EVIDEN

BullSequana EX & AI

Getting Started Guide

86 A1 31FT 04 - November 2024

Trademarks and Acknowledgments

We acknowledge the right of proprietors of trademarks mentioned in this manual.

All brand names and software and hardware product names are subject to trademark and/or patent protection.

Quoting of brand and product names is for information purposes only and does not represent trademark and/or patent misuse.

Hardware

November 2024

Eviden
30 bis rue du Nid de Pie
49000 Angers
FRANCE

Table of contents

Preface

This guide explains how to set up the server.

See	The Bull support web site for the most up-to-date product information, documentation, firmware updates, software fixes and service offers: https://support.bull.com

Important	**ATTENTION: Please read carefully the safety instructions before you perform the procedures described in this manual.** ***Multilingual Safety Notices Guide***

Intended Readers

This guide is intended for use by system administrators and operators.

Chapter 1. Connecting a BullSequana EX & AI server

Important **The steps in this chapter must be followed in the order indicated.**

See The Installation Guide and the documentation set for more information.

1.1. Connecting the server to the power supply

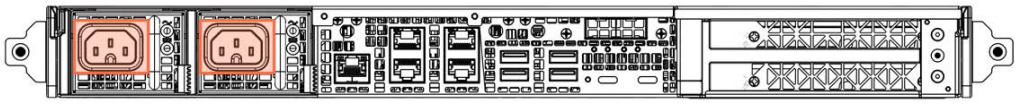
1. **Connect the server to the power supply**

Important **The site power breaker must be OFF when the server is connected to the power supply. The site power supply must remain OFF until the system is ready to be powered on.**

1. Locate the power supply connection.

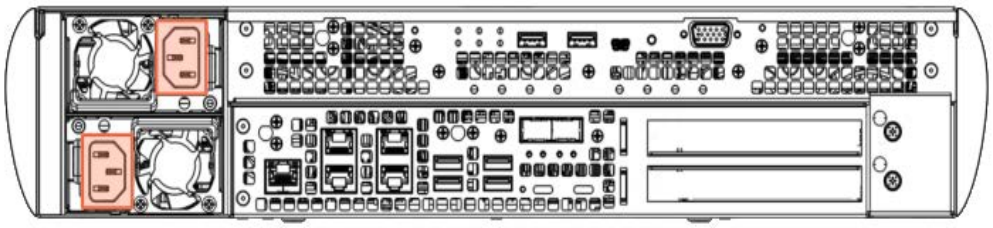
BullSequana EXR & AI100R

Rear view



BullSequana EXD & AI100D

Rear view



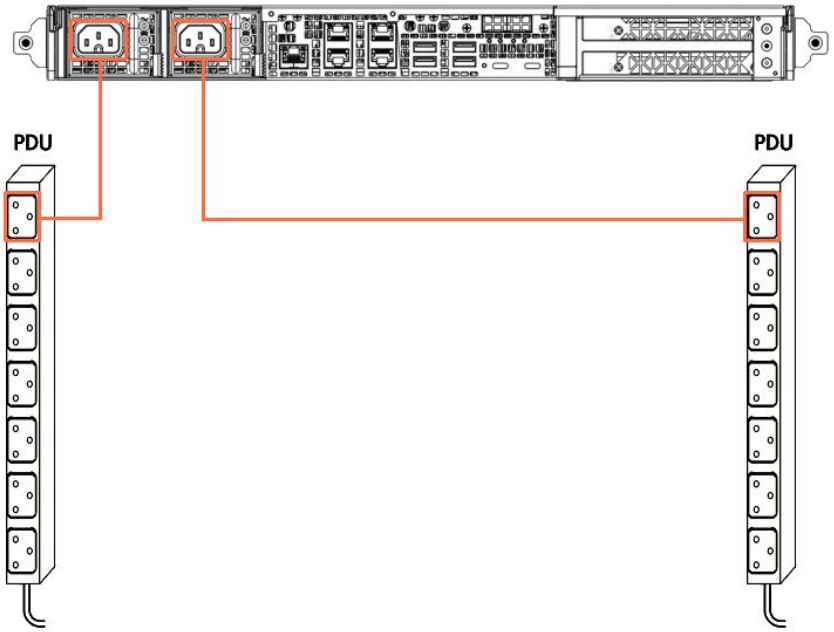
2. Connect the server to the Power Distribution Unit (PDU).

   Plug the power cable into power socket and the required PDU.

Note If the server is installed in a rack cabinet, route the power cable along the cabinet flange to the PDU.

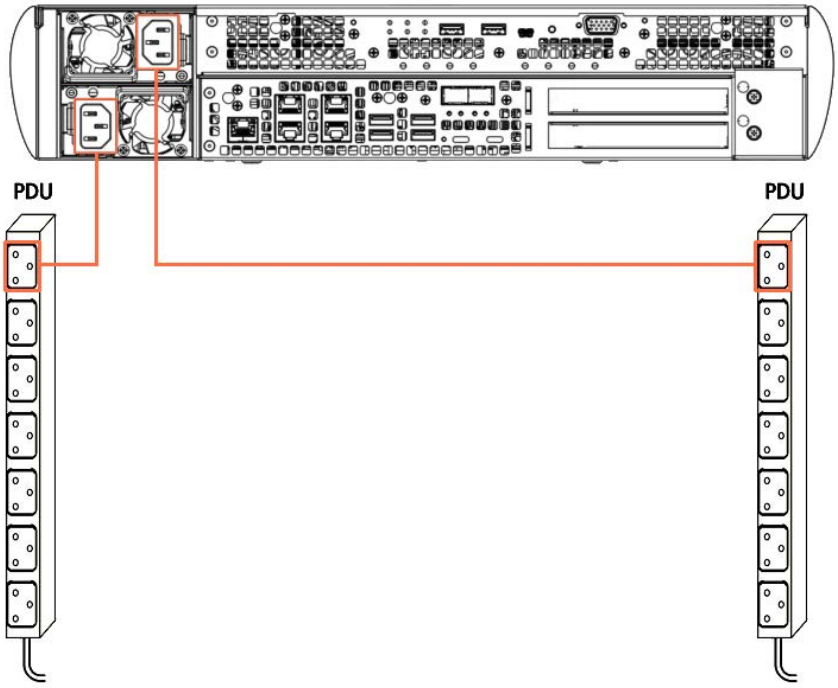
BullSequana EXR & AI100R

Rear view



BullSequana EXD & AI100D

Rear view



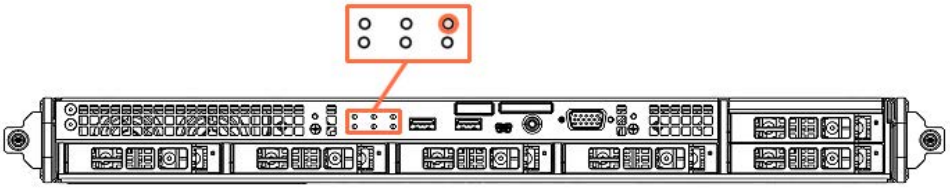
2. Power on the server to standby

1. Turn the site power breakers ON.
2. Check that the power status LED blinks green to indicate that the server is connected to the power supply.

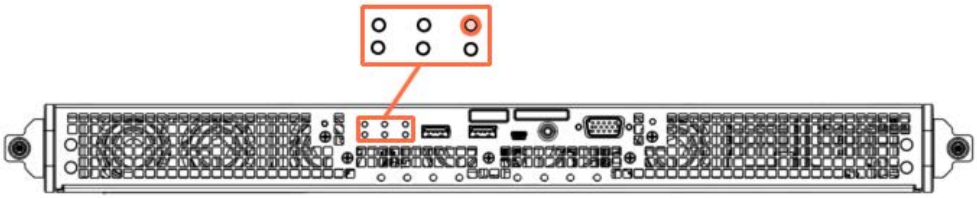
BullSequana EXR & AI100R

Front view

2.5 inch SATA disk option

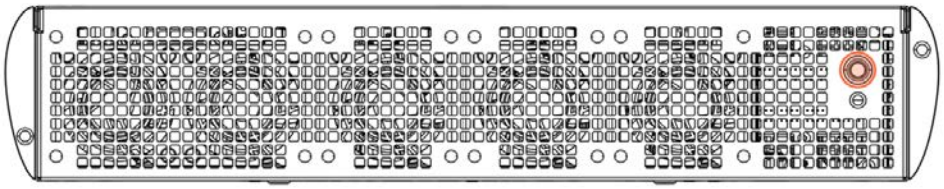


M.2 NVMe disk option



BullSequana EXD & AI100D

Front view



1.2. Accessing the Server Hardware Console (SHC)

The Server Hardware Console (SHC) for BullSequana EX & AI servers provides a web based interface to manage, configure and monitor the server.

The SHC is powered by OpenBMC, an open source implementation of the Baseboard Management Controller (BMC) firmware stack

See The SHC Reference Guide and the documentation set for more information.

The first connection to the SHC can be made using either an IP address allocated by DHCP or an auto-discovery tool.

1.2.1. Obtaining an address via a DHCP server

Prerequisites

- A DHCP server is installed on the network subnet
- The laptop used to access the BullSequana EX & AI server is on the same network subnet

Procedure

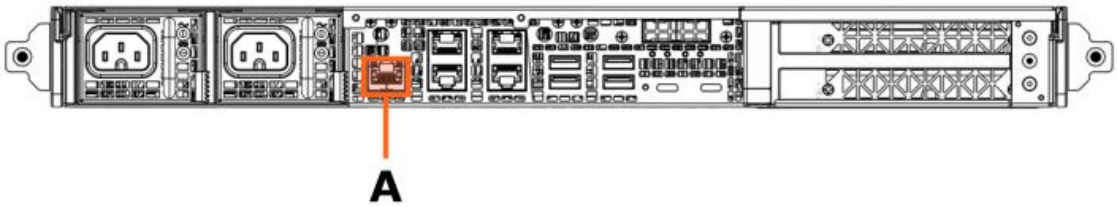
1. **Connect the server to the LAN**

   Connect the server BMC port (A) to the LAN via a RJ45 Ethernet cable.

   Important **If a switch is used the ports must support a bandwidth of 1 Gb/s.**

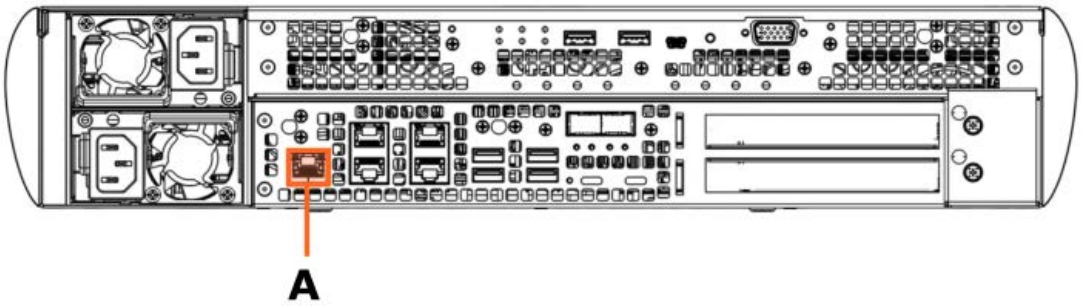
   BullSequana EXR & AI100R

   Rear view



BullSequana EXD & AI100D

Rear view



2. **Check the LAN connection**

   Check the LEDs are on for the BMC port.

3. **Obtain the MAC address for the server**

   1. Remove the top cover and if necessary the air duct.
   2. Locate one of the labels displaying the server MAC address:
      - On the rear of a BullSequana EXD & AI100D server or the front of a BullSequana EXR & AI100R server
      - On the motherboard, next to the memory modules
   3. Note the server MAC address.

4. **Obtain an IP address for the server**

   There are two possibilities according to the network system management:

   - Retrieve an IP address from the DHCP server table
   - Ask the network system administrator to allocate a DHCP IP address using the MAC address of the server

5. **Note the IP address obtained**

1.2.2. Obtaining an IP address with an auto-discovery tool

Prerequisite

A laptop is connected to the server via the LAN

Procedure

Note In this procedure the Bonjour browser is used as an example of an IP auto-discovery tool.

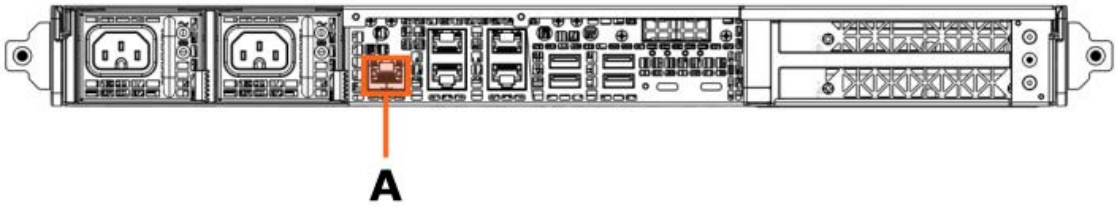
1. **Connect the server to the LAN**

   Connect the server BMC port (A) to the LAN via a RJ45 Ethernet cable.

Important	**If a switch is used the ports must support a bandwidth of 1 Gb/s.**

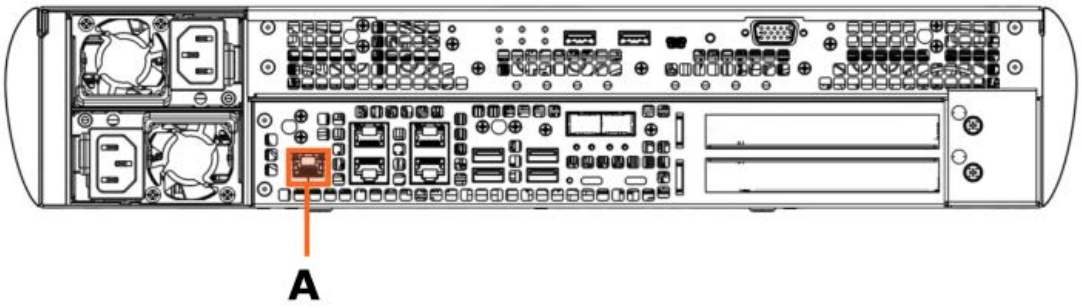
BullSequana EXR & AI100R

Rear view



BullSequana EXD & AI100D

Rear view



2. **Check the LAN connection**

   Check the LEDs are on for the BMC port.

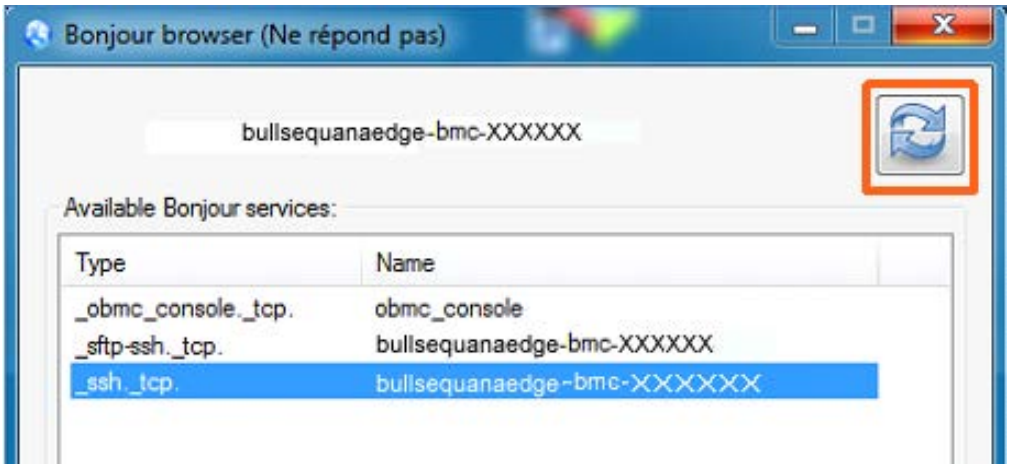
3. **Install Bonjour on the laptop**

   1. Download the latest **BonjourBrowserSetup.exe** file.
   2. Run **BonjourBrowserSetup.exe** to install Bonjour.

4. Launch the Bonjour browser on the laptop

5. Refresh the Bonjour browser

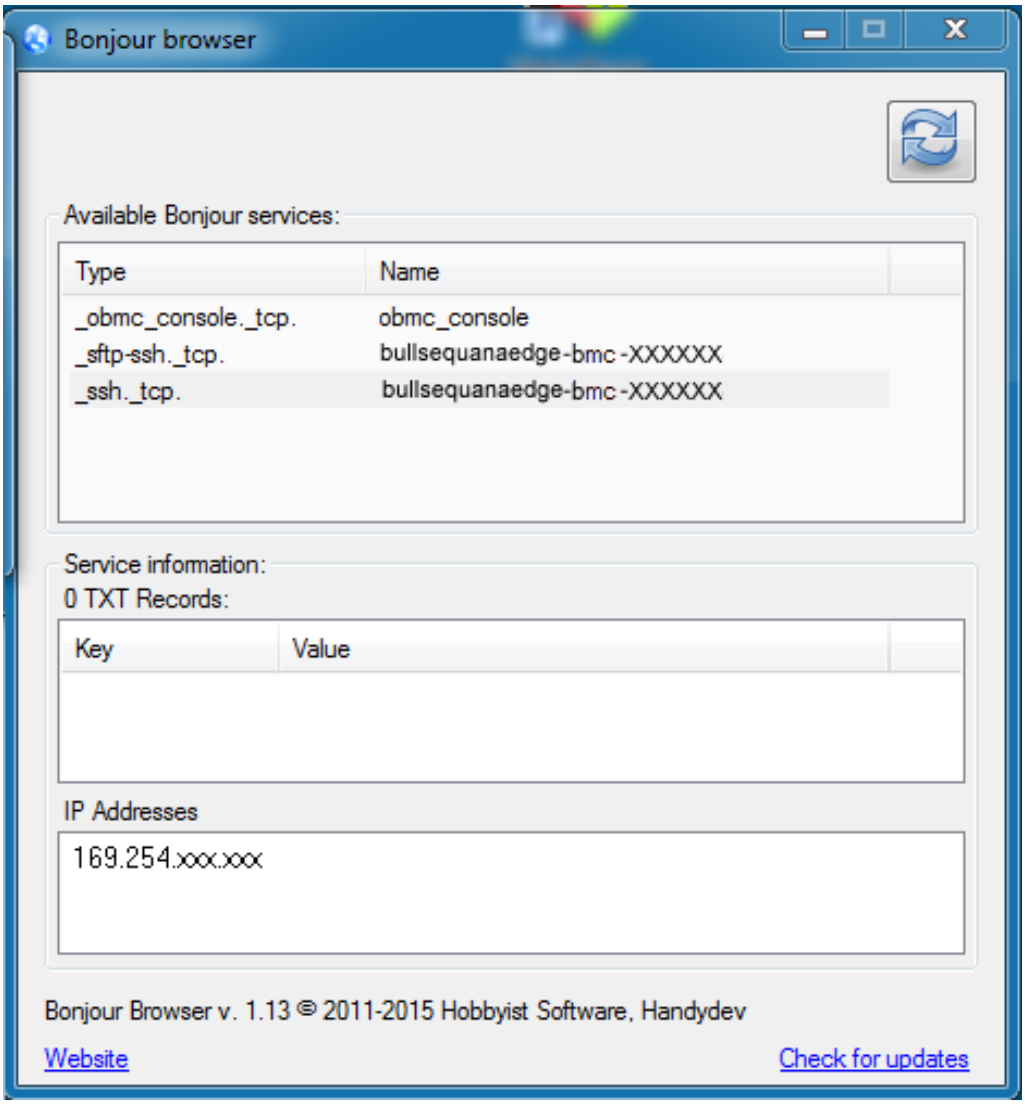
1. Click the Refresh button at the top on the right of the browser window.



2. The available services are displayed.

6. Note the server IP address

1. Select the **_ssh._tcp** Bonjour service for the server BMC.
2. The Bonjour server IP address is displayed in the **IP addresses** field.



3. Note the IP address indicated.

1.2.3. Connecting to the SHC for the first time

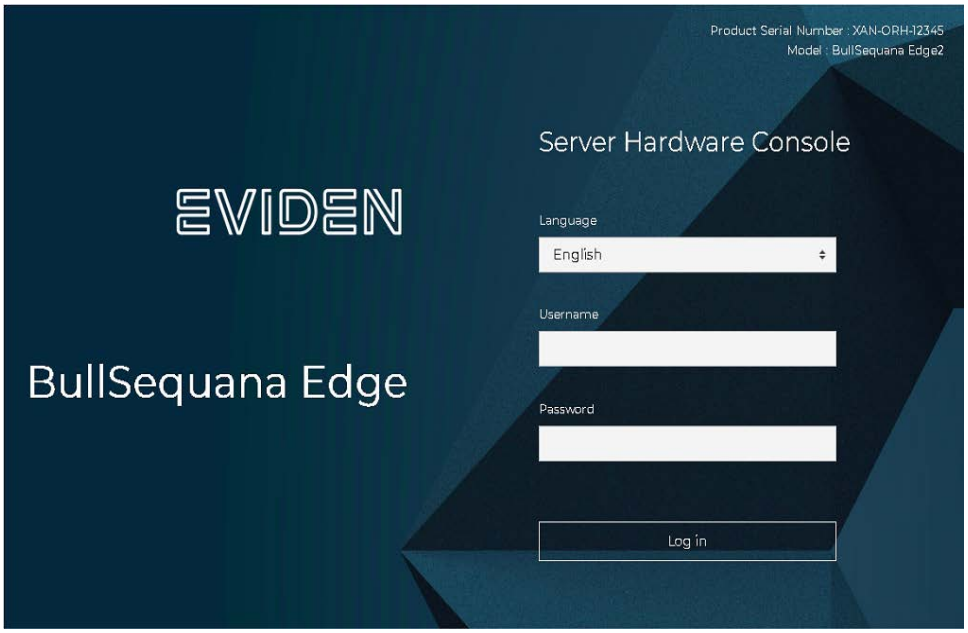
Prerequisites

- An IP address is available for the server
- Chrome or Firefox web browsers are recommended
- Setting the language of the web browser to English is recommended

Procedure

Note The connection to the SHC must be made using the https protocol.

1. Open a web browser on the laptop.
2. Enter the server IP address into the address bar, using the https secure protocol.
3. Ignore all security messages displayed, including advanced messages. The SHC authentication page opens.



4. Complete the Username and Password fields and click **Log in**. The **Overview** page opens.

SHC default user account	
Username	**admin**
Password	**0penBmc*** The 0 in the default password is the number zero.

See SHC Reference Guide for more information.

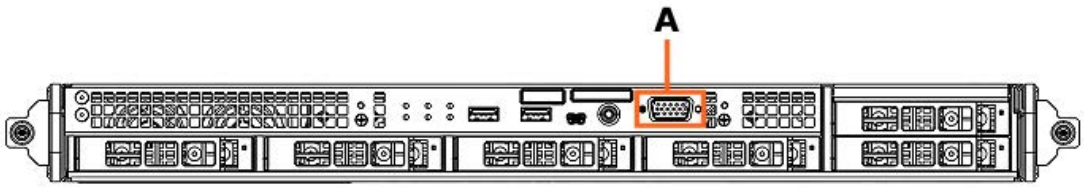
1.3. Connecting the server to a monitor (optional)

Connect a monitor to the VGA port (A).

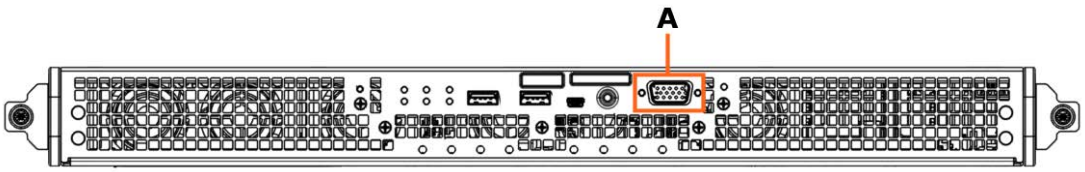
BullSequana EXR & AI100R

Front view

2.5 inch SATA disk option

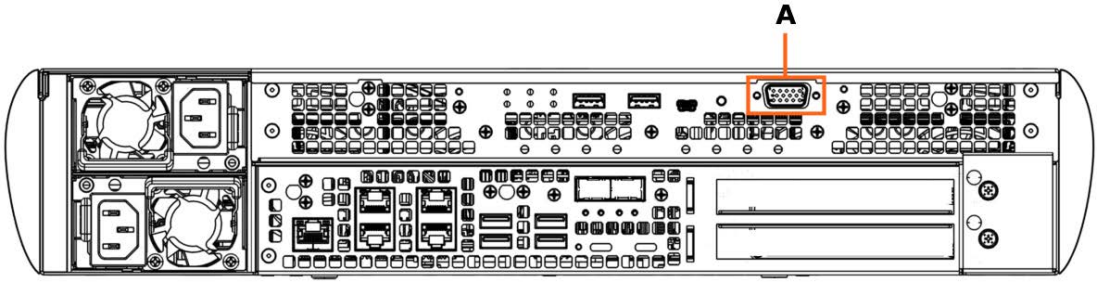


M.2 NVMe disk option



BullSequana EXD & AI100D

Rear view



Chapter 2. Configuring general parameters

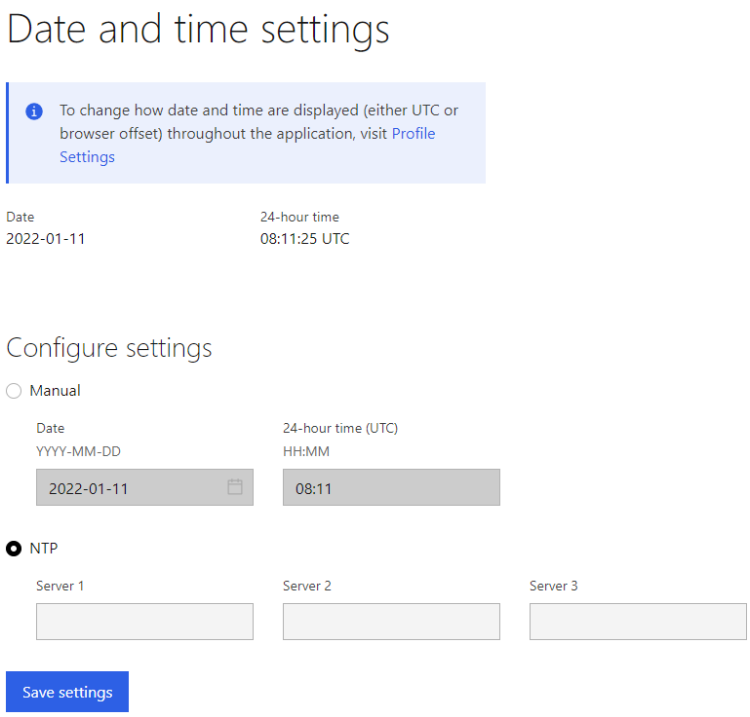
Note The parameters listed In this chapter are configured via the Server Hardware Console (SHC). A connection to the SHC must be in place, as previously described.

When a BullSequana EX & AI is configured for the first time, it is advisable to note the following details:

Data required	Value
Hostname	
User name	
Password	
DNS server IP address(es)	
Gateway IP address	
NTP server IP address(es)	
Power restore policy	
Rsyslog IP address	
Rsyslog port	

2.1. Setting the date and time

1. From the **Configuration** tab, click **Date and time settings**. The **Date and time settings** page opens.

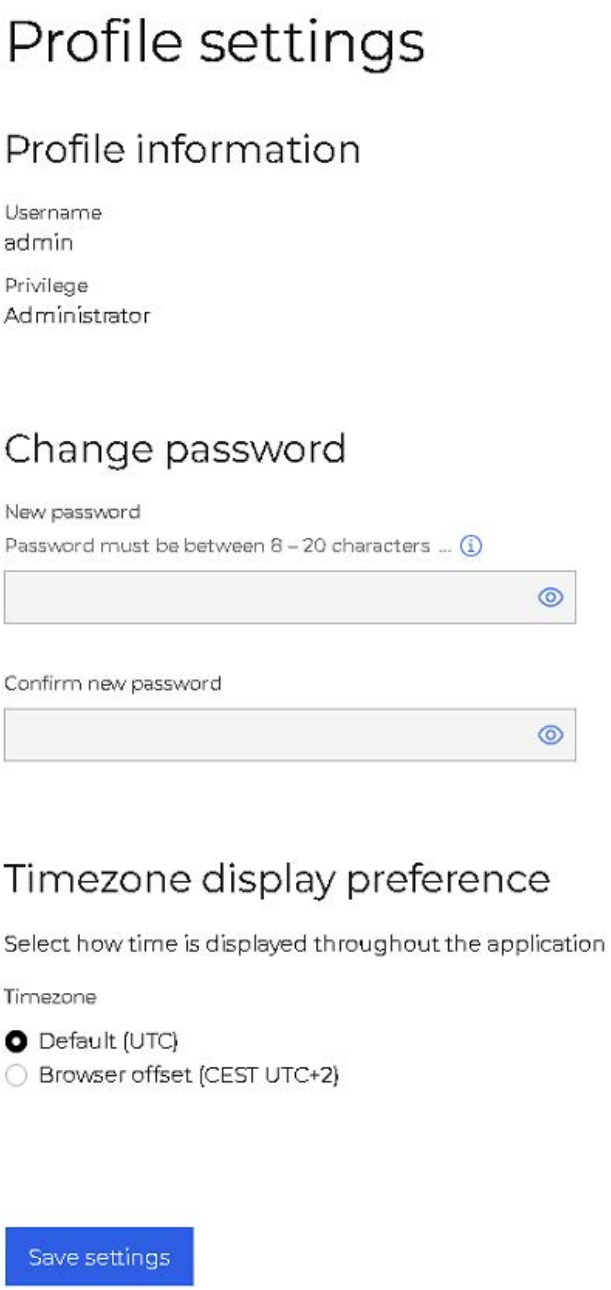


2. Select the date and time configuration:
   - Manual
   - Network Time Protocol (NTP) servers

Note It is recommended to configure an NTP server. Time and date settings configured manually will be lost when the BMC is reset.

3. Click **Save settings.**

4. Click **Profile Settings** at the top of the page. The **Profile settings** page opens.

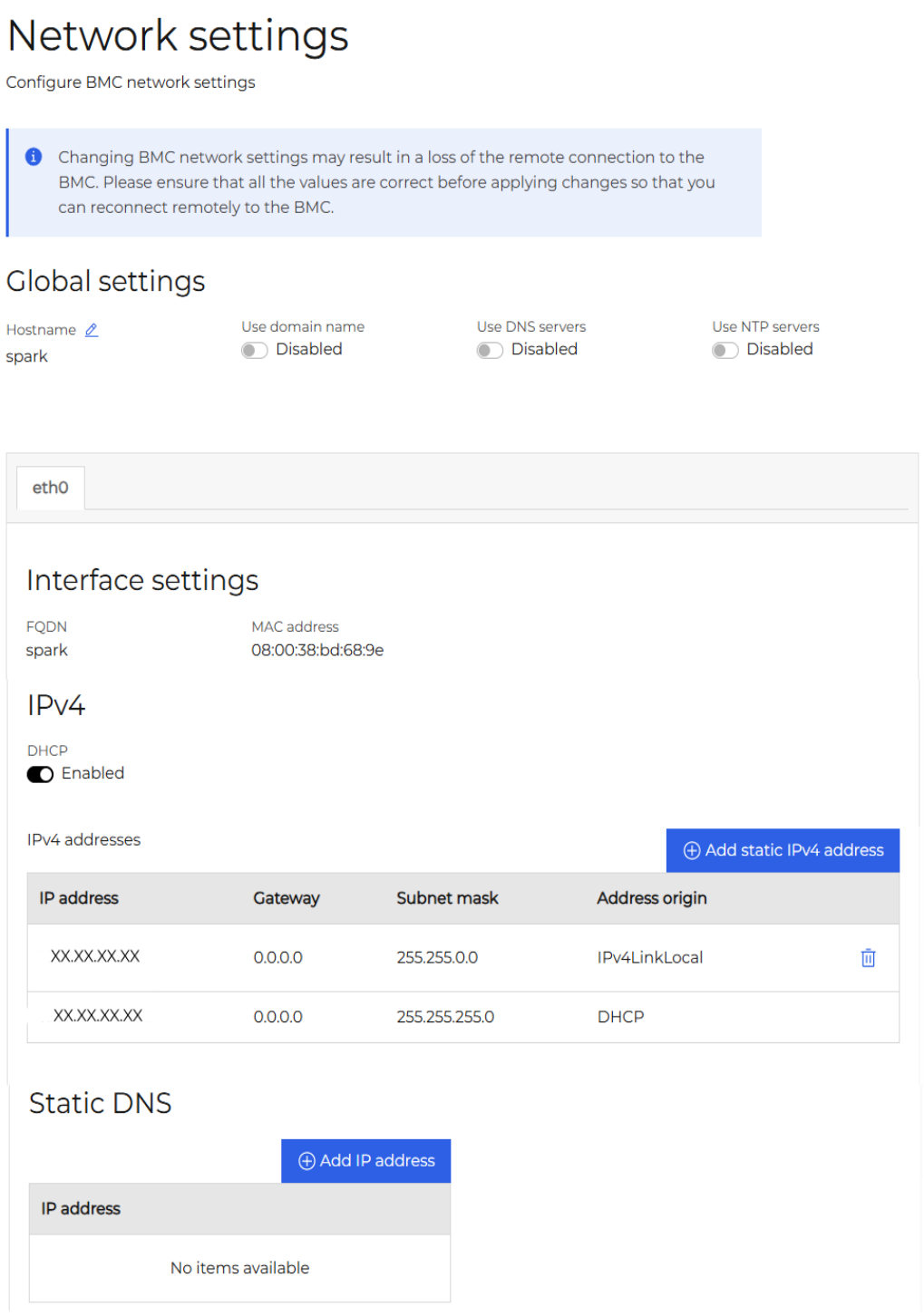


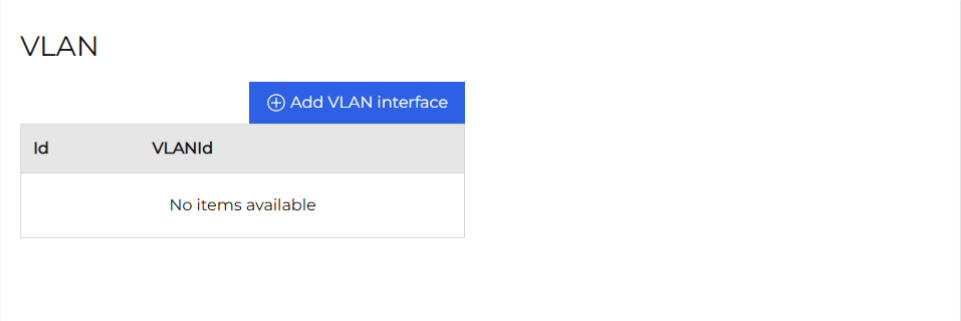
5. Select the timezone display:
   - Default
   - Browser offset
6. Click **Save settings**.

2.2. Configuring network settings

Note The server hostname may be modified in the screen below.

1. From the **Configuration** tab, click **Network settings**. The **Network settings** page opens.





Global settings	
Hostname	The server hostname: it must be a combination of upper case letters (A to Z), lower case letters (a to z) and numbers (0 to 9). The only authorized special character is the hyphen (-)
Use domain name	enables or not domain name usage
Use DNS servers	enables or not DNS server usage
Use NTP servers	enables or not NTP server usage
Interface settings	
FQDN	Fully Qualified Domain Name used by the DNS server
Mac address	The server MAC address
IPv4	
DHCP	When enabled, the server IP address is retrieved from a DHCP server
IP address	Server IP address
Gateway	Gateway IP address
Subnet mask	Sub-net mask to be used
Address origin	DHCP or Static or IPv4LinkLocal
Add Static IPv4 address	Click this button to add a static IP address
Static DNS	
IP address	DNS IP address
Add IP address	Click this button to add a DNS IP address
VLAN	
VLANId	VLAN interface identifier
Add VLAN Interface	Click this button to add a VLAN interface identifier

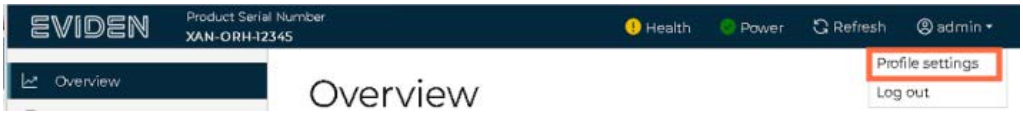
2. Fill in Hostname.
3. Select IPV4 configuration: DHCP or Static.

4. Add a static IP address if required.
5. Add a DNS server if required.
6. Add a VLAN interface if required.
7. Click **Save settings**.

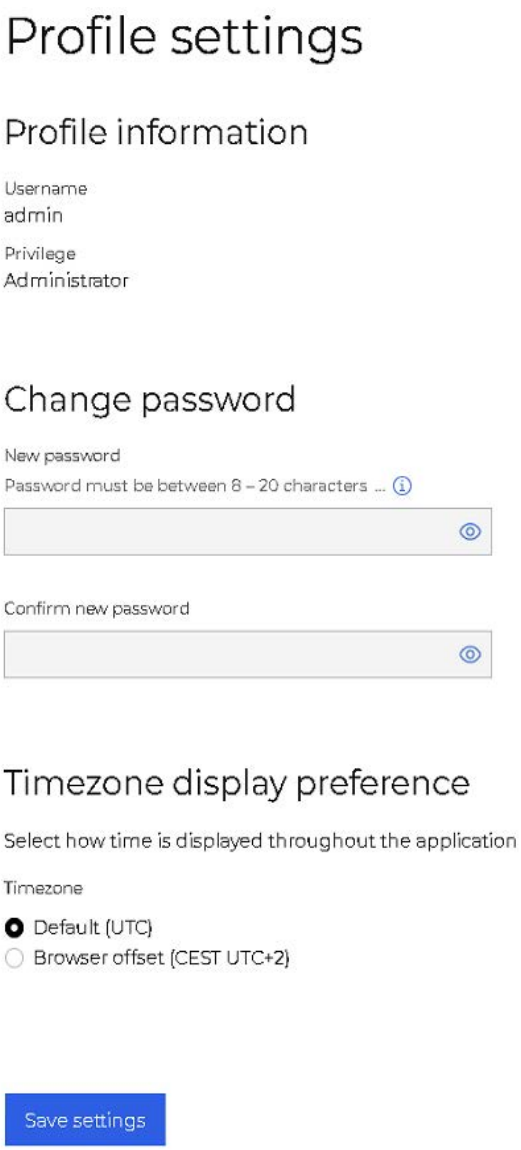
2.3. Changing the initial user password

Important **It is strongly recommended to change the initial password once the setup is completed, taking care to record the new account details for subsequent connections.**

1. From the user profile button, click **Profile settings**.



The **Profile settings** page opens.



2. Enter and confirm the new password.
   - The password must be between 8 and 20 characters long
   - The password must be a mixture of upper case letters, lower case letters, numbers and special characters
   - The password must be different from the user name
3. Click **Save settings**.

Note According to the localisation the timezone can also be changed, for example in France UTC+2 would be used.

2.4. Testing parameters

Stop and restart the Server Hardware Console (SHC) to verify that the new parameters have taken effect.

Procedure

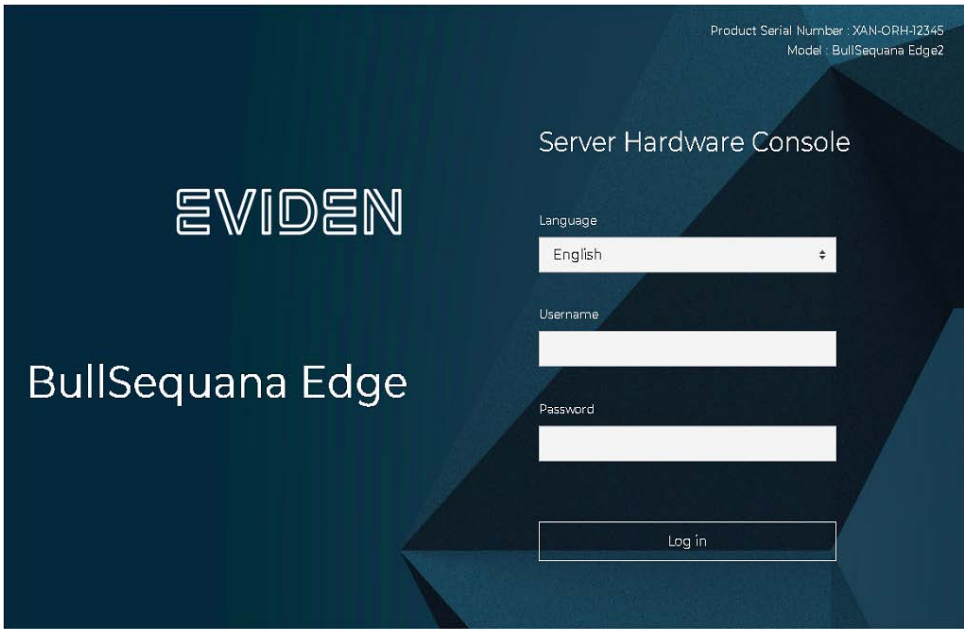
1. **Stop the SHC**

   From the user profile button, click **Log out** to stop the SHC.

2. **Start the SHC**

   Note The connection to the SHC must be made using the https protocol.

   1. Open a web browser on the laptop.
   2. Enter the server IP address into the address bar, using the https secure protocol.
   3. Ignore all security messages displayed, including advanced messages. The SHC authentication page opens.



Chapter 3. Installing an operating system

The operating system is installed from one of the following:

- A bootable USB drive
- A Pre-boot eXecution Environment (PXE)
- A virtual media device

Prerequisites

- The server power status is Off
- Depending on the installation option:
  - A bootable USB drive with the OS to be installed is plugged into a USB port
  - A Pre-boot eXecution Environment (PXE) has been set up and is accessible
  - The location for the virtual media ISO file is known
  - For Windows Server 2022 installation, in some cases, it is necessary to load a driver to be able to access the storage devices

See Appendix A. Pre-installation steps for Windows Server 2022

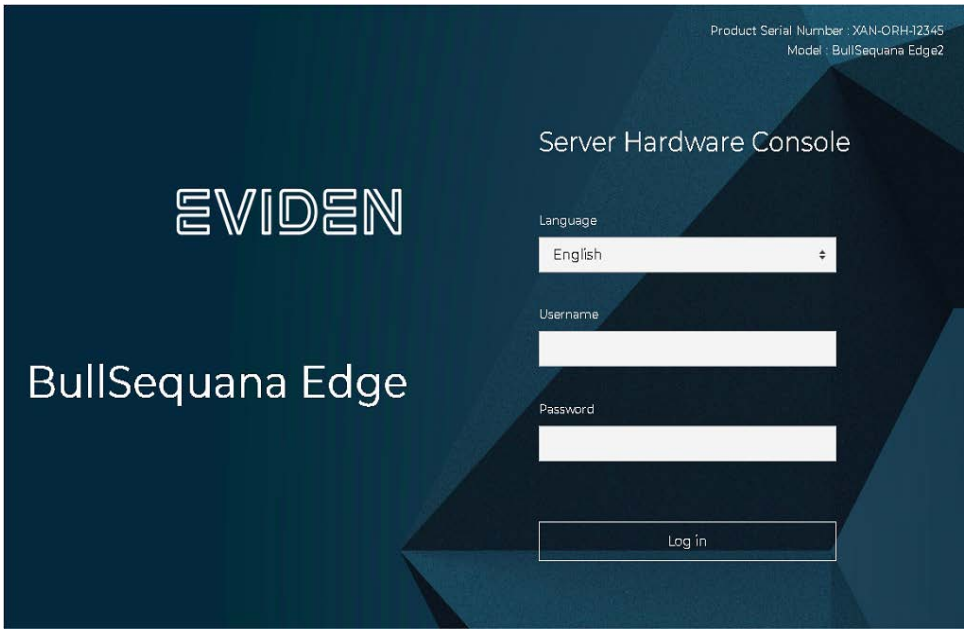
3.1. Installing an OS

Procedure

1. **Connect to the SHC**

Note The connection to the SHC must be made using the https protocol.

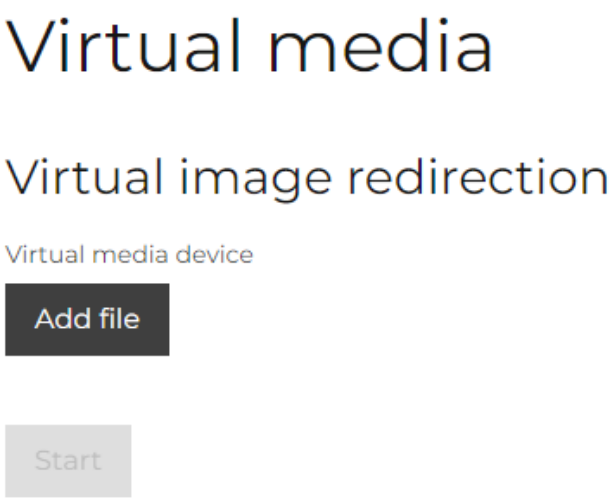
1. Open a web browser on the laptop.
2. Enter the server IP address into the address bar, using the https secure protocol.
3. Ignore all security messages displayed, including advanced messages. The SHC authentication page opens.



2. **Create a virtual media session if this OS installation option is to be used**

Note	Only users with Administrator privilege have access to this feature.

1. From the **Control** tab, click **Virtual media**. The **Virtual media** page opens.



2. Click **Add** file.
3. Select an ISO file for the boot.
4. Click **Start**.

3. **Power on the server**

1. From the **Control** tab, click **Server power operations**. The **Server power operations** page opens.
2. In the **Operations** section, click **Power on**.

4. **Launch the remote system console**

From the **Control** tab, click **KVM**. The **KVM** page opens.

5. Access the BIOS interface

1. Wait a few minutes for the following screen to be displayed.

2. Press **[ESC]** to display the BIOS interface.

3. Select **Boot Manager** from the main menu using the navigation arrows and press **[Enter]**.

6. Define the boot device

1. Select the boot device and press **[Enter]**.

Boot device	Action
Bootable USB drive	Select the corresponding entry in the **USB** section
PXE server	Select the corresponding entry in the **Network** section
Virtual media ISO file	Select the corresponding entry in the **USB** section

2. Follow the instructions displayed to Install the OS.
3. Select the system settings required.

3.2. Booting the operating system (OS)

Note It is advisable to boot the OS using the BIOS interface for the first time in order to verify that the installation is correct. If OK, the operating system is booted in the normal way for subsequent boots.

Prerequisite

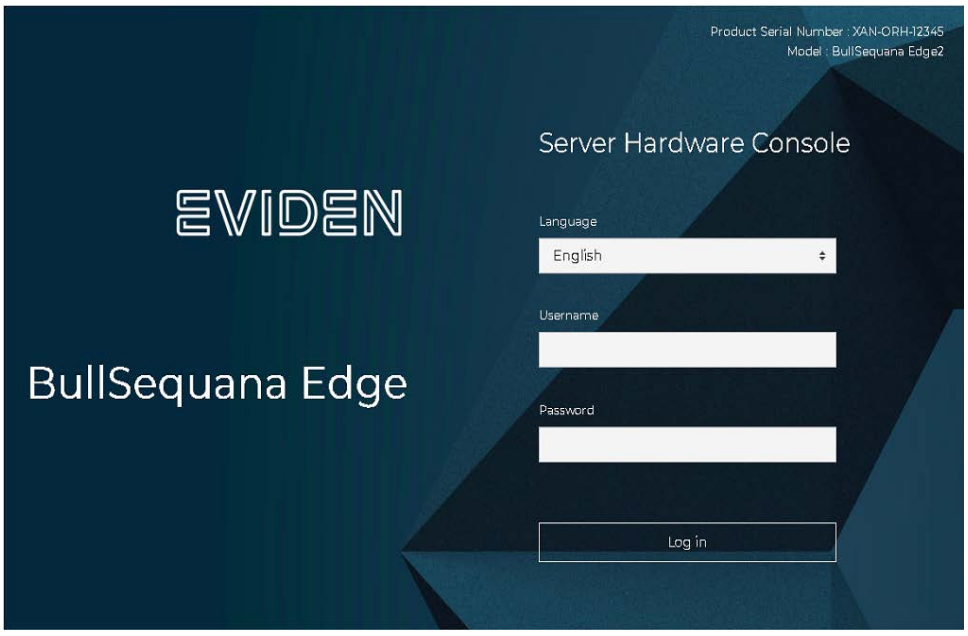
The server power status is Off.

Procedure

1. **Connect to the SHC**

Note The connection to the SHC must be made using the https protocol.

1. Open a web browser on the laptop.
2. Enter the server IP address into the address bar, using the https secure protocol.
3. Ignore all security messages displayed, including advanced messages. The SHC authentication page opens.



2. **Power on the server**

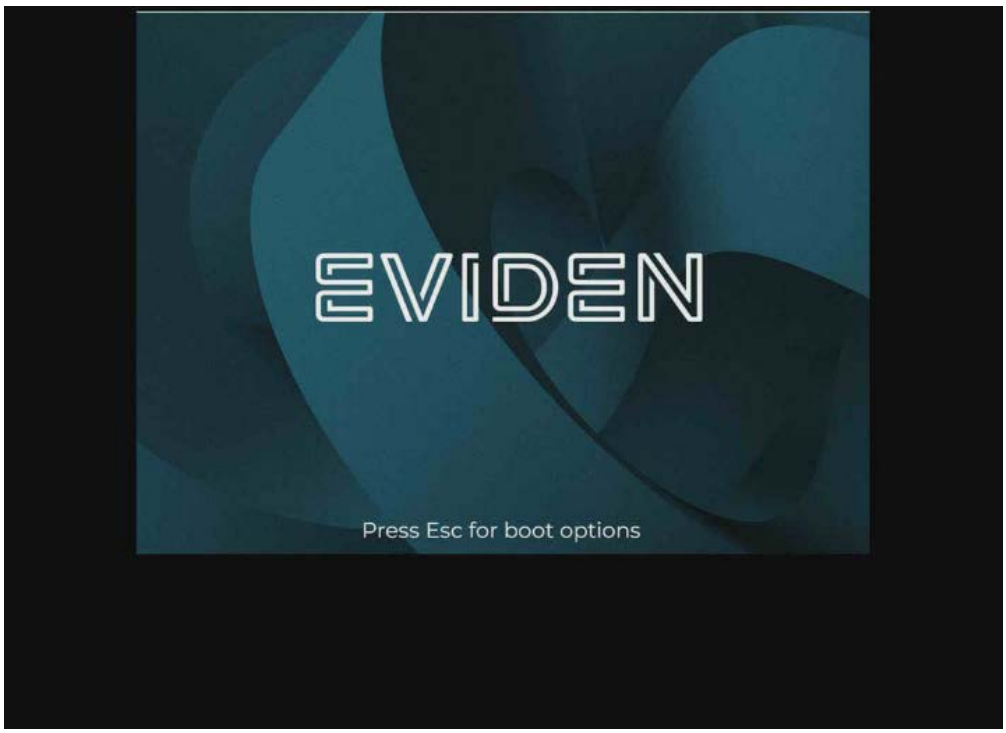
1. From the **Control** tab, click **Server power operations**. The **Server power operations** page opens.
2. In the **Operations** section, click **Power on**.

3. **Launch the remote system console**

From the **Control** tab, click **KVM**. The **KVM** page opens.

4. Access the BIOS interface

1. Wait a few minutes for the following screen to be displayed.

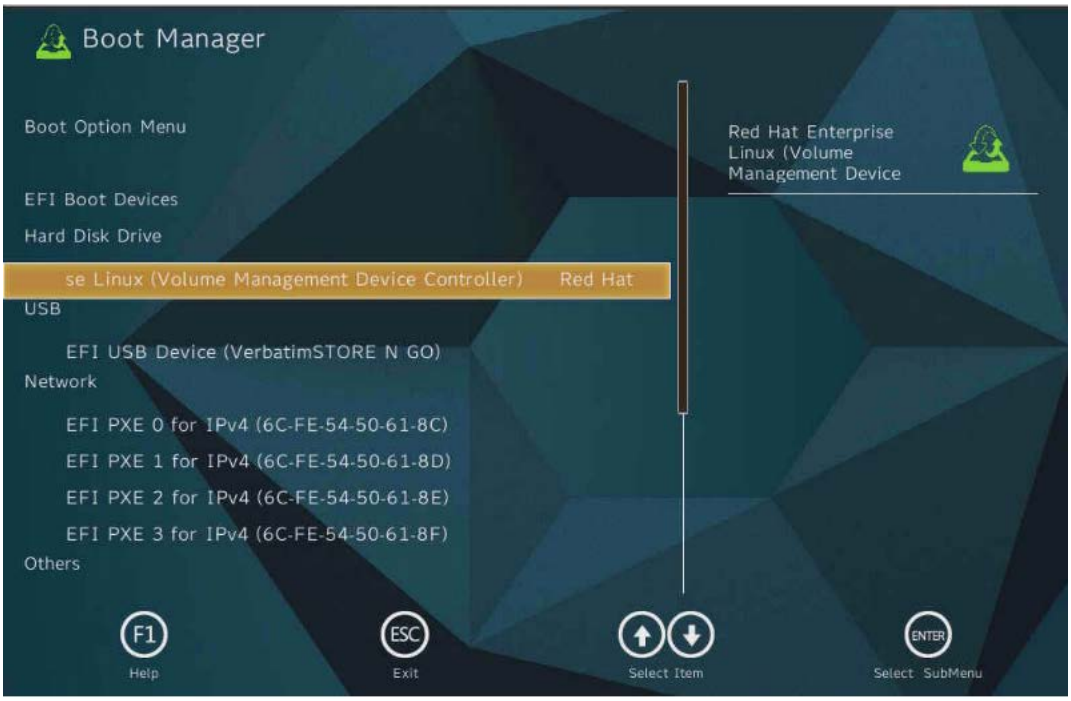


2. Press **[ESC]** to display the BIOS interface.

3. Select **Boot Manager** from the main menu using the navigation arrows and press **[Enter]**.

5. Select the boot option

1. Select the entry corresponding to the OS and press [Enter] to exit setup and complete the system boot.



2. Wait until the boot completes to verify that the operating system has installed correctly.

Chapter 4. Power operations

A BullSequana EX & AI server can be powered on and off using:

- The power button at the front of the server
- The Server Hardware Console (SHC)

See The Description Guide for more information about the ports and LEDs and the SHC Reference Guide.

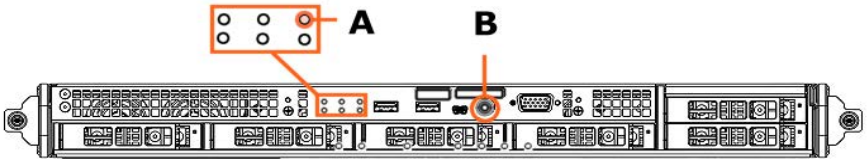
4.1. Powering on the server with the power button

1. Check that the power status LED (A) is blinking green to indicate that the server power status is Off.
2. Press the power button (B) for approximately two seconds.

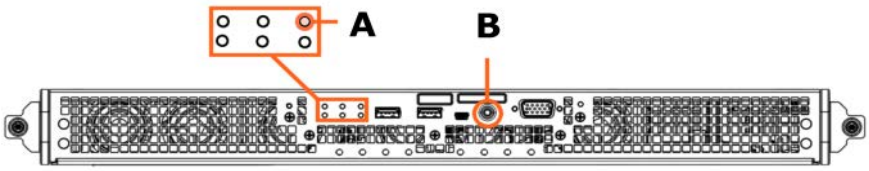
BullSequana EXR & AI100R

Front view

2.5 inch SATA disk option

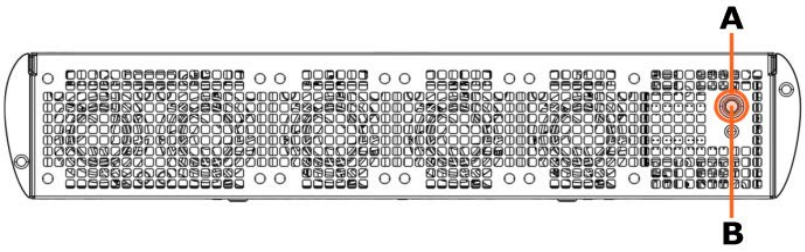


M.2 NVMe disk option

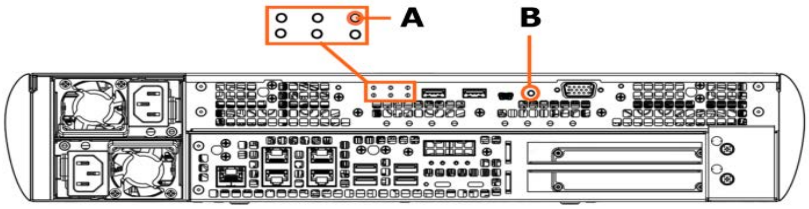


BullSequana EXD & AI100D

Front view



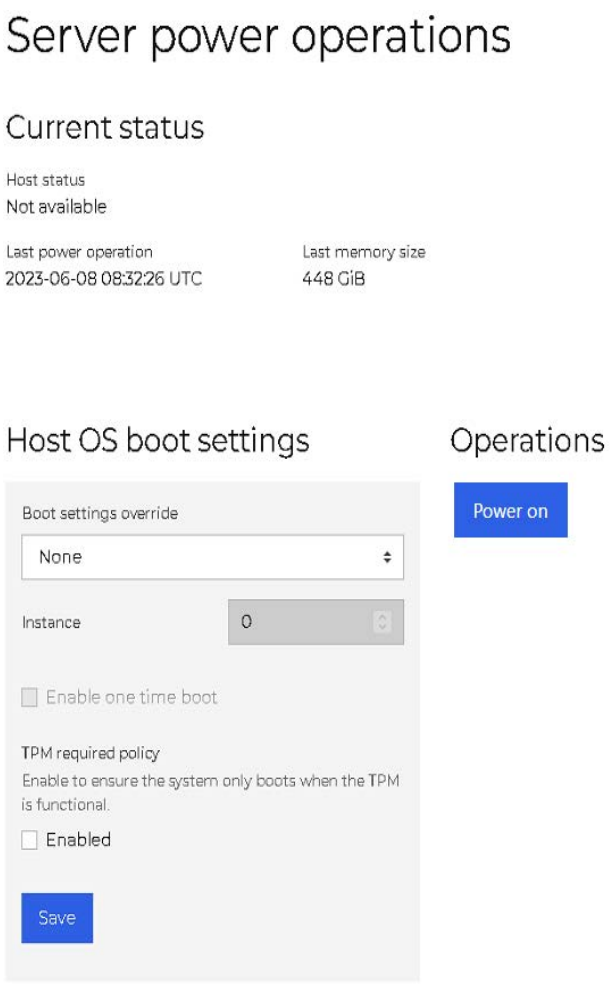
Rear view



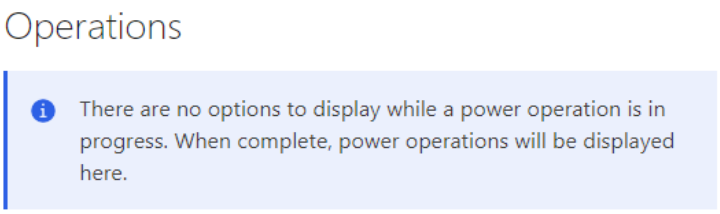
3. Check that the power button LED (A) is on and solid green to indicate that the server power status is Running.

4.2. Powering on from the SHC

1. From the **Control** tab, click **Server power operations**. The **Server power operations** page opens.
2. In the **Operations** section, click **Power on**.



A message is displayed.



Note After initiating the power on of the system, there is a 30 second delay before the update of the host power status to avoid sensor fluctuation. It is therefore necessary to wait 30 seconds before refreshing the Server power operations page of the Server Hardware Console (SHC) to see the updated power status after a power on.

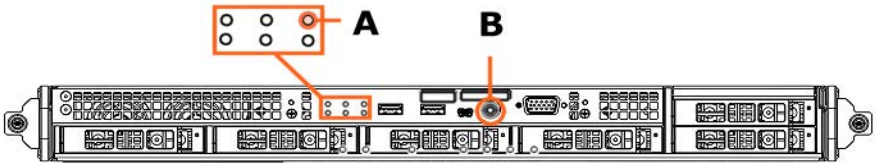
4.3. Powering off the server with the power button

1. Check that the power button LED (A) is on and solid green to indicate that the server power status is Running.
2. Press the power button (B) for approximately four seconds.

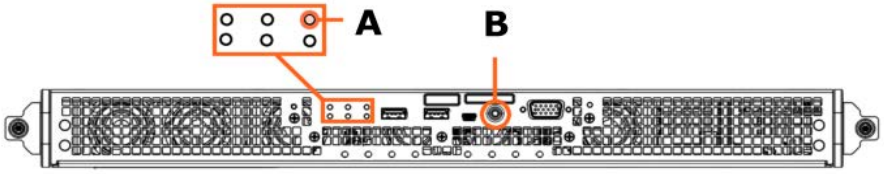
BullSequana EXR & AI100R

Front view

2.5 inch SATA disk option

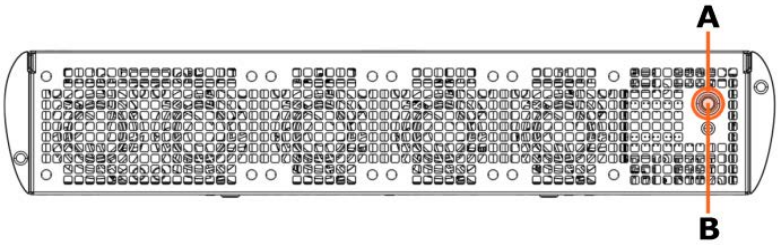


M.2 NVMe disk option

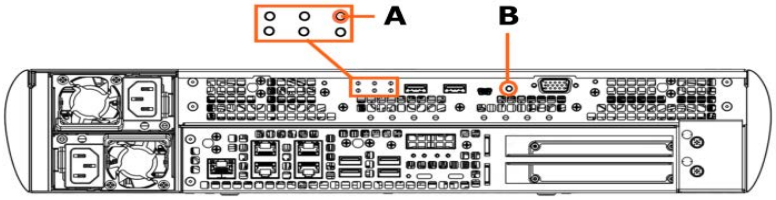


BullSequana EXD & AI100D

Front view



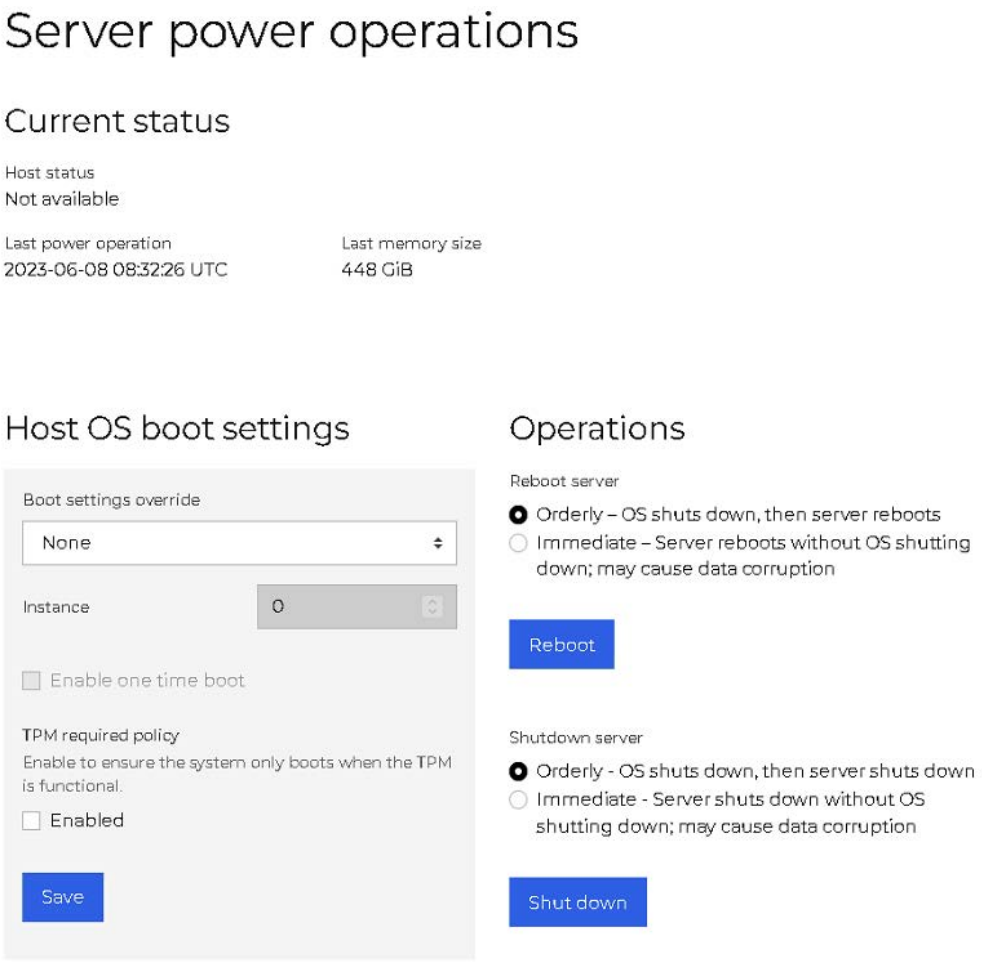
Rear view



3. Check that the power status LED (A) is blinking green to indicate that the server power status is Off.

4.4. Rebooting or shutting down from the SHC

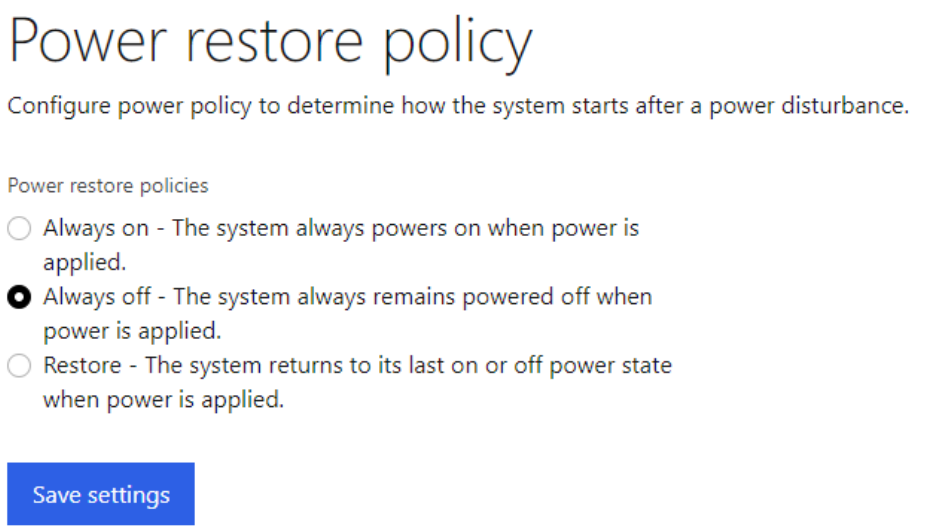
1. From the **Control** tab, click **Server power operations**. The **Server power operations** page opens.
2. In the **Operations** section, select the mode and click **Reboot** or **Shutdown**.



4.5. Configuring the power restore policy

The power restore policy determines how the system starts after a power disturbance.

1. From the **Control** tab, click **Power restore policy**. The **Power restore policy** page opens.



2. Select the policy.

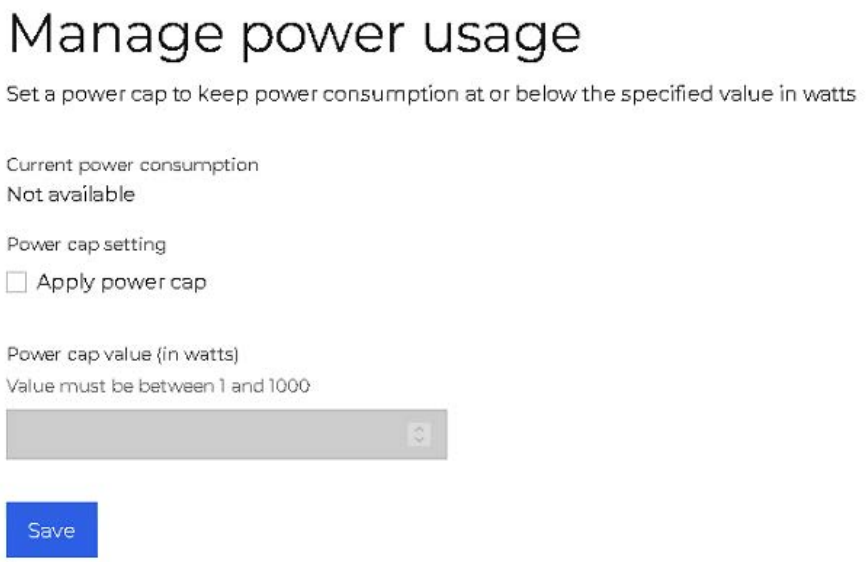
Power restore policy	Description
Always On	The system always powers on when power is applied
Always Off	The system always remains powered off when power is applied
Last state	The system returns to its last power state when power is applied

3. Click **Save Settings**.

4.6. Managing power usage

Note Only users with Administrator privilege have access to this feature.

1. From the **Control** tab, click **Manage power usage**. The **Manage power usage** page opens.



2. To set a power cap:
   a. Select **Apply power cap**.
   b. Set the power cap value in the **Power Cap Value (in watts)** box.
3. Click **Save**.

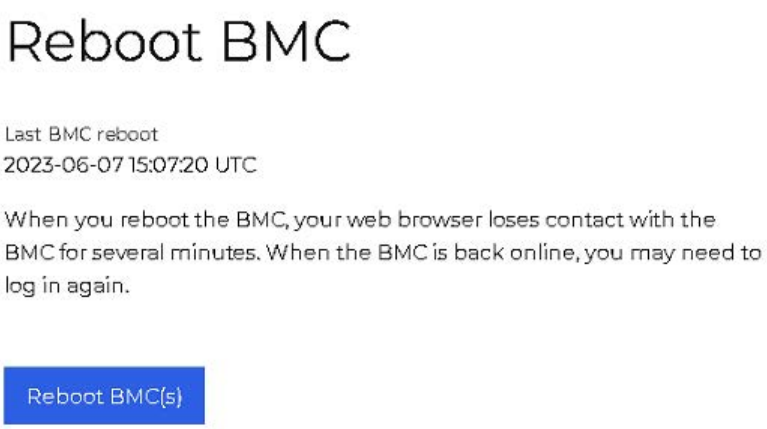
Note The power consumption and power cap value are indicated on the Overview page.

Chapter 5. Maintenance operations

5.1. Rebooting the BMC

Note Only users with Administrator privilege have access to this feature.

1. From the **Control** tab, click **Reboot BMC**. The **Reboot BMC** page opens.



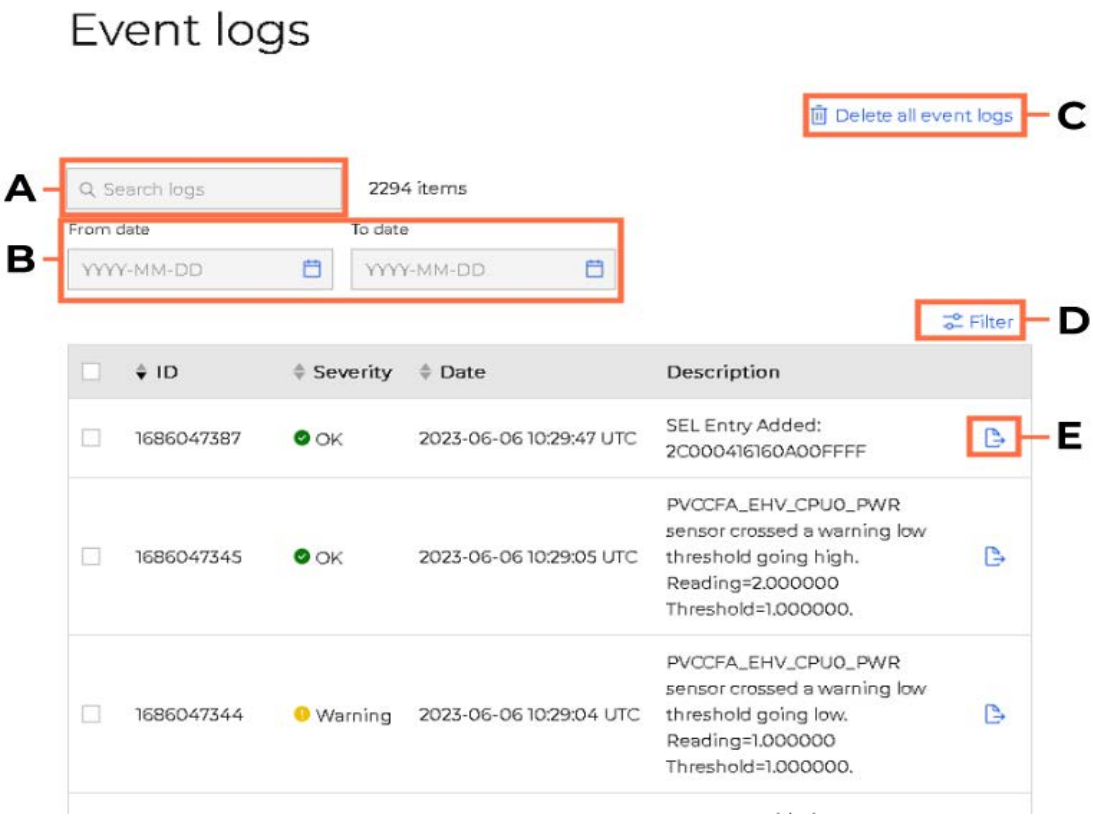
2. Click the **Reboot BMC** button and confirm.

   A success message is displayed.

5.2. Checking event logs

Displaying event logs

From the **Health** tab, click **Event logs**. The **Event logs** page opens.



Mark	Description
A	Alphabetical search
B	Date range search
C	Log deletion
D	Severity filter
E	Export of log to a json file

Filtering event logs

Enter one or more search criteria in the alphabetical search (A), date range (B) and severity (D) fields to filter the event logs displayed.

Exporting event logs

Click the arrow (E) to export an event log to a json file.

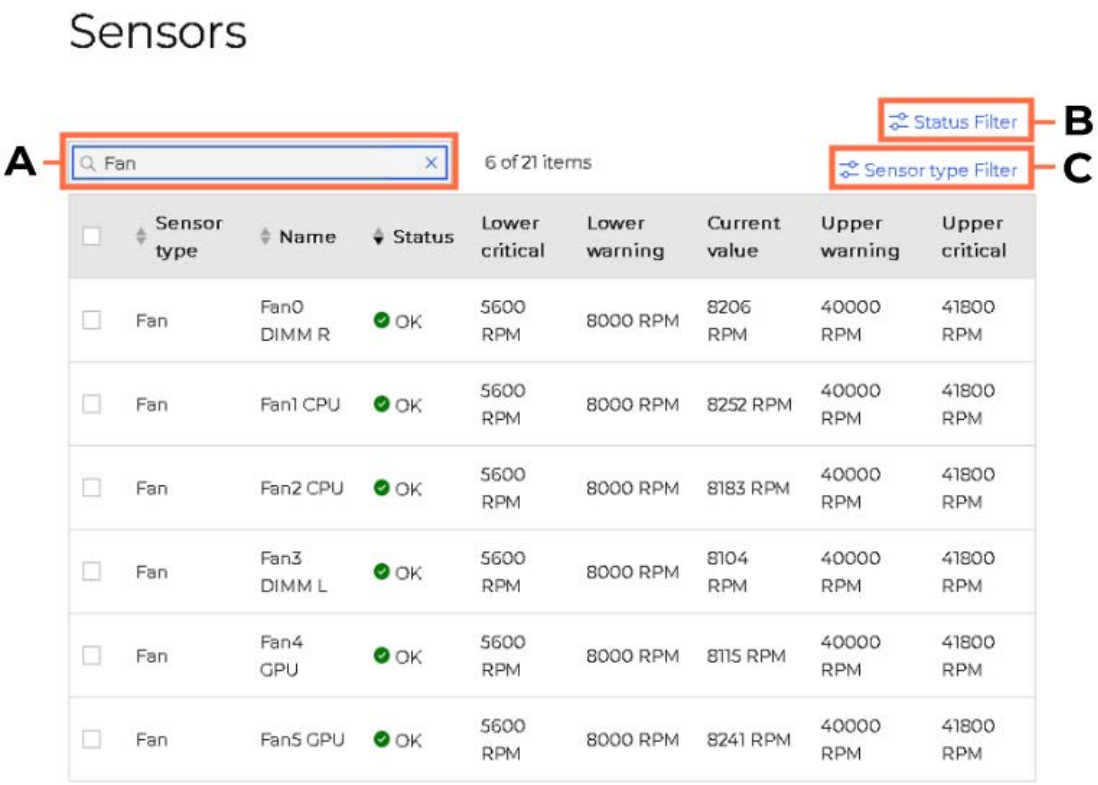
Deleting event logs

Click (C) to delete all event logs.

5.3. Checking the sensors

Displaying sensors

From the **Health** tab, click **Sensors**. The **Sensors** page opens.



Mark	Description
A	Alphabetical search
B	Status filter
C	Sensor type filter

Filtering sensors

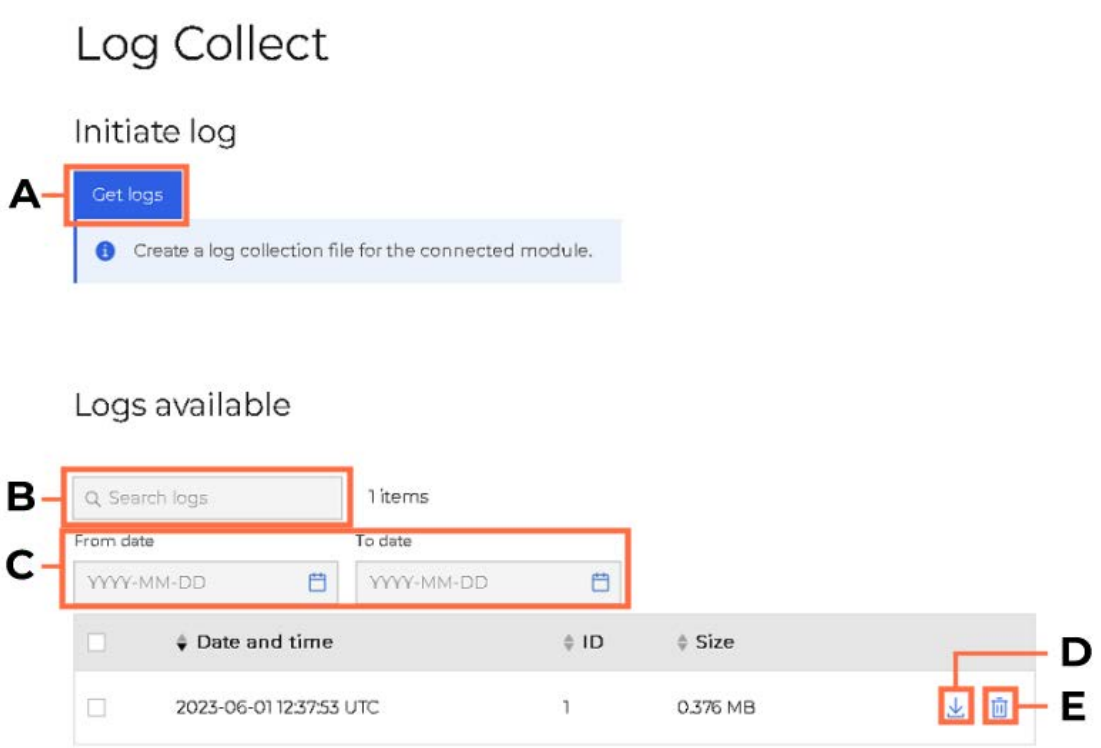
Enter one or more search criteria in the alphabetical search (A), date range (B) and severity (C) fields to filter the sensors displayed.

5.4. Collecting Logs

A log file is a collection of the logs for the connected server.

Displaying logs

From the **Health** tab, click **Log Collect**. The **Log Collect** page opens.



Mark	Description
A	Log file creation
B	Alphabetical search
C	Data range search
D	Log file download
E	Log file deletion

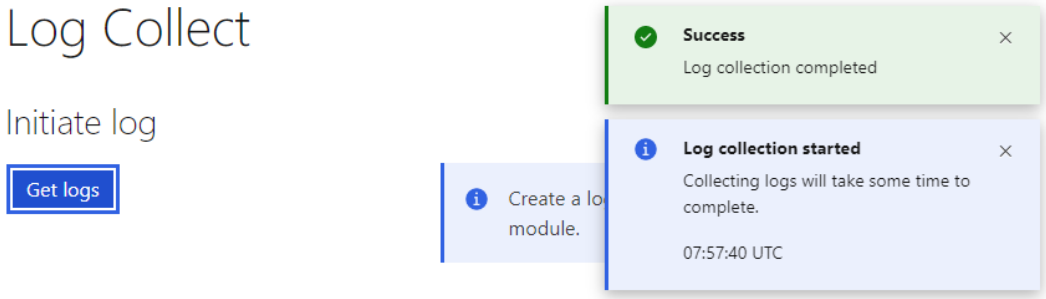
Filtering logs

Enter the search item (B) and / or the date range (C) to filter the log files displayed.

Collecting logs

Note	Due to space restrictions, it is advisable to delete the existing logs before perform a new log collect.

Click **Get logs** (A) to create a new log collection.



Exporting event logs

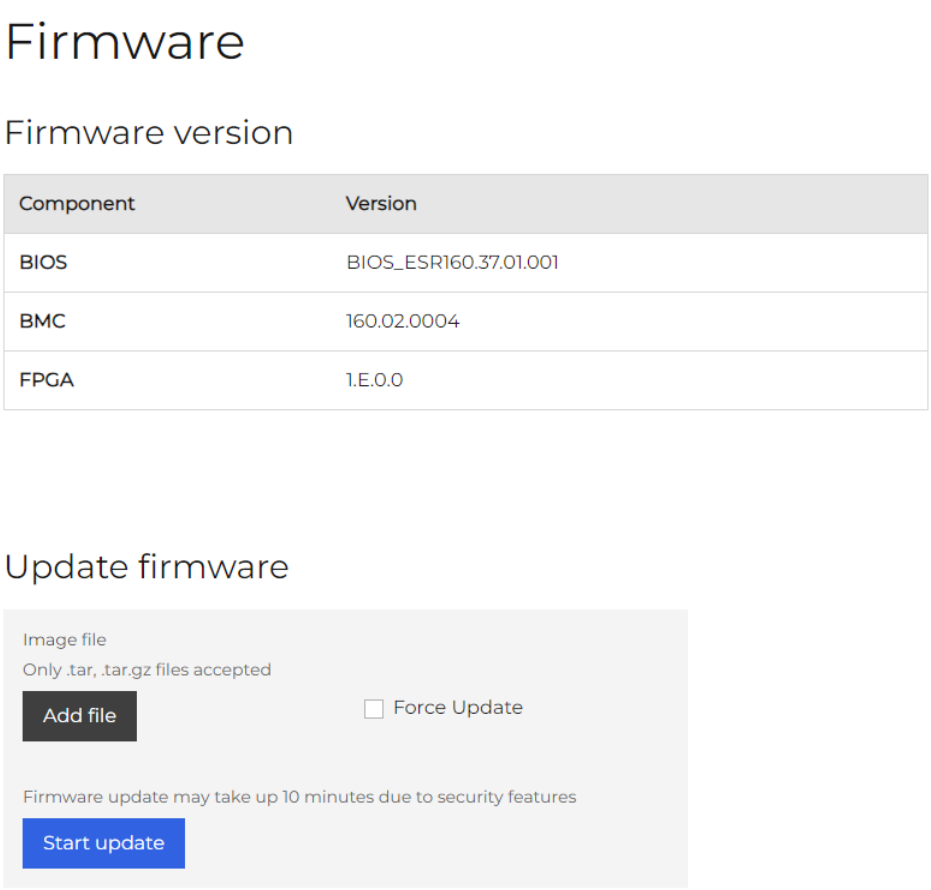
Click the arrow (D) to download a log file.

Deleting event logs

Click (E) to delete the log file.

5.5. Managing firmware versions

1. From the **Configuration** tab, click **Firmware**. The **Firmware** page opens.



2. To update a firmware version, click **Add file** to select the firmware version file, and click **Start update**.

Notes

- It is strongly recommended to power off the system before updating the BIOS and FPGA firmware.
- After a BIOS firmware update, the boot option is reset to PXE. It is therefore necessary to change the boot option after the update if PXE is not desired boot option.
- Select the **Force Update** box to reinstall the same firmware version.

Chapter 6. Managing RAID configurations

Important	**ATTENTION: Please read carefully the safety instructions before you perform the procedures described in this manual.** **See the *Multilingual Safety Notices Guide* for translated versions of the safety notices.**

WARNING W083
Do not change BIOS setup settings unless directed to do so by the support team.

WARNING W082
These procedures are for advanced users only. Risk of system damage.

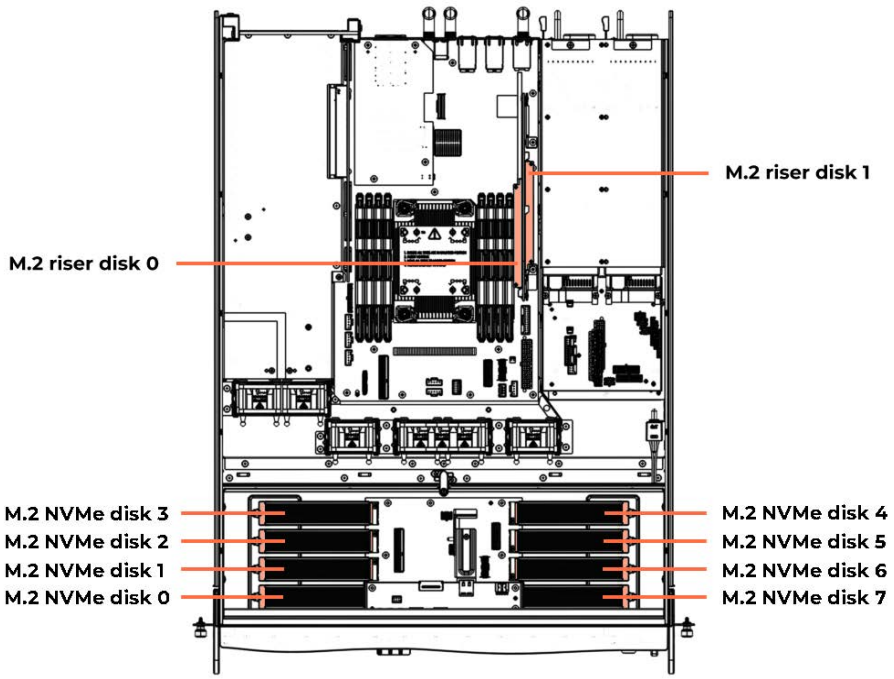
6.1. M.2 NVMe disks RAID configuration with Virtual RAID On CPU (Intel® VROC)

To use Virtual RAID On CPU (Intel® VROC) with M.2 NVMe disks, a hardware key must be inserted onto the motherboard, and the appropriate socket Virtual Management Devices (VMD) must be enabled in the BIOS settings.

6.1.1. M.2 NVMe disks location

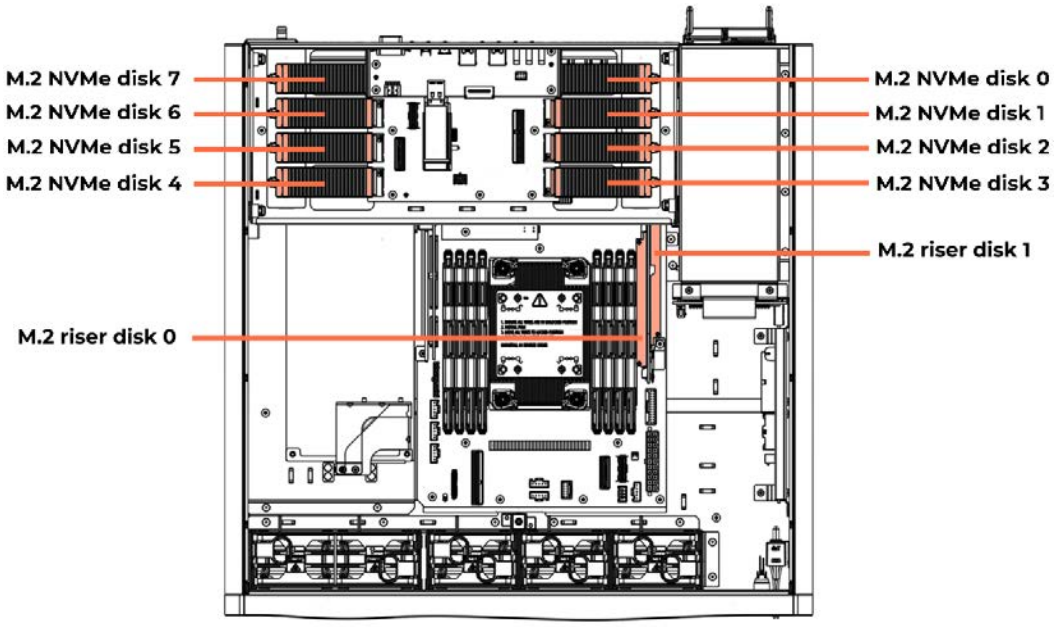
BullSequana EXR & AI100R

Top view



BullSequana EXD & AI100D

Top view

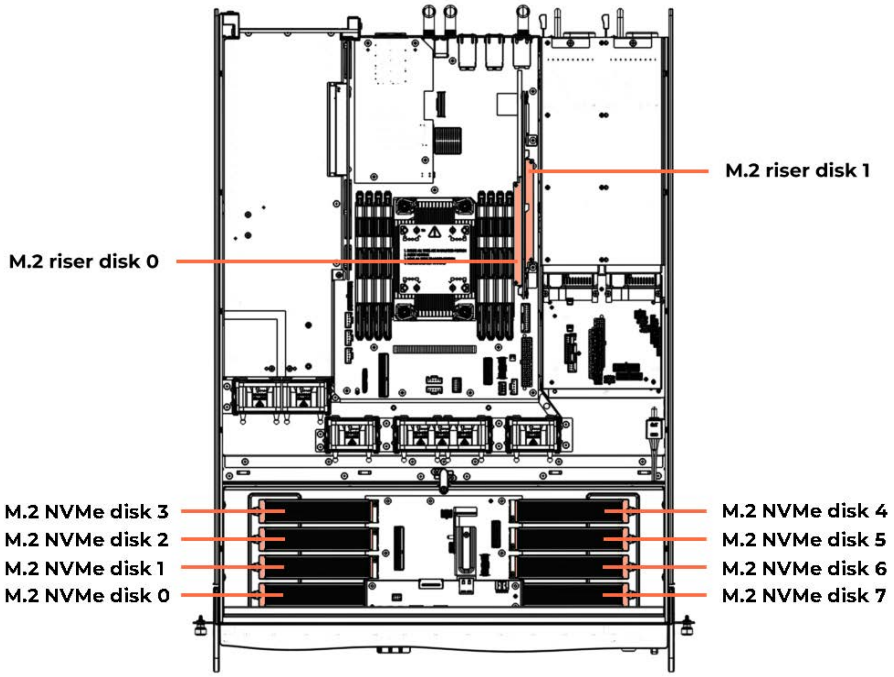


Disk module	Socket	IOU	VMD port
M.2 NVMe disk 0	0	IOU 3	A
M.2 NVMe disk 1	0	IOU 3	C
M.2 NVMe disk 2	0	IOU 3	E
M.2 NVMe disk 3	0	IOU 3	G
M.2 NVMe disk 4	0	IOU 4	A
M.2 NVMe disk 5	0	IOU 4	C
M.2 NVMe disk 6	0	IOU 4	E
M.2 NVMe disk 7	0	IOU 4	G
M.2 riser board disk 0	0	IOU 0	A
M.2 riser board disk 1	0	IOU 0	C

6.1.2. Intel® VROC mapping

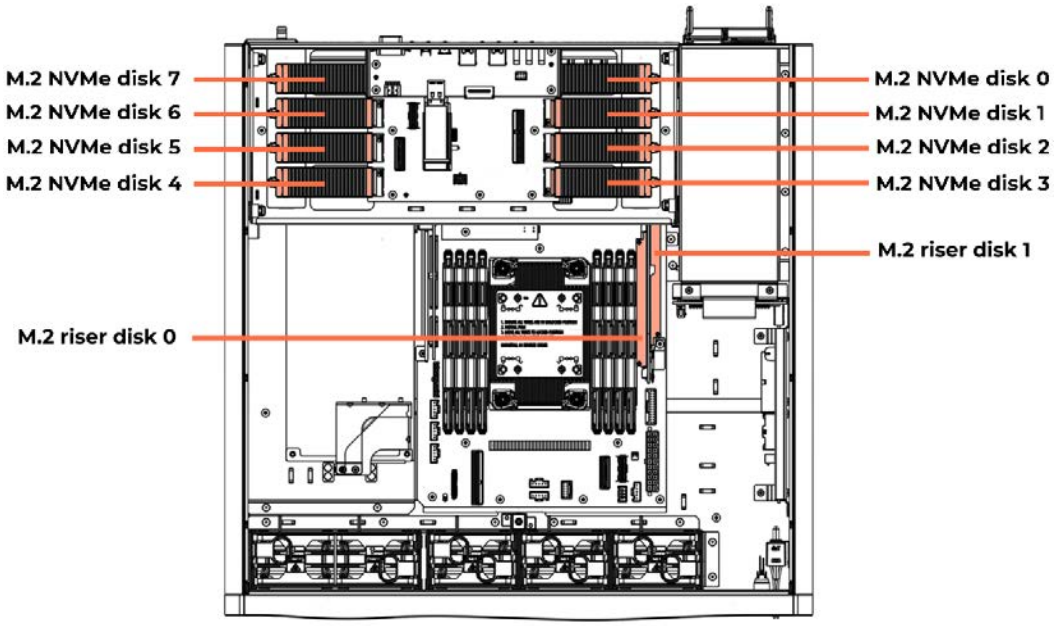
BullSequana EXR & AI100R

Top view



BullSequana EXD & AI100D

Top view



Physical location	BIOS
M.2 NVMe disk 0	Port 3.0, Slot 8, CPU0, VMD3, BDF 0A.00.0
M.2 NVMe disk 1	Port 3.1, Slot 9, CPU0, VMD3, BDF 0B.00.0
M.2 NVMe disk 2	Port 3.2, Slot 10, CPU0, VMD3, BDF 0C.00.0
M.2 NVMe disk 3	Port 3.3, Slot 11, CPU0, VMD3, BDF 0D.00.0
M.2 NVMe disk 4	Port 4.0, Slot 12, CPU0, VMD4, BDF 0A.00.0
M.2 NVMe disk 5	Port 4.1, Slot 13, CPU0, VMD4, BDF 0B.00.0
M.2 NVMe disk 6	Port 4.2, Slot 14, CPU0, VMD4, BDF 0C.00.0
M.2 NVMe disk 7	Port 4.3, Slot 15, CPU0, VMD4, BDF 0D.00.0
M.2 riser board disk 0	Port 0.0, Slot 2, CPU0, VMD0, BDF 8A.00.0
M.2 riser board disk 1	Port 0.1, Slot 3, CPU0, VMD0, BDF 8B.00.0

6.1.3. Configuring RAID disks

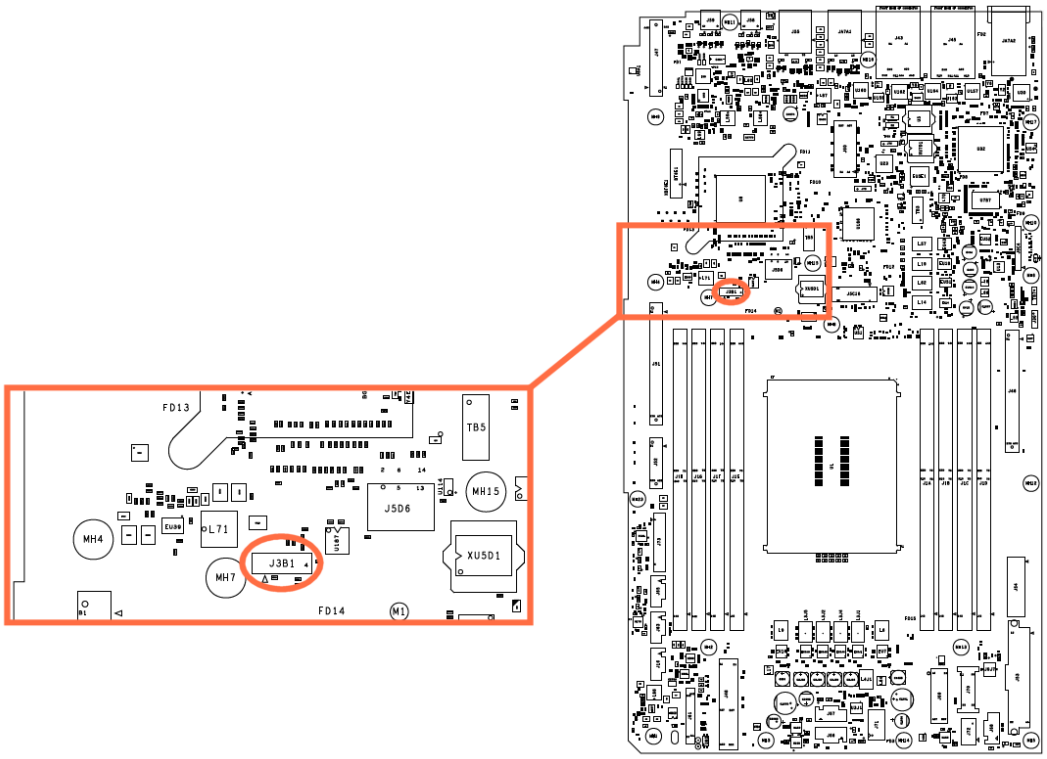
Note A RAID volume can be used as a bootable disk only if all disks in the RAID volume are connected to a single VMD domain. It is possible to create RAID volumes spanning multiple VMD domains, however such RAID configurations are not bootable.

Prerequisite

The appropriate Intel® VROC key is inserted on the motherboard.

Intel® VROC key type	RAID level
Standard	RAID 0, 1, 10
Premium	RAID 0, 1, 5, 10

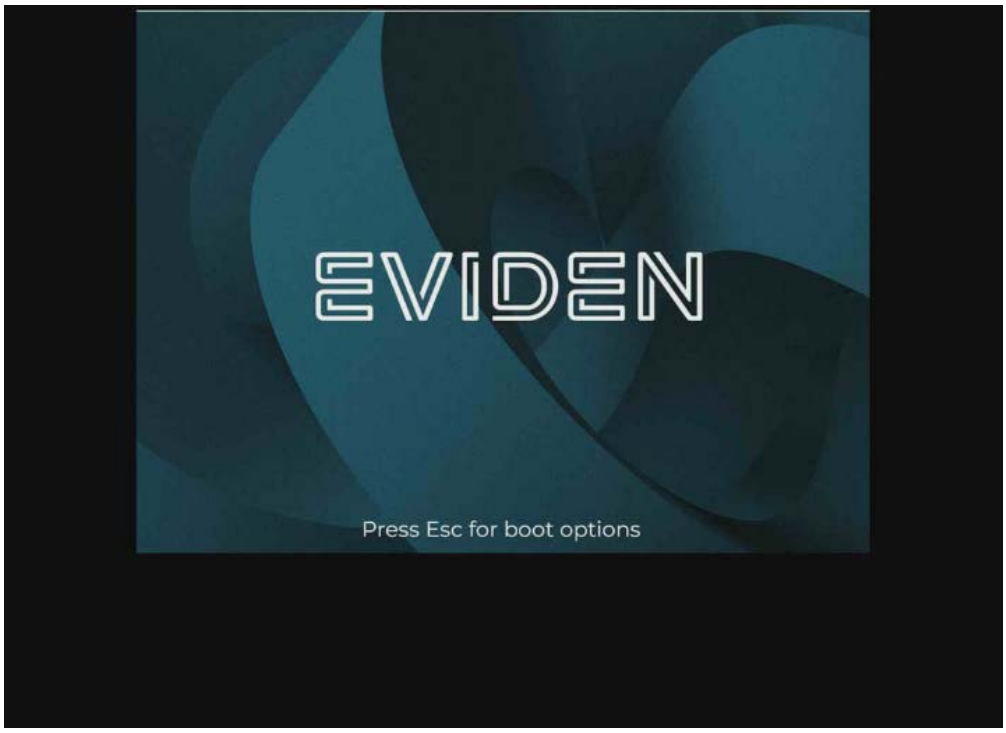
It is necessary to remove the optional mezzanine to insert or remove the Intel® VROC key. Contact the Support team for more information.



Procedure

1. Access the BIOS interface

1. Wait a few minutes for the following screen to be displayed.



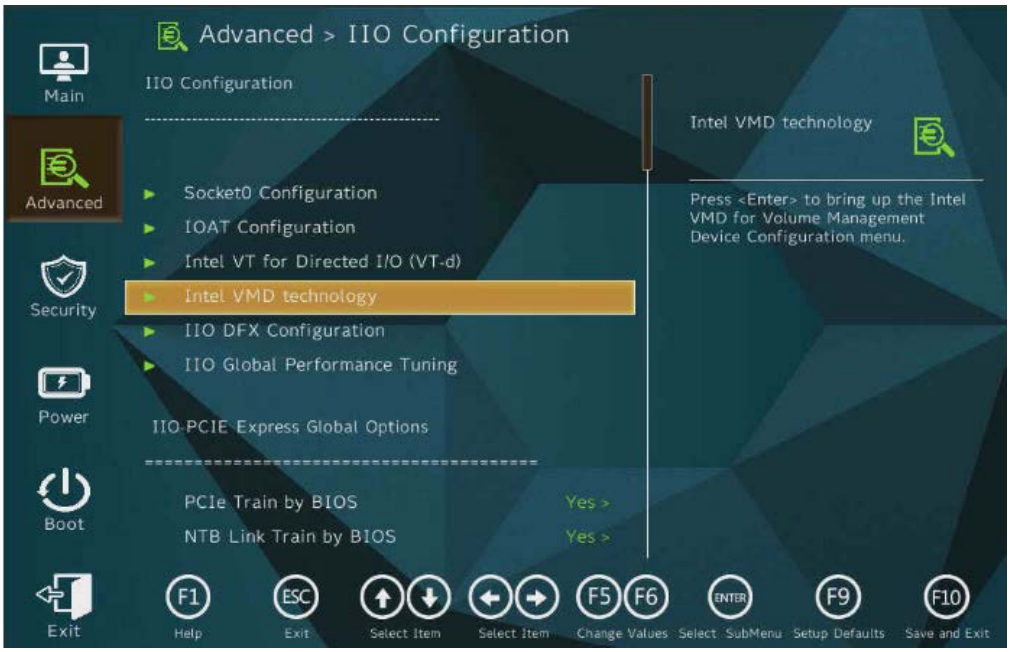
2. Press **[ESC]** to display the BIOS interface.
3. Select **Setup utility** from the main menu.

2. Configure VMD

1. From **Advanced**, select **Socket Configuration**.

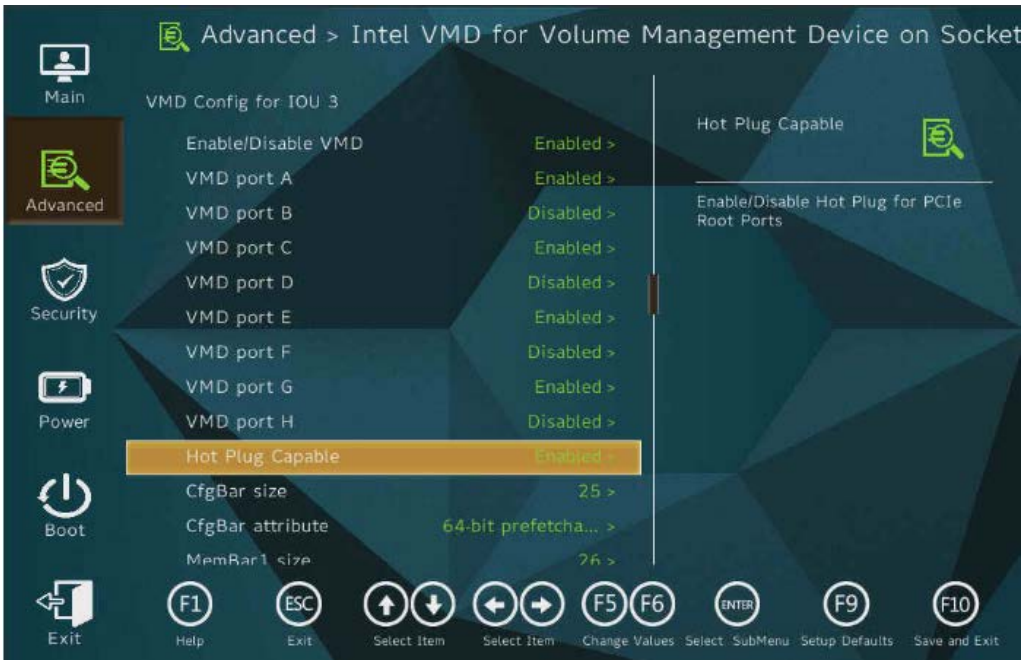
2. Select **IIO Configuration**.

3. Select **Intel VMD technology**.



4. Select **Intel VMD for Volume Management Device on socket 0**.

5. In sections **VMD Config for IOU 0**, **VMD Config for IOU 3** and **VMD Config for IOU 4**, enable:
   - Enable/Disable VMD
   - VMD port A
   - VMD port C
   - VMD port E
   - VMD port G
   - Hot Plug capable



3. Save changes

1. Click **Exit**.
2. Click **Exit Saving Changes**.
3. Click **Yes** in the **Exit** dialog box.

4. Reboot the system

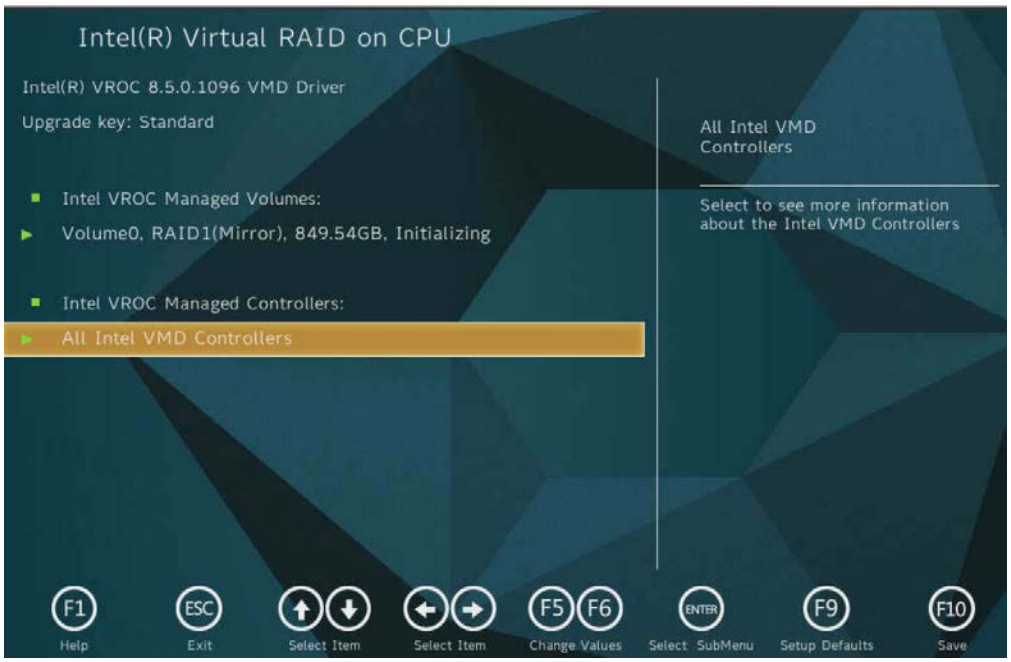
5. Check the configuration after reboot

1. Select **Device management** from the main menu.

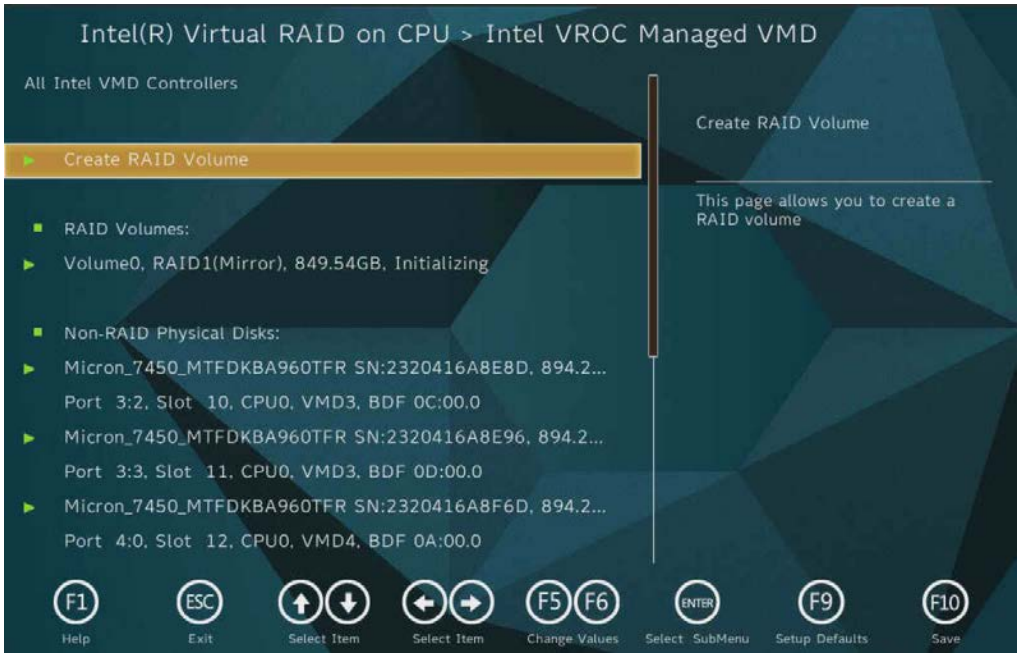
2. In **Device Management**, check that the new device **Intel(R) Virtual RAID on CPU** is created.

3. Select **Intel(R) Virtual RAID on CPU**.

4. Select **All Intel VMD Controllers**.

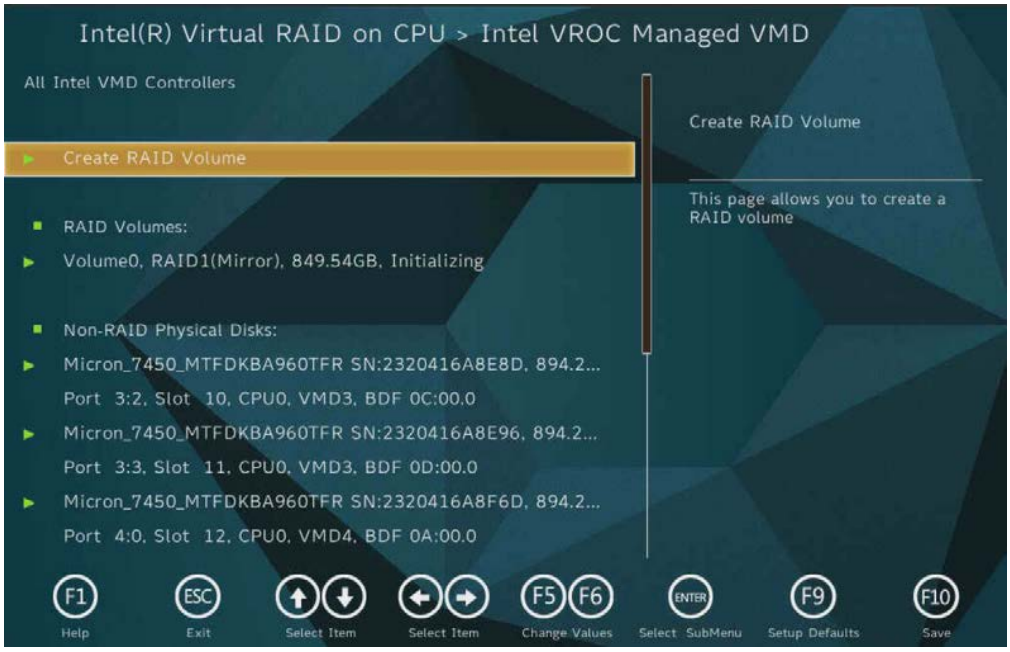


5. Check the configuration.



6. **Configure RAID volumes**

    1. From the **Device Management** menu, select **Intel(R) Virtual RAID on CPU**.
    2. Select **All Intel VMD Controllers**.
    3. Select **Create RAID Volume**.



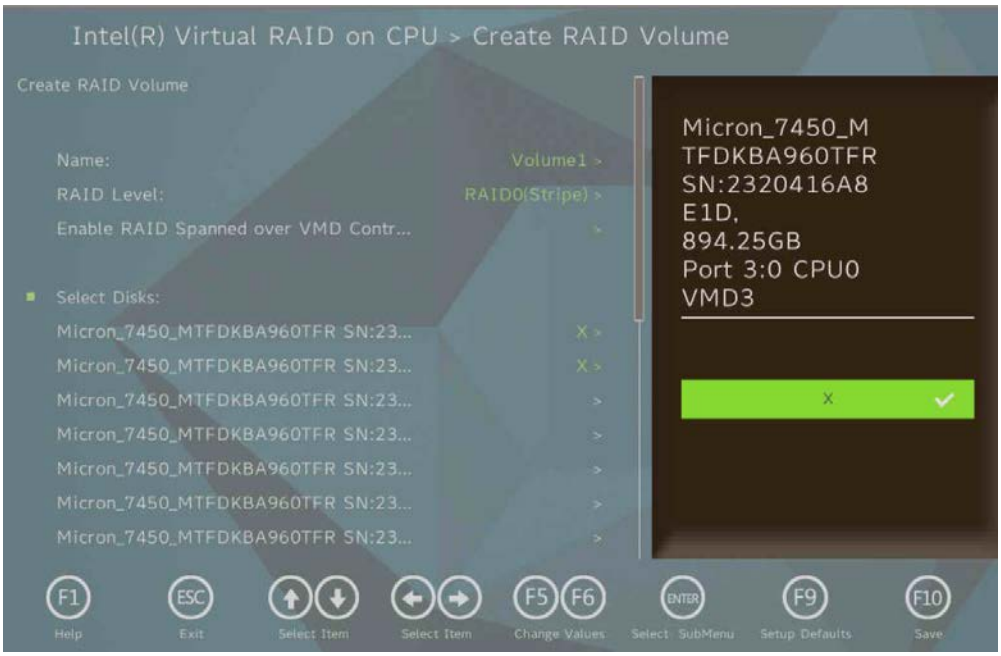
4. Create the RAID volume:

   a. Select the **RAID Level**: 0,1, 5 or 10.

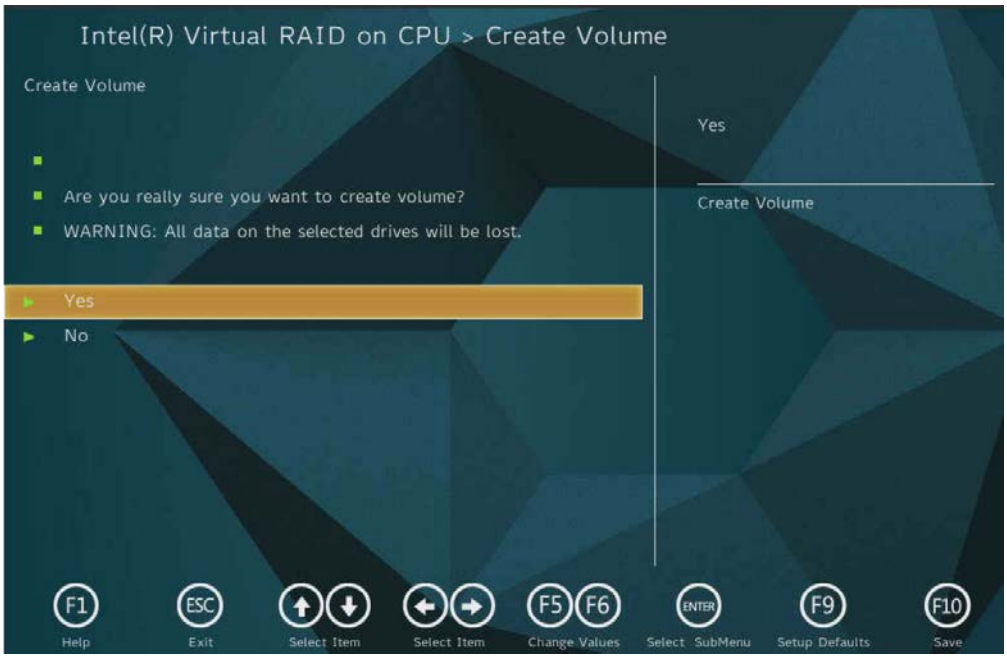
   b. Select **Enable RAID spanned over VMD Controllers** to create RAID volumes spanning multiple VMD domains.

   c. Select the required disks in **Select Disks** section.

   d. Select **Create Volume**.



5. Click **Yes** in the **Create Volume** dialog box.

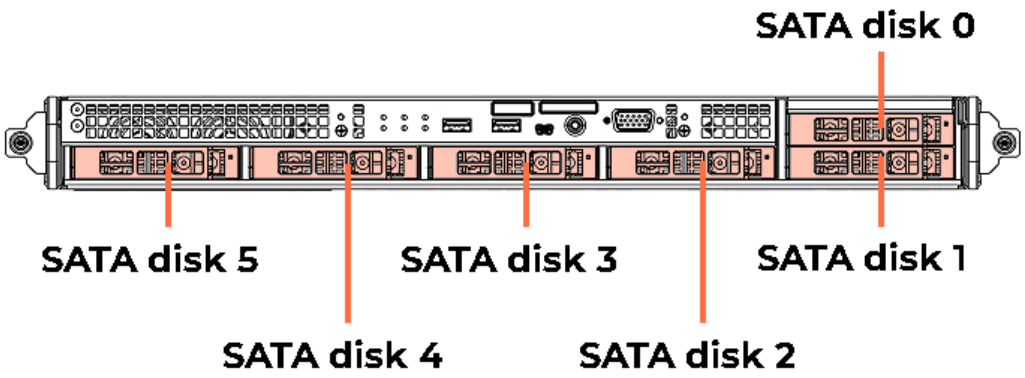


6.2. SATA disks RAID configuration with Virtual RAID On CPU (Intel® VROC)

To use Virtual RAID On CPU (Intel® VROC) with SATA disks, no hardware key is required, but the appropriate socket Virtual Management Devices (VMD) must be enabled in the BIOS settings.

6.2.1. 2.5 inch SATA disks location

Front view



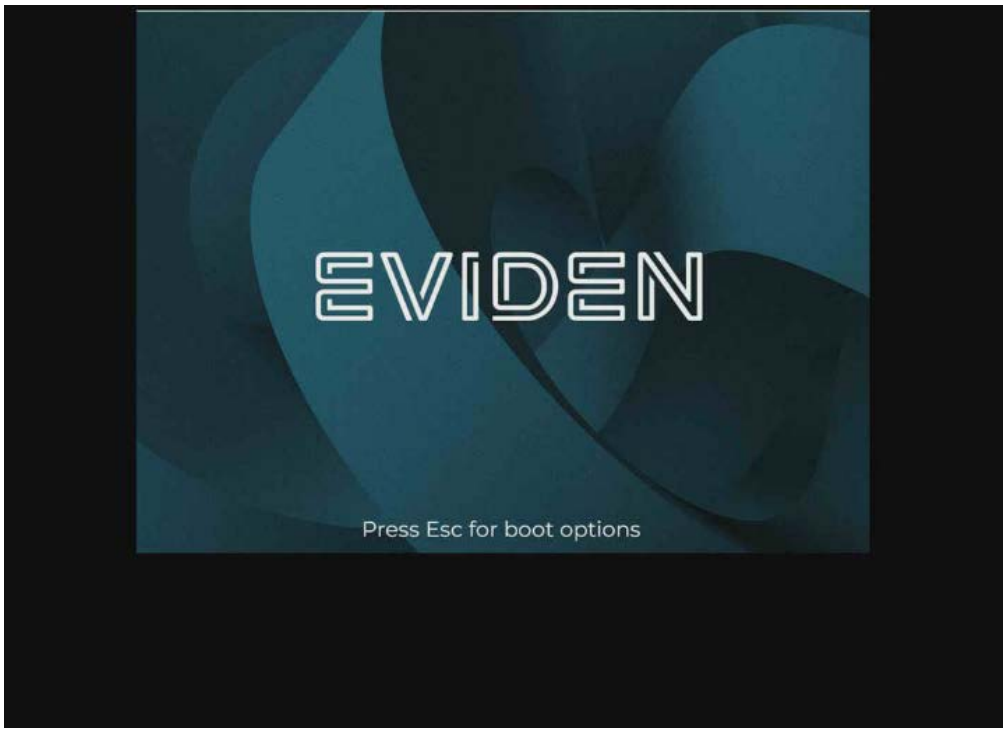
6.2.2. Configuring RAID disks

Note A RAID volume can be used as a bootable disk only if all disks in the RAID volume are connected to a single VMD domain. It is possible to create RAID volumes spanning multiple VMD domains, however such RAID configurations are not bootable.

Procedure

1. **Access the BIOS interface**

   1. Wait a few minutes for the following screen to be displayed.



   2. Press **[ESC]** to display the BIOS interface.

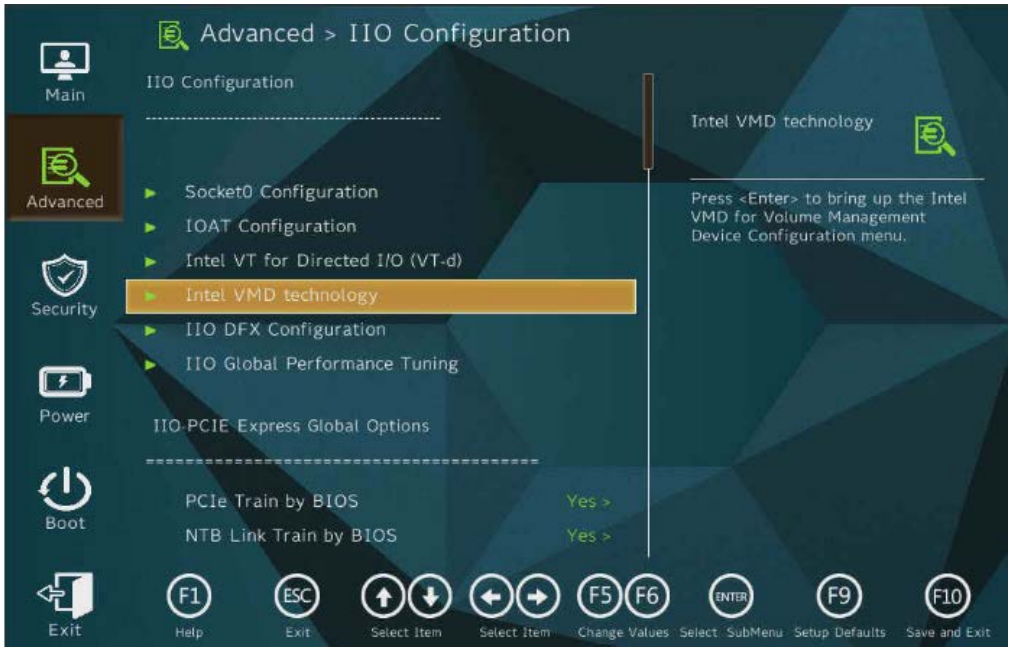
3. Select **Setup utility** from the main menu.

2. Configure VMD

1. From **Advanced**, select **Socket Configuration**.

2. Select **IIO Configuration**.

3. Select **Intel VMD technology**.

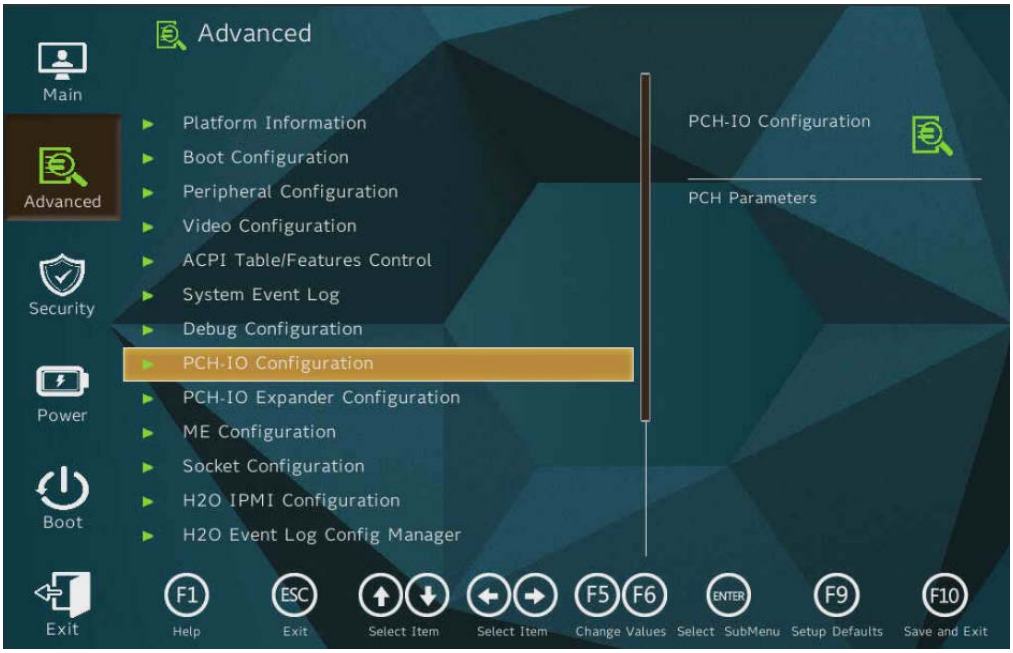


4. Select **Intel VMD for Volume Management Device on socket 0**.

5. In section **VMD Config for IOU 0** enable:
   - Enable/Disable VMD
   - VMD port A
   - VMD port C
   - VMD port E
   - VMD port G
   - Hot Plug capable

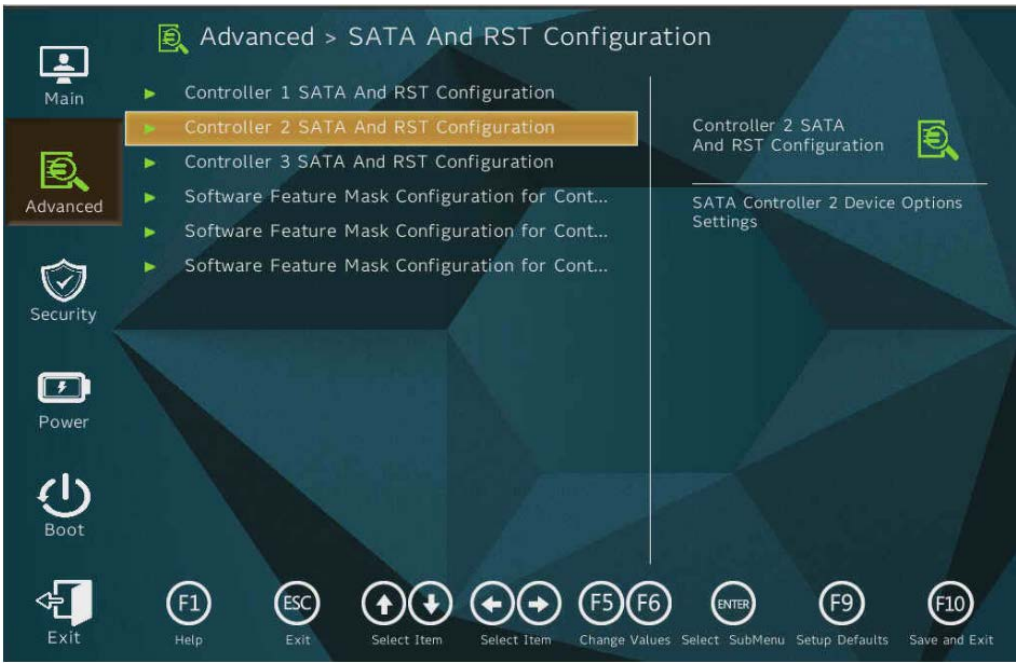
3. Configure settings for SATA disks

1. From **Advanced**, select **PCH-IO Configuration**.

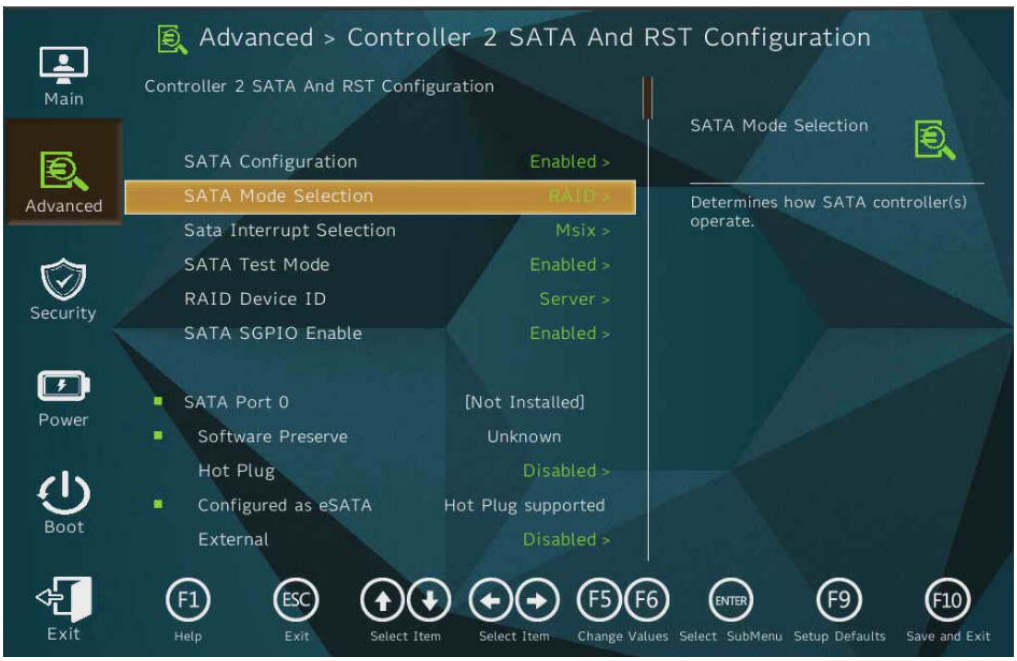


2. Select **SATA and RST Configuration**.

3. Select **Controller 2 SATA and RST Configuration**.



4. Change **SATA Mode Selection** to RAID.



4. Save changes

1. Click **Exit**.
2. Click **Exit Saving Changes**.
3. Click **Yes** in the **Exit** dialog box.

5. Reboot the system

6. Check the configuration after reboot

1. Select **Device management** from the main menu.

2. Select **Intel® VROC sSATA Controller**.

3. Check the configuration.

7. Configure RAID volumes

1. From the Device Management menu, select **Intel® VROC sSATA Controller**.

2. Select **Create RAID Volume**.

3. Create the RAID volume:

   a. Select the **RAID Level**: 0,1, 5 or 10.

   b. Select **Enable RAID spanned over VMD Controllers** to create RAID volumes spanning multiple VMD domains.

   c. Select the required disks in **Select Disks** section.

   d. Select **Create Volume**.

4. Select **Yes** in the **Create Volume** dialog box.

Appendix A. Pre-installation steps for Windows Server 2022

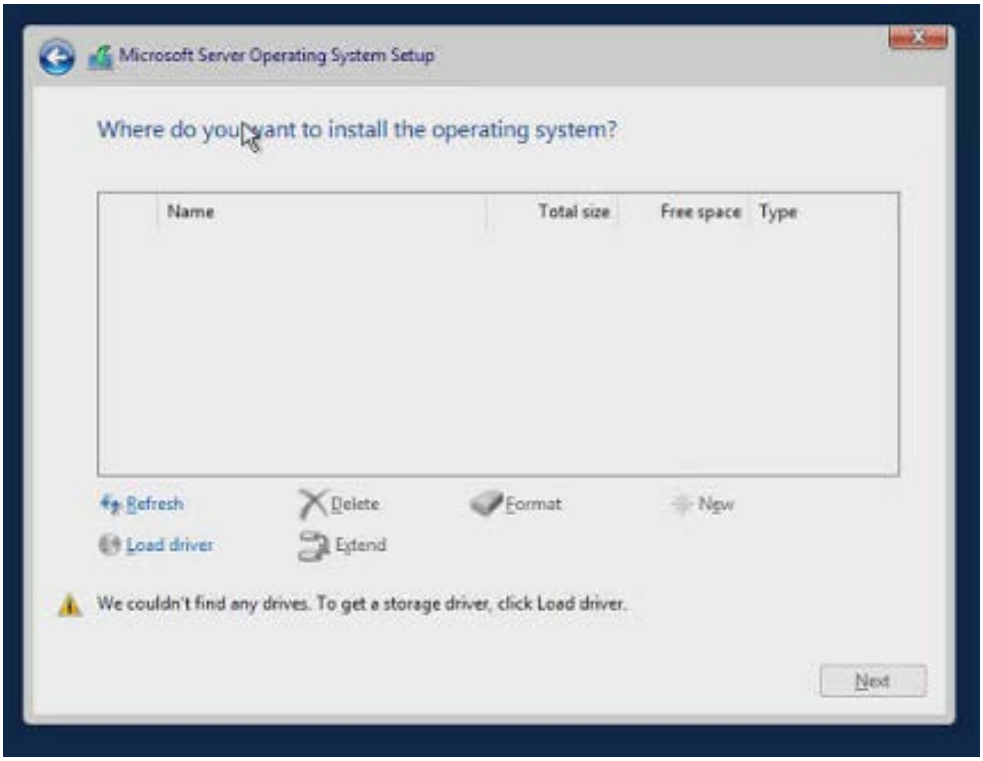
The Windows Server 2022 operating system (OS) can be installed on different storage configurations using the installation ISO image.

In some cases, it is necessary to load a driver to be able to access the storage devices.

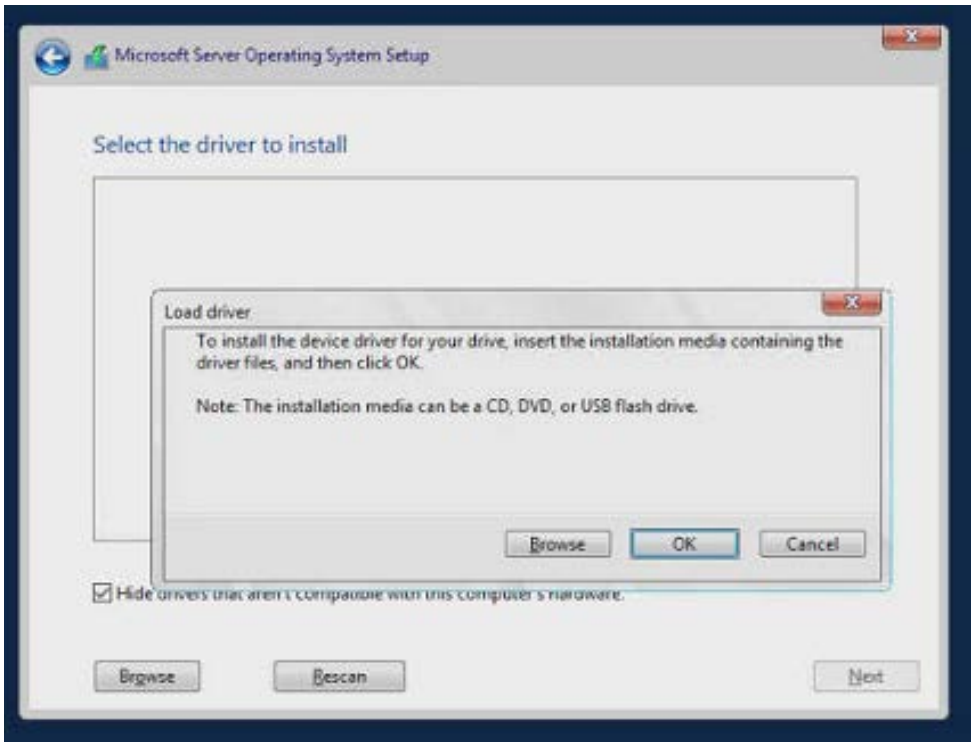
See The Bull support web site for the necessary drivers:
https://support.bull.com

Procedure

1. **Click Load Driver on the following screen**



2. Browse the location of the driver

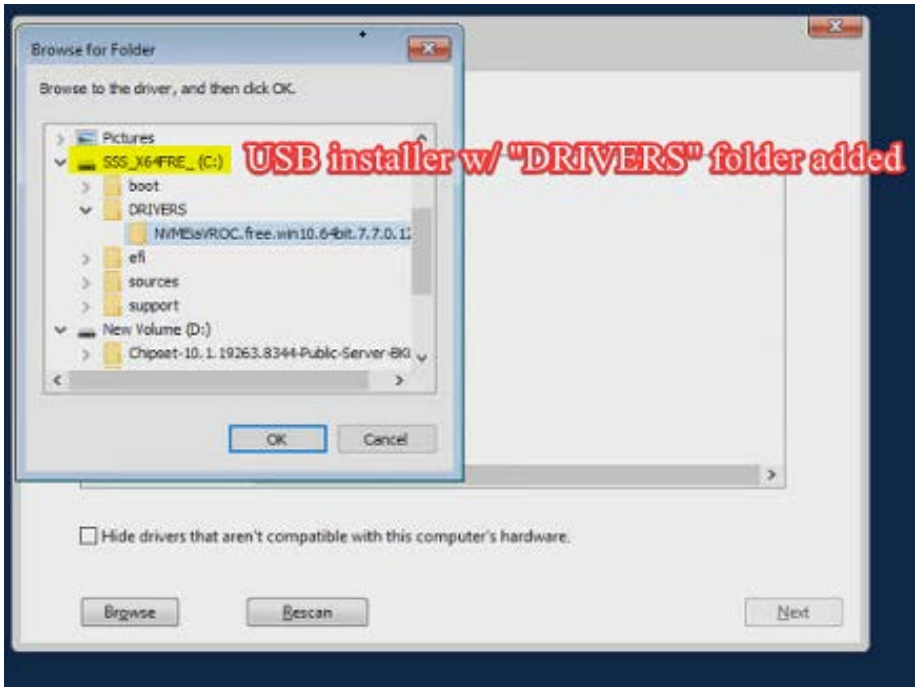


3. Select the driver

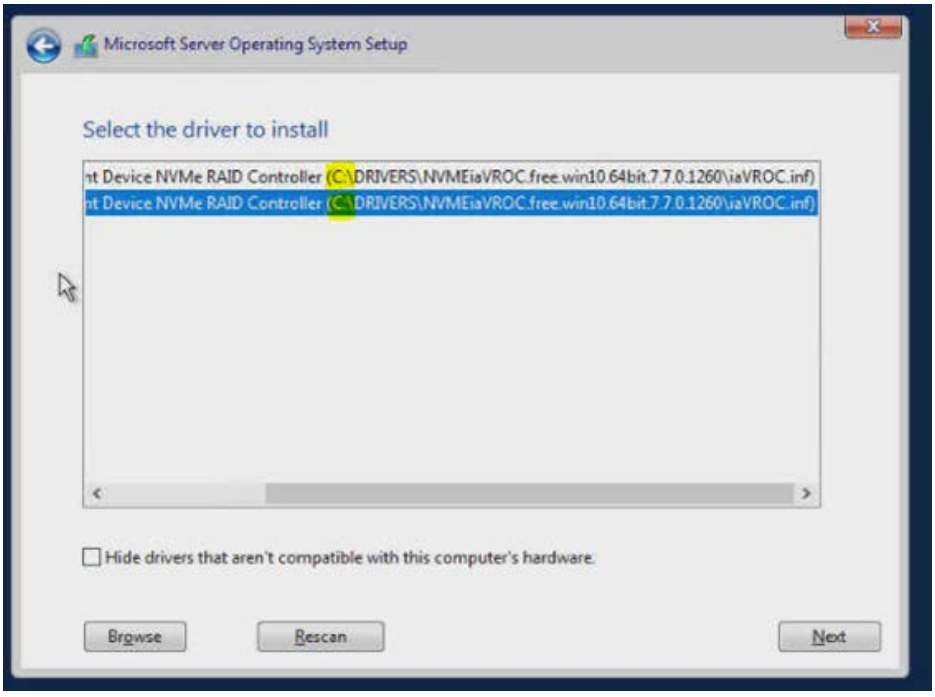
The driver can be copied to the installation media before starting, or to another USB drive.

Driver added to the installation media

1. Select the driver folder that is present on the Windows Installation USB drive.

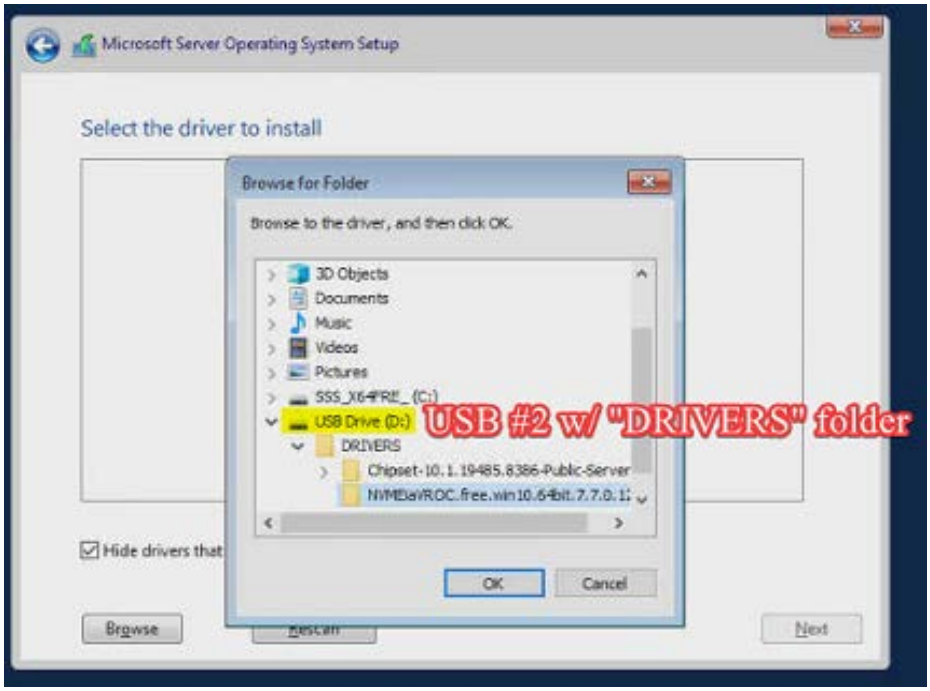


2. Select the driver to install.

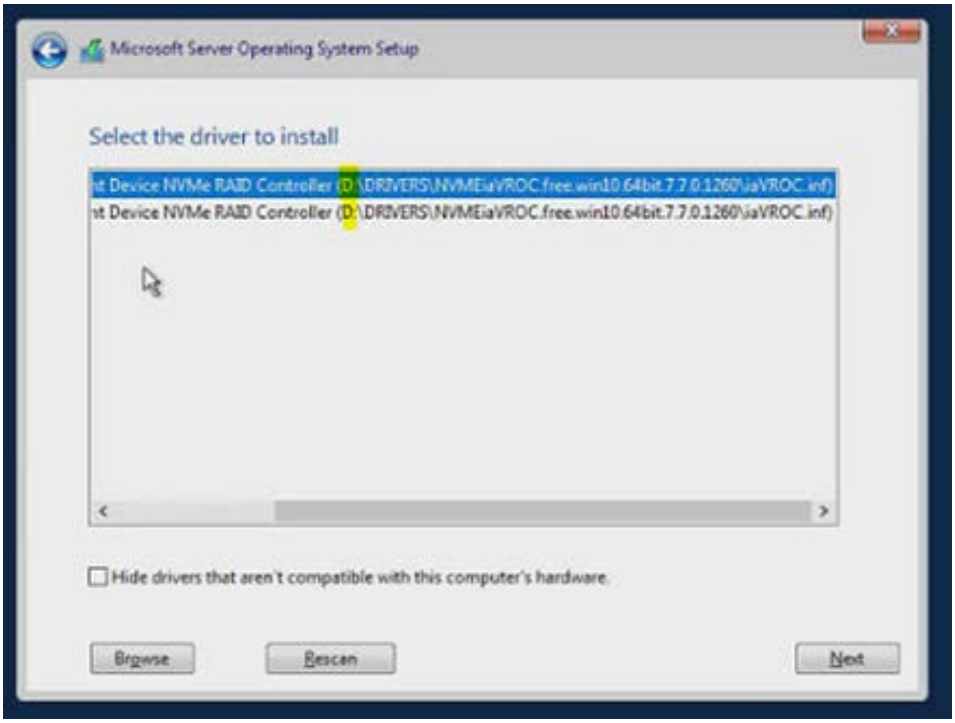


Driver on another USB drive

1. Select the driver folder that is present on a separate drive.



2. Select the driver to install.



4. **Select one of the NVMe drives present to continue installation**