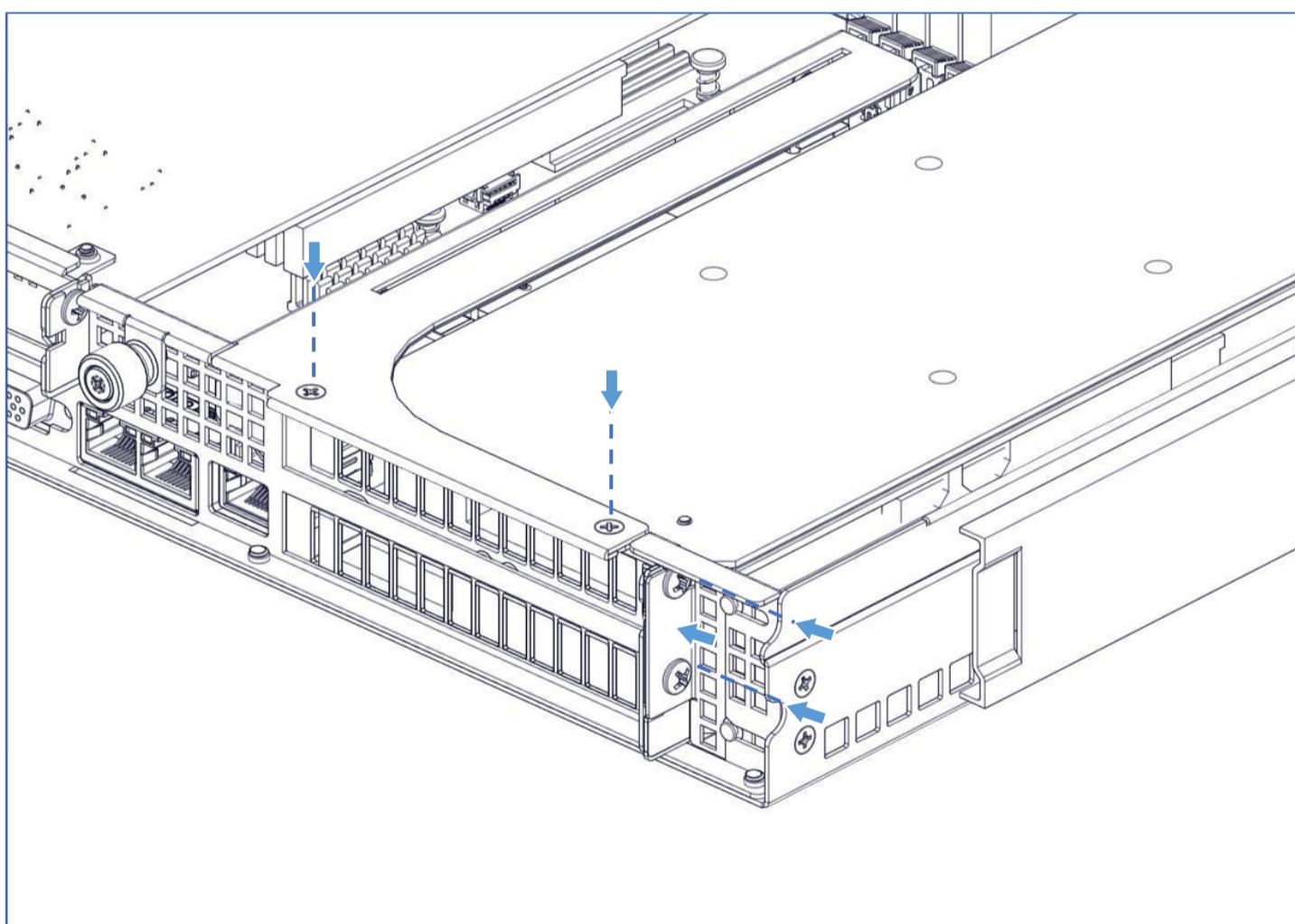
Step 6: Slide the new GPU into the riser card. Set the GPU front end carefully inside the chassis ensuring that the GPU connectors are cleared of interference.



Step 7: Align the riser card and PCIe1 slot and slide it in.



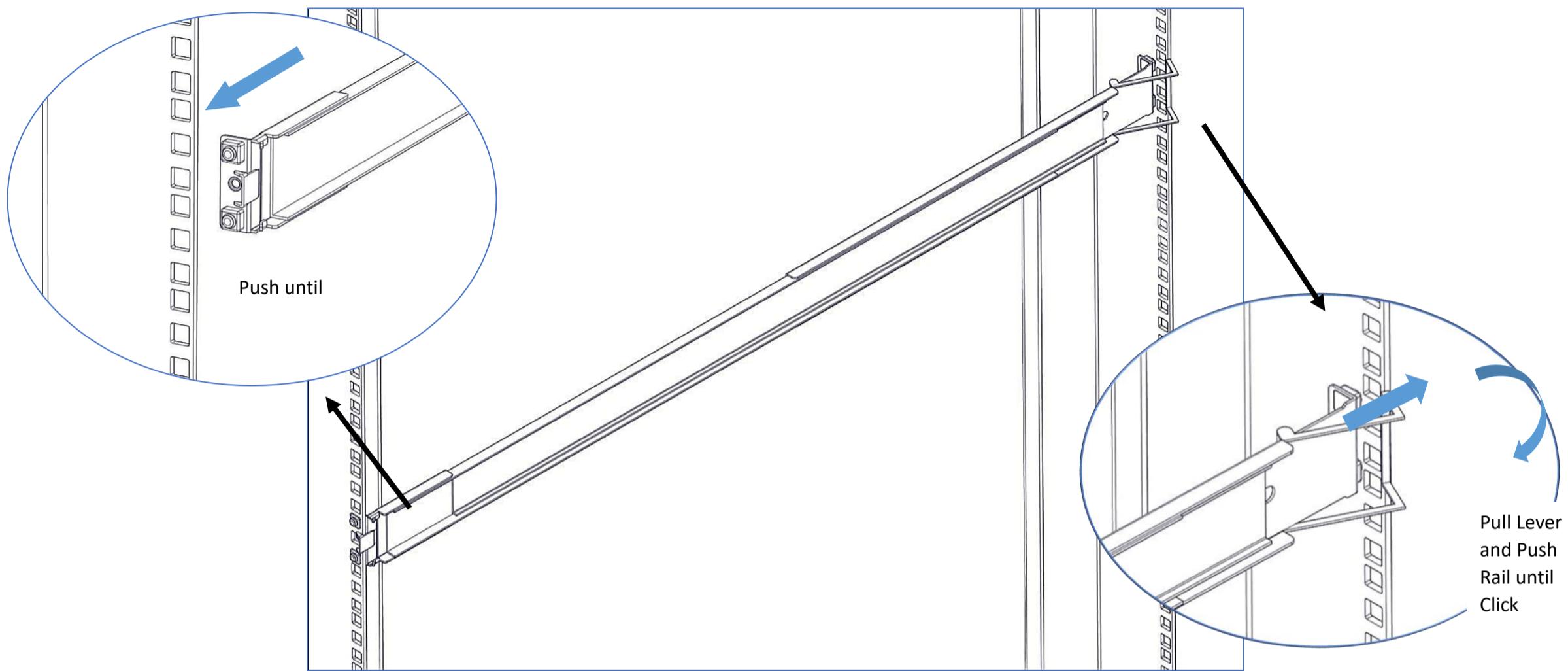
Step 8: Screw the top screws and push the plate and screw in the side screws.



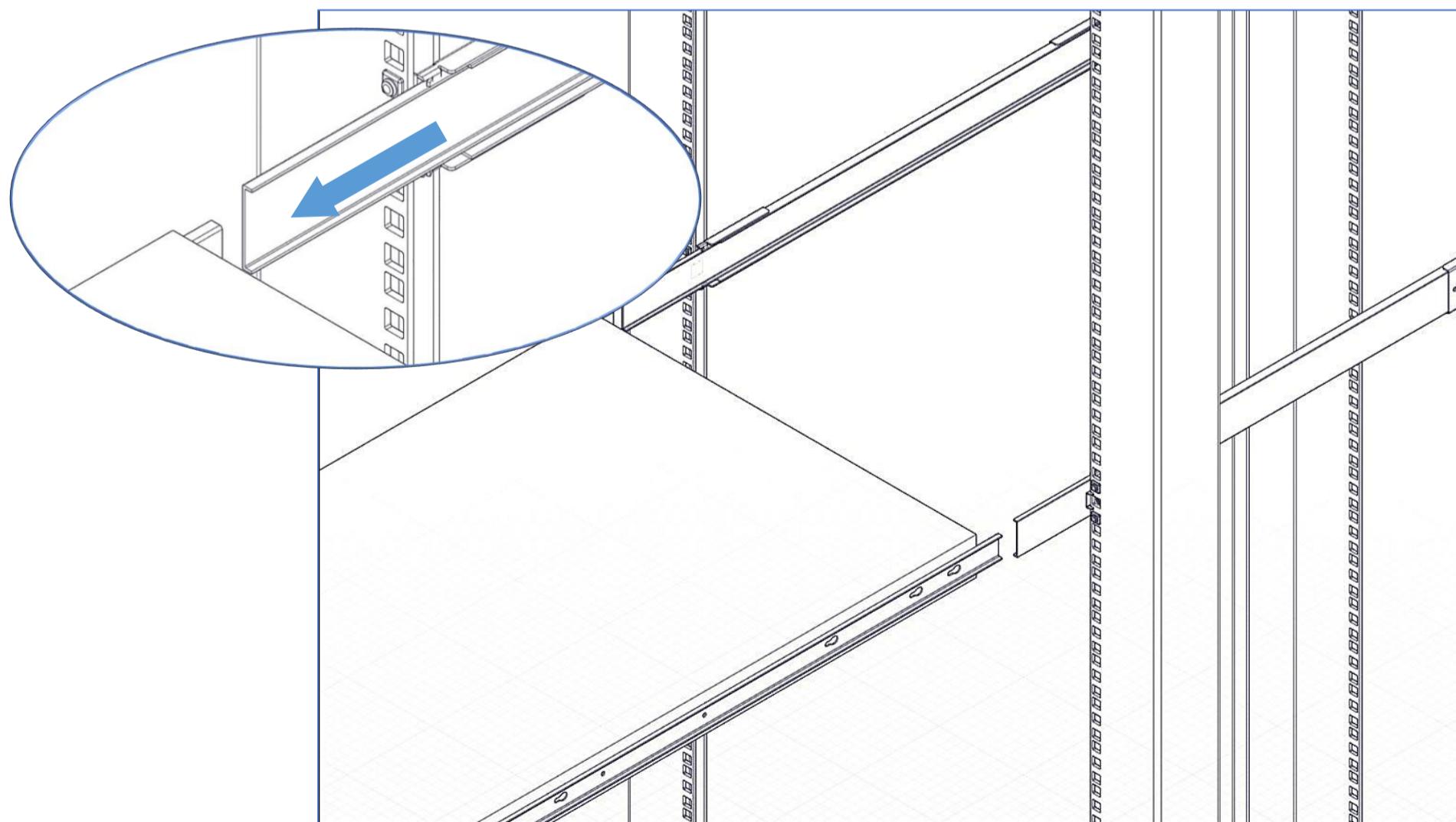
20. Rack Mounting

This section provides information on how to mount a system into the rack with the rack rails.

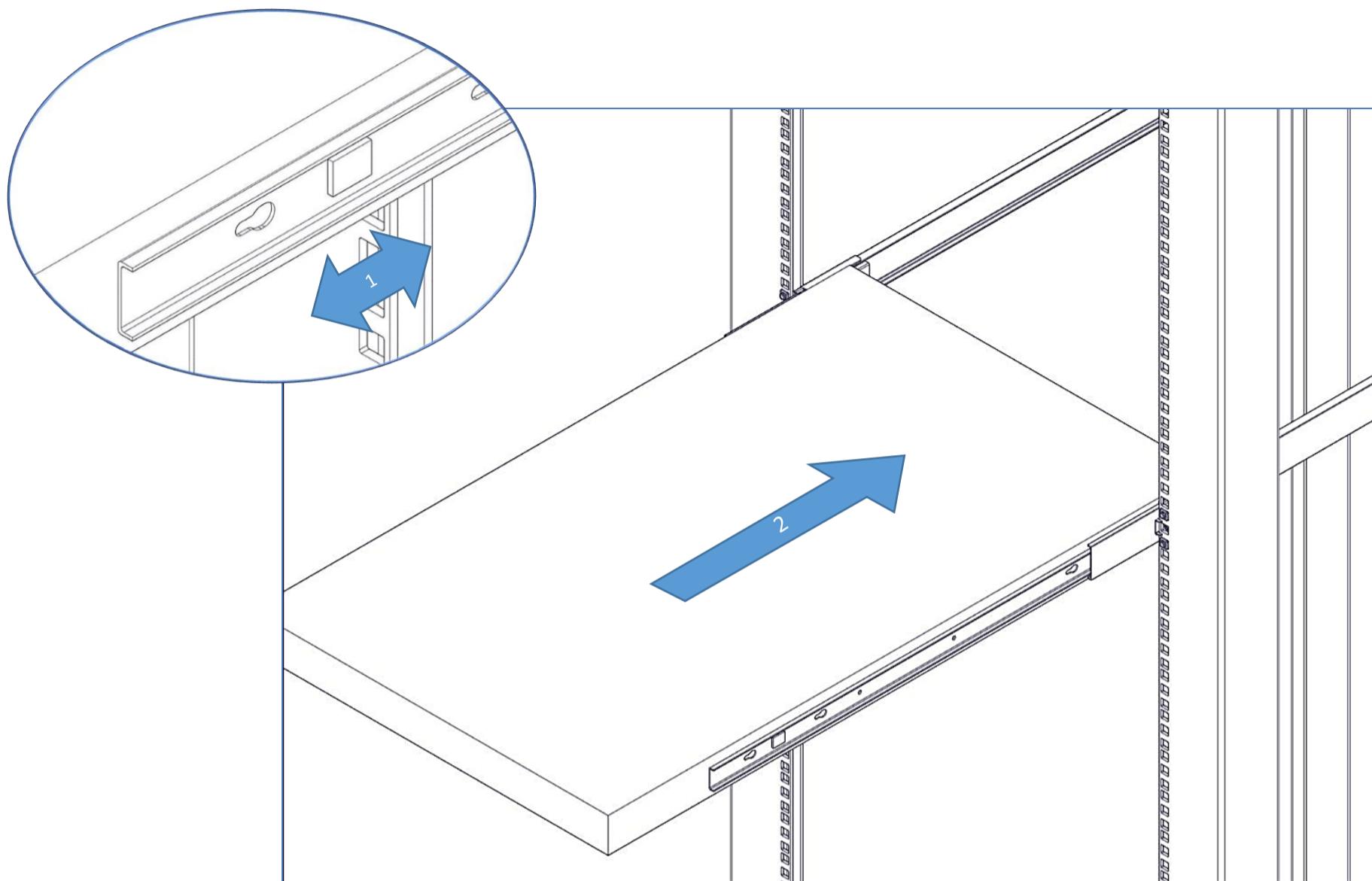
Step 1. Install rails into the rack



Step 2. Pull the middle fully extended member in lock position; ensure that the ball bearing retainer is located at the front of the middle member. Horizontally install chassis half way into slide member.

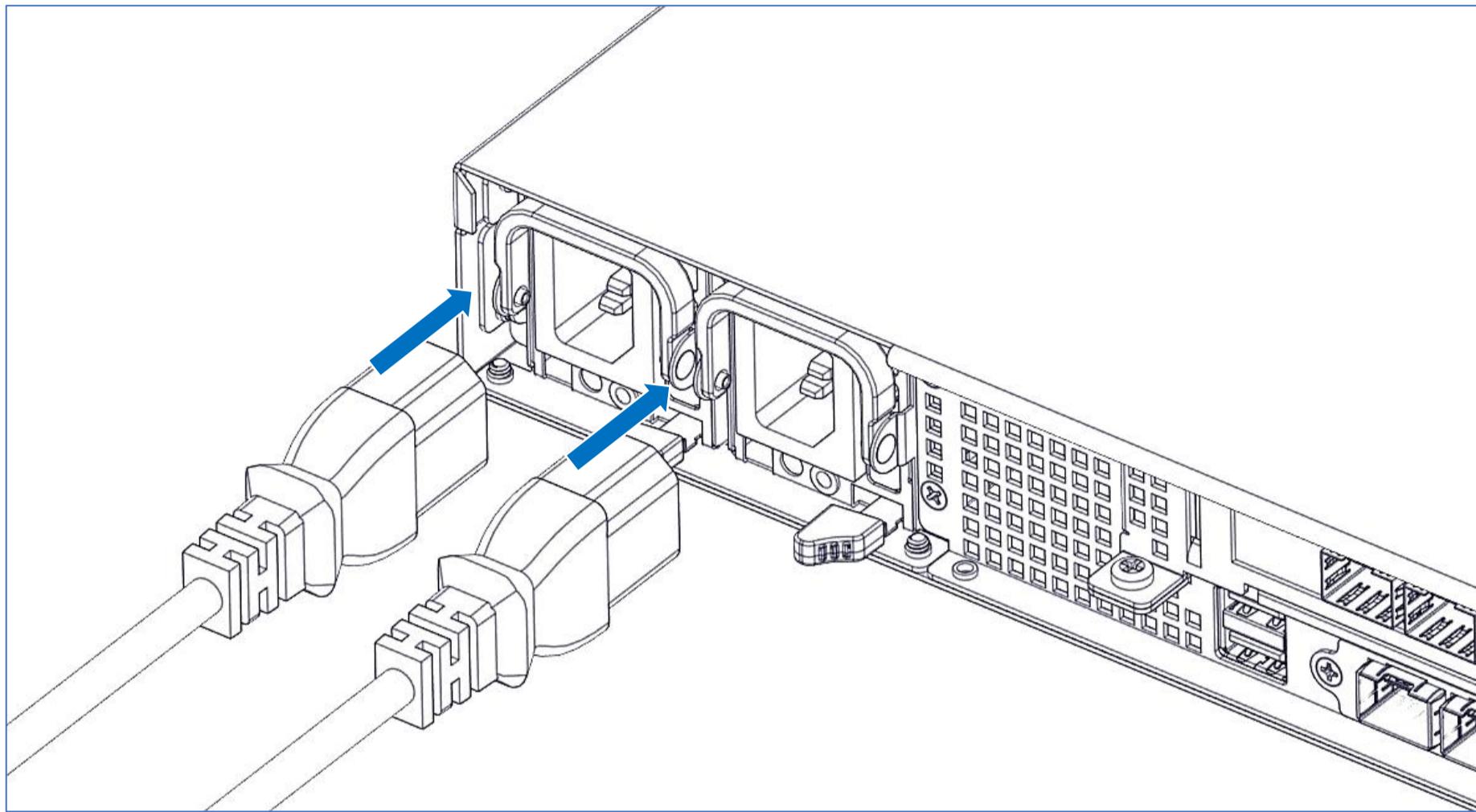


Step 3. When it hits a stop, please pull/push the blue release tab on the inner member.



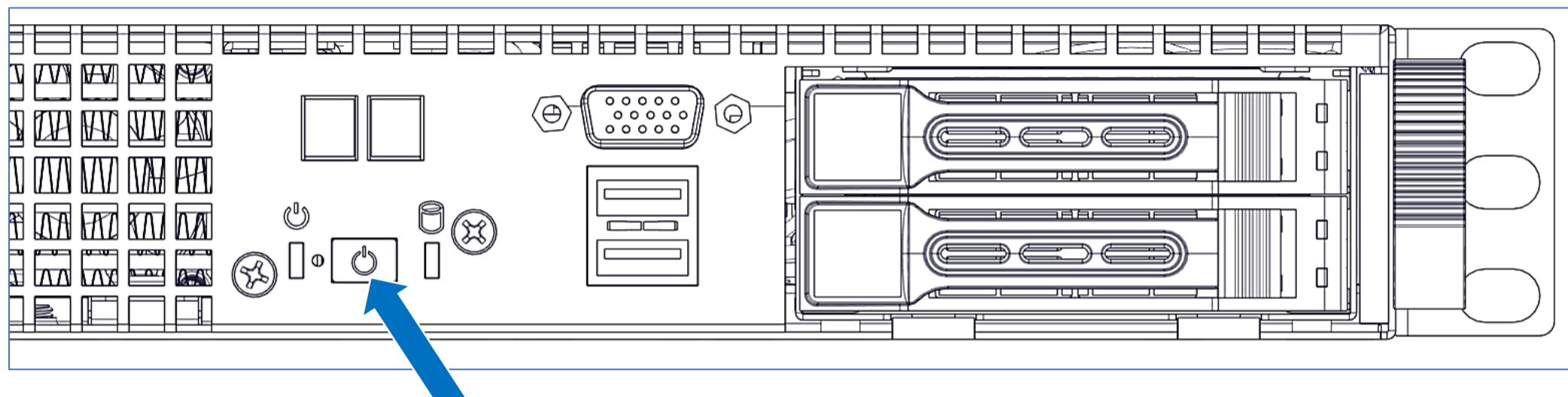
21. Plugging the Power Cords

The following illustration shows how to connect the power cords to the back of the system.



22. Turning on the System

The following illustration indicates where the power button is located on the front of the server.



23. QCodes:

AMI_Debug code:

```
{ PEI_CORE_STARTED, 0x10 },  
{ PEI_CAR_CPU_INIT, 0x11 },  
{ PEI_CAR_NB_INIT, 0x15 },  
{ PEI_CAR_SB_INIT, 0x19 },  
{ PEI_MEMORY_SPD_READ, 0x2B },  
{ PEI_MEMORY_PRESENCE_DETECT, 0x2C },  
{ PEI_MEMORY_TIMING, 0x2D },  
{ PEI_MEMORY_CONFIGURING, 0x2E },  
{ PEI_MEMORY_INIT, 0x2F },  
{ PEI_MEMORY_INSTALLED, 0x31 },  
{ PEI_CPU_INIT, 0x32 },  
{ PEI_CPU_CACHE_INIT, 0x33 },  
{ PEI_CPU_AP_INIT, 0x34 },  
{ PEI_CPU_BSP_SELECT, 0x35 },  
{ PEI_CPU_SMM_INIT, 0x36 },  
{ PEI_MEM_NB_INIT, 0x37 },  
{ PEI_MEM_SB_INIT, 0x3B },  
{ PEI_DXE_IPL_STARTED, 0x4F },  
{ PEI_RECOVERY_AUTO, 0xF0 },  
{ PEI_RECOVERY_USER, 0xF1 },  
{ PEI_RECOVERY_STARTED, 0xF2 },  
{ PEI_RECOVERY_CAPSULE_FOUND, 0xF3 },  
{ PEI_RECOVERY_CAPSULE_LOADED, 0xF4 },  
  
{ PEI_MEMORY_INVALID_TYPE, 0x50 },  
{ PEI_MEMORY_INVALID_SPEED, 0x50 },  
{ PEI_MEMORY_SPD_FAIL, 0x51 },  
{ PEI_MEMORY_INVALID_SIZE, 0x52 },  
{ PEI_MEMORY_MISMATCH, 0x52 },  
{ PEI_MEMORY_NOT_DETECTED, 0x53 },  
{ PEI_MEMORY_NONE_USEFUL, 0x53 },  
{ PEI_MEMORY_ERROR, 0x54 },  
{ PEI_MEMORY_NOT_INSTALLED, 0x55 },  
{ PEI_CPU_INVALID_TYPE, 0x56 },  
{ PEI_CPU_INVALID_SPEED, 0x56 },  
{ PEI_CPU_MISMATCH, 0x57 },  
{ PEI_CPU_SELF_TEST_FAILED, 0x58 },
```

{ PEI_CPU_CACHE_ERROR, 0x58 },
{ PEI_CPU_MICROCODE_UPDATE_FAILED, 0x59 },
{ PEI_CPU_NO_MICROCODE, 0x59 },
{ PEI_CPU_INTERNAL_ERROR, 0x5A },
{ PEI_CPU_ERROR, 0x5A },
{ PEI_RESET_NOT_AVAILABLE, 0x5B },
{ PEI_RECOVERY_PPI_NOT_FOUND, 0xF8 },
{ PEI_RECOVERY_NO_CAPSULE, 0xF9 },
{ PEI_RECOVERY_INVALID_CAPSULE, 0xFA },
{ DXE_CORE_STARTED, 0x60 },
{ DXE_NVRAM_INIT, 0x61 },
{ DXE_SBRUN_INIT, 0x62 },
{ DXE_CPU_INIT, 0x63 },
{ DXE_NB_HB_INIT, 0x68 },
{ DXE_NB_INIT, 0x69 },
{ DXE_NB_SMM_INIT, 0x6A },
{ DXE_SB_INIT, 0x70 },
{ DXE_SB_SMM_INIT, 0x71 },
{ DXE_SB_DEVICES_INIT, 0x72 },
{ DXE_ACPI_INIT, 0x78 },
{ DXE_CSM_INIT, 0x79 },
{ DXE_BDS_STARTED, 0x90 },
{ DXE_BDS_CONNECT_DRIVERS, 0x91 },
{ DXE_PCI_BUS_BEGIN, 0x92 },
{ DXE_PCI_BUS_HPC_INIT, 0x93 },
{ DXE_PCI_BUS_ENUM, 0x94 },
{ DXE_PCI_BUS_REQUEST_RESOURCES, 0x95 },
{ DXE_PCI_BUS_ASSIGN_RESOURCES, 0x96 },
{ DXE_CON_OUT_CONNECT, 0x97 },
{ DXE_CON_IN_CONNECT, 0x98 },
{ DXE_SIO_INIT, 0x99 },
{ DXE_USB_BEGIN, 0x9A },
{ DXE_USB_RESET, 0x9B },
{ DXE_USB_DETECT, 0x9C },
{ DXE_USB_ENABLE, 0x9D },
{ DXE_IDE_BEGIN, 0xA0 },
{ DXE_IDE_RESET, 0xA1 },
{ DXE_IDE_DETECT, 0xA2 },
{ DXE_IDE_ENABLE, 0xA3 },
{ DXE_SCSI_BEGIN, 0xA4 },

```
{ DXE_SCSI_RESET, 0xA5 },
```

```
{ DXE_SCSI_DETECT, 0xA6 },
```

```
{ DXE_SCSI_ENABLE, 0xA7 },
```

```
{ DXE_SETUP VERIFYING_PASSWORD, 0xA8 },
```

```
{ DXE_SETUP_START, 0xA9 },
```

```
{ DXE_SETUP_INPUT_WAIT, 0xAB },
```

```
{ DXE_READY_TO_BOOT, 0xAD },
```

```
{ DXE_LEGACY_BOOT, 0xAE },
```

```
{ DXE_EXIT_BOOT_SERVICES, 0xAF },
```

```
{ RT_SET_VIRTUAL_ADDRESS_MAP_BEGIN, 0xB0 },
```

```
{ RT_SET_VIRTUAL_ADDRESS_MAP_END, 0xB1 },
```

```
{ DXE_LEGACY_OPROM_INIT, 0xB2 },
```

```
{ DXE_RESET_SYSTEM, 0xB3 },
```

```
{ DXE_USB_HOTPLUG, 0xB4 },
```

```
{ DXE_PCI_BUS_HOTPLUG, 0xB5 },
```

```
{ DXE_NVRAM_CLEANUP, 0xB6 },
```

```
{ DXE_CONFIGURATION_RESET, 0xB7 },
```

```
{ DXE_CPU_ERROR, 0xD0 },
```

```
{ DXE_NB_ERROR, 0xD1 },
```

```
{ DXE_SB_ERROR, 0xD2 },
```

```
{ DXE_ARCH_PROTOCOL_NOT_AVAILABLE, 0xD3 },
```

```
{ DXE_PCI_BUS_OUT_OF_RESOURCES, 0xD4 },
```

```
{ DXE_LEGACY_OPROM_NO_SPACE, 0xD5 },
```

```
{ DXE_NO_CON_OUT, 0xD6 },
```

```
{ DXE_NO_CON_IN, 0xD7 },
```

```
{ DXE_INVALID_PASSWORD, 0xD8 },
```

```
{ DXE_BOOT_OPTION_LOAD_ERROR, 0xD9 },
```

```
{ DXE_BOOT_OPTION_FAILED, 0xDA },
```

```
{ DXE_FLASH_UPDATE_FAILED, 0xDB },
```

```
{ DXE_RESET_NOT_AVAILABLE, 0xDC },
```

24. RC_Debug code:

Major Checkpoint progress indicators written to debug port

```
#define STS_DIMM_DETECT      0xB0
#define STS_CLOCK_INIT        0xB1
#define STS_SPD_DATA          0xB2
#define STS_GLOBAL_EARLY       0xB3
#define STS_RANK_DETECT        0xB4
#define STS_CHANNEL_EARLY      0xB5
#define STS_DDRIO_INIT          0xB6
#define STS_CHANNEL_TRAINING    0xB7
#define STS_INIT_THROTTLING     0xB8
#define STS_MEMBIST             0xB9
#define STS_MEMINIT              0xBA
#define STS_DDR_MEMMAP           0xBB
#define STS_RAS_CONFIG            0xBC
#define STS_GET_MARGINS          0xBD
#define SSA_API_INIT             0xBE
#define STS_MRC_DONE              0xBF
#define STS_JEDEC_INIT             0xC0
```

===== IIO POST code - Major Definitions =====

```
*/
#define STS_IIO_EARLY_INIT_ENTRY    0xE0 // IIO early init entry
#define STS_EARLY_PRELINK_TRAINING   0xE1 // Early Pre-link training setting
#define STS_GEN3_EQ_PROGRAMMING      0xE2 // IIO Gen3 EQ programming
#define STS_LINK_TRAINING            0xE3 // IIO Link training
#define STS_GEN3_OVERRIDE              0xE4 // IIO Gen3 override
#define STS_IIO_EARLY_INIT_EXIT       0xE5 // IIO early init exit
#define STS_IIO_LATE_INIT_ENTRY       0xE6 // IIO late init entry
#define STS_IIO_PCIE_PORT_INIT         0xE7 // PCIE port init
#define STS_IIO_IOAPIC_INIT            0xE8 // IOAPIC init
#define STS_IIO_VTD_INIT                0xE9 // VTD init
#define STS_IIO_IOAT_INIT                 0xEA // IOAT init
#define STS_IIO_DFX_INIT                  0xEB // IIO DFX init
#define STS_IIO_NTB_INIT                  0xEC // NTB init
#define STS_IIO_SECURITY_INIT            0xED // Security init
#define STS_IIO_LATE_INIT_EXIT           0xEE // IIO late init exit
#define STS_IIO_ON_READY_TO_BOOT         0xEF // IIO On ready to boot
```

```
/* CPUPM POST code - Major */
```

#define STS_PPM_STRUCT_INIT 0xD0 // CPU PM Structure Init
#define STS_PPM_CSR_PROGRAMMING 0xD1 // CPU PM CSR programming
#define STS_PPM_MSR_PROGRAMMING 0xD2 // CPU PM MSR programming
#define STS_PPM_PSTATE_TRANSITION 0xD3 // CPU PM PSTATE transition
#define STS_PPM_EXIT 0xD4 // CPU PM driver exit
#define STS_PPM_ON_READY_TO_BOOT 0xD5 // CPU PM On ready to boot event

25. Accessing BIOS:

This section provides information on how to access to the system's BIOS.

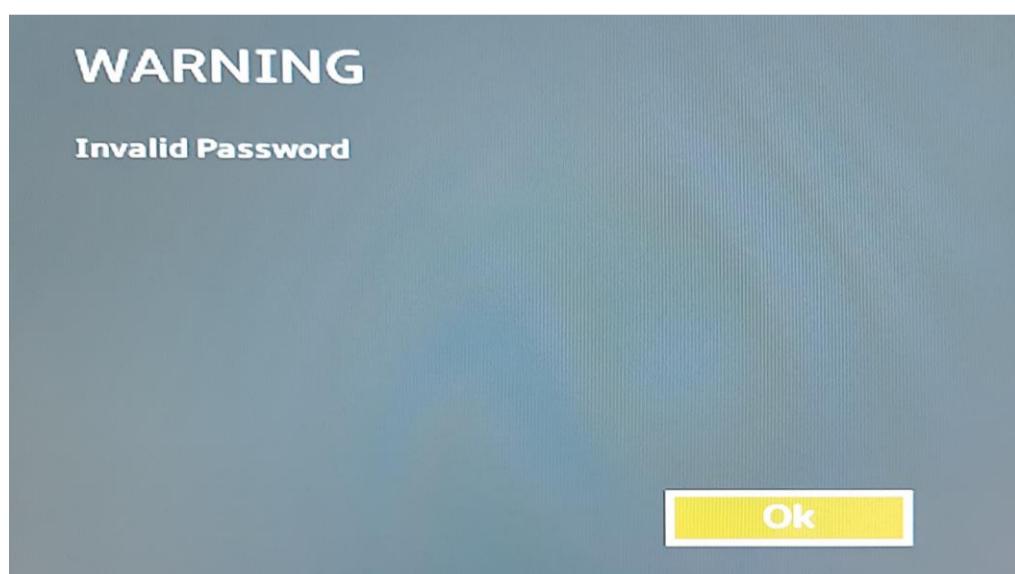
Step 1. Turn on the system and press the **DEL** button on the keyboard immediately after you see the following windows to enter in to the Bios.



Step 2. When prompted for the password, and **press Enter** 1 time to bypass this prompt.



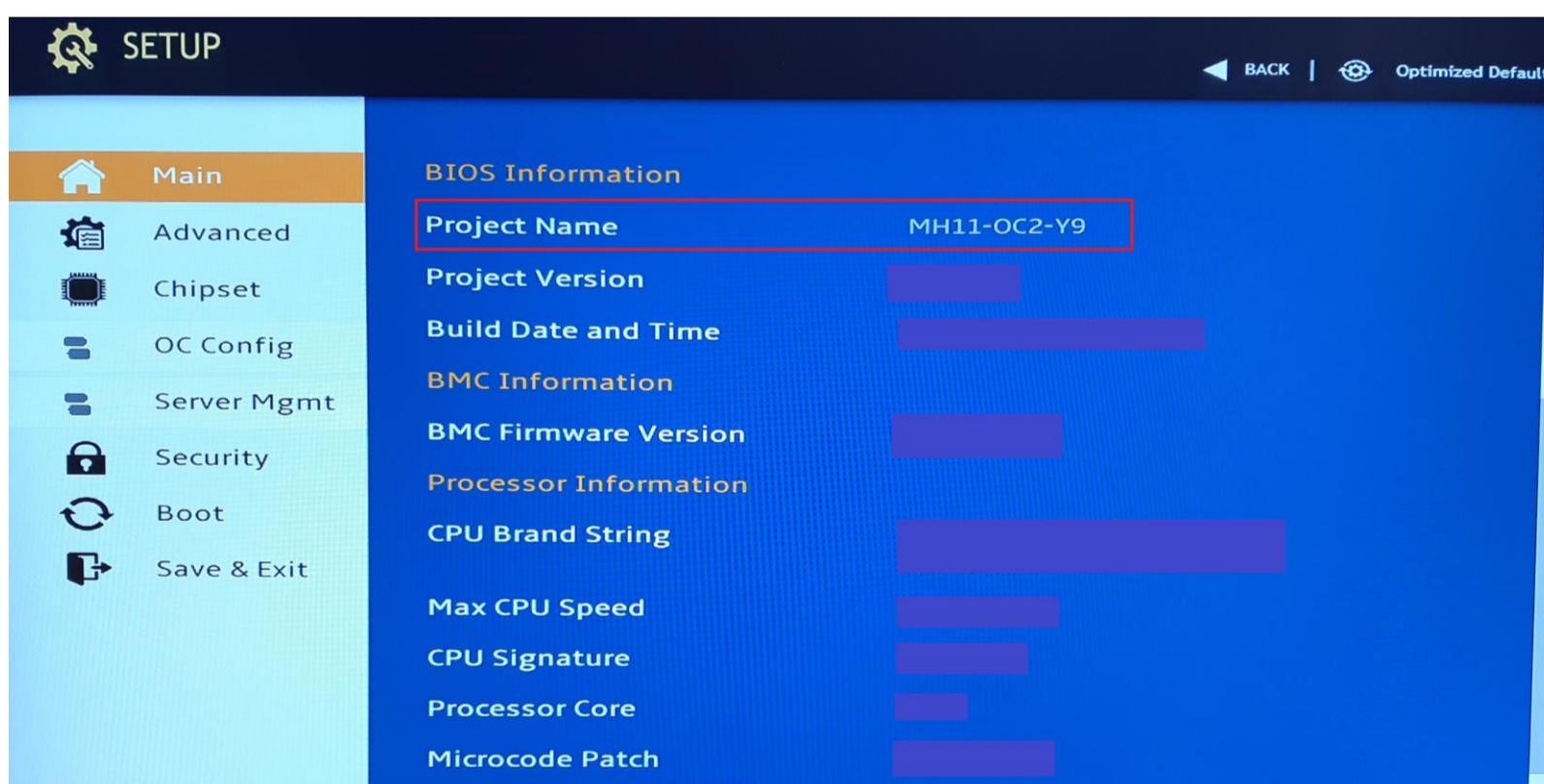
Step 3. In the Warning window, Press **OK**



Step 4. Select the **SETUP** and press Enter.



Step 4. In the main Menu in the BIOS. You can use either the keyboard arrow keys or mouse cursor to navigate.



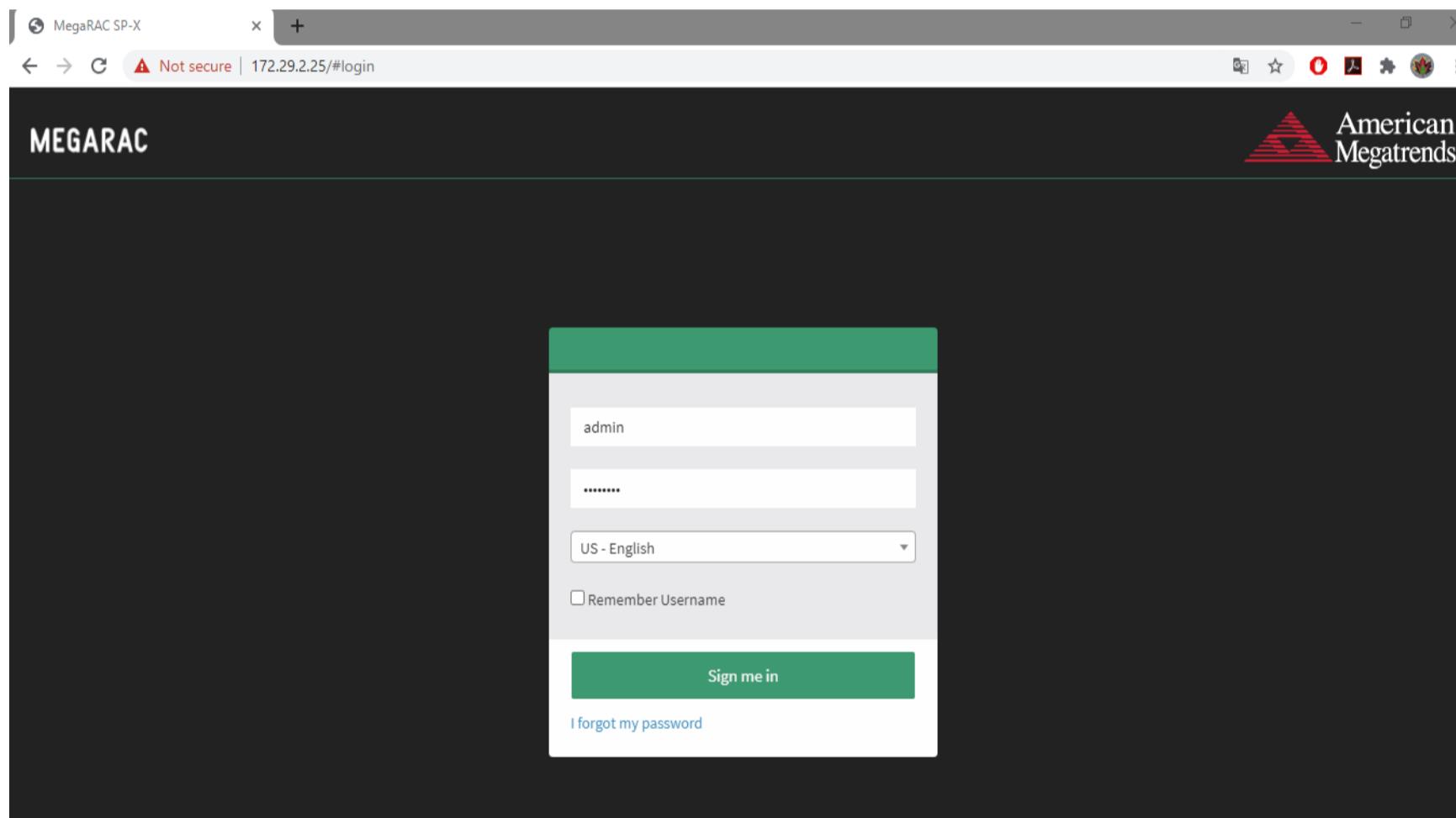
26. Configuring BMC IP-Address Settings for remote management

This section provides information on how to configure BMC IP-address settings for remote management.

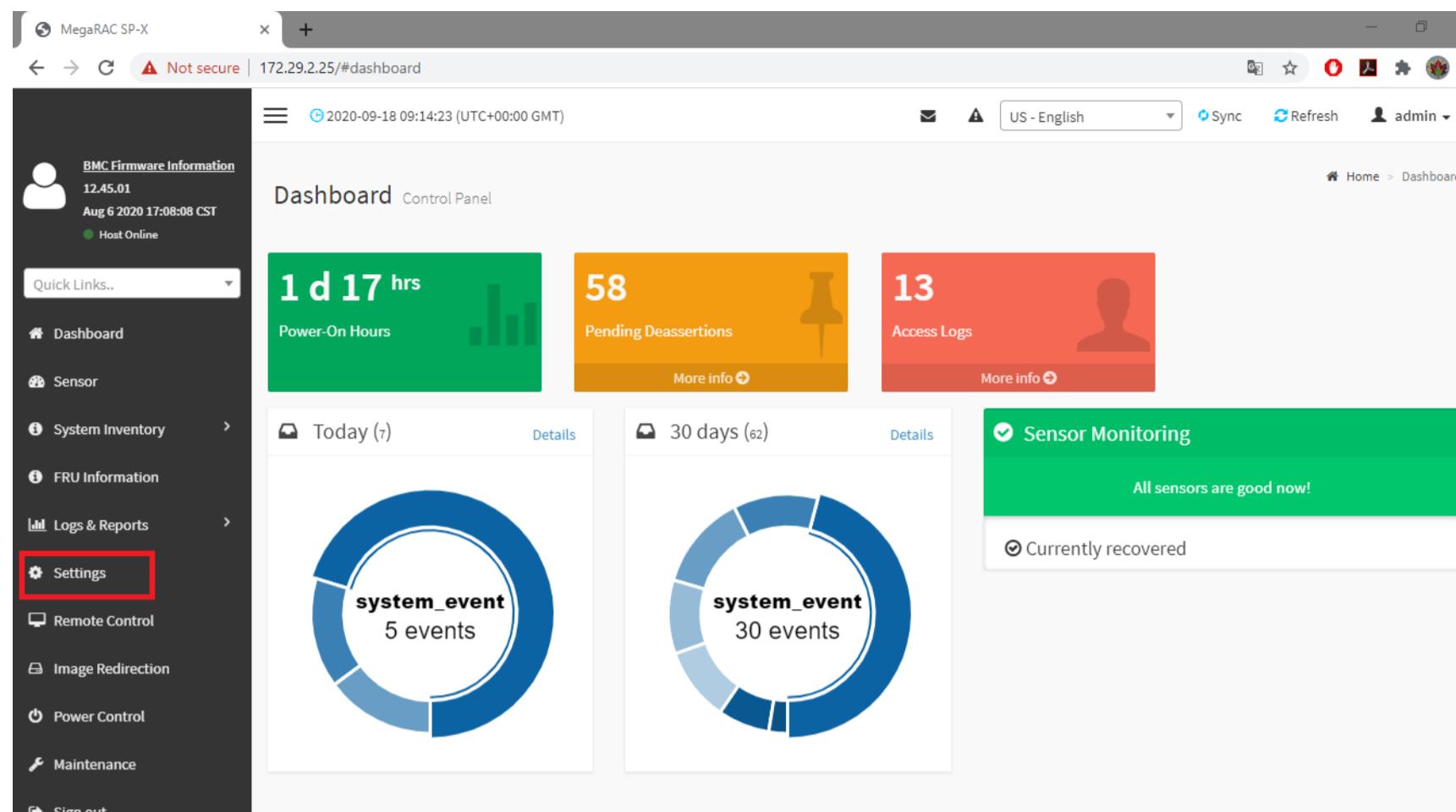
Step 1: Go in to the **BIOS**, In the Setup menu, under the **Server Mgmt** menu select **BMC network configuration** and note down the **Station IP address**.



Step 2: Launch the web browser, Type the IP address of the **BMC**, and enter the username as **admin** and password as **password**. Then click on **Sign me in**.

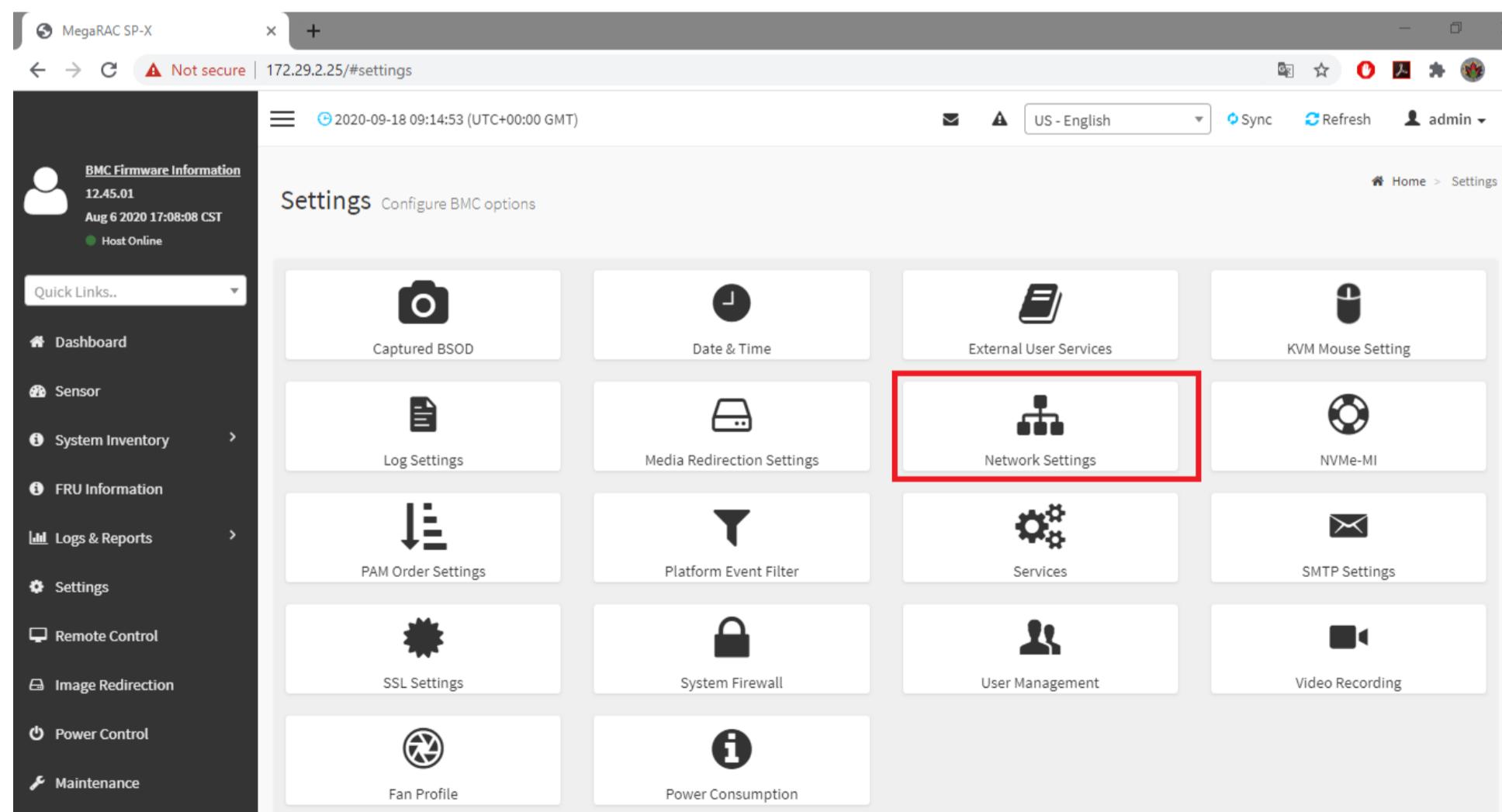


Step 3: When main menu of BMC appears then click on the **Settings**



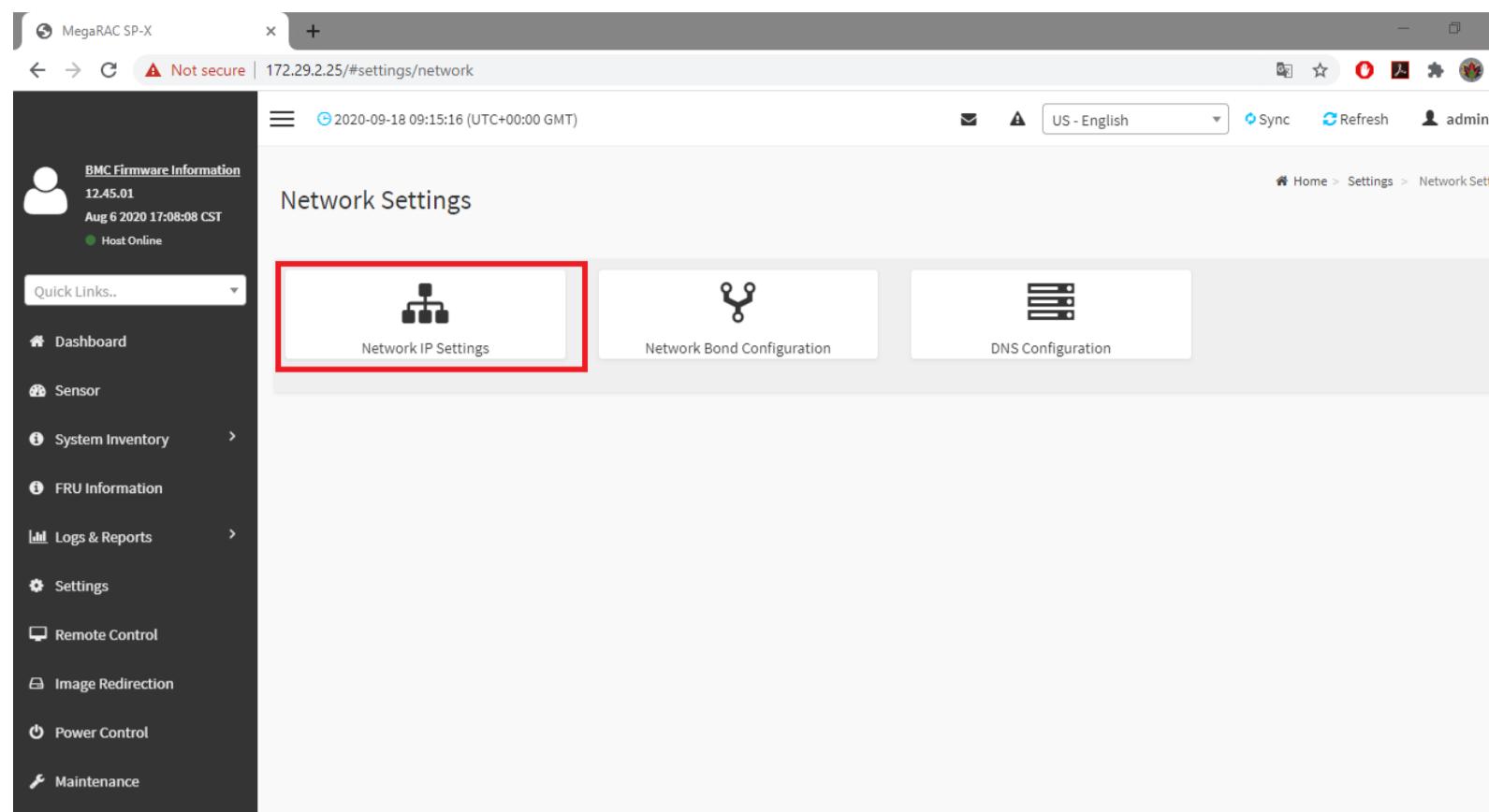
The screenshot shows the BMC Dashboard interface. On the left, there is a sidebar with various links: BMC Firmware Information, Quick Links, Dashboard, Sensor, System Inventory, FRU Information, Logs & Reports, Settings (which is highlighted with a red box), Remote Control, Image Redirection, Power Control, Maintenance, and Sign out. The main area displays several metrics: Power-On Hours (1 d 17 hrs), Pending Deassertions (58), Access Logs (13), and two circular charts for system events (5 events and 30 events). A green box on the right indicates that Sensor Monitoring is active and all sensors are good now.

Step 4: Select the **Network Settings**

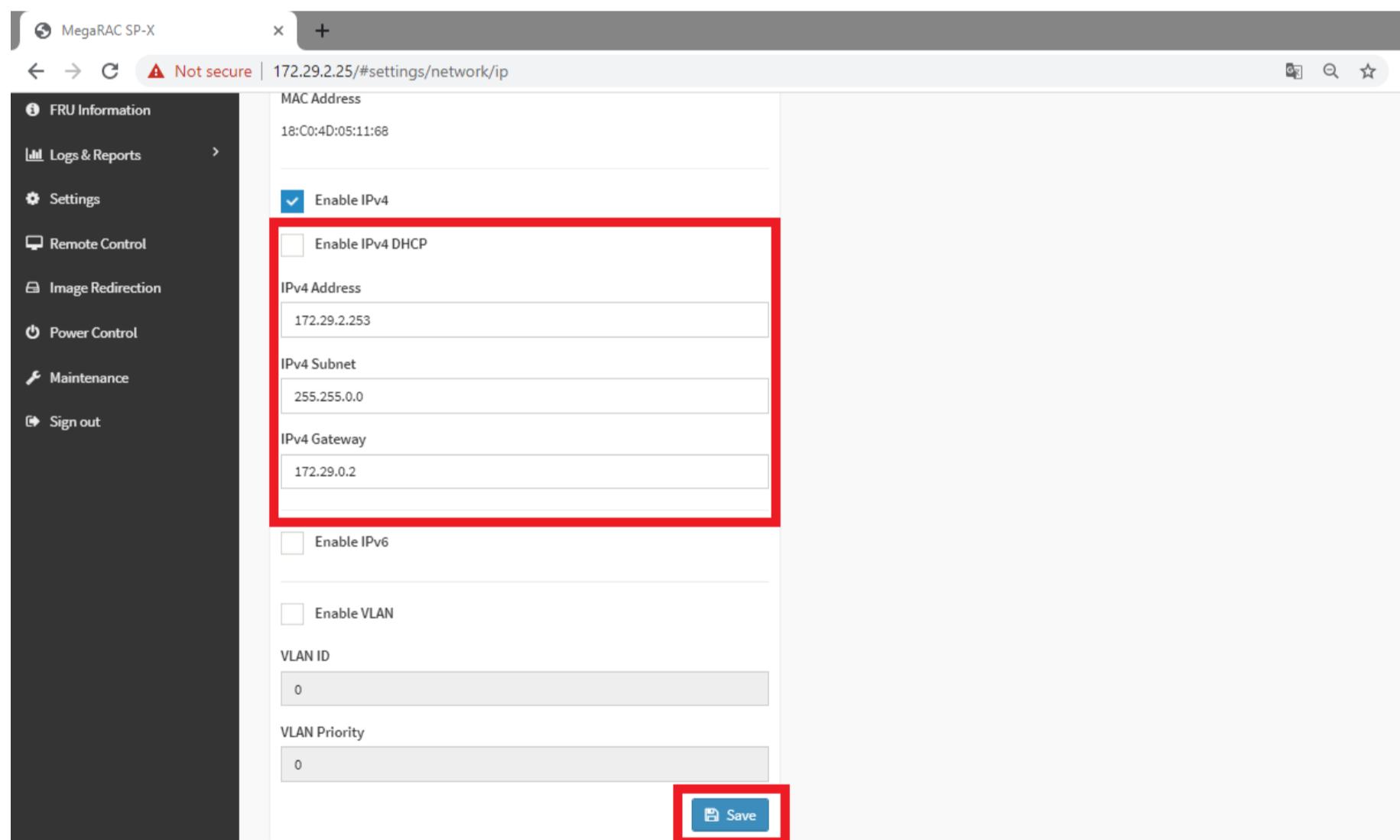


The screenshot shows the BMC Settings page. The sidebar is identical to the previous dashboard screenshot. The main area contains a grid of settings icons. The 'Network Settings' icon, which features a server tower icon, is highlighted with a red box.

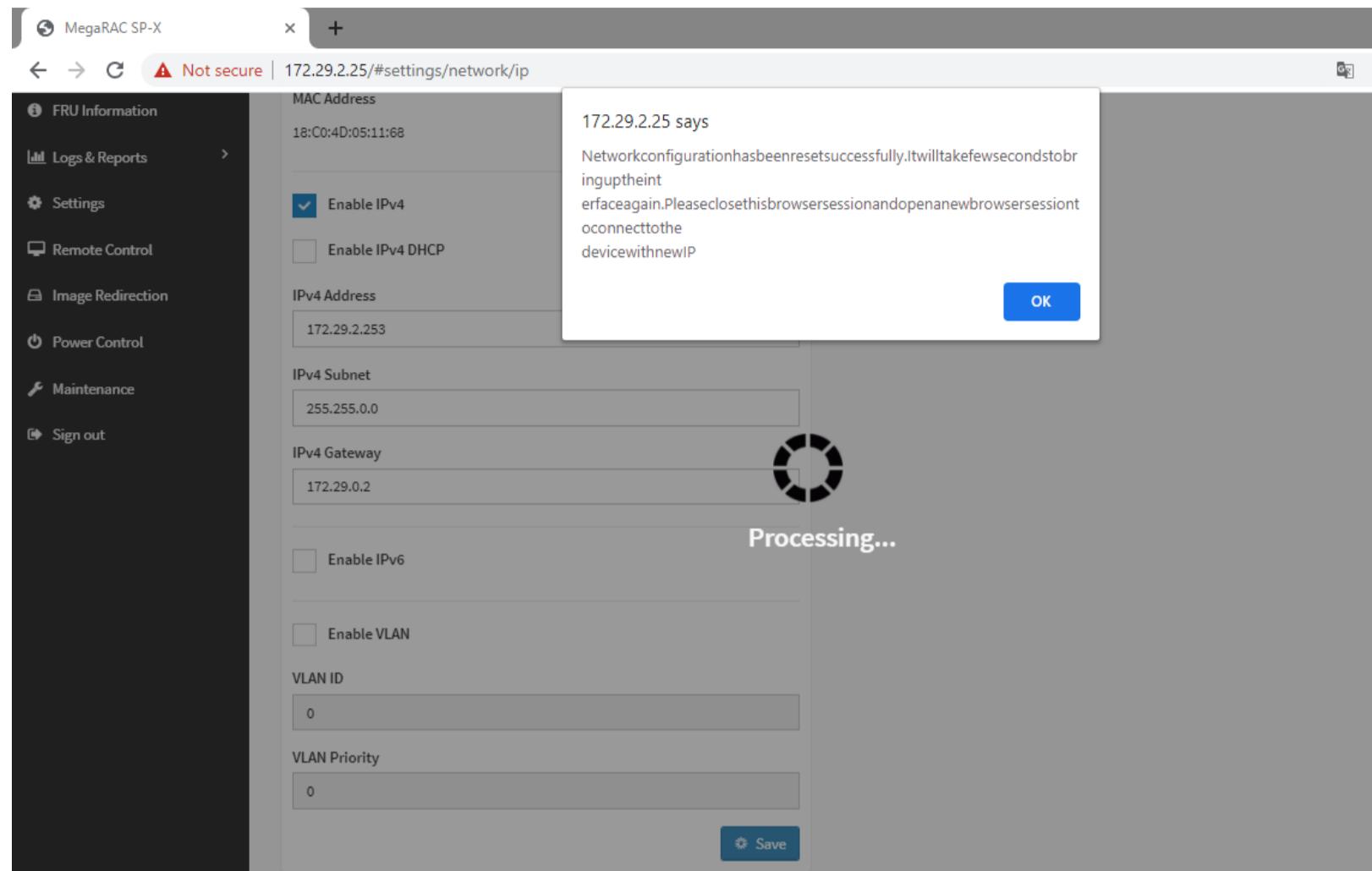
Step 5: Select the Network IP Settings



Step 6: Uncheck the Enable IPv4 DHCP, then enter the IPv4 Address, IPv4 Subnet and IPv4 Gateway and then click on Save.

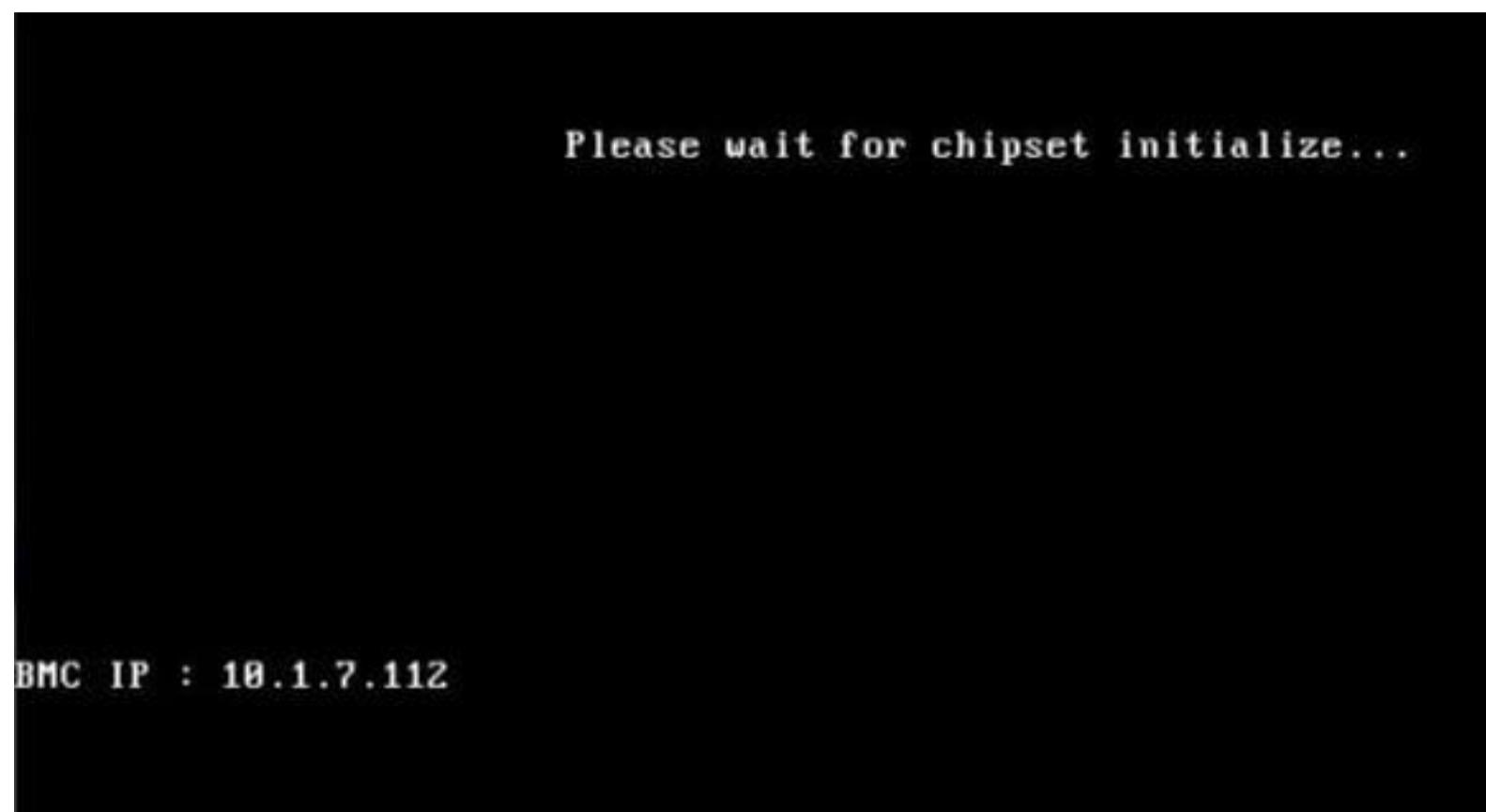


Step 7: Click on **OK** and close the browser tab or browser. Launch the browser or new tab with the new **BMC IP Address** to verify if the changes has been successful.



27. Configuring Management Console Network

In order to configure the Management Console, Turn ON the system and note down the BMC IP as seen below.



28. Using the Web User Interface

The BMC firmware features an embedded web server, enabling users to connect to the BMC using a web browser. The web server should support four concurrent connections.

The Web user interface (GUI) is used to configure, monitor and administer the Orion HF310-G4 systems. This Web-based GUI is supported on the following web browsers.

Microsoft Windows:

- Internet Explorer 8 ~ 11
- Google Chrome Google chrome Version 29.0.1547.66m or later
- Mozilla® Firefox® 2.0 or later

Linux:

- Mozilla Firefox 2.0 or later

29. Accessing the Management Console

1. Open a web browser and type in your identified BMC IP.
2. A dialog box prompts you to enter Username and Password.



3. Enter the following values:

Username: **ADMIN**

Password: **ADMIN**

OR

Username: **admin**

Password: **password**

(i) Note: When you log in using the root user name and password, you have full administrative powers. The recommendation is that once you log in, you change the root password.

30. Viewing and Configuring the Management Console

After you successfully log into your Management Console, the Remote Management Console GUI appears.

29.1 Properties

The **Properties** page displays the platform and firmware version of current remote client system.

The screenshot shows the 'Properties' page of the GIGABYTE Embedded Management Software. The left sidebar contains a navigation menu with sections such as EMS (highlighted with a red box), Configuration, Network, Network Security, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, Sensor Monitor, Power, Control, Consumption, System Event Log, Event Management (Platform Events, Trap Settings, Email Settings, Serial Over LAN), vKVM & vMedia (Launch, Configuration), and Hardware (CPU, Memory, Storage, PSU Information, System NIC, PCIE). The main content area is titled 'Properties' and contains two tables: 'Platform Information' and 'Firmware Information'. The 'Platform Information' table includes rows for Manufacturer (Clara Technologies), Product Name (ORION HF310-G4), BIOS Version (F26), and BIOS Release Date (04/08/2019). The 'Firmware Information' table includes rows for Product Name (MergePoint EMS), Product Information (MergePoint Embedded Management Software), Firmware Version (1.78), Firmware Updated (10 Apr 2019, 17:48:26 (UTC+0000)), and ASIC Type (ast2500). A 'Refresh' button is located in the top right corner of the main content area. At the bottom right, a welcome message reads 'Welcome ADMIN (Administrator) ! Thu Jan 01 1970, 01:54:48 (UTC+0000)'.

29.2 Configuration Network

In the **Configuration Network** page, you can view and modify the network settings on this screen. Select the Network **Mode** from the drop-down list.

29.2.1 Dedicated Mode

When set to Dedicated Mode, you can configure the BMC related settings through the BMC port.

29.2.2 Shared Mode

When set to Shared Mode, you can configure the BMC related settings through the NIC2 port. (Shared NIC Mode)

NOTE: Function available on selected models.

29.2.3 Failover Mode

When set to Failover Mode, you can configure the BMC related settings through the BMC or NIC2 port. (Backup Mode)

When you finish configuration, click **Apply Change**.

Please note that the changes may not take effect immediately, click "**Refresh**" to take effect of changes.

NOTE: Function available on selected models.

General Settings

To change the Network settings may change IP address settings.
Each change to settings may cause a loss in connectivity and the termination of all sessions.
Changes may not take effect immediately.

Mode	Dedicated
Host Name	GIGABYTE-01234567890123456789A
DNS Domain Name	pe.local
Global DNS	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Global Dynamic DNS	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled <input type="radio"/> By Interface

Network Interface Configuration

Name	iF Enabled	IPv4 Enabled	IPv4 Address	IPv6 Enabled	IPv6 Address
eth1	Enabled	Enabled	172.2.2.64	Enabled	View

29.3 Network Security

You can configure the network security settings on this screen. Check the **IP Blocking Enabled** box and input the desire value of **IP Blocking Fail Count**, **IP Blocking Fail Window**, and **IP Blocking Penalty Time**. After you finish the configuration, click **Apply Change** to save the settings.

The screenshot shows the 'Network Security' configuration page. On the left, a sidebar menu lists various management categories like EMS, Configuration, Network, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, and Hardware. The 'Network Security' option under the 'Network' section is highlighted with a red box. The main content area is titled 'Network Security' and contains a brief description: 'Use this page to configure the network security settings.' Below this is a table with four rows:

Setting	Value	Unit
IP Blocking Enabled	<input type="checkbox"/>	
IP Blocking Fail Count	5	
IP Blocking Fail Window	60	Seconds
IP Blocking Penalty Time	300	Seconds

A blue 'Apply Changes' button is located in the top right corner of the main content area.

29.4 Security

The **Security** page shows the current certificate status.

To generate a new certificate, click **Generate Certificate**.

To upload a certificate, click **Upload Certificate**.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar has a tree view with nodes like EMS, Server Information, Hardware, etc. The 'Security' node is selected and highlighted with a red box. The main content area is titled 'Security' and contains a section titled 'Current Certificate:' with detailed certificate information. At the top right of the main area are two buttons: 'Generate Certificate' and 'Upload Certificate'. The browser address bar shows the URL as https://172.2.2.64/index.html, and the status bar indicates 'Not secure'.

Current Certificate:

```
Serial Number      : D04477A404A37178
Subject Information:
Country Code (CC)   : US
State (S)          : FL
Locality (L)        : Sunrise
Organization (O)    : Avocent
Organizational Unit (OU) : AE55
Common Name (CN)     : avocent.com

Issuer Information:
Country Code (CC)   : US
State (S)          : FL
Locality (L)        : Sunrise
Organization (O)    : Avocent
Organizational Unit (OU) : AE55
Common Name (CN)     : avocent.com

Valid From         : 09 Mar 2017, 06:10:15 (UTC+0000)
Valid To           : 07 Mar 2027, 06:10:15 (UTC+0000)
```

29.5 Users

In the **Users** page is to configure a specific user, click the User ID. To display new user information, click **Refresh**. **NOTE:** BMC convention for enabling an ‘anonymous’ login is to configure the entry for User ID 1 with a null username (all zero’s) and a null password (all zero’s). Applications may then present this to the user as an anonymous login.

To configure a particular user, click the User ID. If Password policy check is enabled, password strength checking will be enabled while updating user configuration.

Password Policy Check Enable

User ID	State	User Name	User Role	IPMI LAN Privilege	IPMI Serial Privilege	Serial Over LAN
1	Disabled		None	Administrator	Administrator	Enabled
2	Enabled	admin	Administrator	Administrator	Administrator	Enabled
3	Enabled	ADMIN	Administrator	Administrator	Administrator	Enabled
4	Disabled		None	None	None	Disabled
5	Disabled		None	None	None	Disabled
6	Disabled		None	None	None	Disabled
7	Disabled		None	None	None	Disabled
8	Disabled		None	None	None	Disabled
9	Disabled		None	None	None	Disabled
10	Disabled		None	None	None	Disabled
11	Disabled		None	None	None	Disabled
12	Disabled		None	None	None	Disabled
13	Disabled		None	None	None	Disabled
14	Disabled		None	None	None	Disabled
15	Disabled		None	None	None	Disabled
16	Disabled		None	None	None	Disabled

29.6 Services

In the **Services** page, you can configure the web server parameters (such as, HTTP Port Number, HTTPS Port Number, and Timeout) on a remote computer. By default, the timeout is 1800 seconds. When you finish the configuration, click **Apply Changes**.

The screenshot shows the 'Services' page of the GIGABYTE Embedded Management Software. The left sidebar contains a navigation tree with categories like EMS, Configuration, System Event Log, Event Management, and Hardware. The 'Services' node under Configuration is highlighted with a red box. The main content area is titled 'Web Server' and displays configuration settings in a table:

HTTP Port Number	80
HTTPS Port Number	443
Timeout	1800 seconds
Max Sessions	32
Active Sessions	1

A blue 'Apply Changes' button is located in the top right corner of the content area.

29.7 IPMI

The IPMI page contains two sections: **IPMI Serial** and **IPMI Settings**.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar has a tree view with categories like EMS, IPMI, and Hardware. The IPMI category is expanded, and the IPMI node is selected, highlighted with a red box. The main content area has two tabs: 'IPMI Serial' and 'IPMI Settings'. Under 'IPMI Serial', there are four configuration fields: 'Enable IPMI Serial' (checkbox checked), 'Connection Mode Settings' (dropdown set to 'Direct Connect Basic Mode'), 'Baud Rate' (dropdown set to '57.6 kbps'), and 'Flow Control' (dropdown set to 'None'). There is also a 'Channel Privilege Level Limit' dropdown set to 'Administrator'. Under 'IPMI Settings', there are three fields: 'Enable IPMI Over LAN' (checkbox checked), 'Channel Privilege Level Limit' (dropdown set to 'Administrator'), and 'Encryption Key' (a long string of zeros). At the top right of the main area is a blue 'Apply Changes' button.

29.7.1 IPMI Serial

There are four serial configuration in IPMI Serial: **Connection Mode Settings**, **Baud Rate**, **Flow Control**, and **Channel Privilege Level Limit**.

The Connection Mode Settings allows user to select the Console redirection type and to manage the system from a remote location.

Once the connection mode is set, select the Baud Rate and Flow Control from the drop-down list.

With Channel Privilege Level Limit, users can be configure to operate with a particular maximum Privilege Level. Privilege levels tell the BMC which commands are allowed to be executed. The following table shows the Channel Privilege Level.

Users	This may be considered the lowest privilege level.
Operator	All BMC commands are allowed, except for configuration commands that can change the behavior of the out-of-band interfaces. For example, Operator privilege does not allow the capability to disable individual channels, or change user access privileges.
Administrator	All BMC commands are allowed, including configuration commands. An Administrator can even execute configuration commands that would disable the channel that the Administrator is communicating

29.7.2 IPMI Settings

IPMI Settings provides remote configuration over LAN. To activate IPMI remote configuration by LAN, check **Enable IPMI over LAN** option, define the **Channel Privilege Level Limit**, and enter the **Encryption Key**.

When you finish the configuration, click **Apply Changes**.

29.8 Time Settings

This page provides the mechanism to configure the Network Time acquisition method. With Administrator or Operator privilege level, you can modify configuration settings and click the **Apply Changes** button to execute the settings, as well as click the **Sync Time Now** button (when in **Requested Mode**) to request an immediate clock set.

29.8.1 Operation Mode

Configures the NTP Mode. You can Disable NTP, set **Requested Mode**, or **Daemon Mode** in this parameter.

In **Requested Mode**, you can request an immediate clock synchronization with the NTP server; request will be sent when click the Sync Time Now button.

The **Daemon Mode** runs NTP daemon, which sends a NTP request at approximately 5-minute intervals. Multiple NTP servers may be specified to provide redundancy.

29.8.2 Time Synchronization Method

Specifies the synchronization method for Requested Mode. Select **Slew mode** when you want to adjust the time smoothly over time if there are time sensitive applications in place. Select **Step mode** to aggressively change the time using `settimeofday()` system call.

Not secure | https://172.2.2.64/index.html

Support Help About Logout

GIGABYTE™

Time Settings

Use this page to configure the Network Time Protocol and Time Zone settings.

Network Time Protocol

Operation Mode	Disabled
NTP Server 1	
NTP Server 2	
NTP Server 3	
Requested Mode's Update Frequency (minutes)	3
Time Synchronization Method	<input type="radio"/> Step Mode <input checked="" type="radio"/> Slew Mode

Time Zone Setting

The Client Time Zone can be changed from the operating system.

Use Server or Client Time Zone	<input type="radio"/> Server Time Zone <input checked="" type="radio"/> Client Time Zone		
Server Time Zone	UTC	Select...	Set to UTC

29.9 Language

This page allow users to choose preferred language when using the WebUI.

When you finish the configuration, click **Apply Change**.

The screenshot shows the GIGABYTE Embedded Management Software WebUI. The top navigation bar includes links for Support, Help, About, and Logout. The main header features the GIGABYTE logo. On the left, a vertical sidebar menu lists various management categories: EMS (Properties, Configuration - Network, Network Security, Security, Users, Services, IPMI, Time Settings, Language), Sessions (LDAP, Update, Utilities, Fan Profiles), Server Information (Sensor Monitor, Power - Control, Consumption, System Event Log, Event Management - Platform Events, Trap Settings, Email Settings, Serial Over LAN), vKVM & vMedia (Launch, Configuration), and Hardware (CPU, Memory, Storage, PSU Information, System NIC, PCIE). The central content area is titled "Language" and contains a sub-instruction: "This page provides the language display setting for WebGUI, Virtual KVM Viewer, and Virtual Media Session." Below this is a form with a "Language" dropdown menu set to "English ▾". At the bottom right of the content area are "Apply Changes" and "Refresh" buttons.

29.10 Session

This page displays information on Active Sessions. Additionally, the trashcan icon provides the delete function for privileged users. Click Session log to view the session log. Click Refresh to refresh the Sessions status.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with sections like EMS, Server Information, and Hardware. The 'Sessions' link in the EMS section is highlighted with a red box. The main content area is titled 'Sessions' and contains a table with one row of data. The table has columns for Session ID, User Name, IP Address, Session Type, and Kill. The data row shows Session ID 1, User Name admin, IP Address 172.2.0.6, Session Type GUI, and Kill N/A. Below the table, a note says: 'Use this page to view information about the active sessions. Additionally, privileged users can click on the trash can icon to kill an active session.' At the top right, there are links for Support, Help, About, and Logout.

Session ID	User Name	IP Address	Session Type	Kill
1	admin	172.2.0.6	GUI	N/A

29.11 LDAP

The **LDAP** page allows download user list of LDAP server then create Management Console user account from this list directly.

Check the box below to enable LDAP authentication and enter the required information to access the LDAP server. Click **Apply Changes** to save your changes.

The screenshot shows the 'LDAP Configuration Page' of the GIGABYTE Embedded Management Software. The left sidebar contains a navigation menu with various sections like EMS, Configuration, Network, Security, Users, Services, IPMI, Time Settings, Language, Sessions, **LDAP**, Update, Utilities, Fan Profiles, Server Information, Sensor Monitor, Power, Control, Consumption, System Event Log, Event Management, Platform Events, Trap Settings, Email Settings, Serial Over LAN, vKVM & vMedia, Launch, Configuration, Hardware, CPU, Memory, Storage, PSU Information, System NIC, and PCIE. The 'LDAP' option is highlighted with a red box. The main content area is titled 'LDAP Configuration Page' and contains a sub-instruction 'Use this page to configure Lightweight Directory Access Protocol (LDAP.)'. Below it is a section titled 'Enable LDAP' with a checked checkbox. A note says 'Before uploading certificate, any change to Certificate File Path should be saved.' There is a 'File Path' input field showing '/etc/certs/cacerts/ldap.cert' with a 'Choose File' button and an 'Upload Certificate' button. The configuration form includes fields for 'Enable Encryption for LDAP client' (checked), 'Validate Server Certificate at Binding' (unchecked), 'Certificate File Path' ('/etc/certs/cacerts/ldap.cert'), 'Use DNS to find servers' (unchecked), 'Domain Source' ('Use Domain from Login'), 'Domain Name for DNS SRV request' ('ldap'), 'Service Name' ('ldap'), 'Domain Controller 1' (empty), 'Domain Controller 1's Port' ('389'), 'Domain Controller 2' (empty), 'Domain Controller 2's Port' ('389'), 'Domain Controller 3' (empty), 'Domain Controller 3's Port' ('389'), 'Base Domain Name' (empty), 'UID Search Object value' ('sAMAccountName'), 'Group Filter' (empty), 'Binding Method' ('Use Login Credentials'), 'Client ID used with CC binding' (empty), 'Client Password used with CC binding' (empty), 'Group ID Attribute' ('memberOf'), and 'Attribute to query permission in group' (empty). At the top right are 'Apply Changes' and 'Refresh' buttons, and at the bottom right is a vertical scroll bar.

29.12 Updates

In the **Updates** page, the firmware can be updated remotely.

To update firmware, follow the instruction below:

1. Select Update Type.
2. Select the file on your local system by using **Browse**. Click **Upload** to update to the new version of firmware.

The screenshot shows the 'Firmware Update' page of the GIGABYTE Embedded Management Software. The left sidebar contains a navigation menu with several collapsed sections. The 'Update' section is expanded, showing options like 'Utilities', 'Fan Profiles', 'Server Information', 'Sensor Monitor', 'System Event Log', 'Hardware', and 'PSU Information'. The 'Update' option itself is highlighted with a red box. The main content area has a title 'Firmware Update' and a sub-section 'Upload'. It includes instructions: 'Select an image file and click upload. The upload process will terminate all other sessions including Virtual KVM Viewer and Virtual Media Session.' Below this, it says 'After the upload process is started, any attempt to refresh, logout or navigate away from the update page will restart the system.' There is a form with a dropdown 'Firmware Type' set to 'BMC', a 'File Path' input field containing 'Choose File No file chosen', and a blue 'Upload' button. A 'Dump Bios Image' button is located in the top right corner of the main content area. The browser's address bar shows the URL as <https://172.2.2.64/index.html>.

29.13 Utilities

The **Utilities** page provides BMC reboot and Factory default restore functions.

1. To reboot system, click **Reboot**.
2. To restore factory default, click **Factory Default**.
3. To update Logo, select the file on your local system using **Browse** and click **Update**.
4. To backup configuration, click on **Backup** under the Backup Configuration.
5. To restore configuration, select the file by clicking **Choose File** and then click on **Restore** under the Restore Configuration.
6. To backup certificate, Click on **Backup** under the Backup Certificate.
7. To restore certificate, select the file by clicking **choose File** and then click on **Restore** under the Restore Certificate.

The screenshot shows the 'Utilities' page of the GIGABYTE Embedded Management Software. The left sidebar has a navigation tree with 'Utilities' selected. The main content area contains several sections:

- Reboot:** Click 'Reboot' button to reboot Embedded Management Software.
- Factory Default:** Click 'Factory Default' button to reset Embedded Management Software to default.
- Update Logo:** The upload file should include logo_left.png and logo_background.png packaged as tar, and should smaller than 50KB.
File Path: Choose File (No file chosen)
- Backup Configuration:** Click 'Backup' button to Backup Configuration
- Restore Configuration:** Select a restore file to upload, Then Click 'Restore' button to restore configuration
File Path: Choose File (No file chosen)
- Backup Certificate:** Click 'Backup' button to backup certificate
- Restore Certificate:** Select a restore file to upload, Then Click 'Restore' button to restore certificate
File Path: Choose File (No file chosen)

29.14 Fan Profiles

The Fan Profiles page provides viewing and configuring the Fan Profiles. You can Import/Export the fan profiles as well.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with the following items:

- EMS
 - Properties
 - Configuration
 - Network
 - Network Security
 - Security
 - Users
 - Services
 - IPMI
 - Time Settings
 - Language
 - Sessions
 - LDAP
 - Update
 - Utilities
 - Fan Profiles
- Server Information
 - Sensor Monitor
 - Power
 - Control
 - Consumption
 - System Event Log
 - Event Management
 - Platform Events
 - Trap Settings
 - Email Settings
 - Serial Over LAN
 - vKVM & vMedia
 - Launch
 - Configuration
- Hardware
 - CPU
 - Memory
 - Storage
 - PSU Information
 - System NIC
 - PCIE

The main content area is titled "Fan Profiles". It displays a table with one row of data:

ID	Profile Name	Status	Action
1	default	Run	<button>Copy</button> <button>View</button> <button>Stop</button>

At the top right of the main content area, there are several buttons: "Support PCIE Device", "Import", "Export", "Add", and "Refresh".

29.15 Sensor Monitor

The **Sensor monitor** page provides general configuration for related system hardware monitoring.

To view the Probe list, click **Show Graph** and click **Refresh** to update current probe list.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with various options like EMS Properties, Configuration, Network, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, and Sensor Monitor (which is highlighted with a red box). The main content area has a title 'Sensor Monitor' and two sections: 'General Settings' and 'Probe List'. In 'General Settings', there are dropdown menus for 'Auto Refresh Interval' (set to 'Never Auto-Refresh'), 'Sensor Type' (set to 'Temperatures'), and 'Display Type' (radio buttons for 'All Sensors' and 'Active Sensors'). In the 'Probe List' section, there is a table with the following data:

Status	Probe Name	Reading	Lower Non-Critical	Upper Non-Critical	Lower Critical	Upper Critical	Lower Non-Recoverable	Upper Non-Recoverable
✓	CPU0_TEMP	21 °C	5 °C	90 °C	0 °C	92 °C	N/A	N/A
✓	CPU0_DTS	71 °C	N/A	N/A	N/A	N/A	N/A	N/A
✓	VR_P0_TEMP	32 °C	5 °C	92 °C	0 °C	100 °C	N/A	N/A
✓	VR_DIMM0_TEMP	34 °C	5 °C	92 °C	0 °C	100 °C	N/A	N/A
?	VR_DIMM1_TEMP	33 °C	5 °C	92 °C	0 °C	100 °C	N/A	N/A
?	GPU0_PROC	Unavailable	N/A	92 °C	N/A	96 °C	N/A	N/A
?	GPU1_PROC	Unavailable	N/A	92 °C	N/A	96 °C	N/A	N/A
✓	PDB_TEMP	27 °C	N/A	96 °C	N/A	99 °C	N/A	N/A
✓	PSU1_HOTSPOT	36 °C	N/A	105 °C	N/A	110 °C	N/A	N/A
✓	PSU2_HOTSPOT	35 °C	N/A	105 °C	N/A	110 °C	N/A	N/A

29.16 Power Control

The Power Control allows you to power on/off/cycle, Hard Reset/NMI/Soft off System the remote host system. Additionally you can see the remote power status.

To perform the power control operation, select the operation and click **Apply Changes**.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with sections like EMS, Server Information, Sensor Monitor, Power Control (which is highlighted with a red box), and Hardware. The main content area is titled "Power Control". It displays the "Power Status" as "ON" and a list of "Power Control Operations" with radio buttons for selecting actions: Power On System, Power Off System, Power Cycle System, Reset system, NMI, and Soft Off System. At the top right, there are "Apply Changes" and "Refresh" buttons. The top bar includes links for Support, Help, About, and Logout, along with browser navigation icons.

29.17 Power Consumption

This section allows user to configure the power policies for the system.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with the following items:

- EMS
 - Properties
 - Configuration
 - Network
 - Network Security
 - Security
 - Users
 - Services
 - IPMI
 - Time Settings
 - Language
 - Sessions
 - LDAP
 - Update
 - Utilities
 - Fan Profiles
 - Server Information
 - Sensor Monitor
 - Power
 - Control
 - Consumption
 - System Event Log
 - Event Management
 - Platform Events
 - Trap Settings
 - Email Settings
 - Serial Over LAN
 - vKVM & vMedia
 - Launch
 - Configuration
- Hardware
 - CPU
 - Memory
 - Storage
 - PSU Information
 - System NIC
 - PCIE

29.18 System Event Log

It records the event when sensor has an abnormal state. When the log matches the pre-defined alert, the system sends out the notification automatically, if it is pre-configured.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with sections like EMS, Configuration, Server Information, and Hardware. The 'System Event Log' option under 'Event Management' is highlighted with a red box. The main content area is titled 'System Event Log' and displays a table of events. The table has columns for Severity (all green checkmarks), Date/Time (all [System Boot]), and Description. The descriptions detail various system boot and software events. At the top right of the content area, it says 'System Event Count (Current / Maximum) 14 / 1024'. At the bottom right, there is a page number '11'.

Severity	Date/Time	Description
✓	[System Boot]	CPU0_Status: Processor sensor, Processor Presence detected was asserted
✓	[System Boot]	PS2_Status: Power Supply sensor, Presence detected was asserted
✓	[System Boot]	PS1_Status: Power Supply sensor, Presence detected was asserted
✓	[System Boot]	System Software event: System Event sensor, OEM System Boot Event was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, OEM System Boot Event was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: System Event sensor, Timestamp Clock Synch was asserted
✓	[System Boot]	System Software event: OS Boot sensor, boot completed - boot device not specific was asserted

29.19 Platform Event

A platform event filter (PEF) can trigger an action and generate an alert when a critical hardware-related event occurs. For each PEF, you can choose the action to be taken when a platform event occurs.

You can also choose to generate and send an alert when a platform event occurs. In the Platform Events screen, you can enable the generation of platform event alerts globally by clicking Global Alerting Enable.

When you finish the configuration, click **Apply Changes**.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with sections like EMS, Configuration, Network, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, Sensor Monitor, Power Control, Consumption, System Event Log, Event Management, and Platform Events. The 'Platform Events' item is highlighted with a red box. The main content area is titled 'Platform Events' and contains two tables. The first table, 'Platform Event Filters (PEF) Action Global Control List', lists actions: Reboot, Power Cycle, Power Off, and Generate PET, all of which have checkboxes checked. The second table, 'Platform Event Filters (PEF) List', shows a list of filters with columns for None, Reboot, Power Cycle, Power Off, and Generate PET. Most filters have the 'Generate PET' option checked. A note at the top of the table says 'Global Alerting Enable' and provides a note: '(This enables/disables both PEF and email alerts).'. At the bottom right of the main content area is a blue 'Apply Changes' button.

Filter Name	None	Reboot	Power Cycle	Power Off	Generate PET
All Type, Temperature Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Temperature Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Voltage Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Voltage Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Fan Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Fan Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Chassis Intrusion Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Processor Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Processor Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Power Supply Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Power Supply Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Memory Warning Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Memory Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Critical Interrupt Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>
All Type, Watchdog 2 Critical Filter	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>

29.20 Trap Settings

In the **Trap Settings** page, user can set the IPv4 and Ipv6 Destination List.

IPv6 and IPv4 are two completely separate protocols. IPv6 is not backwards compatible with IPv4, and IPv4 hosts and routers will not be able to deal directly with IPv6 traffic.

IPv6 has a significantly larger address space than IPv4. This results from the use of a 128-bit address, whereas IPv4 uses only 32 bits.

When you finish the configuration, click **Apply Changes**.

Trap Settings

Before sending test trap, please make sure changes to the target Destination and Community String have been saved by clicking Apply Changes.

IP Destination List

Destination	Enable	IPv4/IPv6	IP Address	Test
IP Destination 1	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 2	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 3	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 4	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 5	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 6	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 7	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap
IP Destination 8	<input type="checkbox"/>	<input checked="" type="radio"/>	0.0.0.0	Send Test Trap

Community String

Community Name	public
----------------	--------

29.21 Email Settings

If you want the alert to be sent by email, you can configure to specify the e-mail address, subject and message in the Email Settings. After you finish the configuration, click Apply Change to save the settings.

29.21.1 SMTP

Set E-mail (SMTP) server IP address for sending alert notification to user.

Check the SMTP Authentication **Enabled** box and enter the **SMTP IP address**, **User Name**, **Password**; select the **STARTTLS Mode** and **SASL Mode** from the drop-down list. When you finish the configuration, click “Apply Changes”.

The screenshot shows the GIGABYTE Embedded Management Software (EMS) interface. The left sidebar contains a navigation menu with several sections expanded, including 'EMS Properties', 'Configuration', 'Sessions', 'Server Information' (with 'Email Settings' highlighted and boxed in red), and 'Hardware'. The main content area is titled 'Email Settings'. It includes a 'Sender Information' section with a 'From' field set to 'server@ciaratech.com'. Below it is a 'Destination Email Addresses' table with four rows, each representing an 'Email Alert' with columns for 'Enable' (checkbox), 'Destination Email Address' (text input), 'Email Description' (text input), and 'Test' (button). Underneath is a 'SMTP (email) Server Settings' section with 'SMTP IP Address' (0.0.0.0) and 'SMTP Port Number' (25). At the bottom is a 'SMTP Authentication' section with fields for 'Enable' (checkbox checked), 'Username' (text input), 'Password' (text input), 'STARTTLS Mode' (dropdown set to 'AUTO'), and 'SASL Mode' (dropdown set to 'AUTO'). A note says 'Anonymous account will be used when authentication is disabled.' An 'Apply Changes' button is located at the top right of the form.

29.22 Serial Over LAN

You can configure the Serial Over LAN settings on this screen. Check the **Enable Serial Over LAN** box and select the **Baud Rate** and **Channel Privilege Limit** from the drop-down list. After you finish the configuration, click **Apply Change** to save the settings.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with the following items:

- EMS
- Properties
- Configuration
 - Network
 - Network Security
 - Security
 - Users
 - Services
 - IPMI
 - Time Settings
 - Language
- Sessions
- LDAP
- Update
- Utilities
- Fan Profiles
- Server Information
 - Sensor Monitor
 - Power
 - Control
 - Consumption
 - System Event Log
 - Event Management
 - Platform Events
 - Trap Settings
 - Email Settings
- Serial Over LAN
- VKVM & VMedia
 - Launch
 - Configuration
- Hardware
 - CPU
 - Memory
 - Storage
 - PSU Information
 - System NIC
 - PCIE

The "Serial Over LAN" item is highlighted with a red box. The main content area is titled "Serial Over LAN" and contains the following configuration fields:

Enable Serial Over LAN	<input checked="" type="checkbox"/>
Baud Rate	115.2 kbps
Channel Privilege Level Limit	Administrator

A blue "Apply Changes" button is located in the top right corner of the configuration area.

29.23 vKVM & vMedia

This screen allows you to start a Remote Console session with the host system.

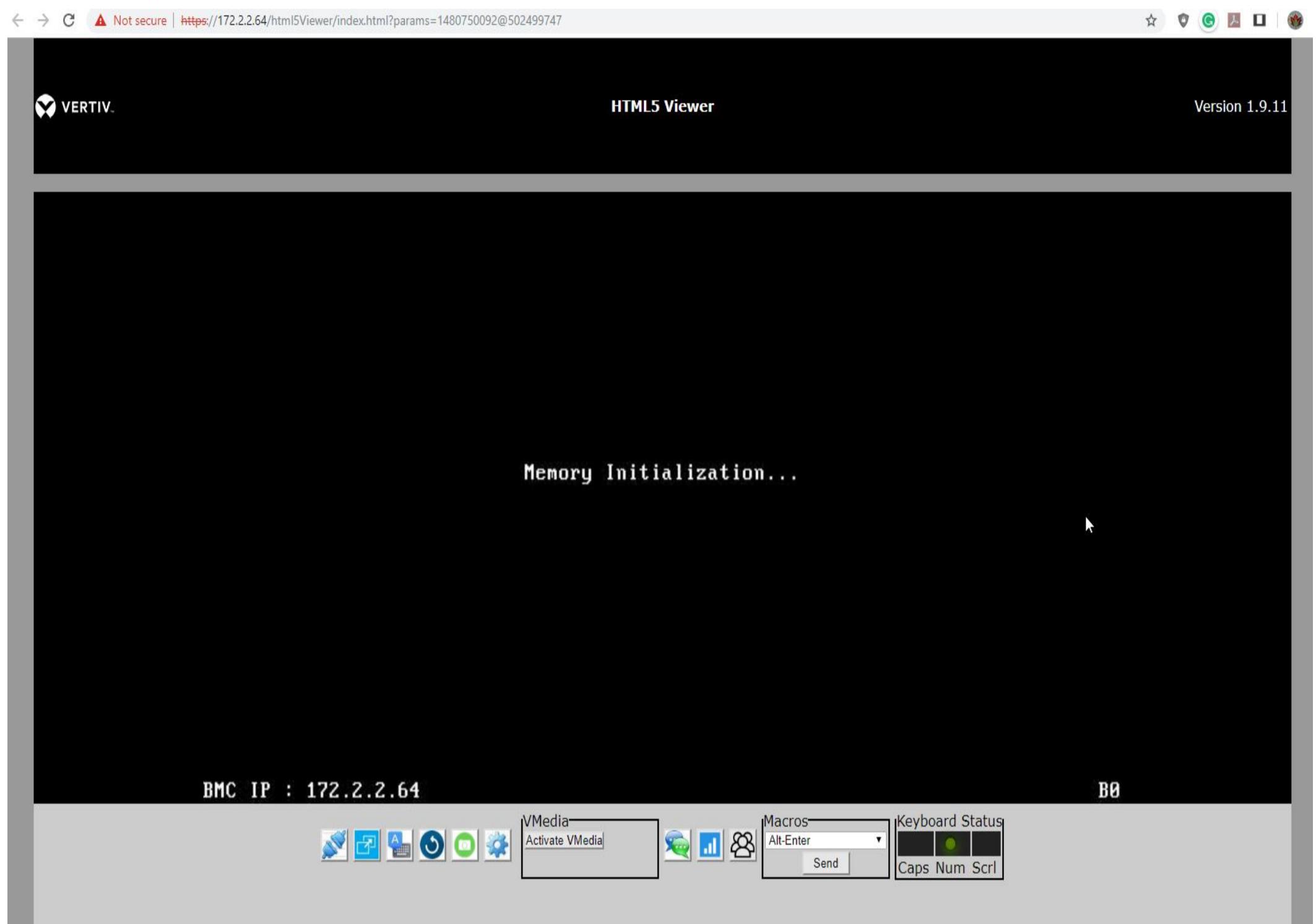
The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with several sections expanded, including EMS, Server Information, Event Management, and Hardware. The "vKVM & vMedia Launch" option under the EMS section is highlighted with a red box. The main content area is titled "Virtual KVM Viewer and Virtual Media Session Launch". It includes a "Launch HTML5 vKVM Viewer" button, a note about launching the KVM client, and a message stating "Unable to load console preview image." Below this are two tables: "Virtual KVM Viewer Configuration" and "Virtual Media Session Configuration".

Virtual KVM Viewer Configuration	
Enabled	Yes
Max Sessions	4
Active Sessions	0
Remote Port	2068
Video Encryption Enabled	Yes
Preferred Client Type	HTML5

Virtual Media Session Configuration	
Enabled	Yes
Max Sessions	1
Active Sessions	0
Encryption Enabled	No

29.24 Launching Java KVM Viewer

Click **Launch HTML5 vKVM Viewer** to launch the redirection console and manage the server remotely. After clicking the button, a console appears as below.



29.25 Virtual KVM Viewer and Virtual Media Session Configuration

This screen allows you to configure the Remote Console settings. Check the Virtual KVM Configuration **Enabled** box or Virtual Media Configuration **Enabled** box, and select the **Max Sessions**, **Remote Port**, **Video Encryption Enabled**, and **Preference Client** from the drop-down list. After you finish the configuration, click **Apply Change** to save the settings.

The screenshot shows the GIGABYTE Embedded Management Software (EMS) interface. The left sidebar contains a navigation menu with sections like EMS Properties, Configuration, Network, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, Sensor Monitor, Power, System Event Log, Event Management, Platform Events, Trap Settings, Email Settings, Serial Over LAN, vKVM & vMedia, Launch, and Configuration. The Configuration section is highlighted with a red box. The main content area is titled "Virtual KVM Viewer and Virtual Media Session Configuration". It includes a note about using this page to configure Virtual KVM Viewer and Virtual Media Session. Below the note are two configuration sections: "Virtual KVM Viewer Configuration" and "Virtual Media Session Configuration". The "Virtual KVM Viewer Configuration" section has fields for "Enabled" (checked), "Max Sessions" (set to 4), "Remote Port" (set to 2068), "Video Encryption Enabled" (checked), and "Preferred Client Type" (set to HTML5). The "Virtual Media Session Configuration" section has fields for "Enabled" (checked) and "Encryption Enabled" (unchecked). A blue "Apply Changes" button is located in the top right corner of the main content area.

Note: In the Preferred Client type you can change from by default **HTML5** to **JAVA**.

A zoomed-in view of the "Virtual KVM Viewer Configuration" section. The "Preferred Client Type" dropdown is highlighted with a red box. The dropdown menu shows two options: "Java" and "HTML5". The "HTML5" option is currently selected and highlighted in blue. The "Virtual Media Session Configuration" section is also visible below it.

29.26 CPU (Processor Information)

This **CPU** page displays the technical specifications of the installed processor.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with sections like EMS, IPMI, Sessions, LDAP, Update, Utilities, Fan Profiles, Server Information, System Event Log, Event Management, Serial Over LAN, vKVM & vMedia, and Hardware. The 'CPU' option under Hardware is highlighted with a red box. The main content area is titled 'Processor Information' and displays a table with the following data:

Status	Name	Processor Brand	Processor Version	Speed	State	Core Count
OK	CPU0	Intel(R) Corporation	Intel(R) Core(TM) i9-7980XE CPU @ 2.60GHz	2600 MHz	Processor Presence Detected	18

At the top right of the main content area are links for Support, Help, About, and Logout. There are also standard browser navigation icons at the very top of the page.

29.27 Memory

This **Memory** page displays the technical specifications of the installed memory.

Click **Refresh** to refresh current installed memory information.

The screenshot shows the 'Memory Information' page of the GIGABYTE Embedded Management Software. The left sidebar contains a navigation menu with sections like EMS, Server Information, Hardware, and Memory (which is highlighted with a red box). The main content area is titled 'Memory Information' and includes a 'Memory Attributes' table and a 'Individual Memory Details' table.

Memory Attributes

Installed Capacity	64 GB
Maximum Capacity	1536.00 GB
Slots Available	8
Slots Used	8
Error Correction	None

Individual Memory Details

Status	Connector Name	Type	Size	State	Rank	Speed
✓	DIMM_P0_A0	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_A1	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_B0	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_B1	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_C0	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_C1	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_D0	DDR4	8 GB	Presence detected	Single Rank	2133 MHz
✓	DIMM_P0_D1	DDR4	8 GB	Presence detected	Single Rank	2133 MHz

29.28 Storage

This page displays the connected hard disk drive and hardware health information.

Click Refresh to view connected hard disk drive hardware health status.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar has a tree view with nodes like EMS, Storage, Server Information, Hardware, and Storage (which is selected and highlighted with a red box). The main content area is titled 'Storage' and shows a detailed table for an Intel SSD. The table includes columns for Manufacturer (Intel), Firmware Version (L2010420), Serial Number (BTJR603203XT480BGN), Device Size (468.9 GB), and Security Status (Support). The table also lists various SATA capabilities and security settings.

Manufacturer	Firmware Version	Serial Number	Device Size	Security Status
Intel	L2010420	BTJR603203XT480BGN	468.9 GB	Support
Sata Capabilities				
SATA Gen1 signaling speed (1.5Gb/s)	Support			
SATA Gen2 signaling speed (3.0Gb/s)	Support			
SATA Gen3 signaling speed (6.0Gb/s)	Support			
Native Command Queueing (NCQ)	Support			
Host-initiated interface power management	No Support			
Phy event counters	Support			
Idle-Unload when NCQ is active	No Support			
NCQ priority information	No Support			
Host automatic Partial to Slumber transitions	No Support			
Device automatic Partial to Slumber transitions	No Support			
READ_LOG_DMA_EXT equivalent to READ_LOG_EXT	Support			
Security Status				
Enabled	No			
Locked	No			
Frozen	Yes			
Count expired	No			
Support Enhanced erase	Support			

29.29 PSU (Power Supply Unit)

This **PSU** page displays the connected Power Supply unit's information like Manufacturer, Serial number, Firmware version etc.

Click **Refresh** to view connected power Supply unit's status.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar contains a navigation menu with various options like EMS, Server Information, Hardware, and PSU Information (which is highlighted with a red box). The main content area is titled "PSU Information" and "PSU Status". It displays a table with two rows of data:

Name	Manufacturer	Product Name	Serial Number	FW Version	REV
1	COMPUWARE	CPR-1021-9M1	102191I07DB0814	53FFFFFFFFF00	REV1.0/20150828/0x000398394
2	COMPUWARE	CPR-1021-9M1	102191H52DB0104	55FFFFFFFFF00	REV1.0/20150828/0x000398394

29.30 System NIC

This **System NIC** page displays the connected network cards information.

Click **Refresh** to view the onboard LAN device related information.

The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar menu is open, showing various system management options. A red box highlights the 'System NIC' option under the 'EMS' section. The main content area is titled 'System NIC' and shows a tree view of network connections. The 'On Board' node is expanded, revealing the 'I350 Gigabit Network Connection' node, which further expands to show 'Port0' and 'Port1'. Below each port, its MAC address is listed: 'MAC e0:d5:5e:a5:ef:0c' for Port0 and 'MAC e0:d5:5e:a5:ef:0d' for Port1. At the top right of the content area, there are four buttons: 'Collapse All', 'Expand All', 'SMBIOS Download', and 'Refresh'.

29.31 PCIE (Peripheral Component Interconnect Express)

This PCIE page displays the on Board and Add in PCIE cards information.

Click Refresh to view the PCIE devices information.

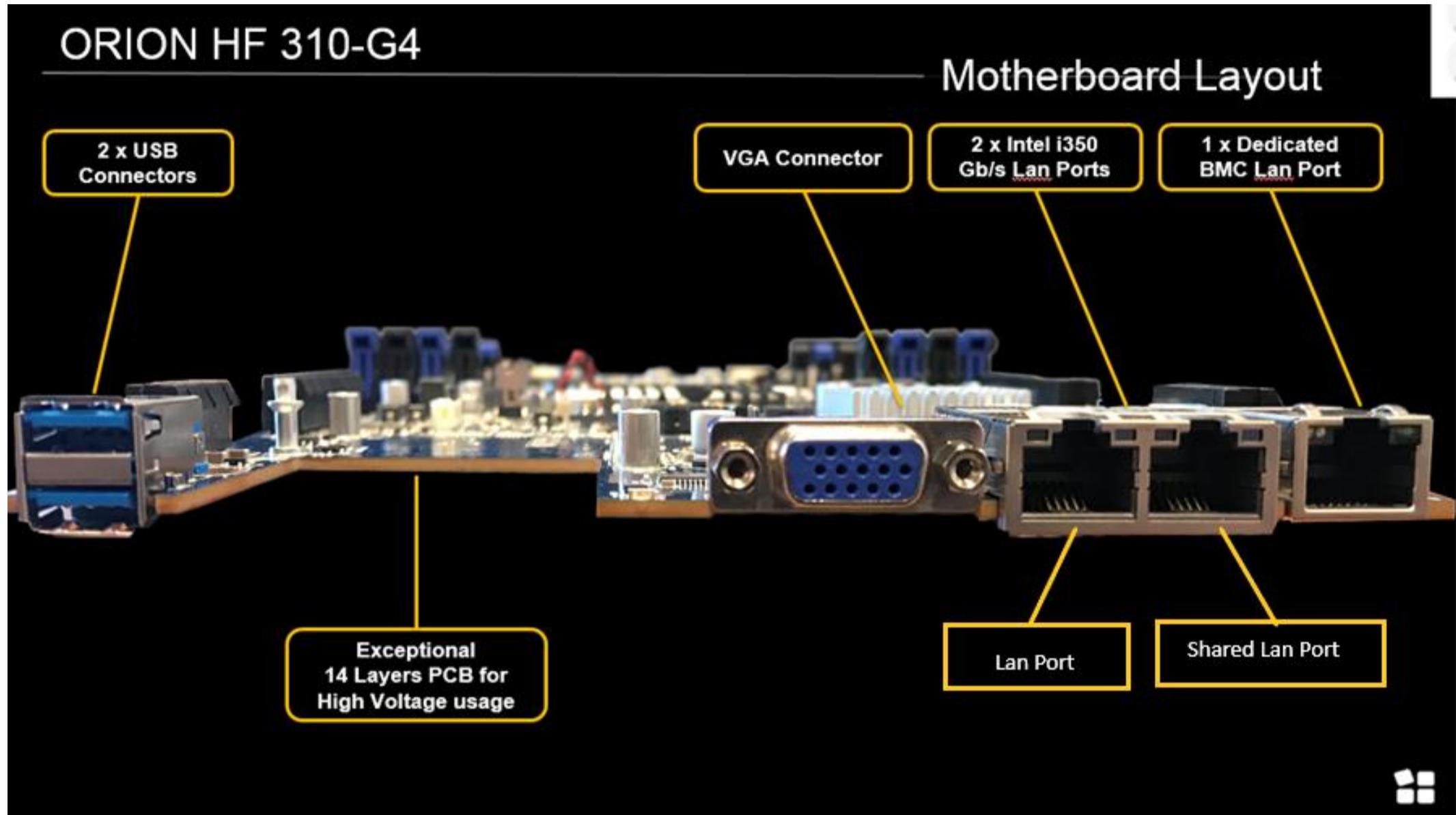
The screenshot shows the GIGABYTE Embedded Management Software interface. The left sidebar has a tree view with various system categories. The 'PCIE' node under the 'Hardware' category is highlighted with a red box. The main content area is titled 'PCIE' and contains a table of detected devices. The table has four columns: Manufacturer, Device Type, VendorID, and DeviceID. The data is organized into sections: 'On Board' (containing a 'Non-VGA unclassified device' and three 'I350 Gigabit Network Connection' entries), 'ASPEED Graphics Family' (one entry), 'AST1150 PCI-to-PCI Bridge' (one entry), 'Add In Card' (containing 'PCIE_1' and 'PCIE_2' sections). The 'PCIE_1' section includes 'MT27500 Family [ConnectX-3]' and 'MEZZ_1A1' entries. The 'PCIE_2' section includes 'MT27520 Family [ConnectX-3 Pro]' and 'M2_MKey1', 'M2_MKey2', 'U2_1', and 'U2_2' entries. Buttons at the top right include 'Collapse All', 'Expand All', 'SMBIOS Download', and 'Refresh'.

Manufacturer	Device Type	VendorID	DeviceID
TBS Technologies	Non-VGA unclassified device	0x544D	0x4124
Intel Corporation	Ethernet controller	0x8086	0x1521
Intel Corporation	Ethernet controller	0x8086	0x1521
ASPEED Technology, Inc.	VGA compatible controller	0x1A03	0x2000
ASPEED Technology, Inc.	PCI bridge	0x1A03	0x1150
Mellanox Technologies	Ethernet controller	0x15B3	0x1003
Mellanox Technologies	Ethernet controller	0x15B3	0x1007
M2_MKey1			
M2_MKey2			
U2_1			
U2_2			

31. Updating Bios and ME

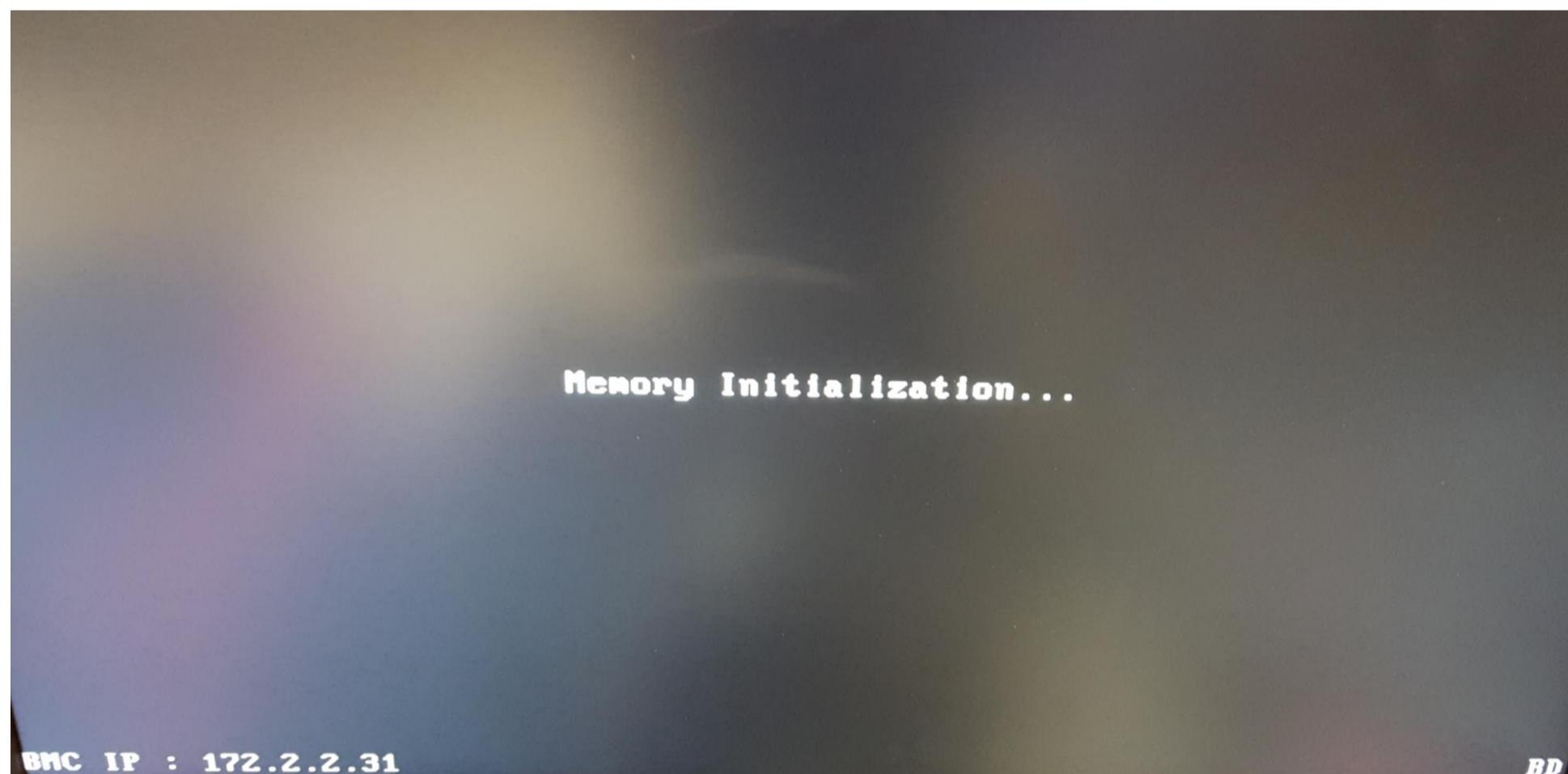
This section provides information on how to update the BIOS and ME through the BMC port.

Step 1: Insert the network cable in the dedicated BMC/IPMI Lan port.



Step 2: Turn ON the machine.

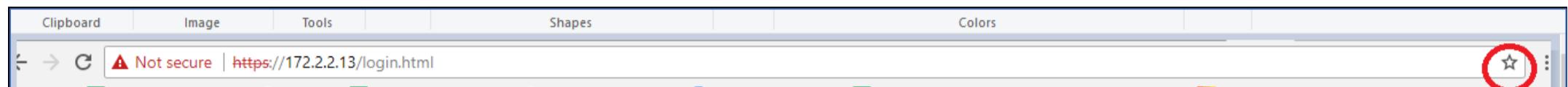
Step 3: Note down the **BMC IP** address detected as shown in the screenshot



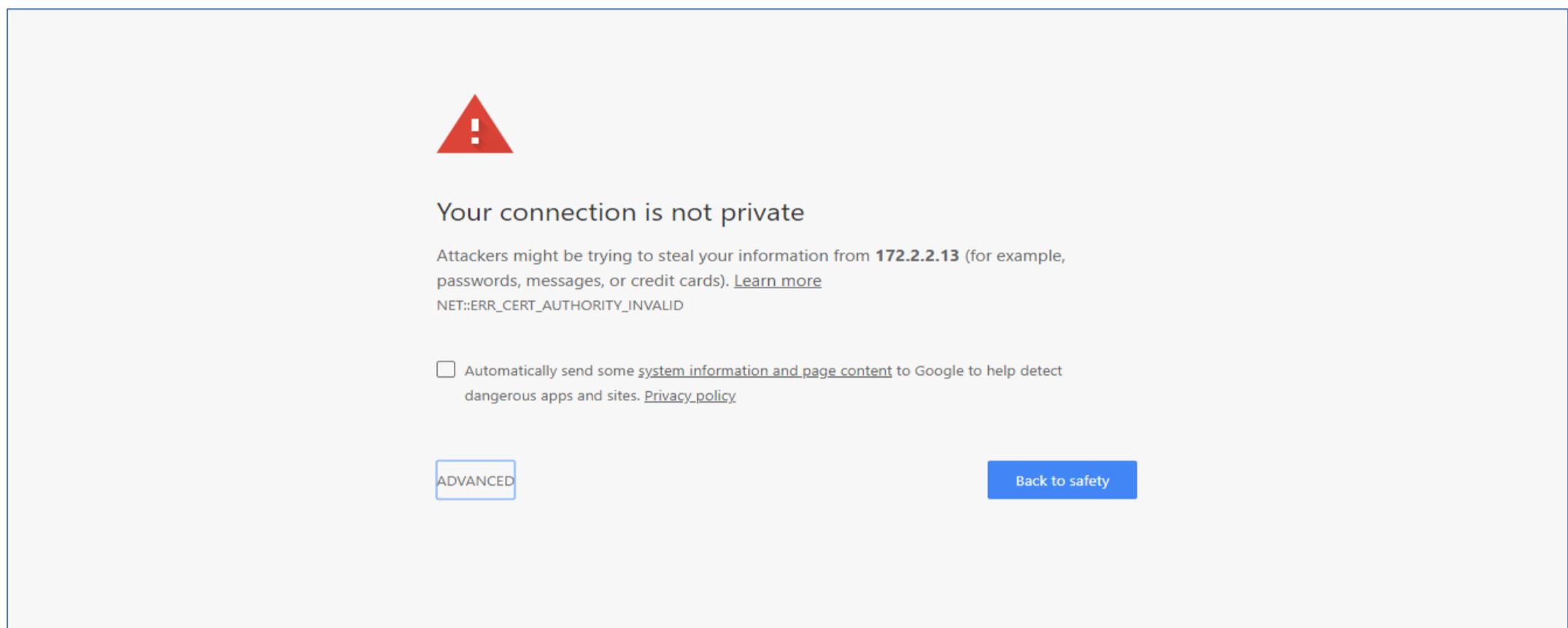
Step 4: Turn off the machine.

Step 5: Go to your computer and open a browser IE or Chrome and then put the BMC IP address on the address bar (ex: [<https://172.2.2.54>]) and press enter.

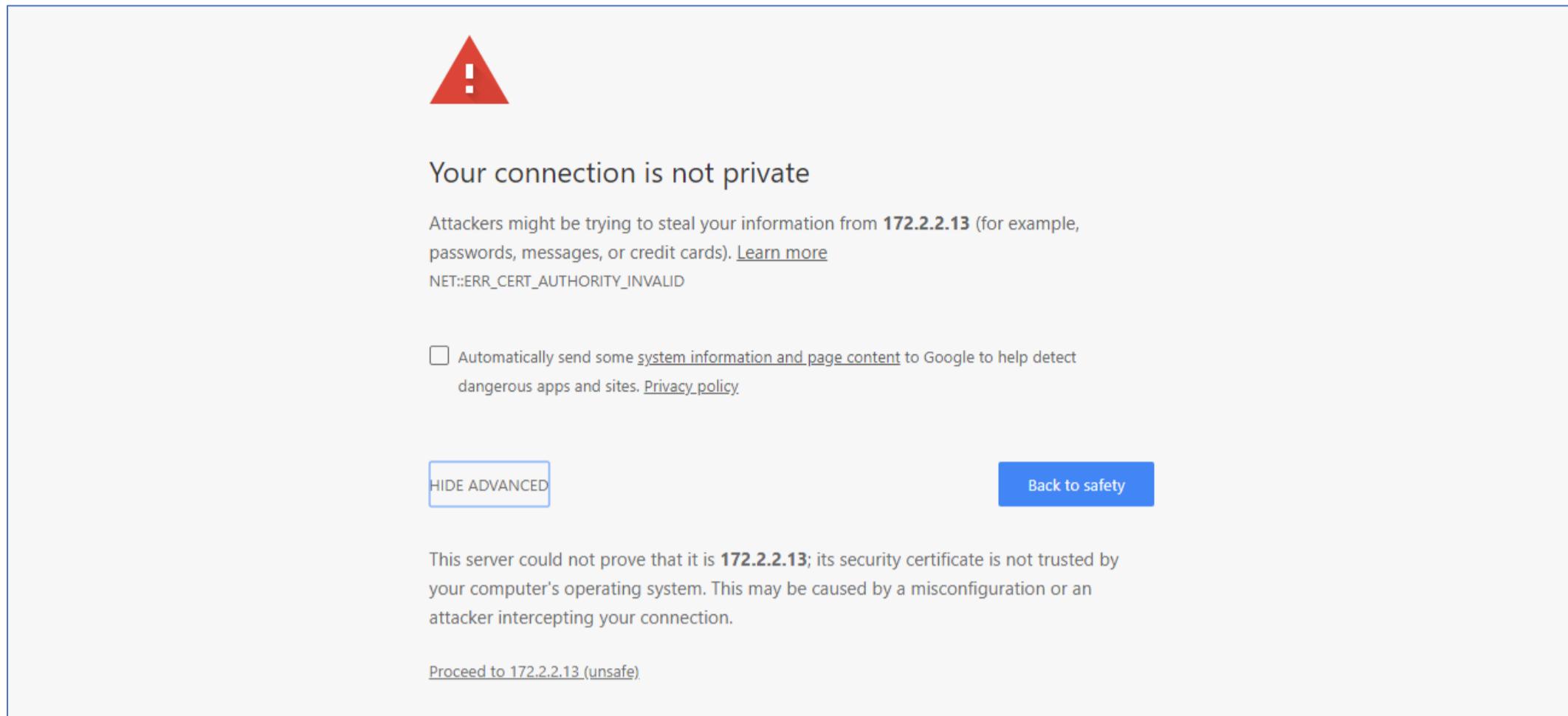
Step 6: If the web page does not open, you need to **ENABLE PRIVACY**



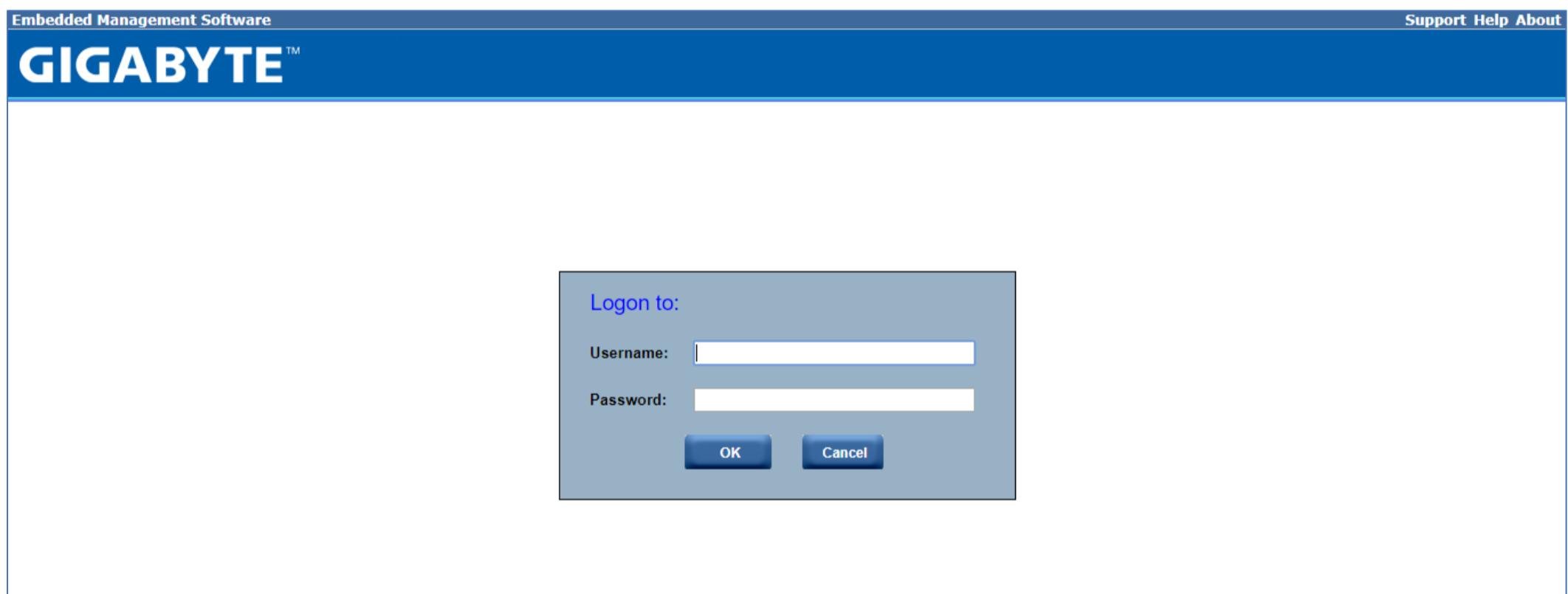
Step 7: Click **ADVANCED**



Step 8: Click **Proceed** to (.....) unsafe.



Step 9: Put **Username: ADMIN** and **Password: ADMIN**



Step 10: Go to **Update**.

Platform Information

Manufacturer	GIGABYTE
Product Name	GS-MH11-OC0-Y9
BIOS Version	F01
BIOS Release Date	02/14/2018

Firmware Information

Product Name	MergePoint EMS
Product Information	MergePoint Embedded Management Software
Firmware Version	1.43
Firmware Updated	01 Jan 1970, 01:06:52 (UTC+0000)
ASIC Type	ast2500

Welcome ADMIN (Administrator) ! Thu Jan 01 1970, 01:13:58 (UTC+0000)

Step 11: Select **BIOS & ME**

Firmware Update

Upload

Select an image file and click upload. The upload process will terminate all other sessions including Virtual KVM Viewer and Virtual Media Session.
After the upload process is started, any attempt to refresh, logout or navigate away from the update page will restart the system.

Firmware Type

File Path

Welcome ADMIN (Administrator) ! Thu Jan 01 1970, 01:14:44 (UTC+0000)

Step 12: Click on **Choose file**

The screenshot shows the 'Firmware Update' page of the GIGABYTE EMS software. On the left, there's a navigation menu with items like EMS, Properties, Configuration, Network, Network Security, Security, Users, Services, IPMI, Time Settings, Language, Sessions, LDAP, Update (which is selected), Utilities, Fan Profiles, Server Information, Sensor Monitor, Power, Control, Consumption, System Event Log, Event Management, Platform Events, Trap Settings, Email Settings, Serial Over LAN, vKVM & vMedia, Launch, Configuration, and Hardware (CPU, Memory). The main area is titled 'Firmware Update' and contains instructions: 'Select an image file and click upload. The upload process will terminate all other sessions including Virtual KVM Viewer and Virtual Media Session. After the upload process is started, any attempt to refresh, logout or navigate away from the update page will restart the system.' Below this is a form with 'Firmware Type' set to 'BIOS & ME', a 'File Path' field containing 'Choose File No file chosen', and a 'Upload' button. A 'Dump Bios Image' button is also visible.

Step 13: Select the file **Image.RBU** from your PC and press **Upload**

This screenshot shows a Windows file selection dialog box open over the EMS interface. The dialog box displays a list of files in the 'Documents' folder, with 'image.RBU' selected. The file path is shown as 'C:\Users\Public\Documents'. At the bottom of the dialog are 'Open' and 'Cancel' buttons. The background shows the 'Firmware Update' page with the 'Update' option selected in the sidebar. The 'Upload' button on the page is highlighted.

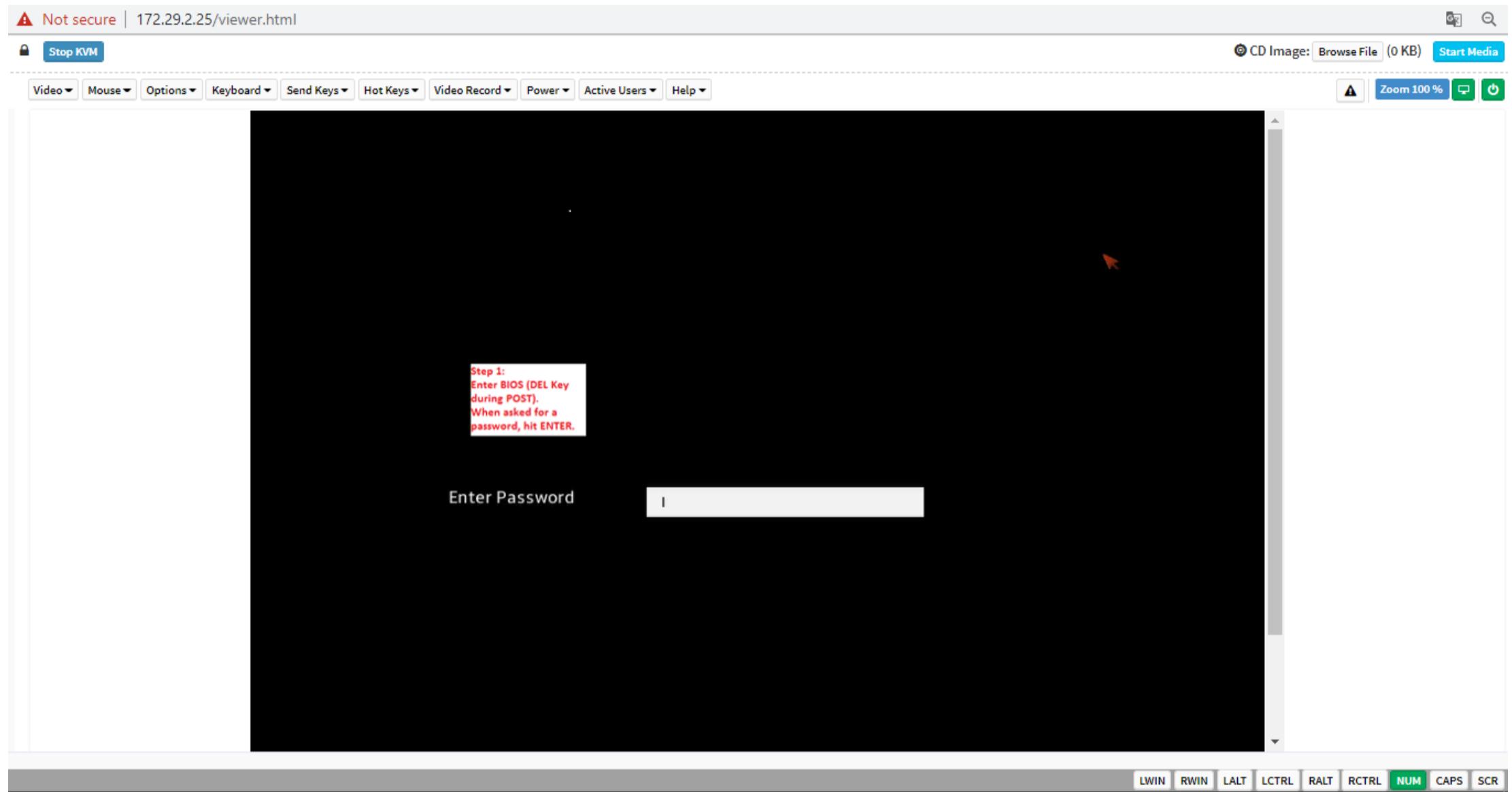
Step 14: Press **Update** and wait until is done 100%

The screenshot shows the 'Firmware Update' section of the GIGABYTE nbembeded Management Software. At the top, there's a navigation bar with links for Support, Help, About, and Logout. The main title is 'Firmware Update'. Below it, a sub-section titled 'Upload' contains instructions: 'Select an image file and click upload. The upload process will terminate all other sessions including Virtual KVM Viewer and Virtual Media Session. After the upload process is started, any attempt to refresh, logout or navigate away from the update page will restart the system.' A form field shows 'Firmware Type' set to 'BIOS & ME' and 'File Path' set to 'Choose File image.RBU'. A large blue 'Upload' button is to the right. Below this, the 'Firmware Image' section shows a status bar with 'Status' and 'None'. A message below says 'Upload is completed. Please click 'Update' to proceed firmware update or click 'Cancel' to terminate the update.' with two buttons: 'Update' and 'Cancel'.

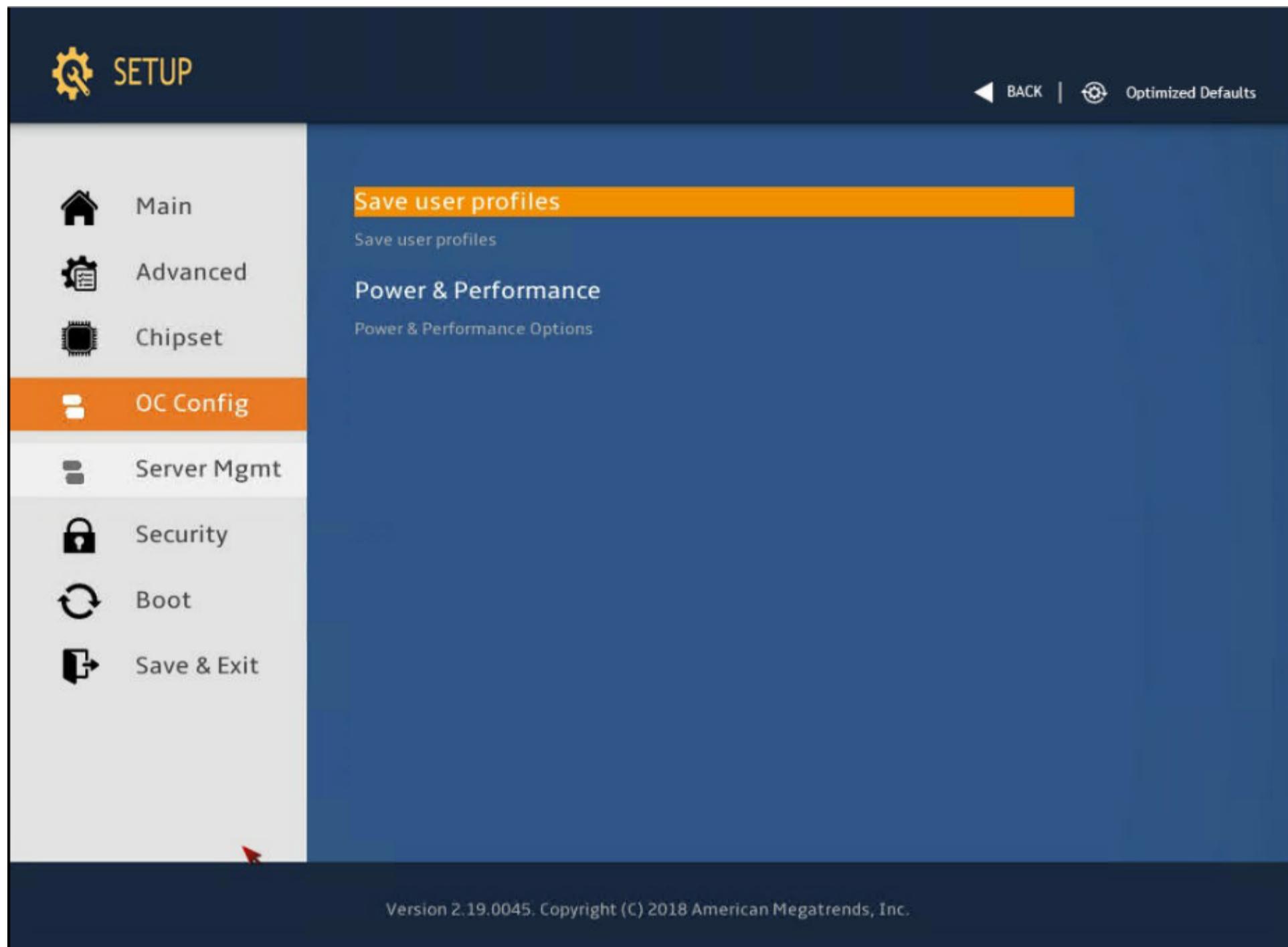
32. Profile Loading in BIOS

This section provides information on how to upload the profile in the BIOS.

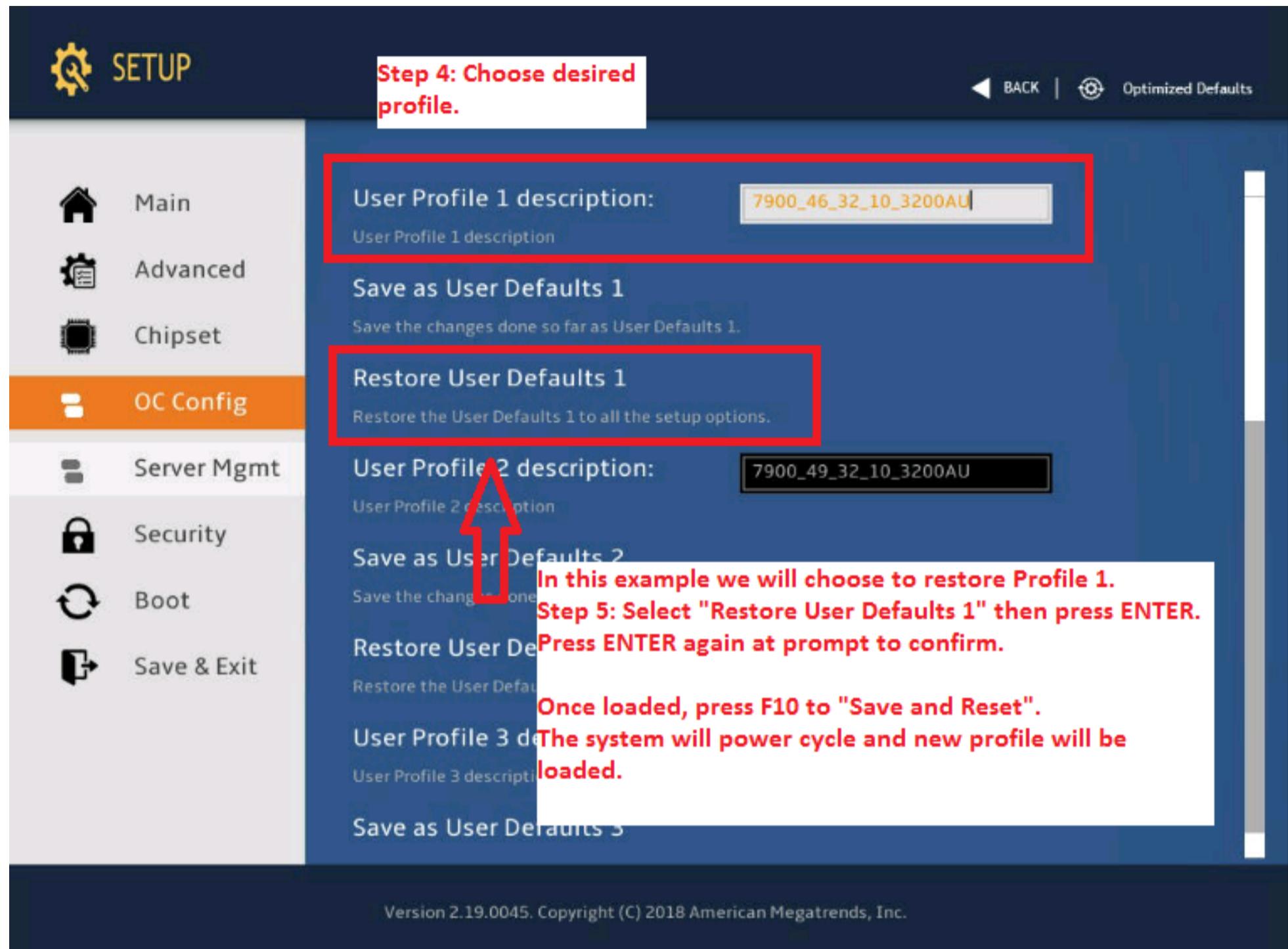
Step 1: There is no password to enter the BIOS; you will just have to hit Enter.



Step 2: In the Setup menu, select the **OC Config** menu and go to **Save user profiles**.

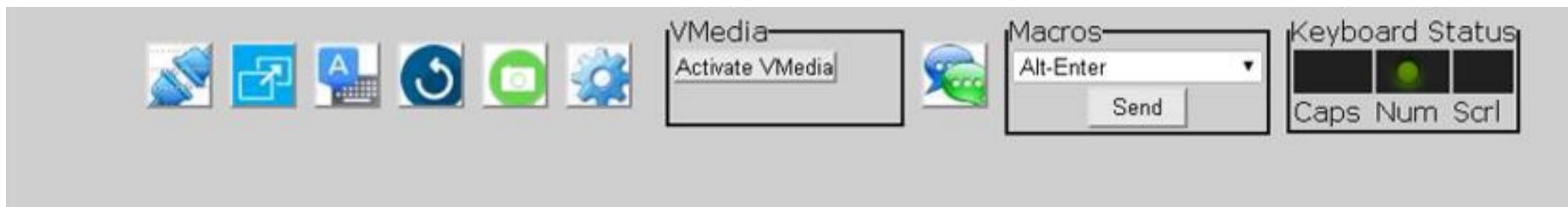


Step 3: Choose the desired profile. You should have a **48_18** and a **50_10** profiles. Restore it, and then press **F10**.

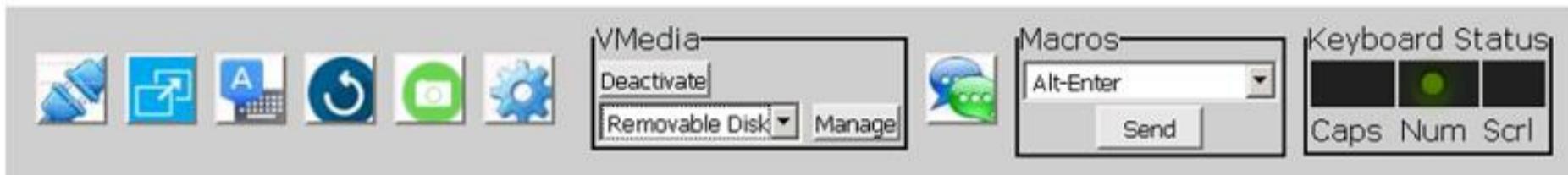


33. Importing profile from Vmedia:

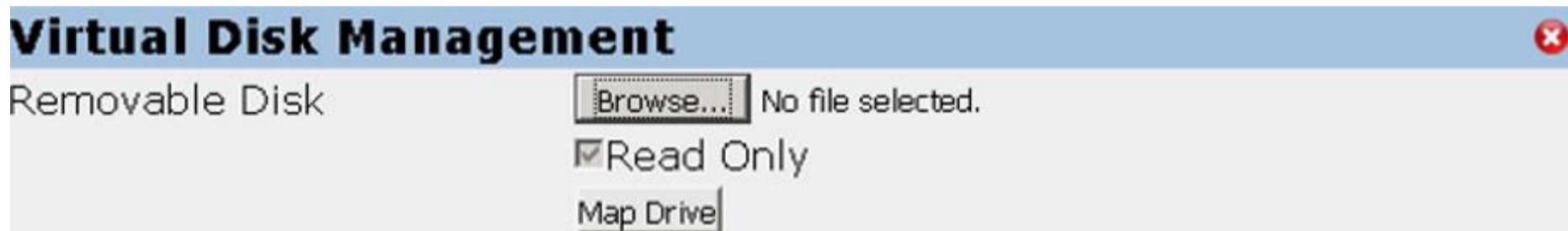
1. From the Launch Menu, on the top right, click on **Launch HTLM5vKVM Viewer**
2. Click on **Activate Vmedia**



3. Select **Removable Disk** and click **Manage**



4. Click on browse to select the profile image: HF310-G4-F05-xxxx-xx.img
5. Click on **Map Drive** to mount the removable media.



6. Boot on the UEFI Shell.
7. Verify the disk letter for the Removable Media. In this example, it has fs3.

```
EFI Shell version 2.60 [5.13]
Current running mode 1.1.2
Device mapping table
  fs0  :HardDisk - Alias hd29a65535a1 blk0
    PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x0,0xFFFF,0x0)/HD(1,GPT,D064FE3E-6DAE-
46FE-9335-F96DE11FA622,0x800,0x64000)
  fs1  :HardDisk - Alias hd35b blk1
    PciRoot(0x0)/Pci(0x1C,0x4)/Pci(0x0,0x0)/NVMe(0x1,5E-0C-B1-71-53-38-25-0
0)/HD(1,GPT,D35B3AEF-49FB-4DCE-B46B-8CCEECC5FA2,0x800,0x64000)
  fs2  :HardDisk - Alias hd37c blk2
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,18-F6-B0-71-52-38-25-0
0)/HD(2,GPT,A42E775C-A257-417C-AC4B-899F739DAA7C,0xE1800,0x32000)
  fs3  :Removable BlockDevice - Alias f26e0c0b blk3
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x4,0x0)/USB(0x2,0x0)/Unit(0x1)
  blk0 :HardDisk - Alias hd29a65535a1 fs0
    PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x0,0xFFFF,0x0)/HD(1,GPT,D064FE3E-6DAE-
```

8. Type **fs3:** (which is the number of Removable Media in this example).

9. Type **update.nsh profile_name** and press **Enter**

```
Shell> fs3:  
  
fs3:\> ls  
Directory of: fs3:\  
  
03/01/18 05:35p      1,081,098 7980_45_30_18_3200_AU_F05a  
02/23/18 10:52p          31 update.nsh  
10/25/17 12:38p      574,720 SceEfi64.efi  
 3 File(s)   1,655,849 bytes  
 0 Dir(s)  
  
fs3:\> update.nsh 7980_45_30_18_3200_AU_F05a_
```

10. Reboot the system, the profile will be applied and saved into the BIOS.

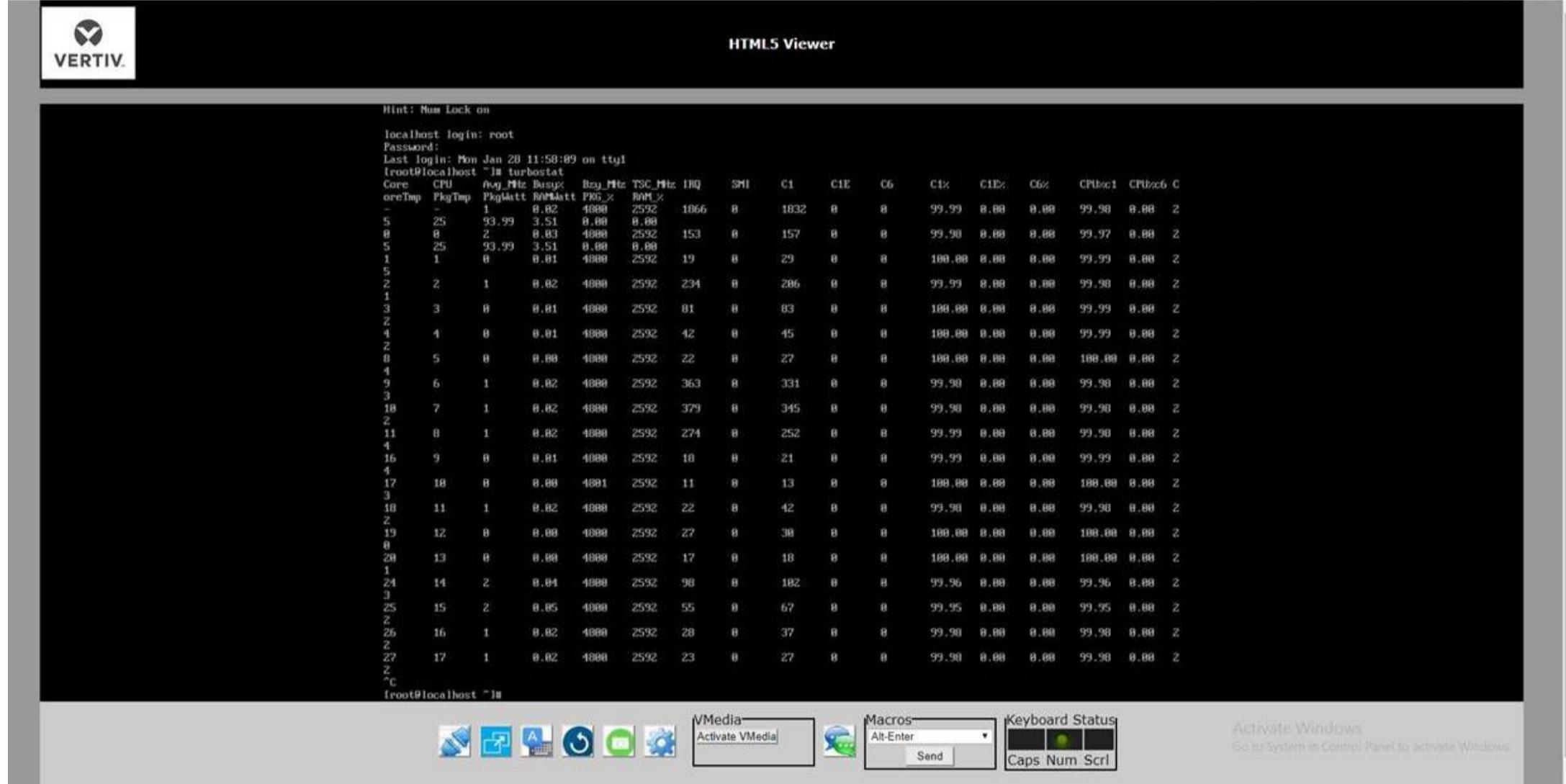
34. Drivers/Tools

The drivers and tools are available on the Ciara's website: <https://ciaratech.com/support-center/>

34.1 Verifying CPU Frequency for Linux

For **UBUNTU** and **DEBIAN**, you can install *i7z* (available in most LINUX Distribution Tree).

For **RHEL** and **CentOS**, turbostat is part of the base install.



34.2 Verifying CPU Frequency for Windows

The Hwinfo utility for Windows available on website: <https://www.hwinfo.com/download/>

WINDOWS Hwinfo64

Core #0 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #1 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #2 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #3 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #4 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #5 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #6 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #7 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #8 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #9 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #10 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #11 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #12 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #13 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #14 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #15 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #16 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Core #17 Clock	4,800.0 MHz	4,798.0 MHz	4,803.1 MHz
Bus Clock	100.0 MHz	100.0 MHz	100.1 MHz
Mesh/LLC Clock	3,100.0 MHz	3,098.7 MHz	3,102.0 MHz
Core #0 Ratio	48 x	48 x	48 x
Core #1 Ratio	48 x	48 x	48 x
Core #2 Ratio	48 x	48 x	48 x
Core #3 Ratio	48 x	48 x	48 x
Core #4 Ratio	48 x	48 x	48 x
Core #5 Ratio	48 x	48 x	48 x
Core #6 Ratio	48 x	48 x	48 x
Core #7 Ratio	48 x	48 x	48 x
Core #8 Ratio	48 x	48 x	48 x
Core #9 Ratio	48 x	48 x	48 x
Core #10 Ratio	48 x	48 x	48 x
Core #11 Ratio	48 x	48 x	48 x
Core #12 Ratio	48 x	48 x	48 x
Core #13 Ratio	48 x	48 x	48 x
Core #14 Ratio	48 x	48 x	48 x
Core #15 Ratio	48 x	48 x	48 x
Core #16 Ratio	48 x	48 x	48 x
Core #17 Ratio	48 x	48 x	48 x
Uncore Ratio	31 x	31 x	31 x