eterio SAN MD-Series Hardware User's Manual

Applicable Models:

eterio SAN MD4224S, MD3216S, MD2212S, MD2226S
eterio SAN MD4224M, MD3216M, MD2212M, MD2226M
eterio SAN MD4224L, MD3216L, MD2212L, MD2226L

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https://eterio.eu

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Product warranty caution

The customer should only perform the service and repair actions on the eterio SAN MD components listed in this document. Any other actions needed should only be performed by an authorized service center.

The warranty for the eterio SAN MD-Series shall not apply to failures of any unit when:

- The System is repaired or modified by anyone other than the manufactures personnel or approved agent.
- The System is physically abused or used in a manner that is inconsistent with the operating instructions or product specification defined by the manufacturer.
- The System fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The System is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by the manufacturer.
- The manufacturer's serial number tag is removed.
- The System is damaged because of improper packaging on return.

In case of unauthorized repairs or modifications, your warranty becomes immediately void.

Notices

This Hardware user's manual is applicable to the following eterio SAN MD models:

Table 1: eterio SAN Storage System 4U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD4224S	Dual Controller	LFF 24-disk 4U Chassis
MD4224M	Dual Controller	LFF 24-disk 4U Chassis
MD4224L	Dual Controller	LFF 24-disk 4U Chassis

Table 2: eterio SAN Storage System 3U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD3216S	Dual Controller	LFF 16-disk 3U Chassis
MD3216M	Dual Controller	LFF 16-disk 3U Chassis
MD3216L	Dual Controller	LFF 16-disk 3U Chassis

Table 3: eterio SAN Storage System 2U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD2212S	Dual Controller	LFF 12-disk 2U Chassis
MD2212M	Dual Controller	LFF 12-disk 2U Chassis
MD2212L	Dual Controller	LFF 12-disk 2U Chassis
MD2226S	Dual Controller	SFF 26-disk 2U Chassis
MD2226M	Dual Controller	SFF 26-disk 2U Chassis
MD2226L	Dual Controller	SFF 26-disk 2U Chassis

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Preface

About This Manual

This manual provides technical guidance for designing and implementing eterio SAN MD-Series, and it is intended for use by system administrators, SAN designers, storage consultants, or anyone who has purchased these products and is familiar with servers and computer networks, network administration, storage system installation and configuration, storage area network management, and relevant protocols.

CAUTION:

Do NOT attempt to service, change, disassemble or upgrade the equipment's components by yourself. Doing so may violate your warranty and expose you to electric shock. Refer all servicing to authorized service personnel. Please always follow the instructions in this owner's manual.

Related Documents

There are related documents which can be downloaded from the website.:

- All eterio SAN Documents
- Eterio SAN MD-Series – Quick Installation Guide
- Eterio SAN MD-Series – Hardware User's Manual
- Eterio SAN MD-Series – Configuration Worksheet
- Eterio SAN MD-Series – ESOS 4.0 User's Manual
- Eterio SAN MD-Series – Compatibility Matrix

Technical Support

Do you have any questions or need help trouble-shooting a problem? Please contact eterio Support, we will reply to you as soon as possible.

Via the Web: https://eterio.eu/serwis

Via Telephone: +48 18 4436509

Via Email: support@eterio.eu

Information, Tip and Caution

This manual uses the following symbols to draw attention to important safety and operational information.

INFORMATION:

INFORMATION provides useful knowledge, definition, or terminology for reference

TIP:

TIP provides helpful suggestions for performing tasks more effectively.

CAUTION:

CAUTION indicates that failure to take a specified action could result in damage to the system.

Conventions

The following table describes the typographic conventions used in this manual.

Table 4:Typographic conventions used in this manual

Conventions	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click the **OK** button.
<*Italic*>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: copy <*source-file*> <*target-file*>.
[ ] square	Indicates optional values.
brackets	Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments.
/ Slash	Indicates all options or arguments.
underline	Indicates the default value. Example: [a | b]

1. Overview

Thank you for purchasing Epsylon products. The eterio San MD-Series is a high-performance SAN storage solution combining outstanding performance with high availability, reliability, flexibility, and simple management.

1.1 eterio SAN MD-Series Product Overview

eterio SAN MD-Series is a SAN storage system, the system is composed of system hardware and the ESOS operating system, the system hardware is a modular design and FRU (field replacement unit) optimized. All the hardware modules are inside the rack mount chassis including system controllers, front panel, rear panel, redundant power supply and fan modules, cache-to-flash module (by using battery backup module or super capacitor module), and expansion slots for optional Fibre Channel or 10GbE / 1GbE iSCSI host cards. This manual will direct you step by step to familiarize you with the eterio SAN hardware components, how to install the system, carry out the initial configuration, and provide you with some quick maintenance guidelines.

INFORMATION:

For how to use the ESOS operating system, please refer to the ESOS 4.0 User's Manual

eterio SAN MD-Series supports several standard form factors:

- LFF (Large Form Factor): 12-bay 19" rack mount 2U chassis, 16-bay 19" rack mount 3U chassis, and 24-bay 19" rack mount 4U chassis.
- SFF (Small Form Factor): 26-bay 19" rack mount 2U chassis.

Figure 1 shows the ESOS system architecture with a single controller configuration. The data path is back and forth between the host interfaces and disk drives via the backplane. The LVM (Logical Volume Management) is the core to handle this data flow between them. It provides a method of allocating space on mass-storage devices that is more flexible than conventional partitioning schemes. A volume manager can concatenate, stripe together or otherwise combine partitions into larger virtual ones that administrators can re-size or move, potentially without interrupting system use. Of course, it may rely on the system resources manager to arrange the processor time slot and scheduled tasks.

Figure 1: Form Factors of eterio SAN MD-Series Models

The following tables provide detailed information about all eterio SAN MD-Series models arranged by form factors.

Table 5: eterio SAN Storage System 4U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD4224S	Dual Controller	LFF 24-disk 4U Chassis
MD4224M	Dual Controller	LFF 24-disk 4U Chassis
MD4224L	Dual Controller	LFF 24-disk 4U Chassis

Table 6: eterio SAN Storage System 3U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD3216S	Dual Controller	LFF 16-disk 3U Chassis
MD3216M	Dual Controller	LFF 16-disk 3U Chassis
MD3216L	Dual Controller	LFF 16-disk 3U Chassis

Table 7: eterio SAN Storage System 2U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
MD2212S	Dual Controller	LFF 12-disk 2U Chassis
MD2212M	Dual Controller	LFF 12-disk 2U Chassis
MD2212L	Dual Controller	LFF 12-disk 2U Chassis
MD2226S	Dual Controller	SFF 26-disk 2U Chassis
MD2226M	Dual Controller	SFF 26-disk 2U Chassis
MD2226L	Dual Controller	SFF 26-disk 2U Chassis

1.2 eterio SAN MD-Series Hardware Features

The following is a list of the key hardware components and optional components of the eterio SAN MD-Series for reference.

- Dual-Active (Active/Active or Active/Passive) controller design architecture
- Processor Intel Xeon D15xx family 2-core or 4-core processor
- Standard system memory capacity
  - MDxxxxL series: DDR4 8GB (2 x 4GB), and up to 128GB (4 x 32GB) per controller
  - MDxxxxM series: DDR4 4GB (1 x 4GB), and up to 128GB (4 x 32GB) per controller
  - MDxxxxS series: DDR4 4GB (1 x 4GB), and up to 32GB (2 x 16GB) per controller
- SAS 3.0 backplane board
- Built-in two 10GbE T-BASE iSCSI ports per controller
- Redundant power supply units
- Redundant fan modules
- Storage capacity expansion with eterio SAN JBOD's series 12Gb SAS RAID expansion enclosure(s) or with third-party system(s).
- Each controller has two host card slots allowing you to select your desired host cards configuration. Optional host cards are on the following:
  - 4-port 16Gb Fibre Channel (SFP+) (only for slot 1)
  - 2-port 16Gb Fibre Channel (for both slot 1 and slot 2, slot 2 provides 20 Gb bandwidth)
  - 4-port 10GbE iSCSI (SFP+) (for both slot 1 and slot 2, slot 2 provides 20 Gb bandwidth)
  - 2-port 10GBASE-T iSCSI (RJ45) (for both slot 1 and slot 2)
  - 4-port 1GBASE-T iSCSI (RJ45) (for both slot 1 and slot 2)
- A Cache-to-Flash module is also available for the protection of the system cache data in your eterio SAN MD-System
  - BBM (Battery Backup Module) + flash module
  - SCM (Super Capacitor Module) + flash module
- You can also use SSDs to boost your overall system speed. If you purchase SATA SSDs for your dual controller eterio SAN MD system; you have to purchase 6G MUX board

from eterio channel partners. Because there are different LFF and SFF disk drive trays, 6G MUX board is needed to adapt to the type of bracket:

- SATA 6Gb MUX board for installing 2.5” SATA SSD into LFF 3.5” disk drive tray
- SATA 6Gb MUX board for installing 2.5” SATA SSD into SFF 2.5” disk drive tray

1.3 eterio SAN MD-Series Hardware Specifications

Following tables are hardware specifications of eterio SAN MDxxxxL and MDxxxxM series.

Table 8: eterio SAN MDxxxxL Series hardware Specifications

Model Name	MD4224L	MD4216L	MD4212L	MD4226L
Form factor	4U 24-bay LFF	3U 16-bay LFF	2U 12-bay LFF	2U 26-bay SFF
RAID controller	Dual Active			
Processor	Intel Xeon D15xx family 4-core processor Model: Intel Xeon D1527 (GG8067402569400)			
Memory (per Controller)	DDR4 ECC 8GB, up to 128GB (four DIMM slots, insert two DIMMs or more will boost performance)			
Host connectivity (per Controller)	Optional Host Cards at Slot 1 (PCIe Gen3 x8) • 4x 16Gb FC (SFP+) ports • 2x 16Gb FC (SFP+) ports • 4x 10Gb iSCSI (SFP+) ports • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Optional Host Cards at Slot 2 (PCIe Gen2 x4) • 2x 16Gb FC (SFP+) ports[1] • 4x 10Gb iSCSI (SFP+) ports[1] • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Built-in 2x 10GBASE-T iSCSI (RJ45) ports Built-in 1x 1GbE management port			
Expansion connectivity (per Controller)	Built-in 2x 12Gb/s SAS wide ports (SFF-8643, internal) connectors (connect with the SAS cable by using mini-SAS HD SFF-8644 connector)			
Drive type	Mix & match 3.5" & 2.5" SAS, NL-SAS, SED HDD 2.5” SAS/SATA[2] SSD			2.5" SAS, NL-SAS, SED HDD 2.5” SAS, SATA[2] SSD
Expansion capabilities	Up to 10 expansion enclosure units using 12Gb SAS interface and/or up to 286 drives			

Model Name	MD4224L	MD4216L	MD4212L	MD4226L
Max. drives supported	284	276	272	286
Dimension (H x W x D [mm]	19“ Rack mount 170.3x438x515	19“ Rack mount 130.4x438x515	19“ Rack mount 88x438x515	19“ Rack mount 88x438x491
Memory protection	Cache-to-Flash module (optional) Battery backup module + Flash module (to protect all memory capacity) Super capacitor module + Flash module (to protect up to 16GB memory per controller)			
LCM (LCD Module)	USB LCM (Optional)			
Power supply	80 PLUS Platinum, two redundant 770W (1+1) AC Input (100-127V / 200-240V, 10A 50-60Hz / 5A 50-60Hz) DC Output (+12V / +5VSB, 63.4A / 2.0A)			
Fan module	2x hot pluggable/redundant fan modules			
Temperature	Operating temperature 0 to 40°C Shipping temperature -10°C to 50°C			
Relative humidity	Operating relative humidity 20% to 80% non-condensing Non-operating relative humidity 10% to 90%			

[1]Slot 2 provides 20Gb bandwidth. [2]6Gb MUX board needed for 2.5" SATA drives in dual controller system.

Table 9: eterio SAN MDxxxxM Series hardware Specifications

Model Name	MD4224M	MD4216M	MD4212M	MD4226M
Form factor	4U 24-bay LFF	3U 16-bay LFF	2U 12-bay LFF	2U 26-bay SFF
RAID controller	Dual Active			
Processor	Intel Xeon D15xx family 4-core processor Model: Intel Pentium D1517 (GG8067402612800)			
Memory (per Controller)	DDR4 ECC 4GB, up to 128GB (four DIMM slots, insert two DIMMs or more will boost performance)			
Host connectivity (per Controller)	Optional Host Cards at Slot 1 (PCIe Gen3 x8) • 4x 16Gb FC (SFP+) ports • 2x 16Gb FC (SFP+) ports • 4x 10Gb iSCSI (SFP+) ports • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Optional Host Cards at Slot 2 (PCIe Gen2 x4) • 2x 16Gb FC (SFP+) ports[1] • 4x 10Gb iSCSI (SFP+) ports[1] • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Built-in 2x 10GBASE-T iSCSI (RJ45) ports Built-in 1x 1GbE management port			
Expansion connectivity (per Controller)	Built-in 2x 12Gb/s SAS wide ports (SFF-8643, internal) connectors (connect with the SAS cable by using mini-SAS HD SFF-8644 connector)			

Model Name	MD4224M	MD4216M	MD4212M	MD4226M
Drive type	Mix & match 3.5" & 2.5" SAS, NL-SAS, SED HDD 2.5" SAS/SATA[2] SSD			2.5" SAS, NL-SAS, SED HDD 2.5" SAS, SATA[2] SSD
Expansion capabilities	Up to 10 expansion enclosure units using 12Gb SAS interface and/or up to 286 drives			
Max. drives supported	284	276	272	286
Dimension (H x W x D [mm]	19" Rack mount 170.3x438x515	19" Rack mount 130.4x438x515	19" Rack mount 88x438x515	19" Rack mount 88x438x491
Memory protection	Cache-to-Flash module (optional) Battery backup module + Flash module (to protect all memory capacity) Super capacitor module + Flash module (to protect up to 16GB memory per controller)			
LCM (LCD Module)	USB LCM (Optional)			
Power supply	80 PLUS Platinum, two redundant 770W (1+1) AC Input (100-127V / 200-240V, 10A 50-60Hz / 5A 50-60Hz) DC Output (+12V / +5VSB, 63.4A / 2.0A)			
Fan module	2x hot pluggable/redundant fan modules			
Temperature	Operating temperature 0 to 40°C Shipping temperature -10°C to 50°C			
Relative humidity	Operating relative humidity 20% to 80% non-condensing Non-operating relative humidity 10% to 90%			

[1]Slot 2 provides 20Gb bandwidth. [2]6Gb MUX board needed for 2.5" SATA drives in dual controller system.

Table 10: eterio SAN MDxxxxS Series hardware Specifications

Model Name	MD4224S	MD4216S	MD4212S	MD4226S
Form factor	4U 24-bay LFF	3U 16-bay LFF	2U 12-bay LFF	2U 26-bay SFF
RAID controller	Dual Active			
Processor	Intel Xeon D15xx family 2-core processor Model: Intel Pentium D1507 (GG8067402612800)			
Memory (per Controller)	DDR4 ECC 4GB, up to 32GB (two DIMM slots, insert two DIMMs or more will boost performance)			
Host connectivity (per Controller)	Optional Host Cards at Slot 1 (PCIe Gen3 x8) • 4x 16Gb FC (SFP+) ports • 2x 16Gb FC (SFP+) ports • 4x 10Gb iSCSI (SFP+) ports • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Optional Host Cards at Slot 2 (PCIe Gen2 x4) • 2x 16Gb FC (SFP+) ports[1] • 4x 10Gb iSCSI (SFP+) ports[1] • 4x 10Gb iSCSI (RJ45) ports • 2x 10Gb iSCSI (RJ45) ports Built-in 2x 10GBASE-T iSCSI (RJ45) ports			

	Built-in 1x 1GbE management port			
Expansion connectivity (per Controller)	Built-in 2x 12Gb/s SAS wide ports (SFF-8643, internal) connectors (connect with the SAS cable by using mini-SAS HD SFF-8644 connector)			
Drive type	Mix & match 3.5" & 2.5" SAS, NL-SAS, SED HDD 2.5" SAS/SATA[2] SSD			2.5" SAS, NL-SAS, SED HDD 2.5" SAS, SATA[2] SSD
Expansion capabilities	Up to 10 expansion enclosure units using 12Gb SAS interface and/or up to 286 drives			
Max. drives supported	284	276	272	286
Dimension (H x W x D [mm]	19" Rack mount 170.3x438x515	19" Rack mount 130.4x438x515	19" Rack mount 88x438x515	19" Rack mount 88x438x491
Memory protection	Cache-to-Flash module (optional) Battery backup module + Flash module (to protect all memory capacity) Super capacitor module + Flash module (to protect up to 16GB memory per controller)			
LCM (LCD Module)	USB LCM (Optional)			
Power supply	80 PLUS Platinum, two redundant 770W (1+1) AC Input (100-127V / 200-240V, 10A 50-60Hz / 5A 50-60Hz) DC Output (+12V / +5VSB, 63.4A / 2.0A)			
Fan module	2x hot pluggable/redundant fan modules			
Temperature	Operating temperature 0 to 40°C Shipping temperature -10°C to 50°C			
Relative humidity	Operating relative humidity 20% to 80% non-condensing Non-operating relative humidity 10% to 90%			

[1]Slot 2 provides 20Gb bandwidth.
[2]6Gb MUX board needed for 2.5" SATA drives in dual controller system.

1.4 eterio SAN MD-Series Package Contents

Following list are the package contents for the eterio SAN MD-series models:

- System Chassis (x1)
- Disk Drive Trays incl. screws pack for disk drives
  - 4U 24-bay, LFF: 3.5" Disk Drive Tray (x24)
  - 3U 24-bay, LFF: 3.5" Disk Drive Tray (x16)
  - 2U 12-bay, LFF: 3.5" Disk Drive Tray (x12)
  - 2U 26-bay, SFF: 2.5" Disk Drive Tray (x26)
- AC Power Cords (x2)
- RS-232 Console Cable (x2)
- Quick Installation Guide

1.5 eterio SAN MD-Series Optional Accessories

Following list are optional components for all eterio SAN MD-Series models. If you want to purchase these optional components, please contact your nearest local eterio reseller.

Table 11: eterio SAN MD-Series hardware Specifications

PN	Picture	Description	Applied model
RAM-4GB		DDR4 ECC 4GB Memory Module	MDxxxxL MDxxxxM MDxxxxS
RAM-8GB		DDR4 ECC 8GB Memory Module	
RAM-16GB		DDR4 ECC 16GB Memory Module	
RAM-32GB		DDR4 ECC 32GB Memory Module	MDxxxxL MDxxxxM
C2F-BBF256GB		Cache-to-Flash Module: Battery backup module + Flash module (to protect all memory capacity)	MDxxxxL MDxxxxM MDxxxxS
C2F-SCF256GB		Cache-to-Flash Module: Super capacitor module + Flash module (to protect up to 16GB memory per controller)	
C2F-BBM		Battery backup module for Cache-to-Flash Module.	
C2F-SCM		Super capacitor module for Cache-to-Flash Module.	
C2F-FM		Flash module for Cache-to-Flash Module.	
HC-16FC4		4-port 16Gb Fibre Channel host card (SFP+)	
HC-16FC2		2-port 16Gb Fibre Channel host card (SFP+)	
HC-10ISS4		4-port 10GbE iSCSI host card (SFP+)	
HC-1ISR4		4-port 1GbE iSCSI host card (RJ45)	

PN	Picture	Description	Applied model
HC-10ISR2		2-port 10GbE iSCSI host card (RJ45)	MDxxxxL MDxxxxM MDxxxxS
Gbic-16FC		16Gb Fibre Channel SFP+ Optical transceiver	
Gbic-10ISS		10Gb BASE-SR SFP+ Optical transceiver	
Gbic-8FC		8Gb Fibre Channel SFP+ Optical transceiver	
CBL-FC50LC		Optical FC Cable, LC-LC, 5m	
CBL-FC20LC		Optical FC Cable, LC-LC, 5m	
CBL-CC10		Console Cable, Phone-jack, 10	
CBL-UPS10		UPS Cable, Phone-jack, 1m	
CBL-SAS15EW		SAS 12Gb Expansion Cable with Wake-on-SAS, SFF-8644 to SFF-8644, 1.5m	
CBL-SAS15E		SAS 12Gb Expansion Cable, SFF-8644 to SFF-8644, 1.5m	
LCM		Portable USB LCD Module	
RMK-MD		Slide Rail, 19” Rack mount kit for MD-Series	
DDT-35		3.5” Disk Drive Tray	MDx224x MDx216x MDx212x
DDM-35		SATA 6Gb MUX Board and Bracket for DDT-35 (2.5" SATA drives only)	
DDT-25		2.5” Disk Drive Tray	MD2226x
DDM-25		SATA 6Gb MUX Board and Bracket for DDT-25	

2. System Components Overview

This chapter outlines the key hardware components or modules of the eterio SAN MD system. After reading this chapter, you will have a basic understanding of each part of the eterio SAN MD hardware and give you the ability to be able to successfully configure and operate your eterio SAN MD system. Following is the list of key components or modules of eterio SAN MD:

- Front Panel
- System Disk Drive Numbering
- Supported Disk Drives and SSDs
- Rear Panel
- Power Unit
- Fan Module
- Cache-to-Flash Module.

2.1 Front Panel

The eterio SAN MD-Series features a unique design: the system controls and indicators is located on the right ear. The system controls and indicators module integrate functional buttons and system state indicators, which can be easily operated and read by user. The figure below contains detailed information about the button and indicators module. For a greater understanding of the related colors and behaviors of each indicator on the front panel, please refer to the chapter 5.1, Front Panel section in the Descriptions of LEDs and Buttons chapter

Figure 2: System Controls and Indicators

Table 12: Descriptions of System Controls and Indicators

Number	Description
1	System Power Button / LED
2	UID (Unique Identifier) Button / LED
3	System Access LED
4	System Status LED
5	USB Port (for USB LCM module)

Figures and the table below illustrate LFF & SFF system front panel components.

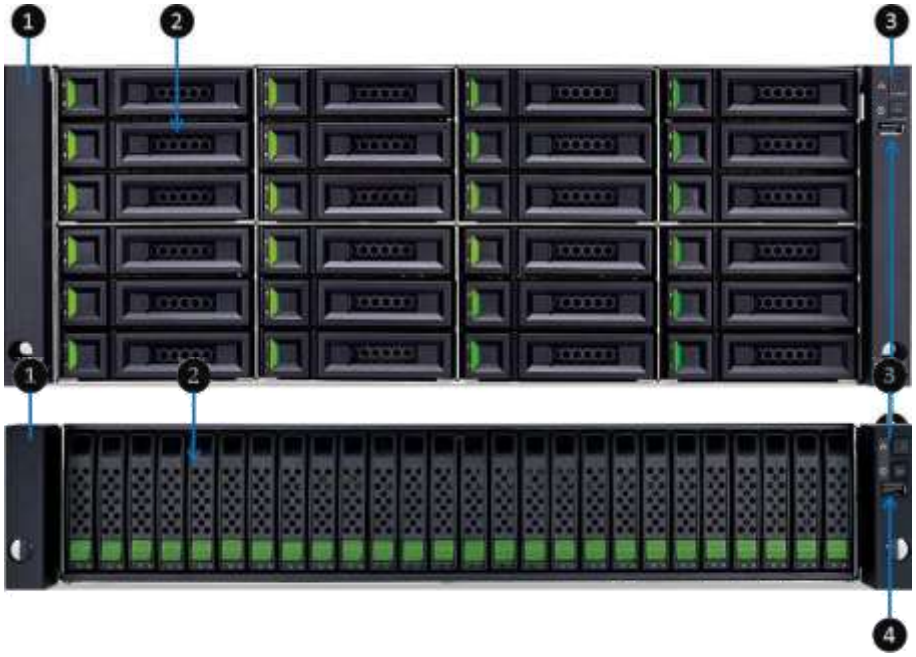

Figure 3: LFF & SFF System Front Panel Components

Table 13: LFF & SFF System Front Panel Components

Number	Description
1	System Left Ear
2	Disk Drive Tray
3	System Right Ear
4	The System Controls and Indicators

Disk Drive Tray Indicators: figures and the table below illustrate LFF and SFF disk drive tray indicators

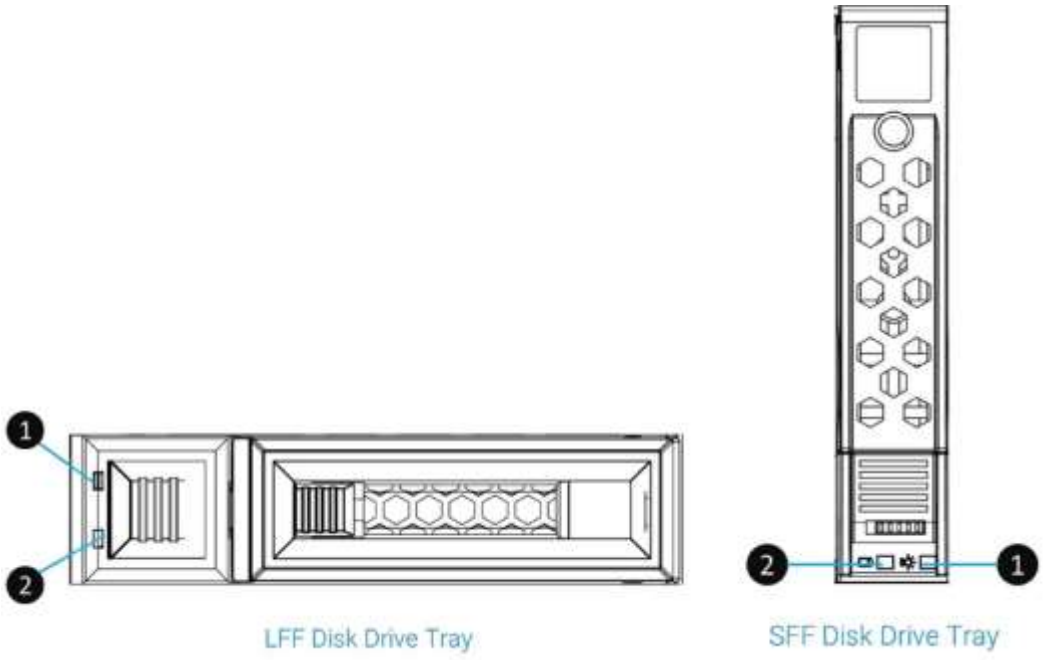

Figure 4: Disk Drive Indicators of LFF & SFF Disk Drive Tray

Table 14: Disk Drive Indicators of LFF & SFF Disk Drive Tray

Number	Description
1	Disk Drive Power LED
2	Disk Drive Power LED

For a greater understanding of the related color and the behavior of the disk drive, please refer to the chapter 5.1, Front Panel section in the Descriptions of LEDs and Buttons chapter.

2.2 System Disk Drive Numbering

Figures below illustrate the eterio SAN MD-System disk drive numbering. The disk drive numbering for LFF system starts from the top of first row in left column; this kind of disk drive numbering rule helps to balance the system weight distribution and enable easy management of disk drives zoning. The SFF system disk drive numbering is single row from left to right. If you want to check the disk drive numbering rule while installing the disk drives into the system, for LFF, you can find a disk drive numbering sticker on the right side of the system chassis top cover; for SFF system, the disk drive numbering is printed on the lower part of the system front.

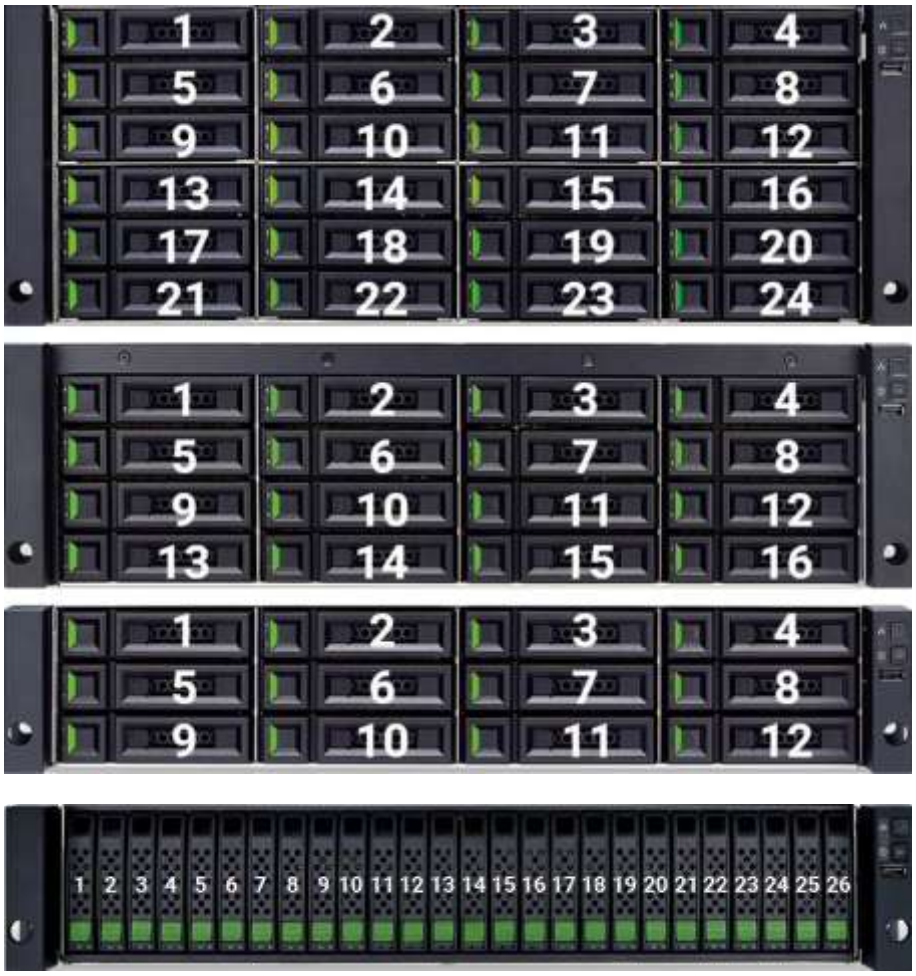

Figure 5: System Disk Drive Numbering for the eterio SAN MD-Series

TIP:

Please plug-in any of the first four hard drives, then event logs can be saved and displayed in next system boot up. Otherwise, the event logs cannot be saved.

2.3 Supported Disk Drives and SSDs

The table below shows supported disk drives and SSDs for all eterio San MD-Series models. This can be a reference for you to purchase suitable disk drives or SSDs for your system.

Epsylon has qualified the popular SAS HDDs and SAS/SATA SSDs available in the market; to ensure that you have the highest level of flexibility in choosing the most advanced HDDs or SSDs available from the manufacturers or purchase the best cost/performance SAS HDDs or SAS/SATA SSDs from the market, to suit your budget/performance. We hope that this will significantly reduce your IT infrastructure investment cost.

If you want to check the compatible HDDs or SSDs for your eterio SAN MD system, please refer to the Compatibility Matrix table.

Table 15: Supported Disk Drive Types

Form factor of disk drive tray	Drive type	Connection interface
LFF 3.5”	HDD	SAS, NL-SAS
	SSD	SAS, SATA[3]
SFF 2.5”	HDD	SAS, NL-SAS
	SSD	SAS, SATA[4]

INFORMATION:

[3]When installing SATA SSDs in dual controller models, it needs to install optional SATA 6Gb MUX board and bracket for 3.5” disk drive tray (model name: DDM-35).

[4]When installing SATA SSDs in dual controller models, it needs to install optional SATA 6Gb MUX board and bracket for 2.5” disk drive tray (model name: DDM-25).

Please contact an eterio authorized reseller for details purchasing information

2.4 Rear panel

The following content outlines the detail of the eterio SAN MD-Series rear panel and components. In this section, you will learn the name and location of the key components and modules in the rear panel.

2.4.1 Rear panel Layout

Figures and the table below illustrate the LFF and SFF system rear panel layout.

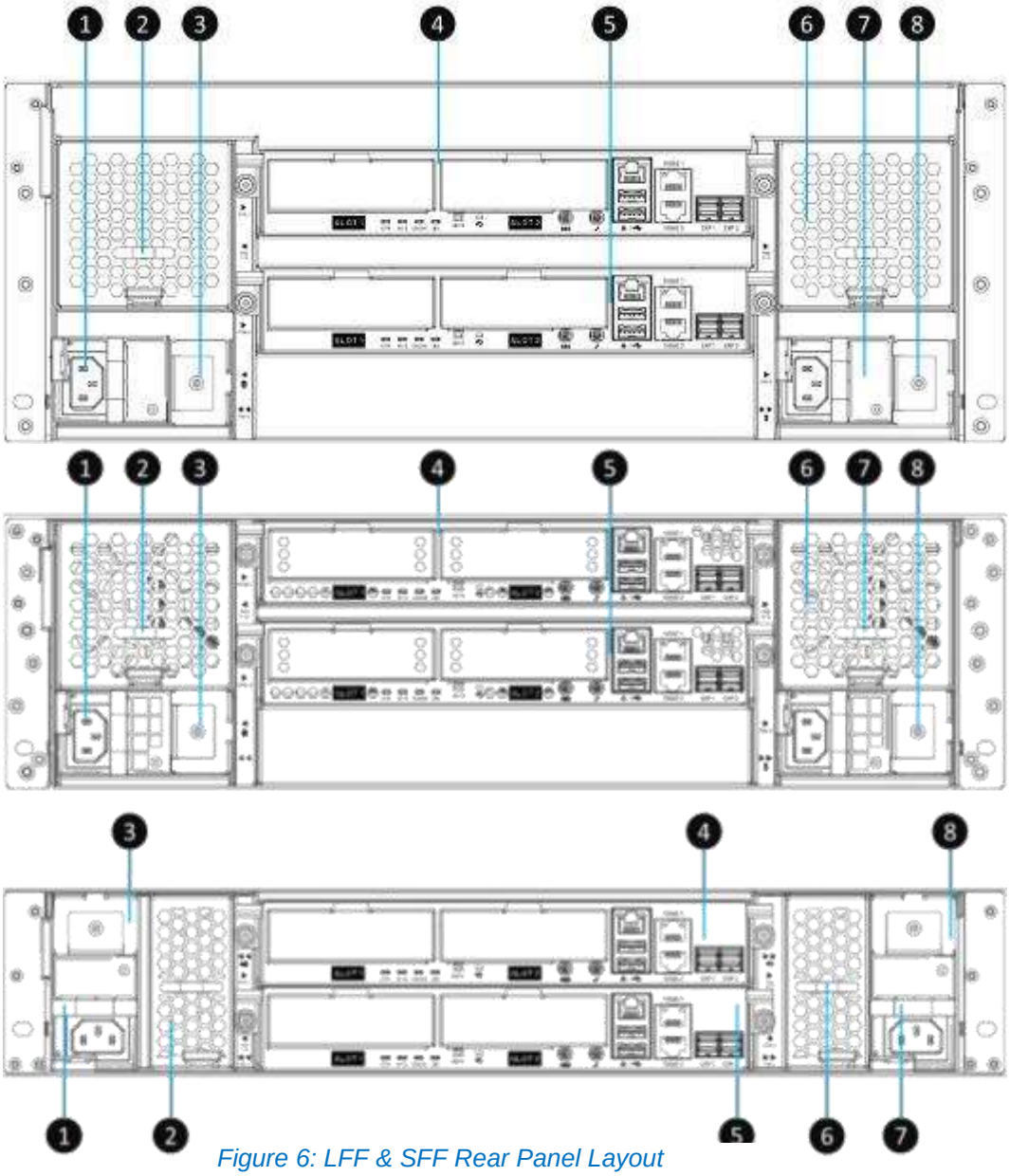

Figure 6: LFF & SFF Rear Panel Layout

Table 16: LFF & SFF Rear Panel Layout

Number	Description
1	Power Supply Unit 1
2	Fan Module 1
3	Slot for Cache-to-Flash Module: Flash Module
4	Controller Module 1
5	Controller Module 2
6	Fan Module 2
7	Power Supply Unit 2
8	Slot for Cache-to-Flash Module: Flash Module

2.4.2 Controller Module

The following image and table illustrate each component of a controller module. In this section, you will learn the name and location of each port, LED and host cards (optional parts).

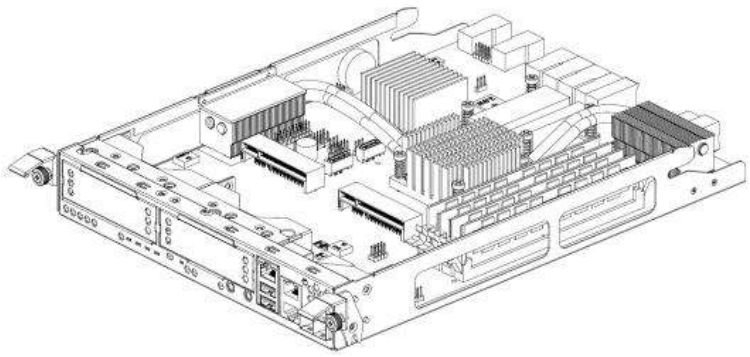

Figure 7: General View of the Controller Module

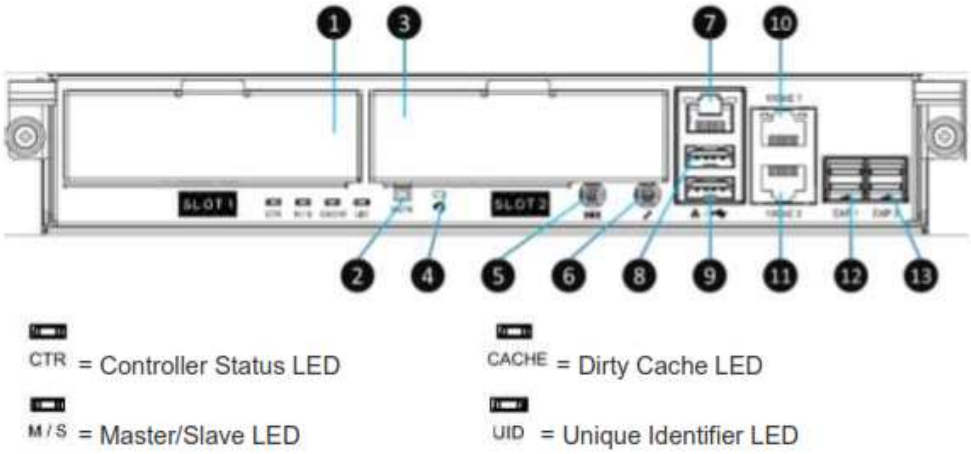

Figure 8: Components of the Controller Module

Table 17: Description of the Controller Module Components

Number	Description
1	Host Card Slot 1 (host card is an optional part)
2	Buzzer Mute Button
3	Host Card Slot 2 (host card is an optional part)
4	Reset to Factory Default Button[5]
5	Console Port (3.5mm jack to RS232)[6]
6	Service Port (UPS)[7]
7	Management Port
8	USB Port 1
9	USB Port 2
10	10GbE iSCSI (RJ45) Port 1
11	10GbE iSCSI (RJ45) Port 2
12	12Gb/s SAS Wide Port 1 (SFF8644)
13	12Gb/s SAS Wide Port 2 (SFF8644)

INFORMATION:

[5]Press the button for 3 seconds to progress reset to defaults and force a reboot. The default settings are:

- Reset **Management Port** IP address to DHCP, and then fix IP address: 169.254.1.234/16.
- Reset admin's **Password** to 1234.
- Reset **System Name** to model name plus the last 6 digits of serial number. For example: XS5216-123456.
- Reset IP addresses of all **iSCSI Ports** to 192.168.1.1, 192.168.2.1, etc.
- Reset link speed of all **Fibre Channel Ports** to Automatic.
- Clear all **access control settings** of the host connectivity

[6]Console cable (NULL modem cable) to connect from console port of the storage system to a RS 232 port on the management PC. The console settings are on the following: Baud rate: 115,200, 8 data bit, no parity, 1 stop bit, and no flow control; terminal Type: vt100.

[7]eterio SAN MD-Series supports traditional UPS via a serial port and network UPS via SNMP. If using the UPS with a serial port, connect the system to the UPS via the included cable for communication. (The cable plugs into the serial cable that comes with the UPS.) Then set up the shutdown values for when the power goes out.

For a greater understanding of the related color and the behavior of the controller module, please refer to the chapter 5.2, Rear Panel section in the Descriptions of LEDs and Buttons chapter.

2.5 Power Supply Unit

All eterio SAN MD-Series models are equipped with two redundant and hot swappable PSUs (Power Supply Units). The PSU for 3U/4U systems and 2U systems are the same, but the installation direction is different. (If you pull out the PSU from the system chassis, for 4U/3U system, the sticker on the PSU will be at down side; for 2U system, the sticker will be at right side). The images and the table below illustrate the location of PSU in the LFF or SFF system.

Figure 9: Location of the Power Supply Unit in the LFF or SFF System

Table 18: Location of the Power Supply Unit in the LFF or SFF System

Number	Description
1	PSU 1
2	PSU 2

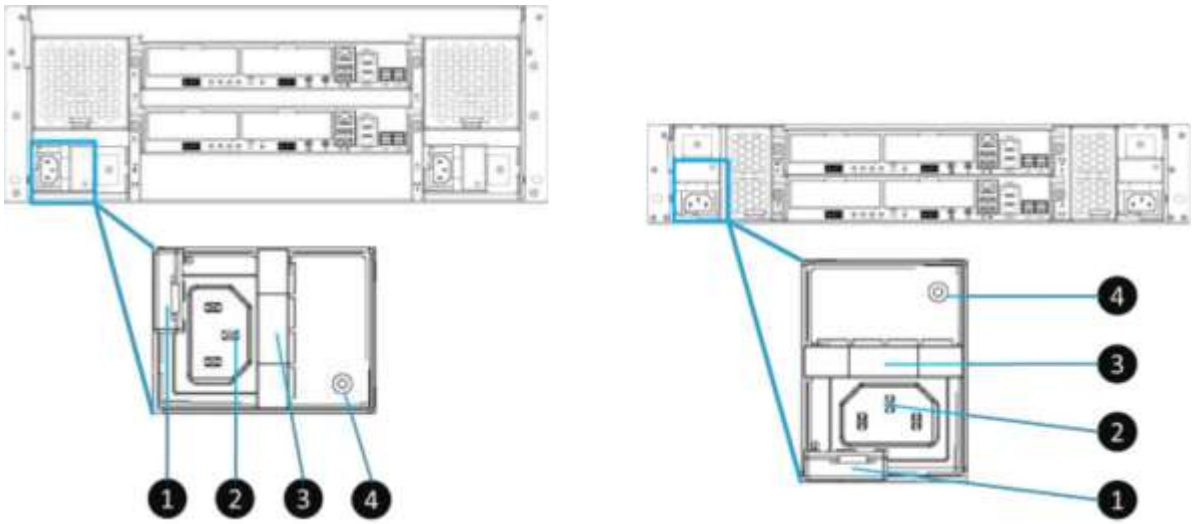

Figure 10: Components of the Power Supply Unit

Table 19: Components of the Power Supply Unit

Number	Description
1	PSU Release Tab
2	PSU Power Cord Connect
3	PSU handle
4	PSU LED Indicator

If you want to learn more about the related color and behavior of the PSU LED, please refer to the chapter 5.2, Rear Panel section in the Descriptions of LEDs and Buttons chapter.

2.6 Fan Module

All eterio SAN MD-Series models are equipped with two redundant and hot swappable fan modules. The fan module for 4U/3U systems are the same, however 2U systems are different. Each fan module includes two fans. Images and tables below illustrate the location and mechanical components of the fan module that is installed in the LFF and SFF system.

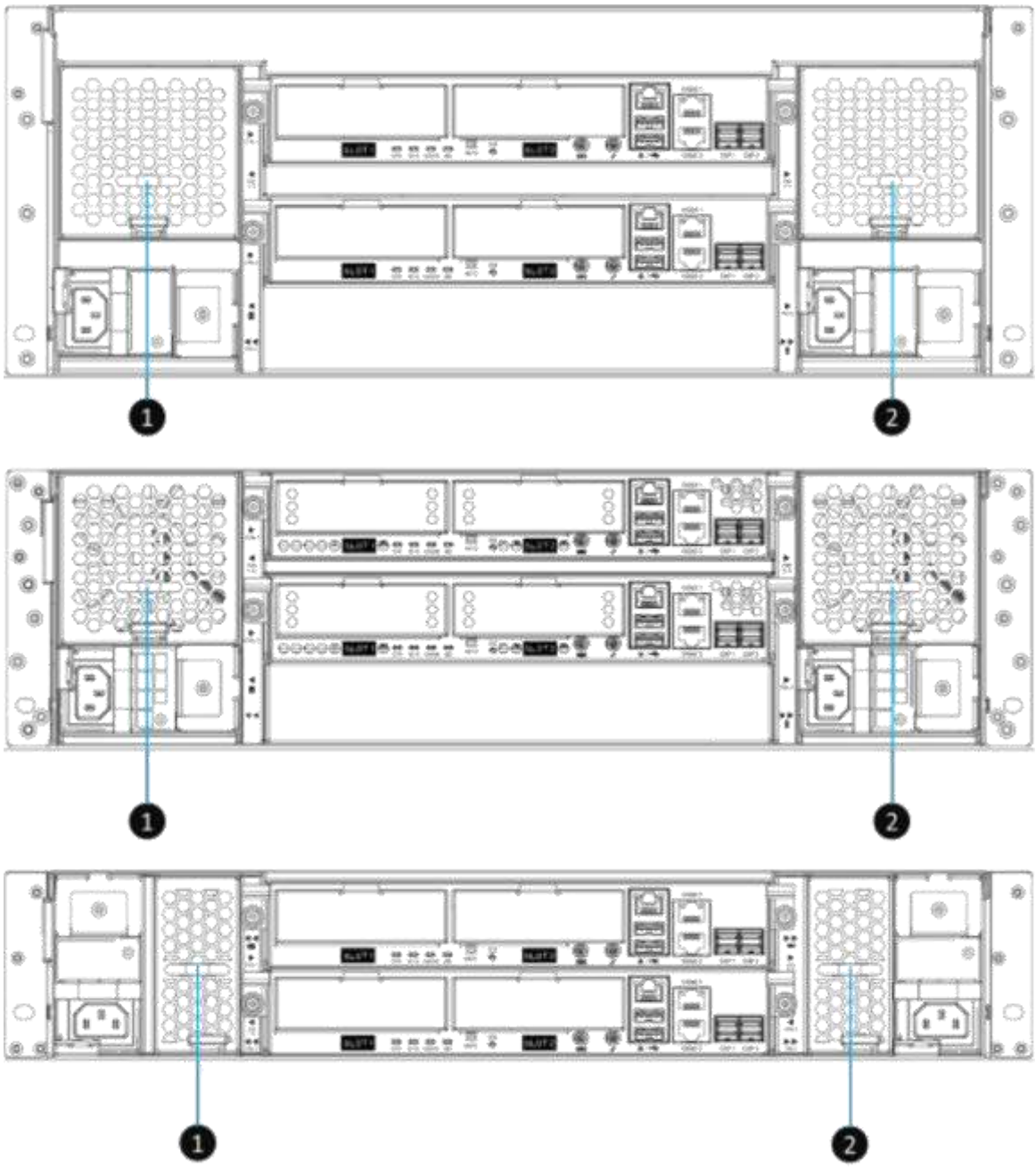

Figure 11: Location of Each Fan Module Installed in the LFF or SFF System

Table 20: Location of Each Fan Module Installed in the LFF or SFF System

Number	Description
1	PSU Release Tab
2	PSU Power Cord Connect

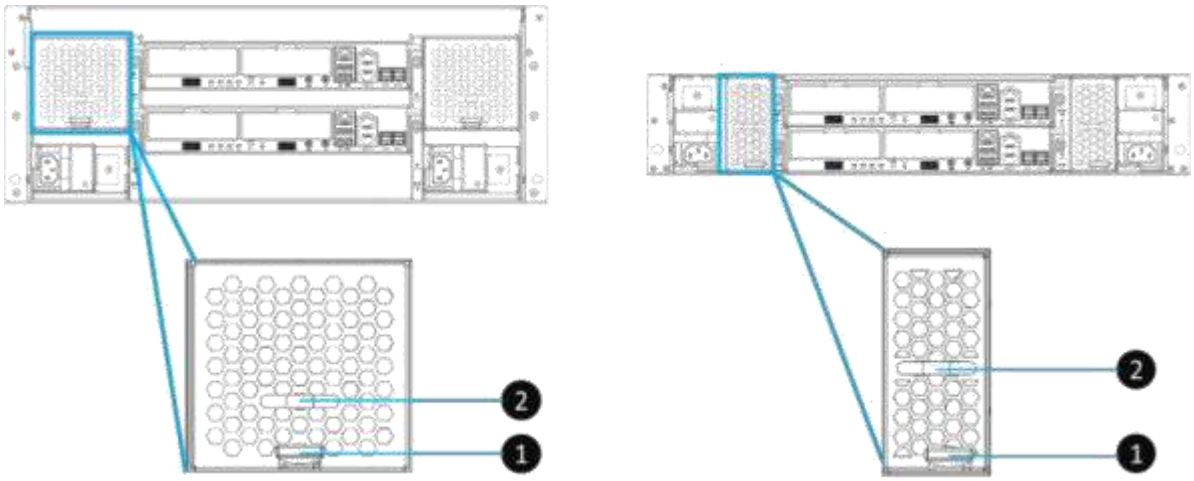

Figure 12: Mechanical Components of the Fan Module

Table 21: Mechanical Components of the Fan Module

Number	Description
1	Fan Module Release Tab
2	Fan Module Handle

2.7 Cache-to-Flash Memory Protection

In the event of power loss, the I/O cache data stored in the volatile memory will be lost; this can cause data inconsistency especially in database applications. The eterio SAN MD-Series can provide an optional Cache-to-Flash memory protection function that will safely transfer the memory cache data to a non-volatile flash device for permanent preservation. The optional Cache-to-Flash module comes with an M.2 flash module and either a BBM (Battery Backup Module) or a SCM (Super Capacitor Module).

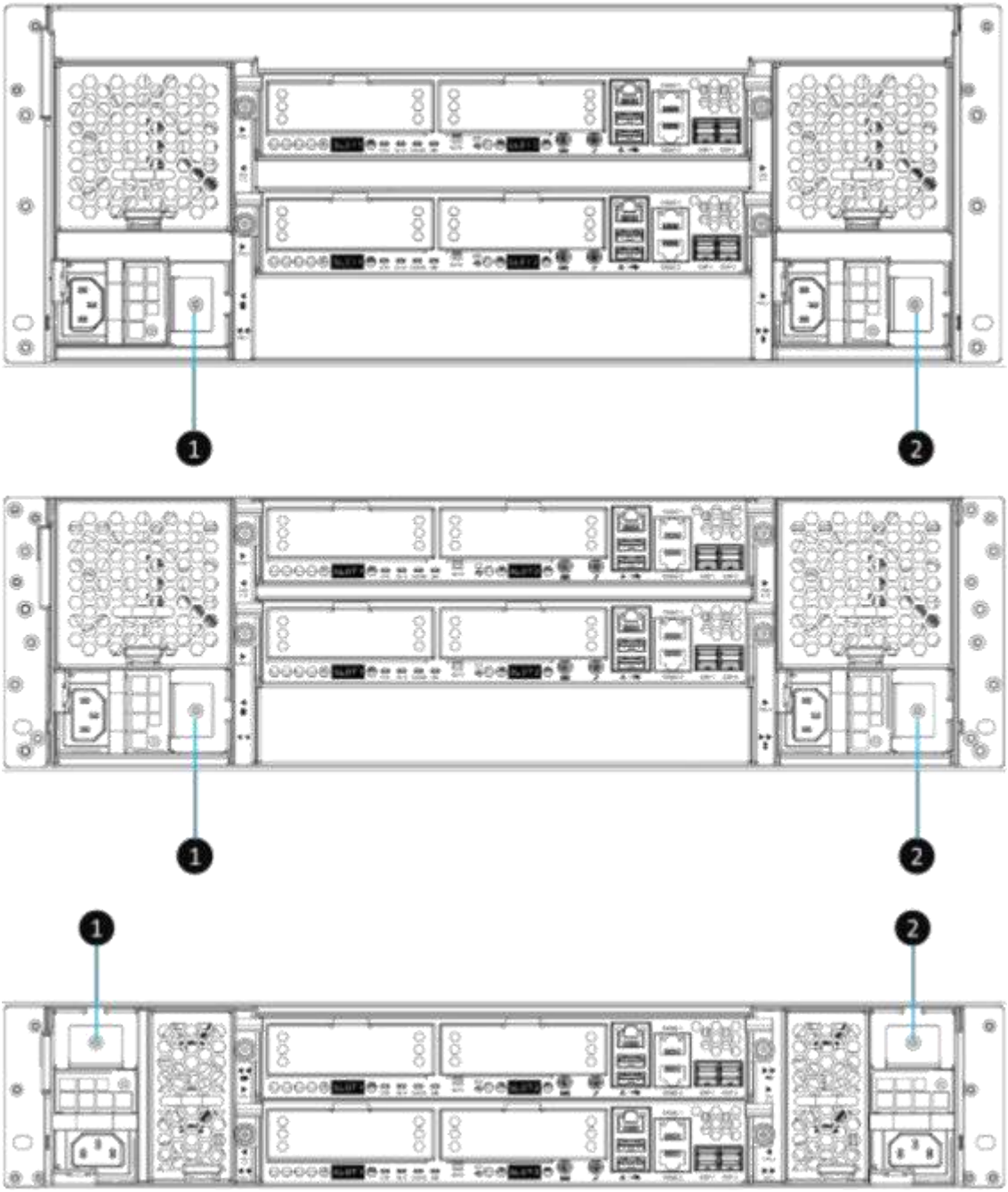

Figure 13: Location of the Cache-to-Flash Module

Table 22: Location of the Cache-to-Flash Module

Number	Description
1	Fan Module Release Tab
2	Fan Module Handle

Figure 14: The Cache-to-flash Module – BBM (Battery Backup Module) Pack

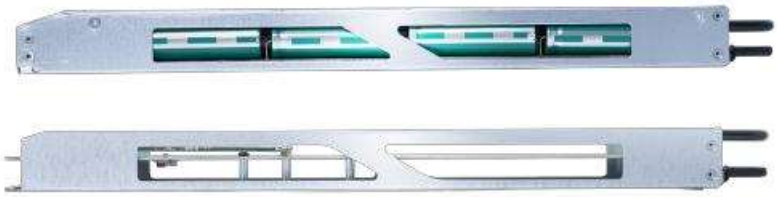

Figure 15: The Cache-to-flash Module – SCM (Super Capacitor Module) Pack

2.7.1 Mechanism of Cache Data Protection

The following image is the working sequence of eterio SAN Cache-to-Flash workflow.

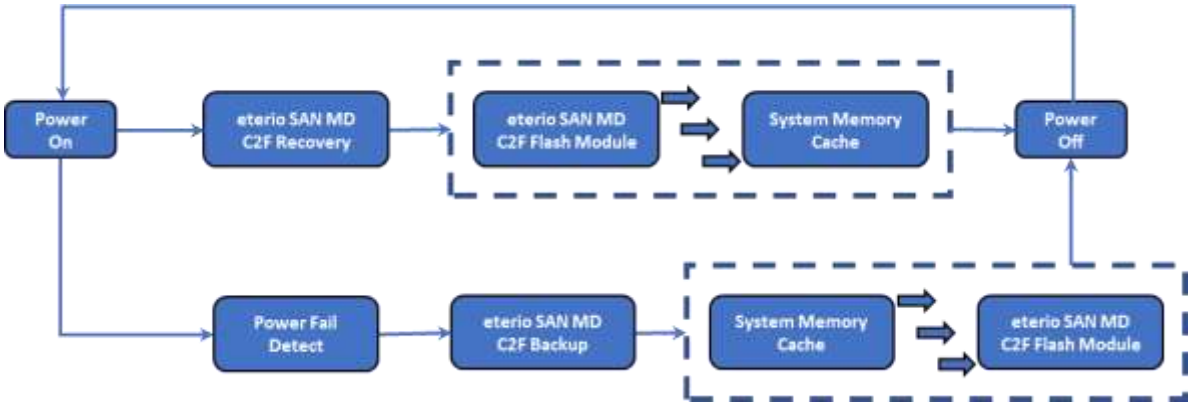

Figure 16: Cache-to-Flash Workflow

Cache-to-Flash technology will first flush CPU cache to memory RAM, then flush memory RAM to M.2 flash module to maintain the upmost data consistency. It leverages the strength of both BIOS and CPU to quickly backup memory RAM data to the flash module. In order to quickly move data from memory RAM to flash module, M.2 PCI-Express interface flash module is selected for better performance and less power consumption.

In Cache-to-Flash recovery phase, BIOS will check C2F flag status. If C2F flag is ON, I/O cache data will be recovered from the M.2 flash module and then continue normal booting. If C2F flag is OFF, the normal booting process continues. Compared with traditional BBM solution of 96 hours standard, Cache-to-Flash technology is more efficient, less risky and consumes less power

2.7.2 Features of the Cache-to-Flash Module

The optional Cache-to-Flash module comes with a M.2 flash module and either a BBM or a SCM. All modules are hot pluggable with zero system downtime for extra availability and reliability. M.2 flash module can be plugged in on the left-hand side from the rear of the chassis. Power module can be plugged in on the right-hand side from the rear of the chassis.

Please be noted that the BBM can protect all memory capacity. But the SCM can protect up to 16GB memory per controller. If your controller memory is higher than 16GB, please select BBM solution.

Table 23: Protection Memory Capacity by Different Cache-to-Flash Module

Device	Protection Memory Capacity
Battery Backup Module + Flash Module	Protect all memory capacity
Super Capacitor Module + Flash Module	Protect up to 16GB memory per controller

3. Installing the System Hardware

This chapter will show you the detailed procedure of the eterio SAN MD-Series hardware installation and initial configuration.

3.1. Installation Checklist

To ensure a successful system installation and initial configuration, you can follow the procedures in the checklist below by order

Table 24: Installation Checklist

Step	Task	Where to find the detail procedure
1	Installing disk drives into the trays	Chapter 3.2
2	Installing the optional host cards	Chapter 3.3
3	Installing the optional memory modules	Chapter 3.4
4	Installing the optional cache-to-flash modules	Chapter 3.5
5	Installing the optional slide rails	Chapter 3.6
6	Installing the trays into the system	Chapter 3.7
7	Connecting the system to a host	Chapter 3.8
8	Connecting power cords and powering on the system	Chapter 3.9
9	Connecting a UPS	Chapter 3.12
10	Connecting the optional USB LCM	Chapter 3.13
11	Discover and carry out the initial configure for the system	Chapter 3.14

3.2. Installing Disk Drives into the Trays

Key Components of the Disk Drive Tray

The following content illustrates the key components of both LFF and SFF disk drive trays.

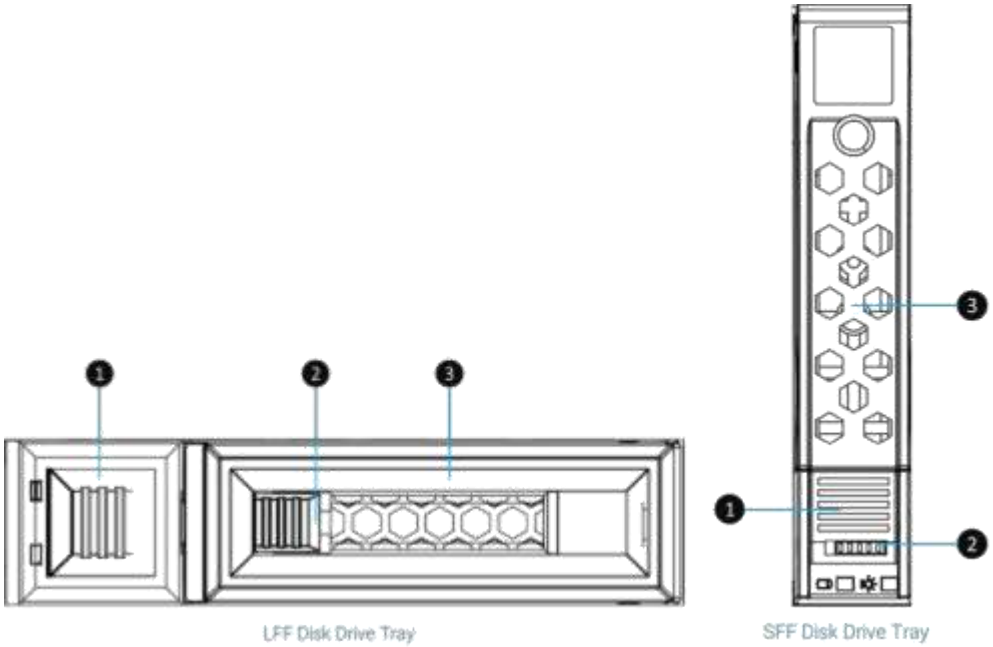

Figure 17: Front Side Components of LFF & SFF Disk Drive Trays

Table 25: Front Side Components of LFF & SFF Disk Drive Trays

Number	Description
1	Carrier Handle Release Button
2	Release Button Lock
3	Carrier Handle

Unlock the Disk Drive Tray and Remove from the System

The standard position of the disk drive tray is locked to prevent damage during transport. You must unlock disk drive trays before starting to install drives into the system chassis.

The following content is the detailed steps for removing a disk drive tray from the system:

- Unlock release button lock: shift the lock from left to right. (LFF and SFF trays)
- Procedure of opening the LFF disk drive tray carrier handle: shift the carrier handle release button from right to left; then carrier handle will automatically pop out.
- Procedure of opening the SFF disk drive tray carrier handle: shift the carrier handle release button from up to down; then carrier handle will automatically pop out.

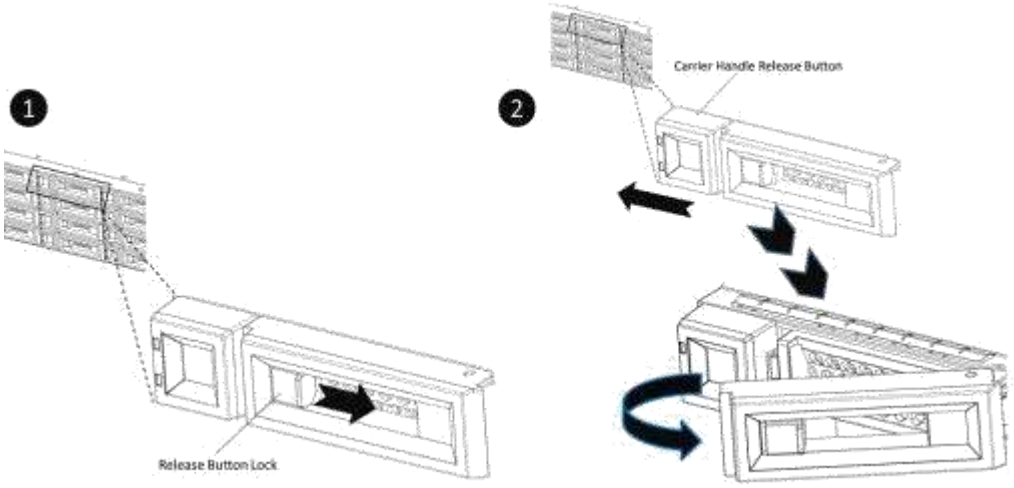

Figure 18: Unlock and Open the Carrier Handle of a Disk Drive Tray (LFF)

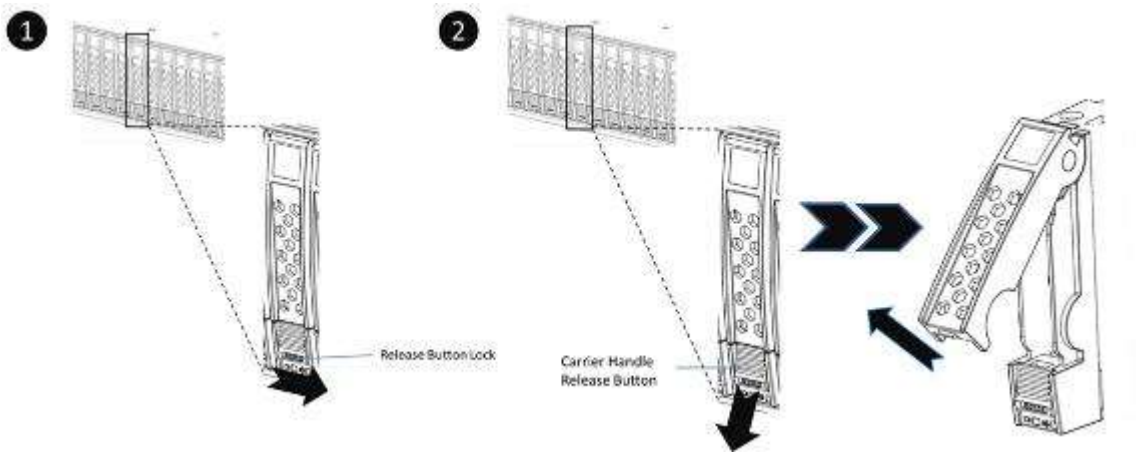

Figure 19: Unlock and Open the Carrier Handle of a Disk Drive Tray (SFF)

The following content is the procedure for removing disk drive trays from the system:

- Hold the carrier handle and pull the disk drive tray out until it is free of the disk drive bay.
- Repeat steps above for another empty disk drive trays that you would like to remove.

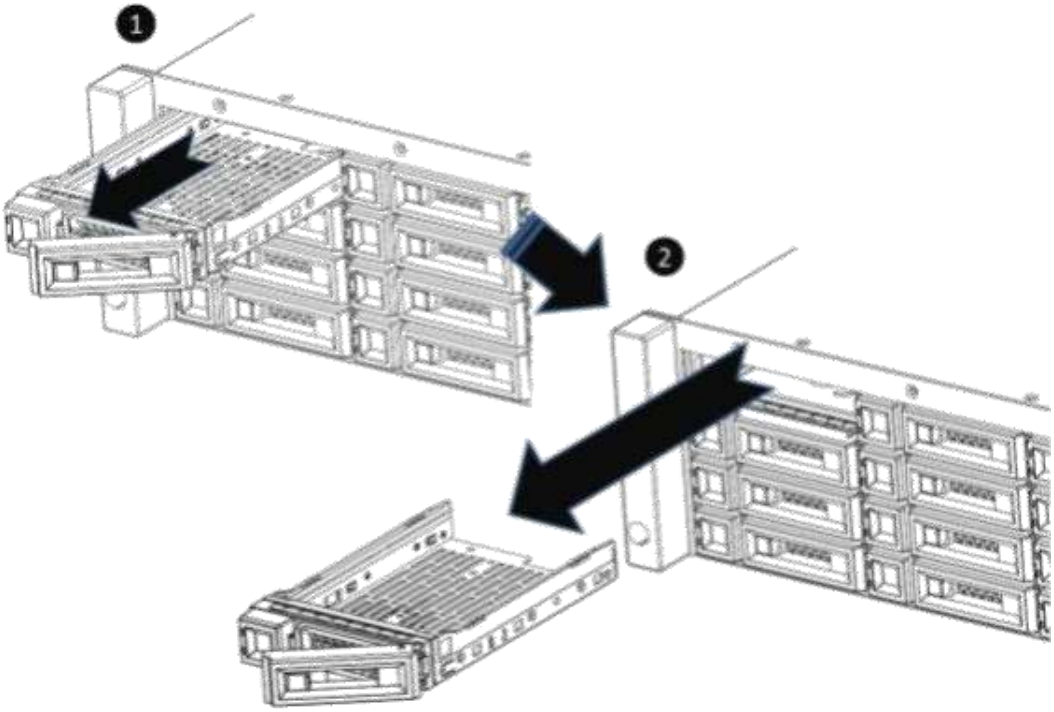

Figure 20: Hold the Carrier Handle and Pull out the Disk Drive Tray (LFF)

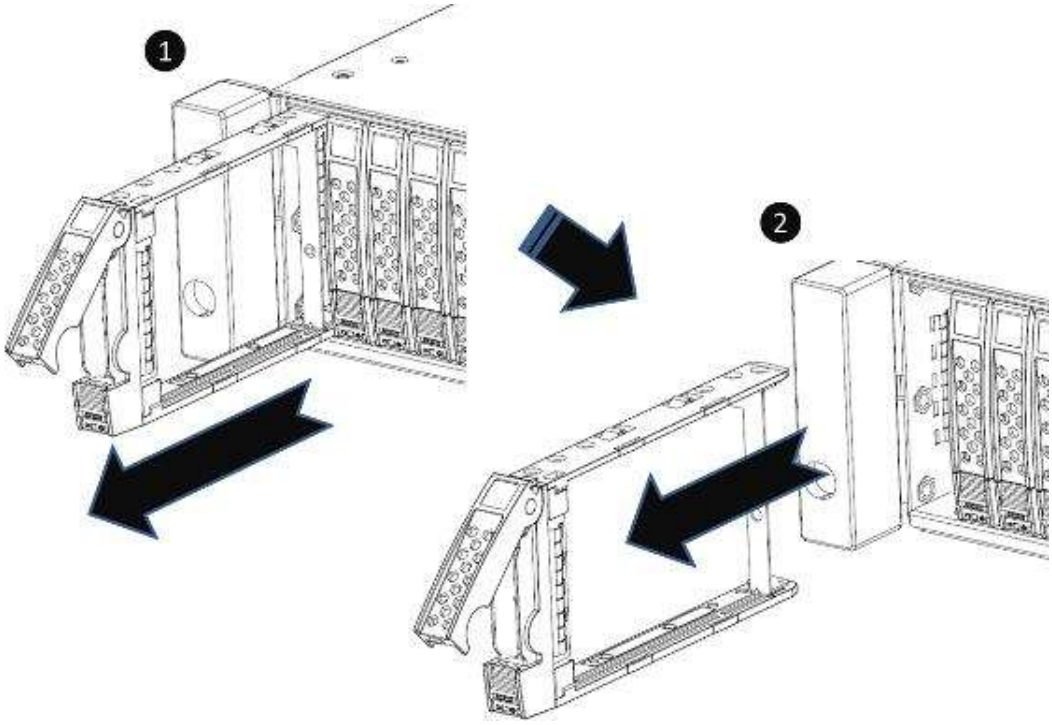

Figure 21: Hold the Carrier Handle and Pull out the Disk Drive Tray (SFF)

Installing a Disk Drive into a Tray

Following contents and figures are detail steps of installing a disk drive into the tray.

- For installing an LFF disk drive into an LFF tray
  - Place a disk drive tray onto a stable surface.
  - Align the disk drive to the tray (with disk connector facing away from carrier handle) and align four disk drive tray screw holes located on both sides of the hard drive
  - Install and tighten all four screws to secure the disk drive within the tray.

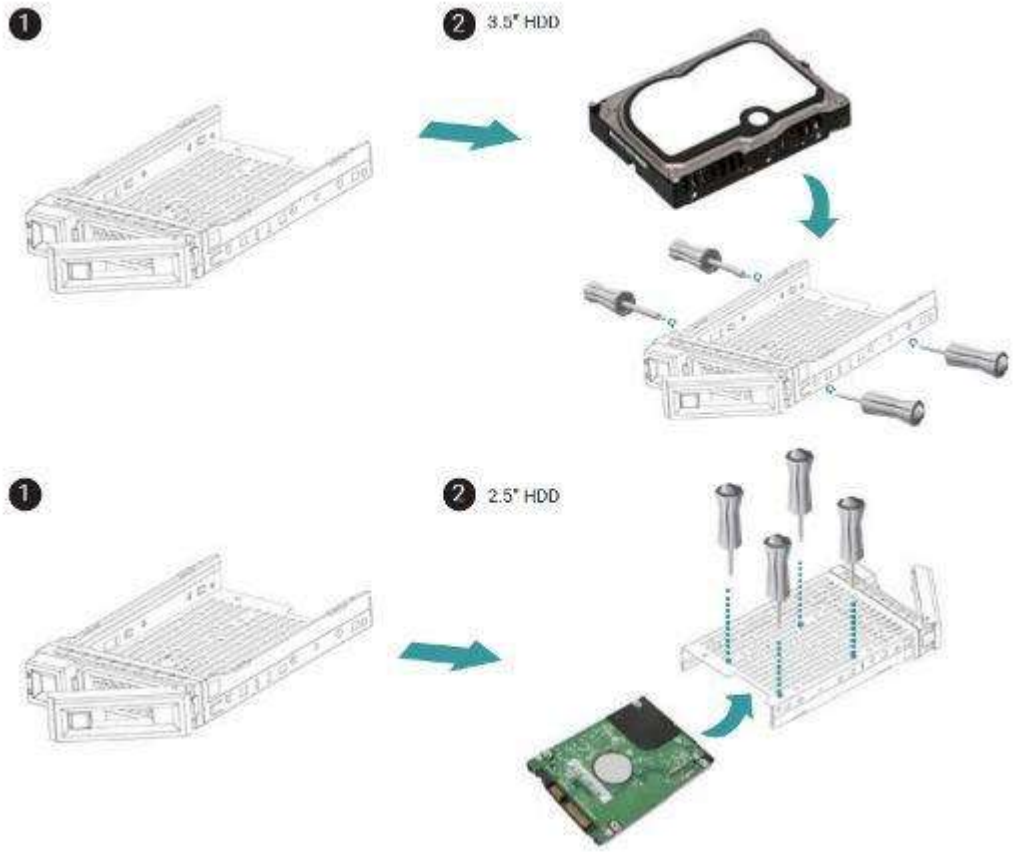

Figure 22: Align a Disk Drive & Install into a Tray (LFF-to-LFF)

- For installing an SFF disk drive into an LFF tray
  - Place a disk drive tray onto a stable surface.
  - Align the disk drive to the tray with the connector facing away from the carrier handle.
  - Align four disk drive tray screw holes (front row at the bottom side of the tray for SAS interface disk drive; a rear row for SATA interface SSD) to the disk drive.
  - Install and tighten all four screws to secure disk drive.

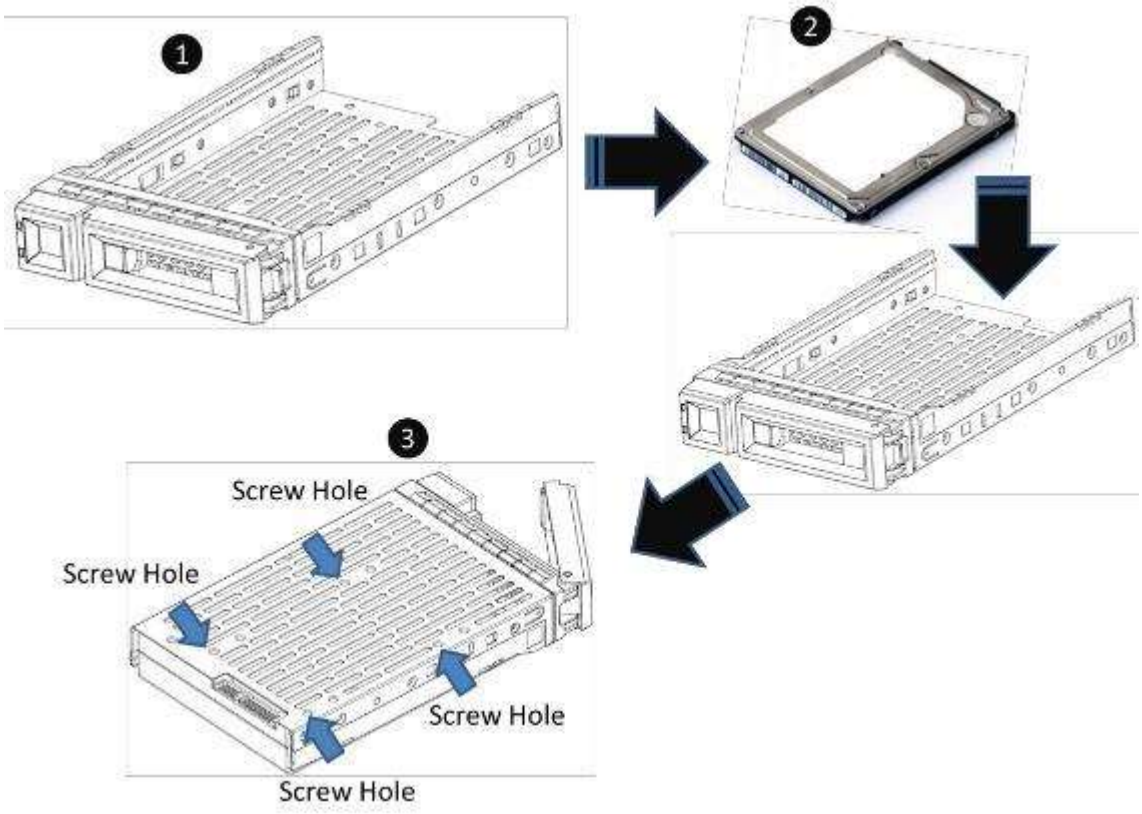

Figure 23: Align a Disk Drive & Install into a Tray (SFF-to-LFF)

- For installing an SFF disk drive into an SFF tray
  - Place a disk drive tray onto a stable surface.
  - Remove the supporting bracket. Then align the disk drive with the connector facing away from the carrier handle.
  - Align four disk drive tray screw holes on both sides of the disk tray.
  - Install and tighten all four screws to secure disk drive within the tray.

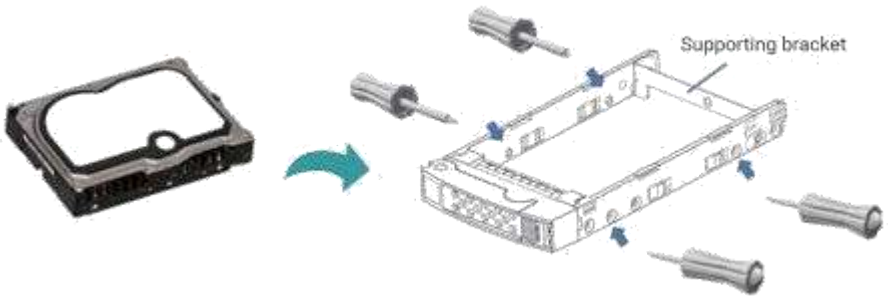

Figure 24: Align a Disk Drive & Install into a Tray (SFF-to-SFF)

TIP:

Please plug-in any of the first four hard drives, then event logs can be saved and displayed in next system boot up. Otherwise, the event logs cannot be saved.

The table below shows the available disk drive trays, MUX board with bracket, and their descriptions

Table 26: Available Disk Drive Trays for eterio SAN MD-Series

PN	Picture	Description	Applied model
DDT-35		3.5” Disk Drive Tray	MDx224x MDx216x MDx212x
DDM-35		SATA 6Gb MUX Board and Bracket for DDT-35 (2.5" SATA drives only)	
DDT-25		2.5” Disk Drive Tray	MD2226x
DDM-25		SATA 6Gb MUX Board and Bracket for DDT-25	

3.3. Installing the Optional Host Cards

The eterio SAN MD-Series comes with two on-board 10GbE iSCSI ports on each controller. If you want to expand the number of host ports, purchase eterio host cards (optional components) will be the fastest and most cost-efficiency choice.

There are four types of host cards that are available for selection. You can configure a Fibre Channel SAN by using eterio 16Gb Fibre Channel host cards; you can choose a iSCSI SAN by using 10GbE via SFP+, 10GBASE-T or 1GBASE-T iSCSI host cards. The table below shows the available host card types, model names, and their descriptions.

Table 27: Available Host Cards for eterio SAN MD-Series

PN	Picture	Description	Applied model
HC-16FC4		4-port 16Gb Fibre Channel host card (SFP+)	MDxxxxL MDxxxxM MDxxxxS
HC-16FC2		2-port 16Gb Fibre Channel host card (SFP+)	
HC-10ISS4		4-port 10GbE iSCSI host card (SFP+)	
HC-1ISR4		4-port 1GbE iSCSI host card (RJ45)	
HC-10ISR2		2-port 10GbE iSCSI host card (RJ45)	

CAUTION:

You must remove the controller module from the system chassis before starting the host card installing procedures.

Host card can NOT hot plug in the controller module. Hot plug in the host card might cause system hang up. You should remove the controller module from the system chassis before installing / removing host card. Please DO NOT attempt to hot plug in the host card.

Following figure is the overview of the host card installation slots.

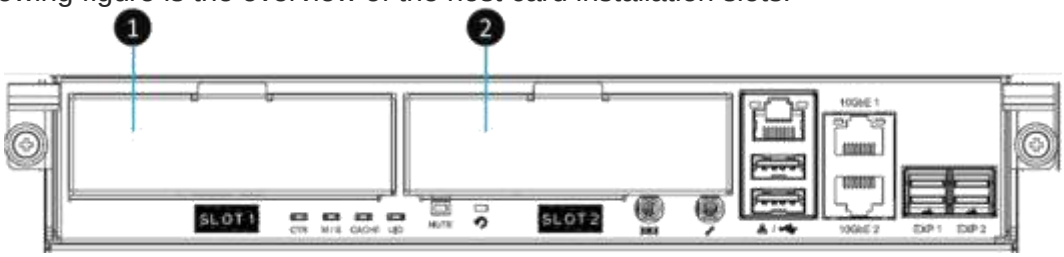

Figure 25: Host Card Installation Slots

Table 28: Host Card Installation Slots of a Controller

Number	Description
1	Carrier Handle Release Button
2	Release Button Lock

Please refer to following tables for supported installing location and combination of host cards to keep the optimized system performance and prevent any unexpected incidents.

Table 29: Supported Installing Location and Combination of the Host Cards

Connection Type	Model Type	Controller Number	Slot 1	Slot 2
FC SAN 16Gb FC SFP+	Dual Controller	Controller 1	HC-16FC4	N/A
		Controller 2	HC-16FC4	N/A
		Controller 1	HC-16FC4	HC-16FC2[8]
		Controller 2	HC-16FC4	HC-16FC2[8]
		Controller 1	HC-16FC2	N/A
		Controller 2	HC-16FC2	N/A
		Controller 1	HC-16FC2	HC-16FC2[8]
		Controller 2	HC-16FC2	HC-16FC2[8]
iSCSI SAN 10GbE SFP+	Dual Controller	Controller 1	HC-10ISS4	N/A
		Controller 2	HC-10ISS4	N/A
		Controller 1	HC-10ISS4	HC-10ISS4[8]
		Controller 2	HC-10ISS4	HC-10ISS4[8]
iSCSI SAN 10GBASE-T RJ45	Dual Controller	Controller 1	HC-10ISR2	N/A
		Controller 2	HC-10ISR2	N/A
		Controller 1	HC-10ISR2	HC-10ISR2
		Controller 2	HC-10ISR2	HC-10ISR2
iSCSI SAN 1GBASE-T RJ45	Dual Controller	Controller 1	HC-1ISR4	N/A
		Controller 2	HC-1ISR4	N/A
		Controller 1	HC-1ISR4	HC-1ISR4
		Controller 2	HC-1ISR4	HC-1ISR4
iSCSI SAN 10GbE SFP+ + 10GBASE-T RJ45	Dual Controller	Controller 1	HC-10ISS4	HC-10ISR2
		Controller 2	HC-10ISS4	HC-10ISR2
iSCSI SAN 10GbE SFP+ + 1GBASE-T RJ45	Dual Controller	Controller 1	HC-10ISS4	HC-1ISR4
		Controller 2	HC-10ISS4	HC-1ISR4
iSCSI SAN 10GBASE-T RJ45 + 1GBASE-T RJ45	Dual Controller	Controller 1	HC-10ISR2	HC-1ISR4
		Controller 2	HC-10ISR2	HC-1ISR4
MIX SAN 16Gb FC SFP+ + 10GbE SFP+	Dual Controller	Controller 1	HC-16FC4	HC-10ISS4
		Controller 2	HC-16FC4	HC-10ISS4
MIX SAN 10GbE SFP+ + 16Gb FC SFP+	Dual Controller	Controller 1	HC-10ISS4	HC-16FC2[8]
		Controller 2	HC-10ISS4	HC-16FC2[8]

Connection Type	Model Type	Controller Number	Slot 1	Slot 2
MIX SAN 16Gb FC SFP+ + 10GBASE-T RJ45	Dual Controller	Controller 1	HC-16FC4	HC-10ISR2
		Controller 2	HC-16FC4	HC-10ISR2
		Controller 1	HC-16FC2	HC-10ISR2
		Controller 2	HC-16FC2	HC-10ISR2
MIX SAN 16Gb FC SFP+ + 1GBASE-T RJ45	Dual Controller	Controller 1	HC-16FC4	HC-1ISR4
		Controller 2	HC-16FC4	HC-1ISR4
		Controller 1	HC-16FC2	HC-1ISR4
		Controller 2	HC-16FC2	HC-1ISR4

[8]Slot 2 provides 20Gb bandwidth.

CAUTION:

If you change the host card type in the same slot, the system needs to be reset to factory default to make the host card change effective. If you want to learn more about how to reset your system to factory, please refer to the chapter 6.5.5, Rest to Factory Default section in the eterio ESOS 4.0 User's Manual.

All dual controller eterio SAN MD-Series models must have installed the same type of host cards into the same slot number to keep the optimized system performance.

INFORMATION:

Due to the total bandwidth of slot 2 is 20Gb. It CAN NOT satisfy four ports of 10GbE iSCSI with full speed, we strongly recommend combining two ports by enabling link aggregation for failover. Such as combining port 1 and port 2 as LAG (Link Aggregation Group) 1, port 3 and port4 as LAG 2. If you want to learn more about how to setup link aggregation, please refer to the chapter 7.3.1, Configure iSCSI Ports section in the eterio ESOS 4.0 User's Manual.

Procedures of the Host Card Installation

The following content and images are detailed steps for installing a host card into the system.

- Remove the controller from the system chassis.

The following image and table are the introduction of the mechanical components of a controller module.

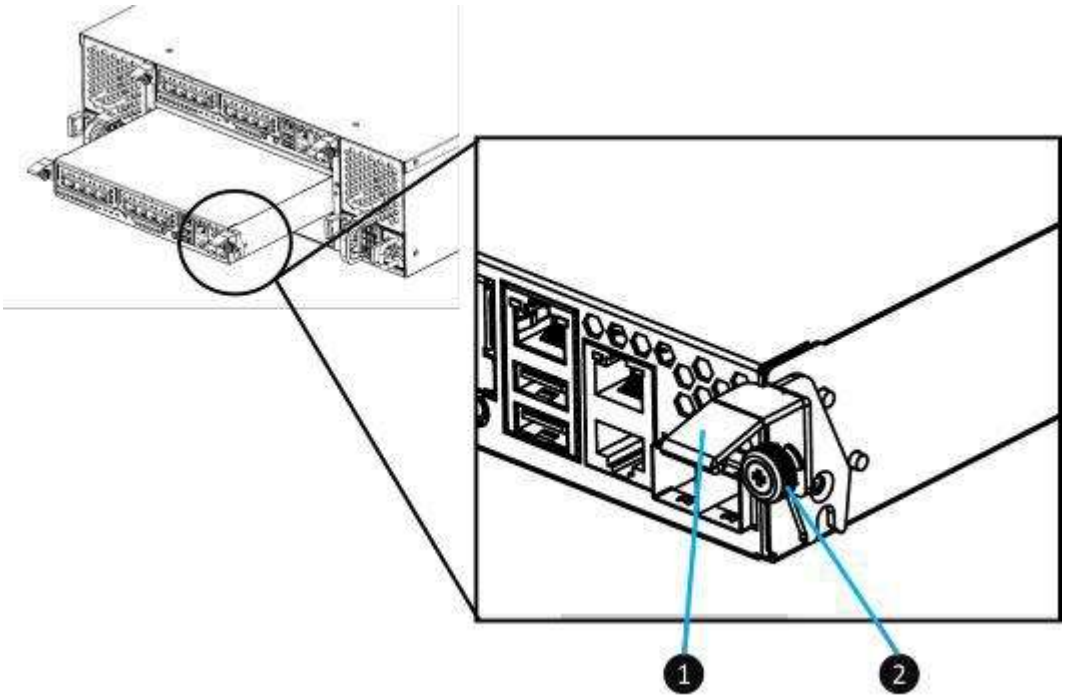

Figure 26: Mechanical Components of the Controller Module

Table 30: Mechanical Components of the Controller Module

Number	Description
1	Release Lever
2	Screw

- The following content and images are detailed steps for removing the controller module from the system chassis.
- Use a standard screwdriver to loosen the thumb screws on each release levers.
- Pull down both levers at the same time and then pull out about half length of the controller module by holding two release levers.
- Use one hand to hold one end of the controller module (the side with release levers) and the other hand hold the bottom of the controller; pull out the controller module until it is free from the system chassis.

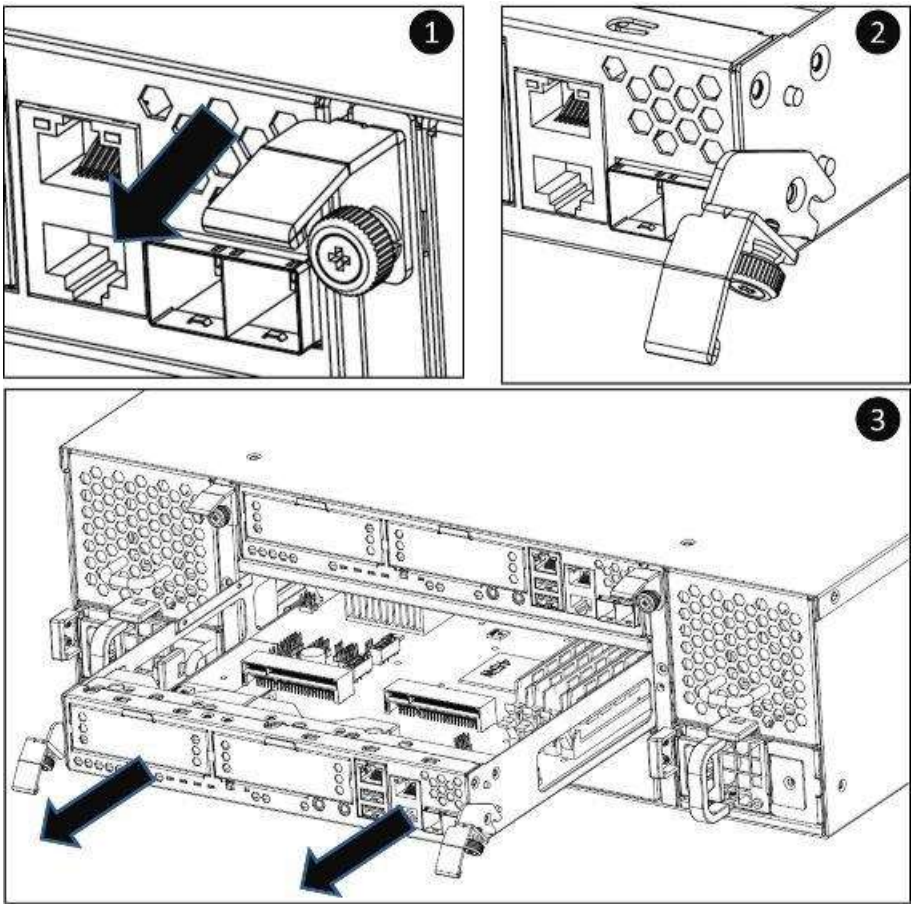

Figure 27: Steps of Removing the Controller Module

- Remove the dummy host card cage by loosening two screws of the dummy host card cage and then take dummy host card cage from controller module.

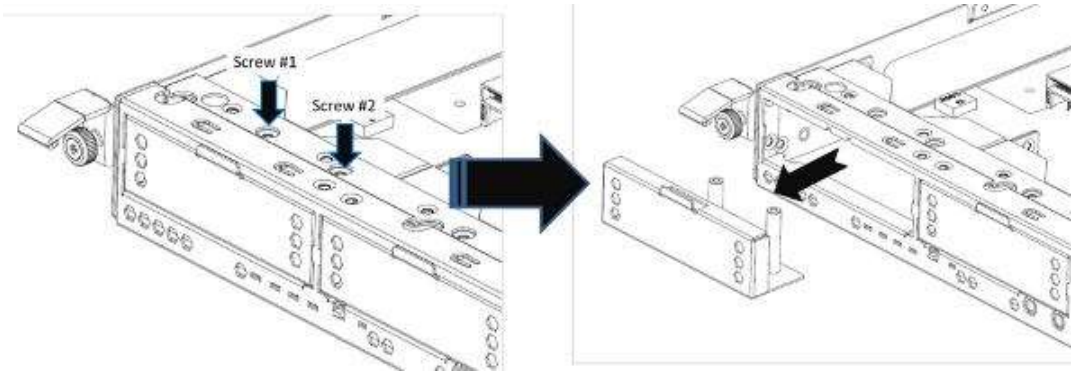

Figure 28: Procedures of Removing the Host Card Dummy Cage

- Align the host card to the slot to be installed and then push all the way into the controller cage until hear a “click” sound and make sure the host card is well connected with the connector in the controller module.

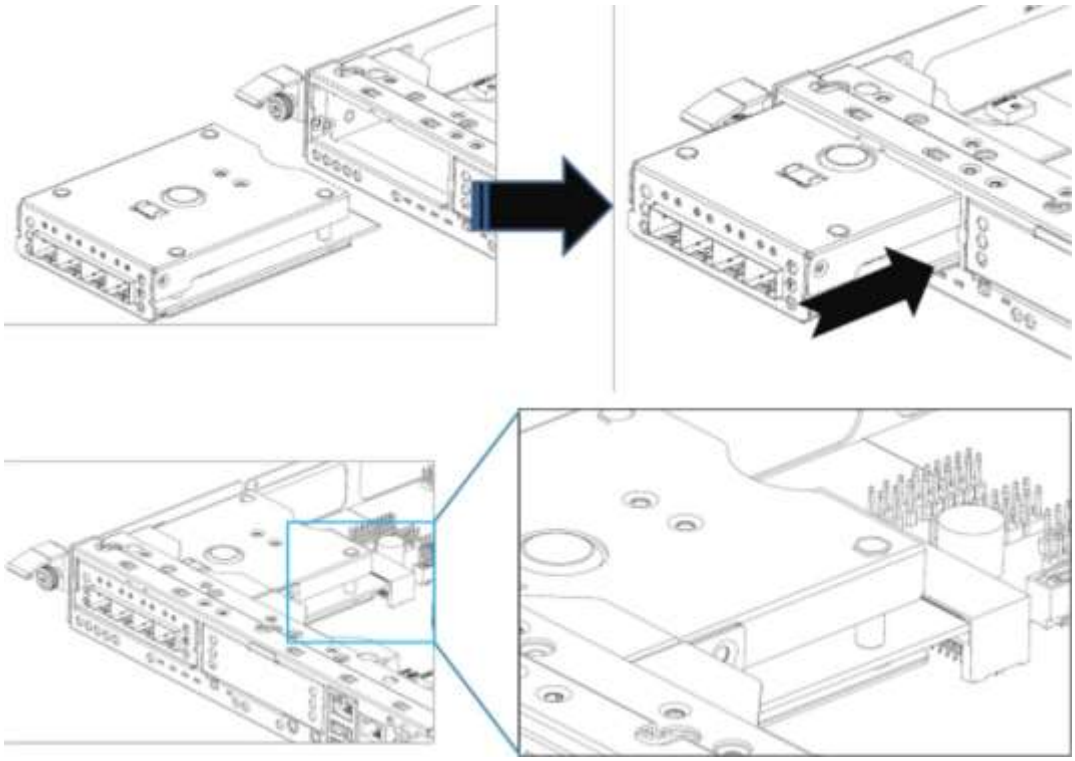

Figure 29: Procedures of Installing the Host Card

- Repeat procedures above if there are other host adapter cards need to be installed.
- You must install GBIC(s) for the Fibre Channel or 10GbE host cards before connecting the cables from the eterio to the host sides.
- Install the controller module into the system chassis if the host card installation completed.

Confirm the Host Card Installation

If the host card is installed properly, you can check the host card connections status in **ESOS UI -> HOST CONNECTIVITY -> Overview**. If your host cards are properly installed, the status column will show the connection speed.

Controller 1

Location	Name	Status	MAC Address/WWPN
Onboard	LAN1 (10Gb)	Down	00:13:78:ff:88:02
Onboard	LAN2 (10Gb)	Down	00:13:78:ff:88:03
Slot2	LAN1 (1Gb)	1 Gb/s	00:13:78:ff:88:04
Slot2	LAN2 (1Gb)	1 Gb/s	00:13:78:ff:88:05
Slot2	LAN3 (1Gb)	1 Gb/s	00:13:78:ff:88:06
Slot2	LAN4 (1Gb)	1 Gb/s	00:13:78:ff:88:07
Slot1	FC1 (16Gb)	16Gb/s	2100001378FF8800
Slot1	FC2 (16Gb)	16Gb/s	2200001378FF8800
Slot1	FC3 (16Gb)	16Gb/s	2300001378FF8800
Slot1	FC4 (16Gb)	16Gb/s	2400001378FF8800

Controller 2

Location	Name	Status	MAC Address/WWPN
Onboard	LAN1 (10Gb)	Down	00:13:78:ff:88:0c
Onboard	LAN2 (10Gb)	Down	00:13:78:ff:88:0d
Slot2	LAN1 (1Gb)	1 Gb/s	00:13:78:ff:88:0e
Slot2	LAN2 (1Gb)	1 Gb/s	00:13:78:ff:88:0f
Slot2	LAN3 (1Gb)	1 Gb/s	00:13:78:ff:88:10
Slot2	LAN4 (1Gb)	1 Gb/s	00:13:78:ff:88:11
Slot1	FC1 (16Gb)	16Gb/s	2900001378FF8800
Slot1	FC2 (16Gb)	16Gb/s	2A00001378FF8800
Slot1	FC3 (16Gb)	16Gb/s	2B00001378FF8800
Slot1	FC4 (16Gb)	16Gb/s	2C00001378FF8800

Figure 30: Connection and Status of the Host Cards

3.4. Installing the Optional Memory Modules

Standard system memory capacity for eterio SAN MD-Series models: 4GB DDR4 for MDxxxxM / MDxxxxS and 8GB DDR4 for MDxxxxL. If you purchase additional optional memory module for your eterio SAN, please refer to the following image and table for the suggested sequence of memory module installation. It is requested that the installation slot and capacity of the memory module MUST be the same for both controllers.

The table below shows the available memory modules and their descriptions.

Table 31: Memory Modules for eterio SAN MD-Series

PN	Picture	Description	Applied model
RAM-4GB		DDR4 ECC 4GB Memory Module	MDxxxxL MDxxxxM MDxxxxS
RAM-8GB		DDR4 ECC 8GB Memory Module	
RAM-16GB		DDR4 ECC 16GB Memory Module	
RAM-32GB		DDR4 ECC 32GB Memory Module	MDxxxxL MDxxxxM

In XS3200 and XS5200, there are four DIMM slots for expansion of memory capacity. The installation sequence for the memory module with the same capacity should be: #3 → #2 → #4 due to slot #1 and #2 are memory bank 1; slot #3 and #4 are bank 2. Balance the memory size of two banks will keep the optimized system performance. The installation sequence is applicable for dual or single controller module.

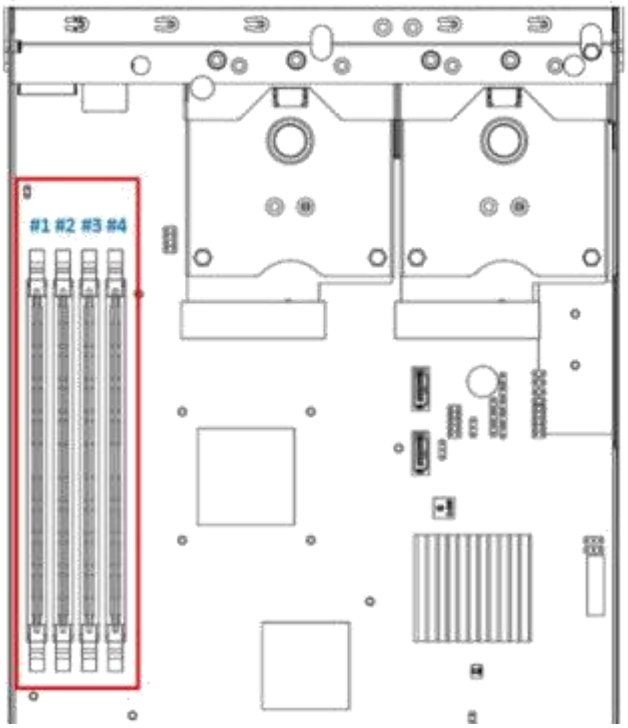

Figure 31: The Installation Sequence of the Memory Module in MDxxxxM and MDxxxxL

The following table is the suggested installation sequence for optional memory module.

Table 32: The Installation Sequence for Optional Memory Module in MDxxxxM and MDxxxxL

Bank 1		Bank 2		Total Memory
Slot #1	Slot #2	Slot #3	Slot #4	
4 GB	-	-	-	4 GB
4 GB	-	4 GB	-	8 GB
4 GB	-	8 GB	-	12 GB
4 GB	-	8 GB	8 GB	20 GB
4 GB	-	16 GB	-	20 GB
4 GB	-	16 GB	16 GB	36 GB
4 GB	4 GB	4 GB		12 GB
4 GB	4 GB	4 GB	4 GB	16 GB
4 GB	4 GB	8 GB		16 GB
4 GB	4 GB	8 GB	8 GB	24 GB
4 GB	4 GB	16 GB		24 GB
4 GB	4 GB	16 GB	16 GB	40 GB
8 GB	-	-	-	8 GB
8 GB	-	8 GB	-	16 GB
8 GB	-	16 GB	-	24 GB
8 GB	-	16 GB	16 GB	40 GB
8 GB	8 GB	8 GB	-	24 GB
8 GB	8 GB	8 GB	8 GB	32 GB
8 GB	8 GB	16 GB	-	32 GB
8 GB	8 GB	16 GB	16 GB	48 GB
16 GB	-	-	-	16 GB
16 GB	-	16 GB	-	32 GB
16 GB	16 GB	16 GB	-	48 GB
16 GB	16 GB	16 GB	16 GB	64 GB
32 GB	-	-	-	32 GB
32 GB	-	32 GB	-	64 GB
32 GB	32 GB	32 GB	-	96 GB
32 GB	32 GB	32 GB	32 GB	128 GB

CAUTION:

To ensure the system stability, you MUST install genuine eterio memory modules for system memory size expansion. In addition, the DIMM type of 32GB is RDIMM, and the others are UDIMM. The platform does not support mixing of DIMM, so there are not allowed the combinations of mixing 32GB.

TIP:

Insert two DIMMs or more will boost performance.

In MDxxxxS, there are two DIMM slots for expansion of memory capacity. The installation sequence is also applicable for dual or single controller module

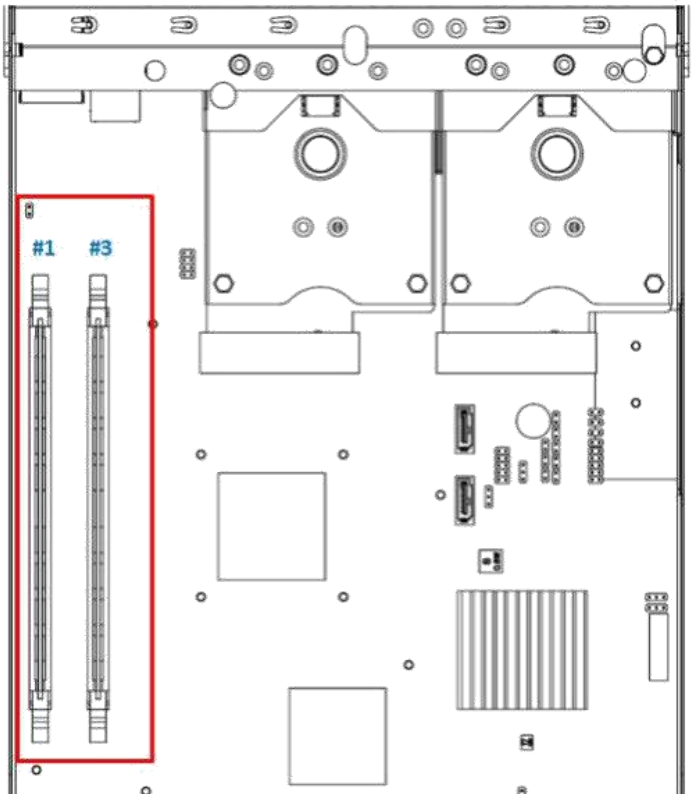

Figure 32: The Installation Sequence of the Memory Module in MDxxxxS

Table 33: The Installation Sequence for Optional Memory Module in MDxxxxS

Bank 1 / Slot #1	Bank 2 / Slot #3	Total Memory
4 GB	-	4 GB
4 GB	4 GB	8 GB
4 GB	8 GB	12 GB
4 GB	16 GB	20 GB
8 GB	-	8 GB
8 GB	8 GB	16 GB
8 GB	16 GB	24 GB
16 GB	-	16 GB
16 GB	16 GB	32 GB

3.5. Installing the Optional Cache-to-Flash Modules

The Cache-to-Flash module is a combination of a flash memory and a power module for write-back data protection in the event of a sudden and unexpected power loss. The table below is the available Cache-to Flash module list. If you want to purchase cache-to-flash module, please contact your nearest local reseller or visit eterio official web site: https://eterio.eu.

The table below shows the available cache-to-flash modules and their descriptions.

Table 34: Available Cache-to-flash Modules for eterio SAN MD-Series

PN	Picture	Description	Applied model
C2F-BBF256GB		Cache-to-Flash Module: Battery backup module + Flash module (to protect all memory capacity)	MDxxxxL MDxxxxM MDxxxxS
C2F-SCF256GB		Cache-to-Flash Module: Super capacitor module + Flash module (to protect up to 16GB memory per controller)	
C2F-BBM		Battery backup module for Cache-to-Flash Module.	
C2F-SCM		Super capacitor module for Cache-to-Flash Module.	
C2F-FM		Flash module for Cache-to-Flash Module.	

CAUTION:

The flash module of Cache-to-Flash is hot swappable because it is a PCIe device. Before removing the flash module from the system chassis, you must press the attention button until the flash module status LED finished blinking. Otherwise, the flash module maybe damage. For more information about Cache-to-Flash modules, please refer to the chapter 5.2.4, Cache-to-Flash Module LEDs and Button section and the chapter 6.5, Removing the Cache-to-Flash Modules section.

Installing Cache-to-Flash Modules

The following content and images are steps for installing cache-to-flash modules.

- Install locations for the cache-to-flash modules

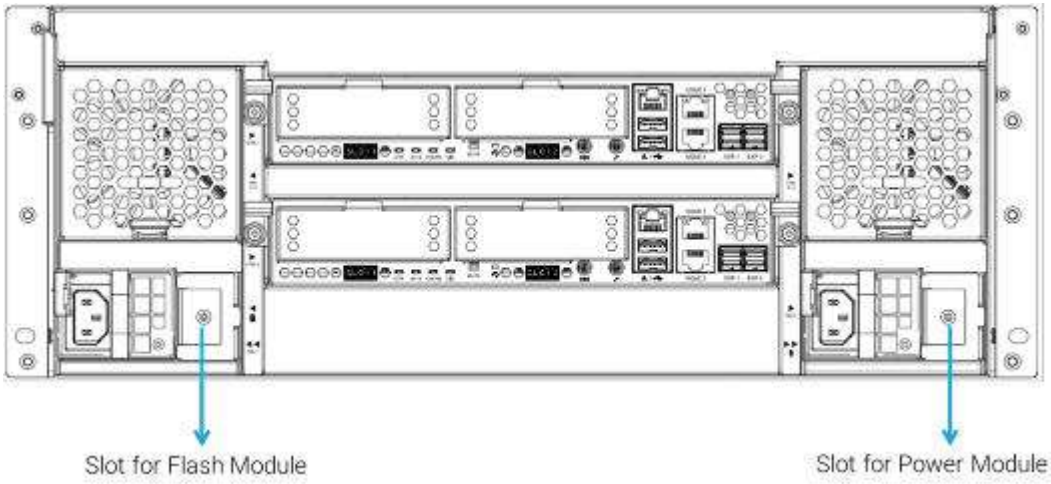

Figure 33: Location of the Cache-to-Flash Module

- Components of the cache-to-flash modules

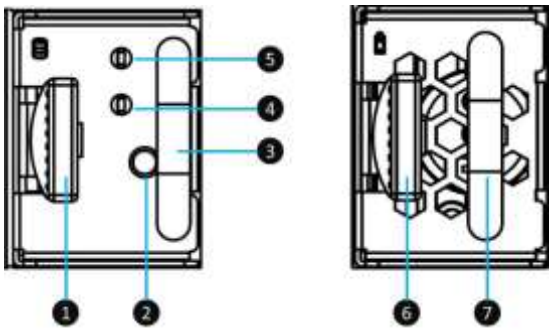

Figure 34: Components of the Cache-to-Flash Modules

Table 35: Components of the Cache-to-Flash Modules

Item	Number	Description
Flash Module	1	Flash Module Release Tab
	2	Flash Module Attention Button
	3	Flash Module Handle
	4	Flash Module Status LED
	5	Flash Module Power LED
Power Module	6	Power Module Release Tab
	7	Power Module Handle

- Remove the dummy cache-to-flash cage by losing the screw on it and then remove the dummy cage from the system chassis. Follow the same procedure for both sides.

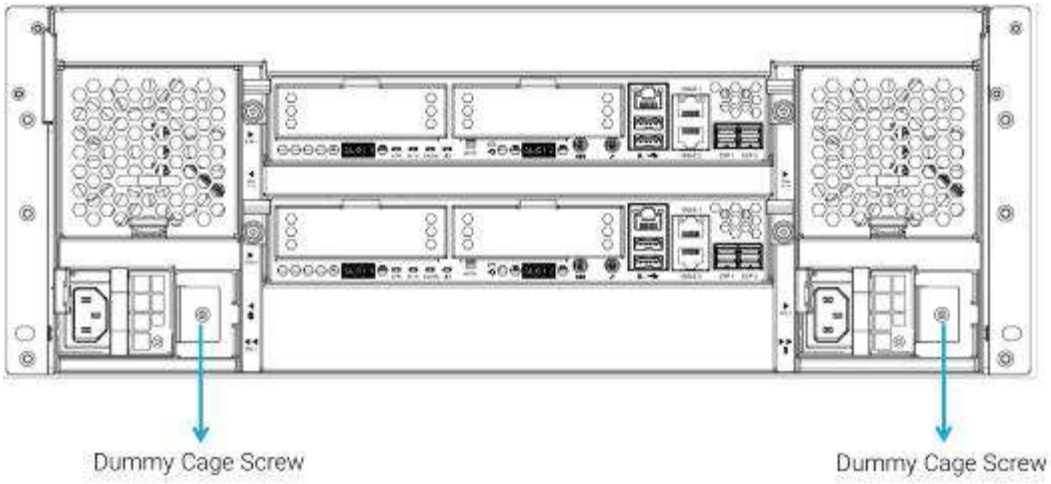

Figure 35: The Dummy Cage Screw Location of the Cache-to-Flash Module

- Align the flash module cage to the slot and then push it all the way into the system chassis until hear a “click” sound (for 4U/3U chassis, release tabs of both flash and power modules are facing left hand side while installing into the system; 2U chassis release tabs of both flash and power modules are facing upward while installing into the system).

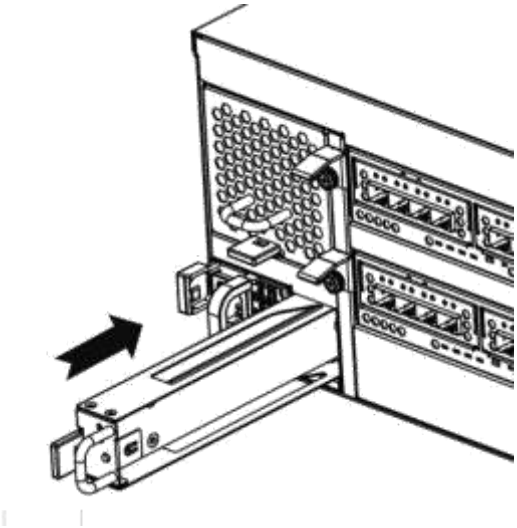

Figure 36: Installing the Flash Module

- Align the power module cage to the slot and then push it all the way into the system chassis until hear a “click” sound.

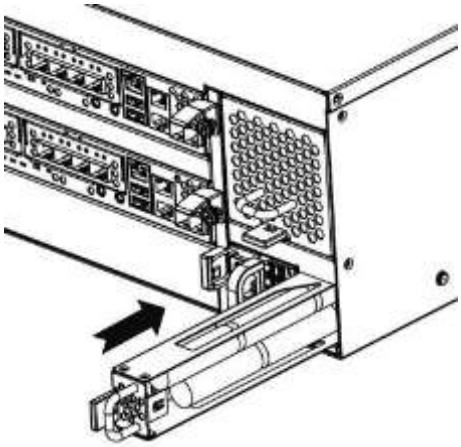

Figure 37: Installing the Power Module

Confirm the Cache-to-Flash Module Installation

After the cache-to-flash modules are installed, you can check the status and information about cache-to-flash module in the **ESOS UI -> SYSTEM SETTINGS -> Power -> Cache to Flash**. If you flash and power module of cache-to-flash module is properly installed, the status will show **Good**.

Power Module

Item	Information
Status	Good
Type	BBM
Power Level	100%
Temperature	+32.0(C)

Flash Module

Item	Information
Status	Good

Figure 38: Status and Information of Cache-to-Flash Module

3.6. Installing the Optional Slide Rails

If you did not purchase eterio qualified slide rails, please skip this section. The table below shows the available slide rail, model name, and its description.

Table 36: Available Slide Rails for eterio SAN MD-Series

PN	Picture	Description	Applied model
RMK-MD		Slide Rail, 19” Rack mount kit for MD-Series	All Models

CAUTION:

The populated eterio SAN MD-System can be very heavy, to avoid any potential injury or harm to installers, or damage to the system, we strongly recommend at least two certified operators or engineers perform the system installation.

INFORMATION:

Slide rails is an optional part of all eterio SAN MD-Series models, if you did not purchase eterio qualified slide rails, you can skip the fourth step of the system installation tasks. If you want to purchase eterio qualified slide rails: full extension and thin slide with tool-less bracket: AA612508 series, please contact eterio authorized reseller.

TIP:

Please plug-in any of the first four hard drives, then event logs can be saved and displayed in next system boot up. Otherwise, the event logs cannot be saved.

1. First step of the slide rails installation
   - Take the slide rails from the carton.
   - Pull the inner rail out and slide the intermediate rail back.

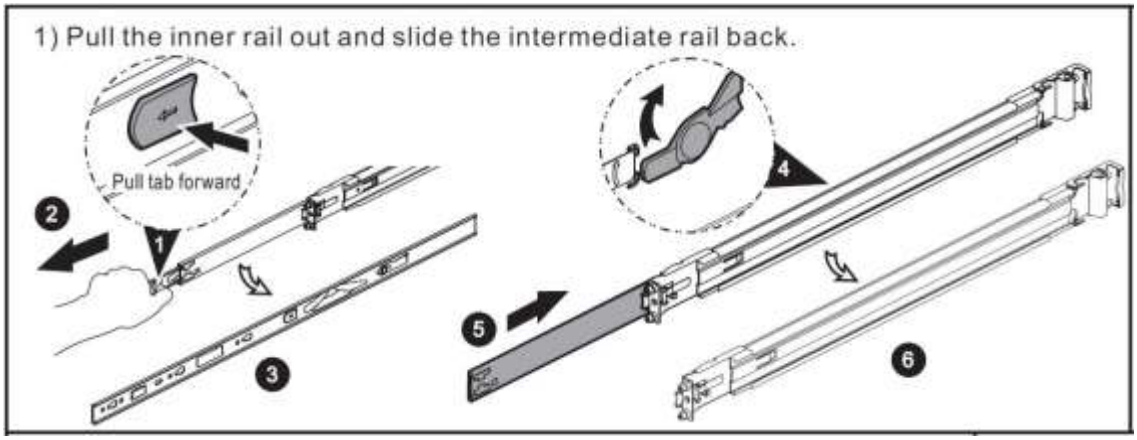

Figure 39: First Step of the Slide Rails Installation

2. Second step of the slide rails installation
    - Install the inner member onto the chassis

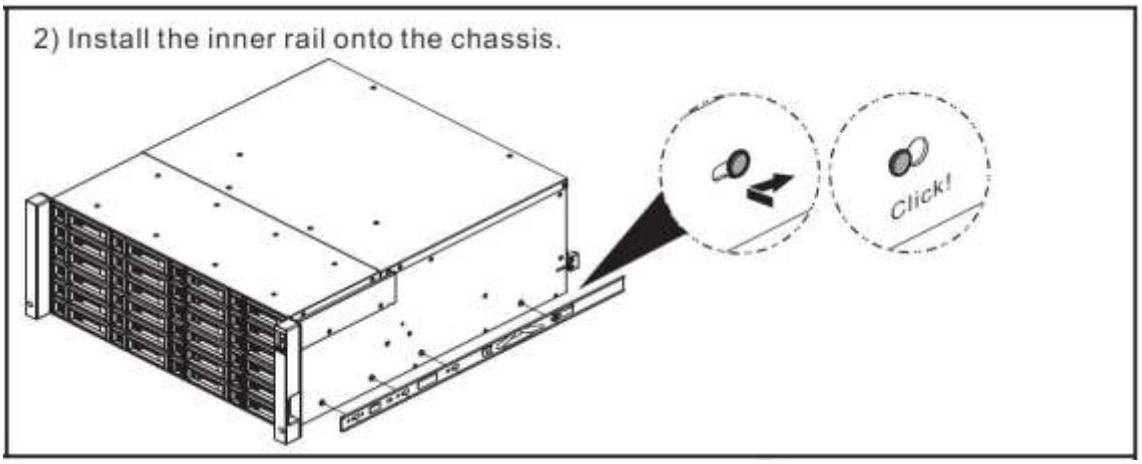

Figure 40: Second Step of the Slide Sails Installation

3. Third step of the slide rails installation
    - Install the outer rail/bracket assembly to the frame.
    - Repeat this installation step for the other side.

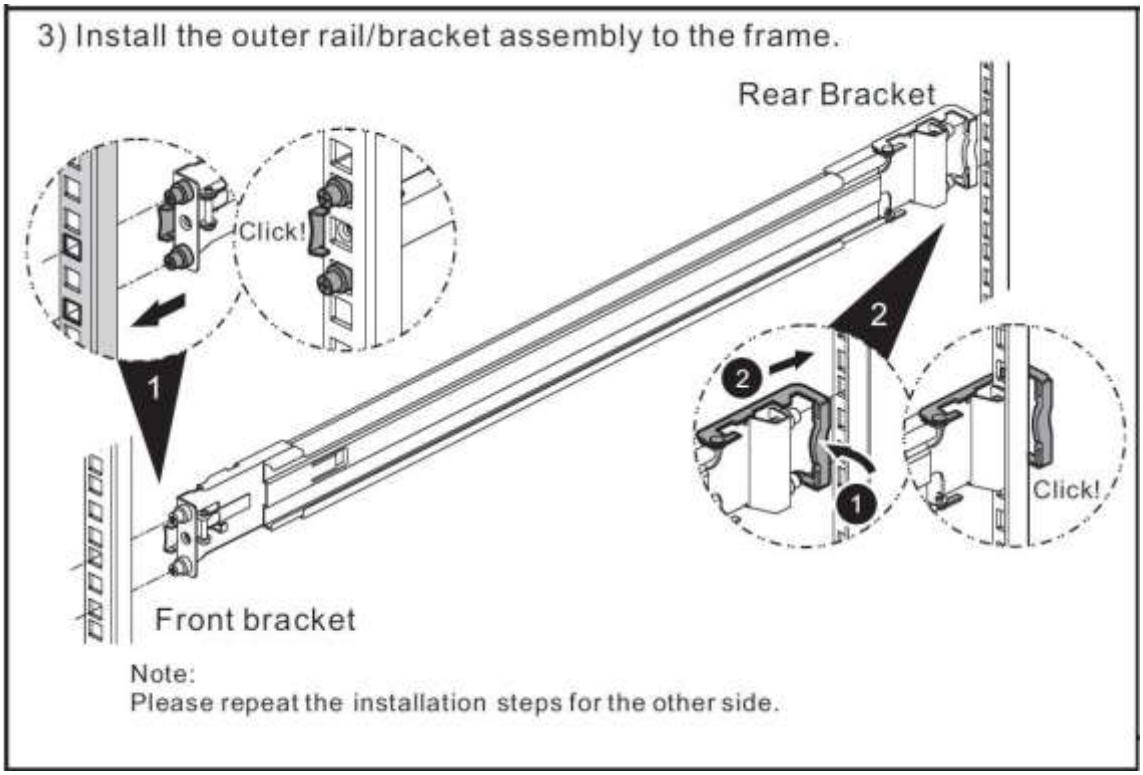

Figure 41: Third Step of the Slide Rails Installation

4. Fourth step of the slide rails installation
   - Pull the middle member fully extended in locked position.
   - Ensure ball bearing retainer is located at the front of the middle member.
   - Insert chassis into middle-outer member.
   - When hitting the stop, pull/push release tab to unlock and retract chassis into rack.
   - Use M5x20 screws to fasten the chassis ear[9].

INFORMATION:

[9]If you purchase optional slide rails, M5x20 screws that are dedicated for optional slide rails are packed in the screws pack.

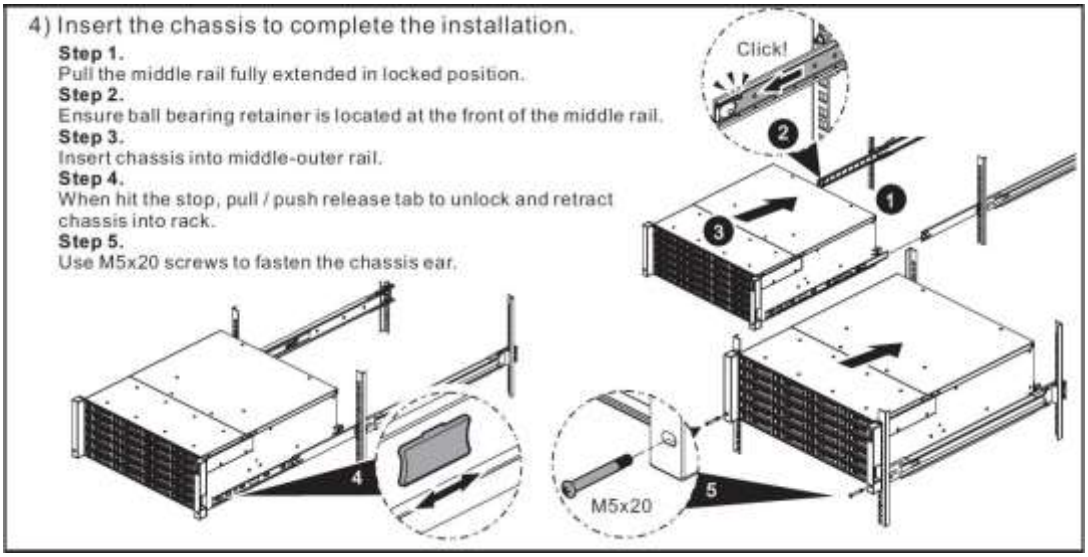

Figure 42: Fourth Step of the Slide Sails Installation

3.7. Installing the Trays into the System

Before installing, please check if the carrier handle is at the open position. The following procedure is for installing a tray into both LFF and SFF systems.

The following content and images are detailed steps for installing a tray into the system.

- Align a disk drive with the tray to the empty bay you would like to install and then push it all the way into the disk drive bay until the carrier handle is at closed position.
- Lock the release button lock by pushing the lock from right to left.
- Refer to the label on the system chassis for disk drive numbering. (Disk drive numberings of 2U 26-bay are printed on the chassis.)

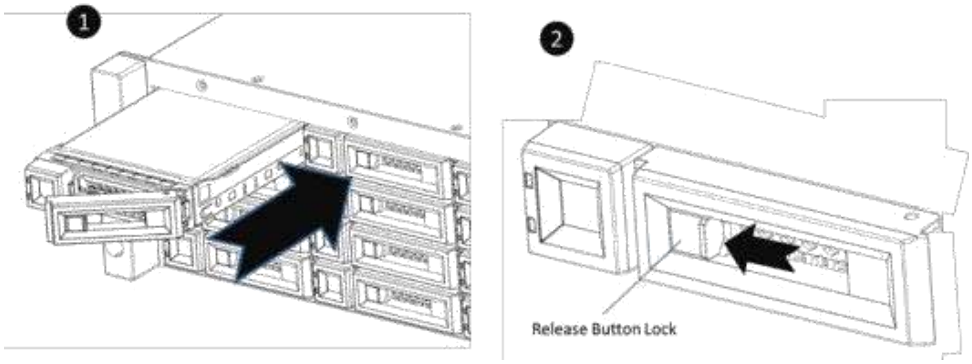

Figure 43: Install a Tray into the System and Lock the Release Button Lock (LFF)

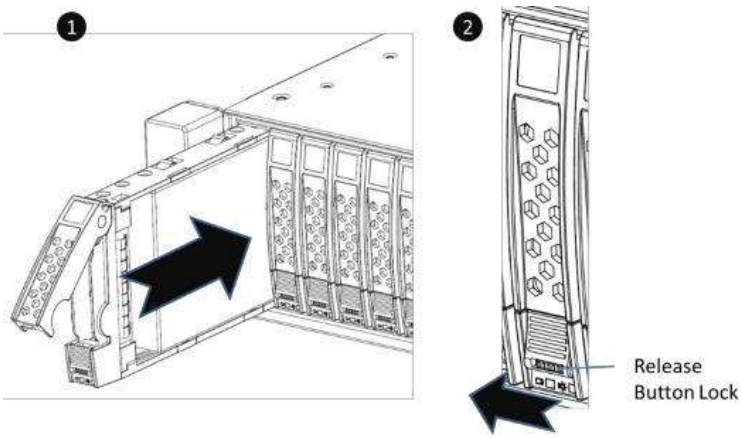

Figure 44: Install a Tray into the System and Lock the Release Button Lock (SFF)

3.8. Connecting the System to a Host

The eterio SAN MD-Series products are equipped with two on-board 10GbE iSCSI (RJ45) ports per controller for data host connections and dual SAS3 expansion ports for expansion by adding up to ten eterio SAN JBOD series or third-party enclosures. To learn more about advanced types of cabling, please refer to the chapter 4, Deployment Types and Cabling.

3.8.1. Connecting to the Management Ports

eterio SAN MD-Series models are equipped with one 1Gb BASE-T (RJ45) management port onboard per controller to allow access to the web-based eterio SAN OS management system. The following image is the example of the cabling for the eterio management ports

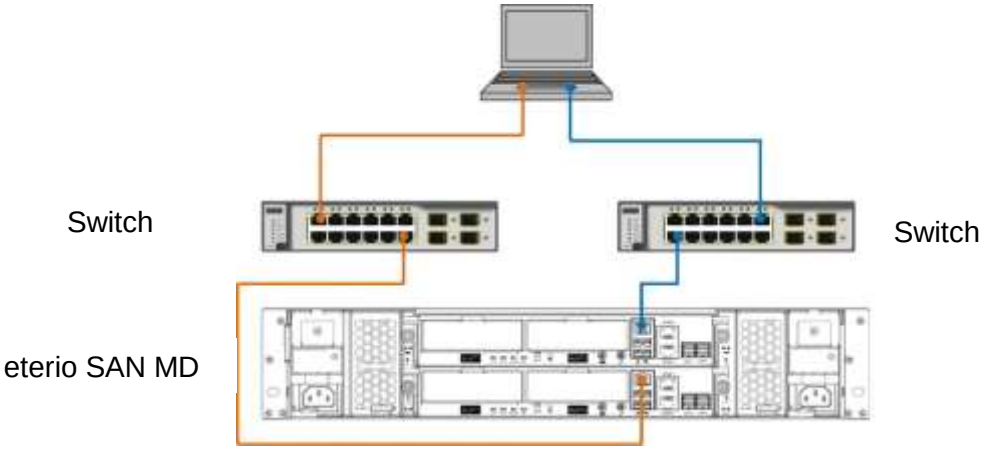

Figure 45: Cabling Example of the Administrator to the eterio SAN Management Port

3.8.2. Dual Path (MPIO) Deployment

The following images illustrate some examples of deployment types for dual controller eterio SAN MD-Series. MPIO (MultiPath I/O) configurations are designed to provide HA (High Availability) data connections to ensure data consistency in the rare event of a failure in the host connectivity from a single path.

One Server / One HBA / Two Switches / One eterio SAN MD / Dual Path

The following figure shows an example of a dual controller, connect enclosure configuration with one server accessing the storage via switches. One server is connected to a dual controller eterio SAN MD-Series using CAT 6 network cables.

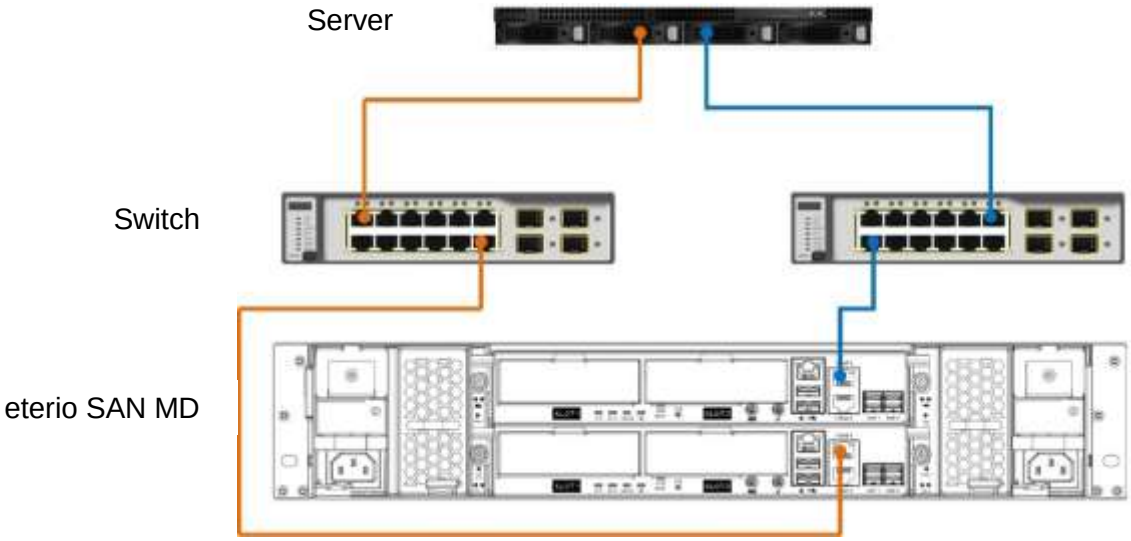

Figure 46: One Server / One HBA / Two Switches / One eterio SAN MD / Dual Path

3.8.3. Expansion Deployment

One Server / One HBA / One eterio SAN MD / One JBOD / Dual Path

The following figure shows an example of a dual controller, connect enclosure configuration with one server accessing the storage. One server is connected to a dual controller eterio SAN MD-Series using CAT 6 network cables. And a dual controller eterio SAN MD-Series connected to a dual controller eterio SAN JBOD series or third-party system using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644).

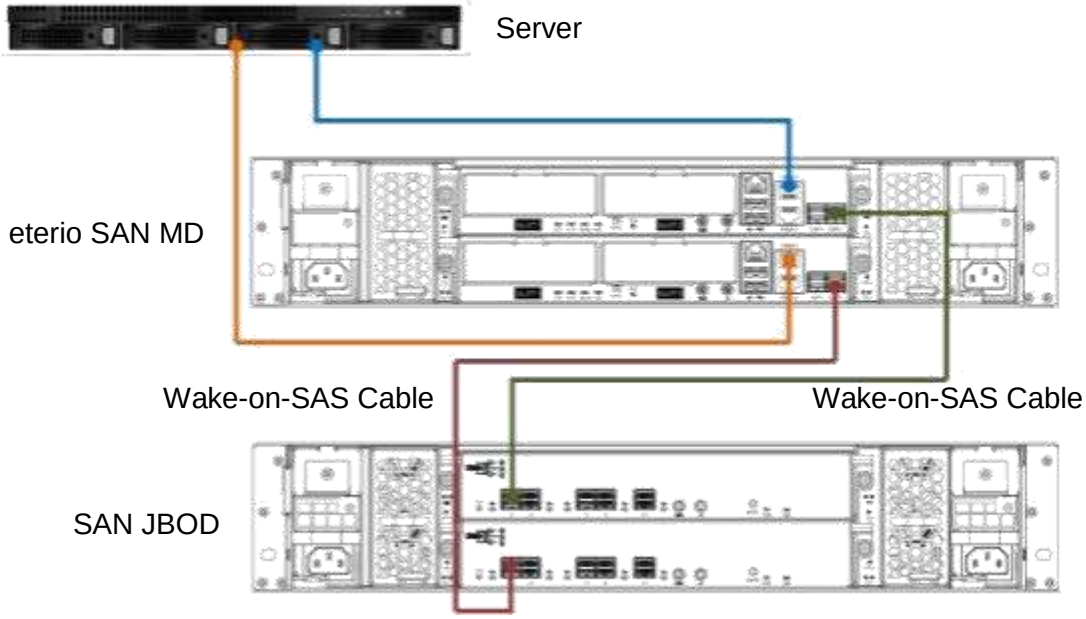

Figure 47: One Server / One HBA / One eterio SAN MD / One SAN JBOD / Dual Path

3.9. Connecting Power Cords and Powering ON the System

Before you power on your eterio SAN MD system for the first time, please make sure following tasks are done:

- Check the power cord type. The power cords for the eterio SAN MD-Series will vary depending on your country/region. If you find the power cords included with your eterio SAN MD system doesn't match your current country/region, you may need to buy an adapter for each power cord to connect the power outlet. Power cord ratings:
  - 100 – 127V~ 10A
  - 200 – 240 V~ 5A
- Install all disk drives in the system so the controllers can identify and configure them at power-up.
- Connect cables that connect the management port and data ports to your network, and then power cords to the system; finally press the power button once to power on the eterio SAN MD system

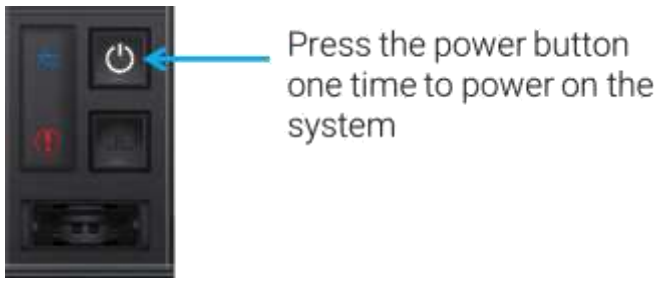

Figure 48: Press the Power Button One Time to Power on the System

INFORMATION:

The power cord rating is the minimum requirement. The rating of the power cord that you purchase must equal to or higher than the minimum requirement to ensure the system safety and reliability.

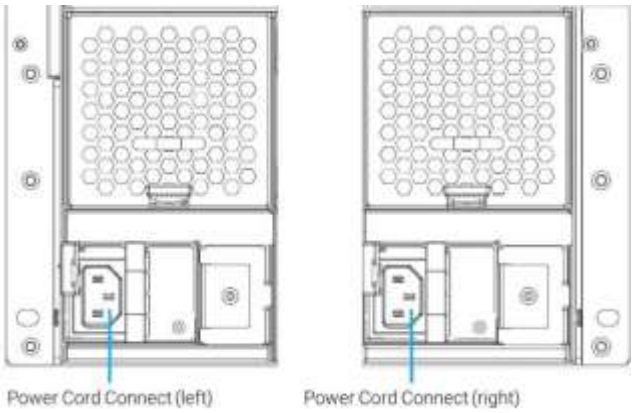

Figure 49: PSU Power Cord Connects

INFORMATION:

The Following are the operational conditions for all eterio SAN MD-Series models:

Temperature:

- Operating temperature 0 to 40°C
- Shipping temperature -10°C to 50°C Relative Humidity:
- Operating Relative Humidity 20% to 80% non-condensing
- Non-Operating Relative Humidity 10% to 90%.

TIP:

The eterio San MD-Series will remember the current power state when the power failed by accent. If the system is online state, after power is recovered, the system will power on automatically. If the system is offline, the system will keep power off:

3.10. Powering OFF the System

To power off the system, please follow the steps outlined below:

- Stop all I/O from all hosts to the eterio SAN systems.
- Shut down the eterio SAN system by one of the methods that are described below:
  - Press and hold the power button for **4 seconds**.

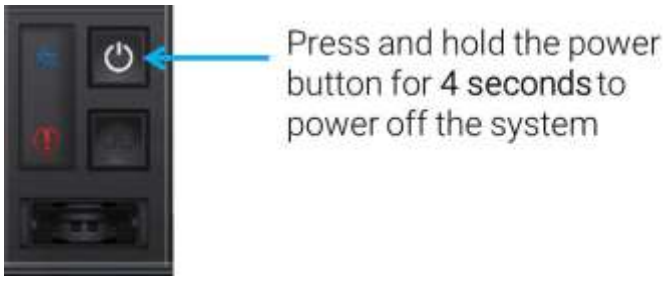

Figure 50: Power off the System by Power Button

  - Via ESOS UI to shut down the system power. If you want to power off the system via Web UI, please go to **SYSTEM SETTINGS -> Maintenance -> Reboot / Shutdown**; click **Shutdown** to power off the system

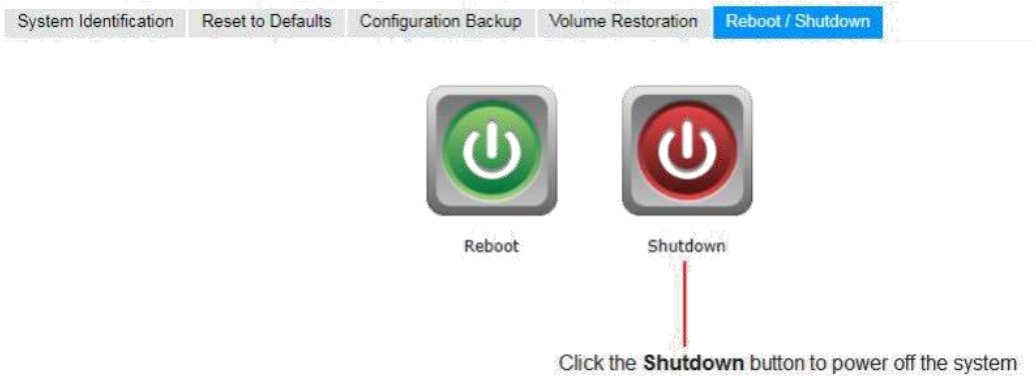

Figure 51: Power off the System Web GUI

3.11. Wake-on-LAN / Wake-on-SAS to Power ON / OFF the System

Eterio's Wake-on-SAS technology allows you to remotely power on/off all cascaded eterio SAN JBOD's or third-party expansion enclosures by using eterio proprietary SAS cables. You can power on the eterio SAN MD system remotely using the Wake-on-LAN feature. The eterio SAN MD can work with any available Wake-on-LAN freeware and shareware. Wake-on-SAS ensures that expansion enclosures will not run idly, consuming electricity after the SAN storage system is shut down for maintenance or other purposes. Wake-on-SAS can avoid unnecessary electricity waste by allowing your devices to be on only when it is necessary. A further advantage of Wake-on-SAS is that when you turn on the SAN, the expansion enclosures will wake automatically, so there is no need to worry about degrading a volume if you forget to turn them on first.

The table below shows the available expansion cable, model name, and its description.

Table 37: Available Expansion Cable for eterio SAN MD-Series

PN	Picture	Description	Applied model
CBL-SAS15EW		SAS 12Gb Expansion Cable with Wake-on-SAS, SFF-8644 to SFF-8644, 1.5m (This cable is not suitable for connecting HBA or RAID card)	All eterio SAN

The following diagram shows that after the eterio SAN MD storage receives the magic packet being sent from the client's computer, it powers on automatically and uses Wake-on-SAS functionality to power-on the attached eterio SAN JBOD or third-party expansion enclosures.

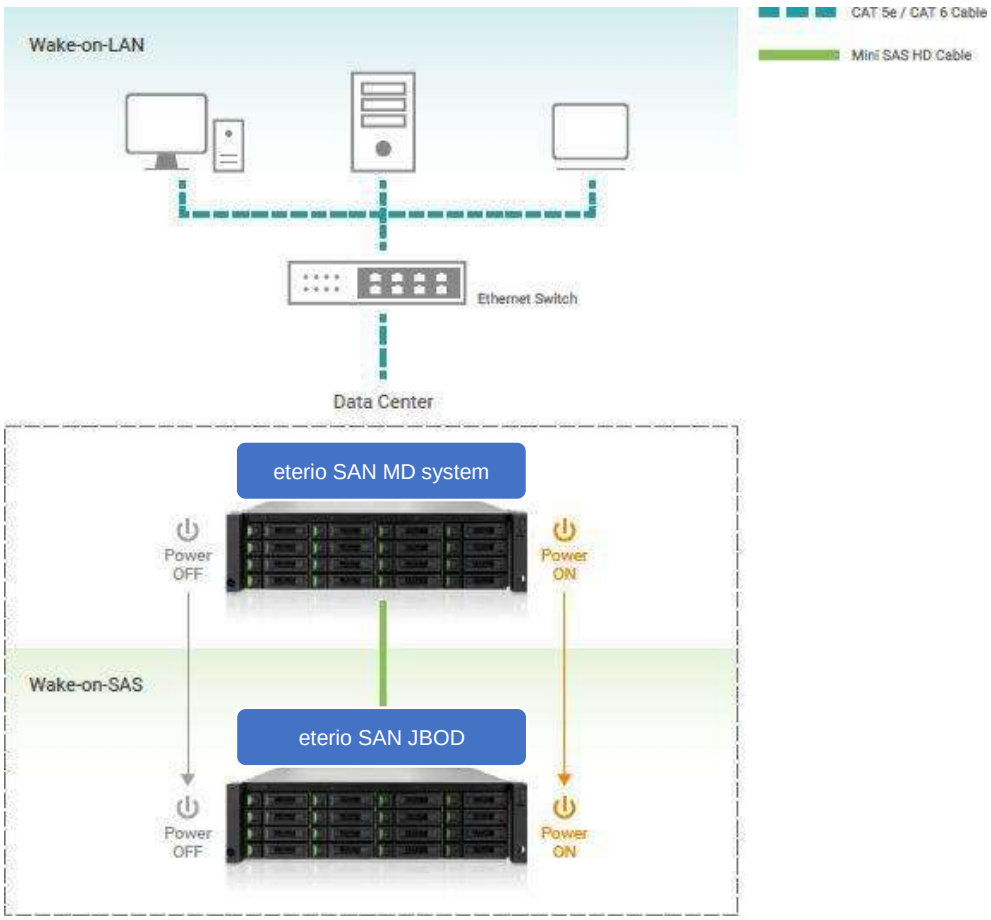

Figure 52: Wake-on-LAN and Wake-on-SAS Technology

3.12. Connecting an UPS

If users want to install an UPS (uninterruptible power supply) to provide clean power and also offer protection against mains power failures, please follow the following instructions.

- Before you purchase a UPS system, please check eterio SAN MD-Series supported UPS interfaces and communication types.
- Supported types → UPS via SNMP, Serial UPS with COM port, and USB UPS.
- Communication types → network UPS via SNMP, Serial UPS with COM port, and USB UPS. Serial communication is the only supported type.
- Connect the UPS to the eterio San MD-System.

The following image is the location for the UPS connection

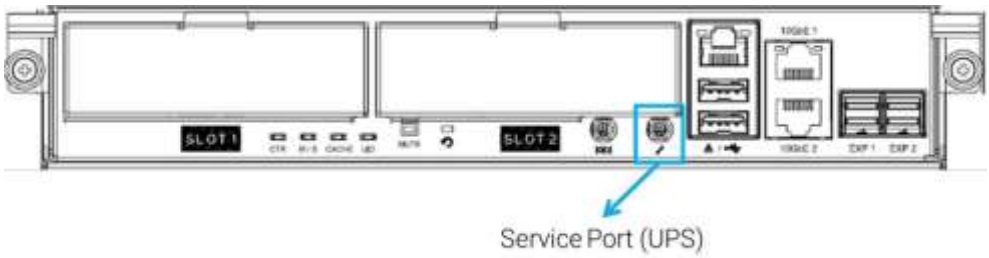

Figure 53: Location for the UPS System Connection

The table below shows the available UPS cable, model name, and its description.

Table 38: Available UPS Cable for eterio SAN MD-Series

PN	Picture	Description	Applied model
CBL-UPS10		UPS Cable, Phone-jack, 1m	All eterio SAN

For checking the UPS connection and status, please refer to the chapter 6.3.3, UPS Settings and Status in the eterio ESOS 4.0 User's Manual.

3.13. Connecting the Optional USB LCM

If you purchased the USB LCM, please use the enclosed USB extension cable (A-male to A-female) to connect to the system. The Following procedures are for the USB LCM connection:

- Connect the USB LCM to the female side of the USB extension cable.
- Connect the male side of the USB extension cable to the USB port on the system front pillar.

The table below shows the available USB LCM, model name, and its description.

Table 39: Available USB LCM for eterio SAN MD-Series

PN	Picture	Description	Applied model
LCM		Portable USB LCD Module	All eterio SAN

To learn more how to use USB LCM, please refer to the chapter 4.4, Accessing the Management USB LCM in the eterio ESOS 4.0 User's Manual.

3.14. Discover and Carry Out the Initial Configuration for the System

After powering on the system, the next step is to discover the system on the network and start the initial configuration. To discover the system, we suggest downloading our QFinder application from the eterio web site; this will hunt the network for your new SAN and allow you to access it via the ESOS GUI. For more information about discovering your system and the initial configuration, please refer to the chapter 3, Getting Started in the eterio ESOS 4.0 User's Manual.

4. Deployment Types and Cabling

This chapter will show detailed deployment types and cabling for the eterio SAN MD-Series. You can start to build up a deployment plan for your Fibre channel or iSCSI storage environment by deploying your eterio SAN MD systems to your desired host. For expansion you can also attach the eterio SAN JBOD series RAID expansion enclosures or third-party system.

4.1. Deployment Types

Eterio SAN MD-Series supports following deployment types:

Table 40: Deployment Types

Deployment Type	Description
Single Path	In a single path deployment, one path is connected from the host/server to the eterio SAN MD system. In this deployment, only one controller in the enclosure is used.
Dual Path	In a dual path deployment, two paths are connected from the host/server to the eterio SAN MD system. In this deployment, both controllers in the system are used. Because dual path deployments provide two paths to the eterio SAN MD system for redundancy even in the event of device, cable, or power failure. In dual-path deployment environment, disk drives must support dual paths I/O (SAS interface).
Server Attached	In multi-server attached deployment, more than one server is connected to the eterio SAN MD system. In multi-server attached deployment, both single and dual path deployment modes are supported.

For more detail deployment type and cabling, please refer following sections.

4.2. Cabling the System

The following examples illustrate how to configure the cabling for the eterio SAN MD-Series. Recommended SAS cable length for the host connection is less than 3 meters. If you want to enable wake on SAS for the eterio SAN JBOD enclosures, the eterio genuine SAS cable with sideband is required to enable this feature. The eterio SAN MD-Series supports a maximum of up to 286 drives for the system storage space expansion; both single and dual path cabling are supported. The table below shows the available cable, model name, and its description.

Table 41: The List of Available Cable for eterio SAN MD-Series

PN	Picture	Description	Applied model
CBL-SAS15EW		SAS 12Gb Expansion Cable with Wake-on-SAS, SFF-8644 to SFF-8644, 1.5m (This cable is not suitable for connecting HBA or RAID card)	All eterio SAN
CBL-SAS15E		SAS 12Gb Expansion Cable, SFF-8644 to SFF-8644, 1.5m	

4.2.1. Expansion Configuration Rules

The table below shows the rule of configuration for the eterio SAN MD-Series and eterio SAN JBOD expansion enclosures. You can refer the table below for maximum number of extension enclosures and disk drives prior to performing system deployment.

Table 42: eterio SAN System and eterio Expansion Enclosure (JBOD) Configuration Rules

SAN Model	JBOD	Max. no. of JBODs	Max. no. of disk drives	Max. Raw capacity LFF = 14TB SFF = 2.4TB
MDxx12x 2U, 12-bay LFF	2U, 12-bay LFF	10	12 + 10 x 12 = 132	1,848 TB
	3U, 16-bay LFF		12 + 10 x 16 = 172	2,408 TB
	4U, 24-bay LFF		12 + 10 x 24 = 252	3,528 TB
	2U, 26-bay SFF		12 + 10 x 26 = 272	792 TB
MDxx16x 3U, 16-bay LFF	2U, 12-bay LFF	10	16 + 10 x 12 = 136	1,904 TB
	3U, 16-bay LFF		16 + 10 x 16 = 176	2,464 TB
	4U, 24-bay LFF		16 + 10 x 24 = 256	3,584 TB
	2U, 26-bay SFF		16 + 10 x 26 = 276	848 TB

SAN Model	JBOD	Max. no. of JBODs	Max. no. of disk drives	Max. Raw capacity LFF = 14TB SFF = 2.4TB
MDxx24x 4U, 24-bay LFF	2U, 12-bay LFF	10	24 + 10 x 12 = 144	2,016 TB
	3U, 16-bay LFF		24 + 10 x 16 = 184	2,576 TB
	4U, 24-bay LFF		24 + 10 x 24 = 264	3,696 TB
	2U, 26-bay SFF		24 + 10 x 26 = 284	960 TB
MDxx26x 2U, 26-bay SFF	2U, 12-bay LFF	10	26 + 10 x 12 = 146	1,742.4 TB
	3U, 16-bay LFF		26 + 10 x 16 = 186	2,302.4 TB
	4U, 24-bay LFF		26 + 10 x 24 = 266	3,422.4 TB
	2U, 26-bay SFF		26 + 10 x 26 = 286	686.4 TB

The table below shows the rule of configuration for the eterio SAN MD-Series and some third-party JBOD expansion enclosures. You can refer the table below for maximum number of extension enclosures and disk drives prior to performing system deployment.

Table 43: eterio SAN System and third-party expansion enclosure (JBOD) Configuration Rules

SAN Model	JBOD	Max. no. of JBODs	Max. no. of disk drives	Max. Raw capacity LFF = 14TB SFF = 2.4TB
MDxx12x 2U, 12-bay LFF	4U, 48-bay LFF	3	12 + 3 x 48 = 156	2,184 TB
	4U, 60-bay LFF		12 + 3 x 60 = 192	2,688 TB
	4U, 84-bay LFF		12 + 3 x 84 = 264	3,696 TB
MDxx16x 3U, 16-bay LFF	4U, 48-bay LFF	3	16 + 3 x 48 = 160	2,240 TB
	4U, 60-bay LFF		16 + 3 x 60 = 196	2,744 TB
	4U, 84-bay LFF		16 + 3 x 84 = 268	3,752 TB
MDxx24x 4U, 24-bay LFF	4U, 48-bay LFF	3	24 + 3 x 48 = 168	2.535 TB
	4U, 60-bay LFF		24 + 3 x 60 = 204	2,856 TB
	4U, 84-bay LFF		24 + 3 x 84 = 276	3,864 TB
MDxx26x 2U, 26-bay SFF	4U, 48-bay LFF	3	26 + 3 x 48 = 170	2,078.4 TB
	4U, 60-bay LFF		26 + 3 x 60 = 206	2,582.4 TB
	4U, 84-bay LFF		26 + 3 x 84 = 278	3,590.4 TB

CAUTION:

There is also possible to mix eterio SAN JBOD enclosure with third-party JBODs, but the total number of 286 installed drives should not be exceeded.

4.2.2. Dual Path (MPIO) Deployment

The following images illustrate some examples of deployment types for dual controller eterio SAN MD-Series. MPIO (MultiPath I/O) configurations are designed to provide HA (High Availability) data connections to ensure data consistency in the rare event of a failure in the host connectivity from a single path.

One Server / One HBA / Two Switches / One eterio SAN MD / Dual Path

The following figure shows an example of a dual controller, connect enclosure configuration with one server accessing the storage via switches. One server is connected to a dual controller eterio SAN MD-Series using CAT 6 network cables.

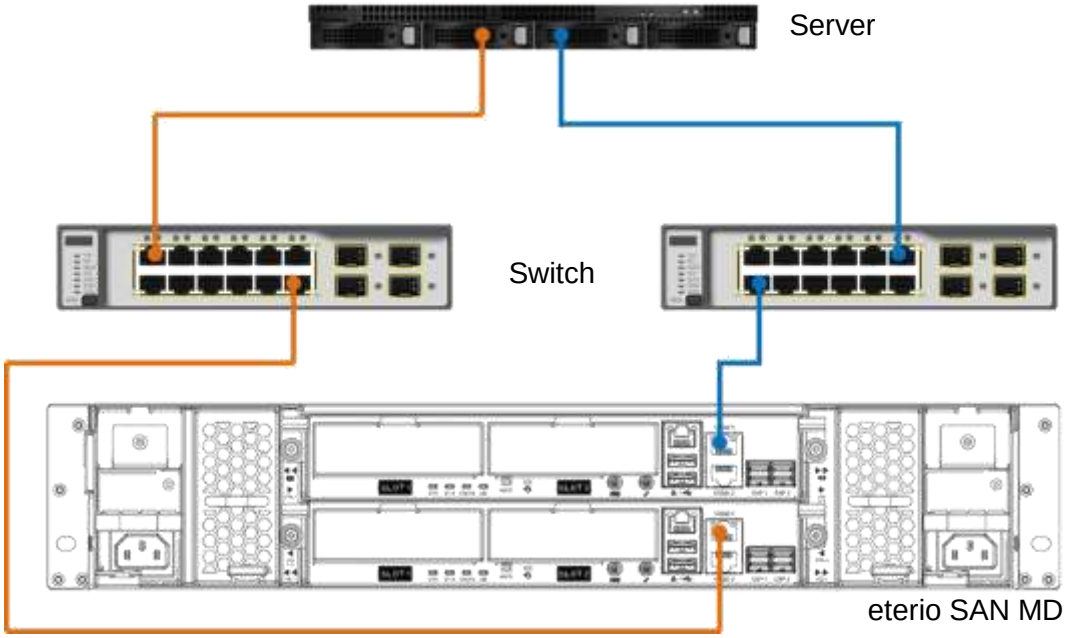

Figure 54: One Server / One HBA / Two Switches / One eterio SAN / Dual Path

One Server / One HBA / One eterio SAN MD / One SAN JBOD / Dual Path

The following figure shows an example of a dual controller, connect enclosure configuration with one server accessing the storage. One server is connected to a dual controller eterio SAN MD-Series using CAT 6 network cables. And a dual controller eterio SAN MD-Series connected to a dual controller eterio SAN JBOD or third-party series using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644).

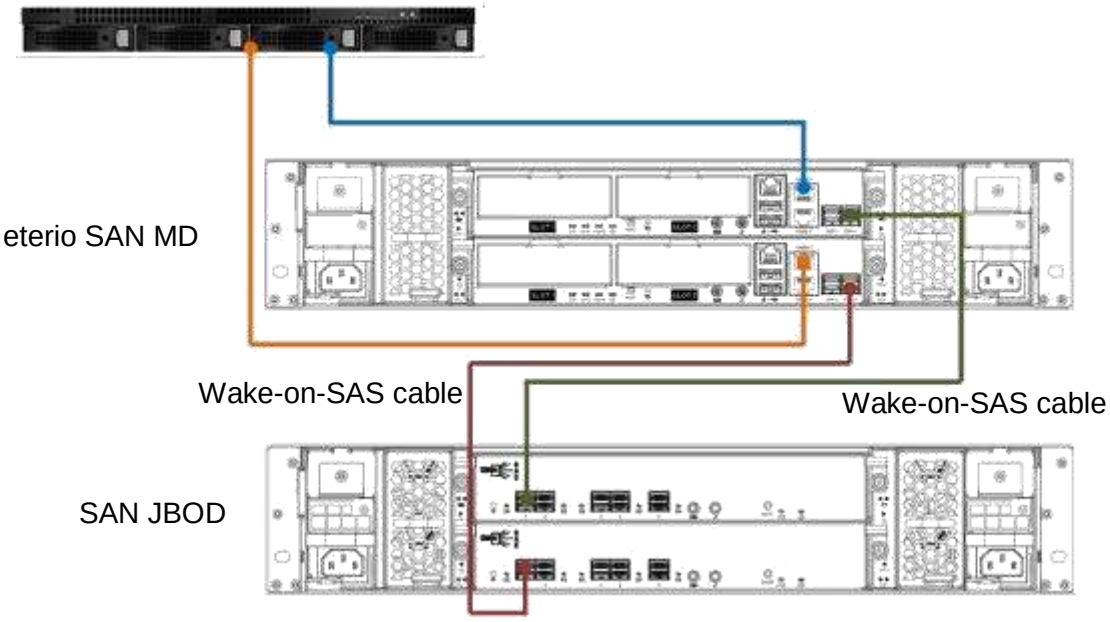

Figure 55: One Server / One HBA / One eterio SAN / One SAN JBOD / Dual Path

4.2.3. Multi-server Attached Cabling Deployment

The following images illustrate some examples of multi-server deployment types

Two Servers / One HBA per Server / Two Switches / One eterio SAN MD / Dual Path

The following figure shows an example of a dual controller, connect enclosures configuration with two servers accessing the storage via switches. Two servers are connected to a dual controller eterio SAN MD-Series using CAT 6 network cables

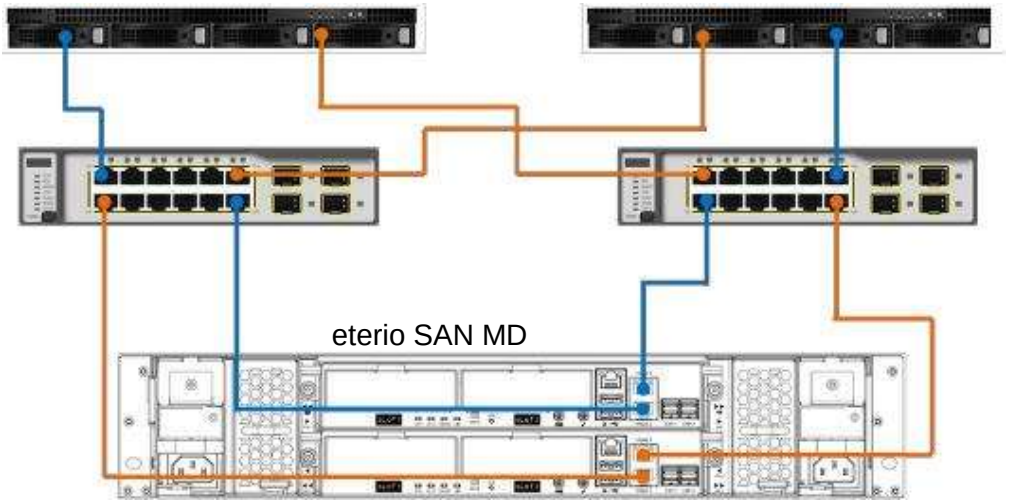

Figure 56: Two Servers / One HBA per Server / Two Switches / One eterio SAN / One eterio SAN / Dual Path

Ten Servers / One HBA per Server / One eterio SAN MD / Dual Path

If customers purchase optional host cards, the following is the cabling example. The following figure shows an example of a dual controller, direct connect enclosure configuration with ten servers accessing the storage. Two servers connect to the on-board 10GbE iSCSI (RJ45) ports. Eight servers connect to the optional host cards. To learn more about host cards support and installation, please refer to the chapter 3.3, Installing the Optional Host Cards.

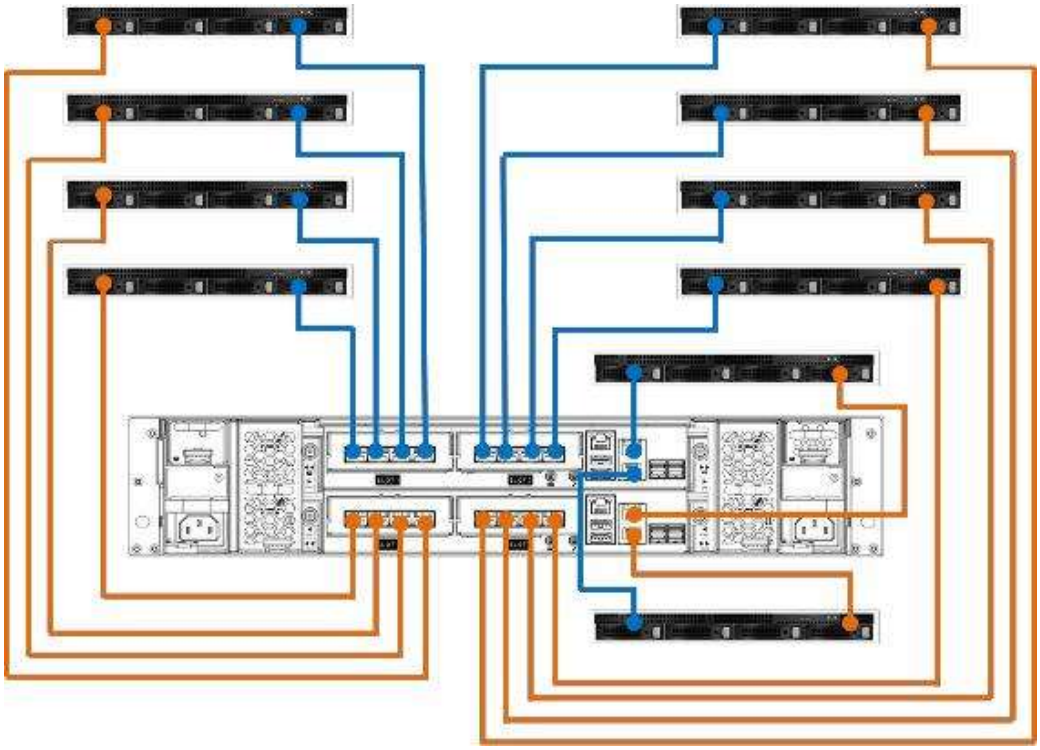

Figure 57: Ten Servers / One HBA per Server / One eterio SAN MD / Dual Path

4.2.4. Expansion Topology and Deployment

The following images illustrate some examples of expansion topology and deployment types for dual controller eterio SAN MD-Series.

Cascade Topology: One eterio SAN MD / One SAN JBOD / Dual Path

The following figure shows an example of a dual controller eterio SAN MD-Series connected to a dual controller SAN JBOD series using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644

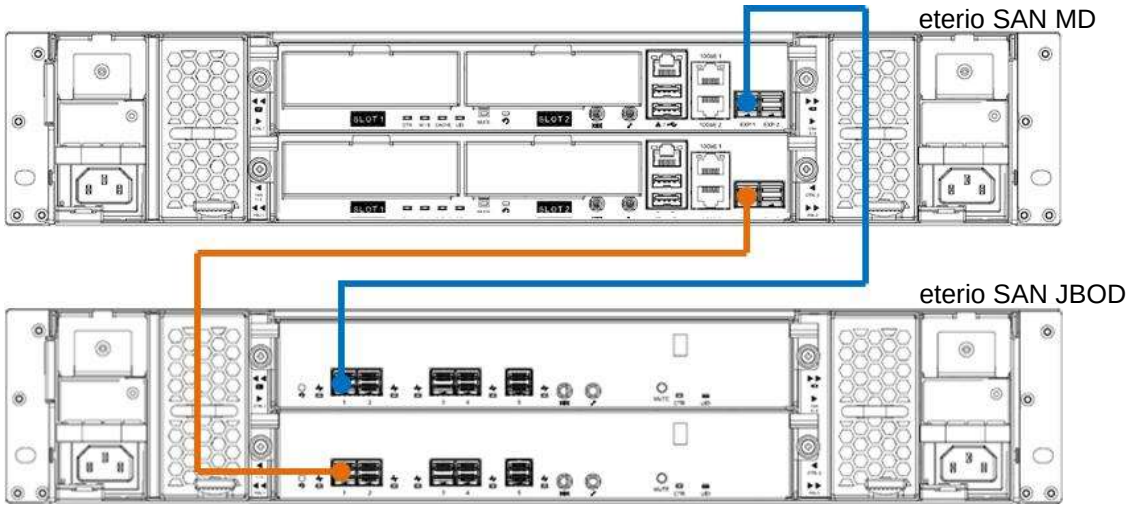

Figure 58: Cascade Topology: One eterio SAN MD / One SAN JBOD / Dual Path

Cascade Topology: One eterio SAN MD / Two SAN JBOD / Dual Path

The following figure shows an example of a dual controller eterio SAN MD-Series connected to a dual controller SAN JBOD series which is in turn connected to the second dual controller SAN JBOD series using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644).

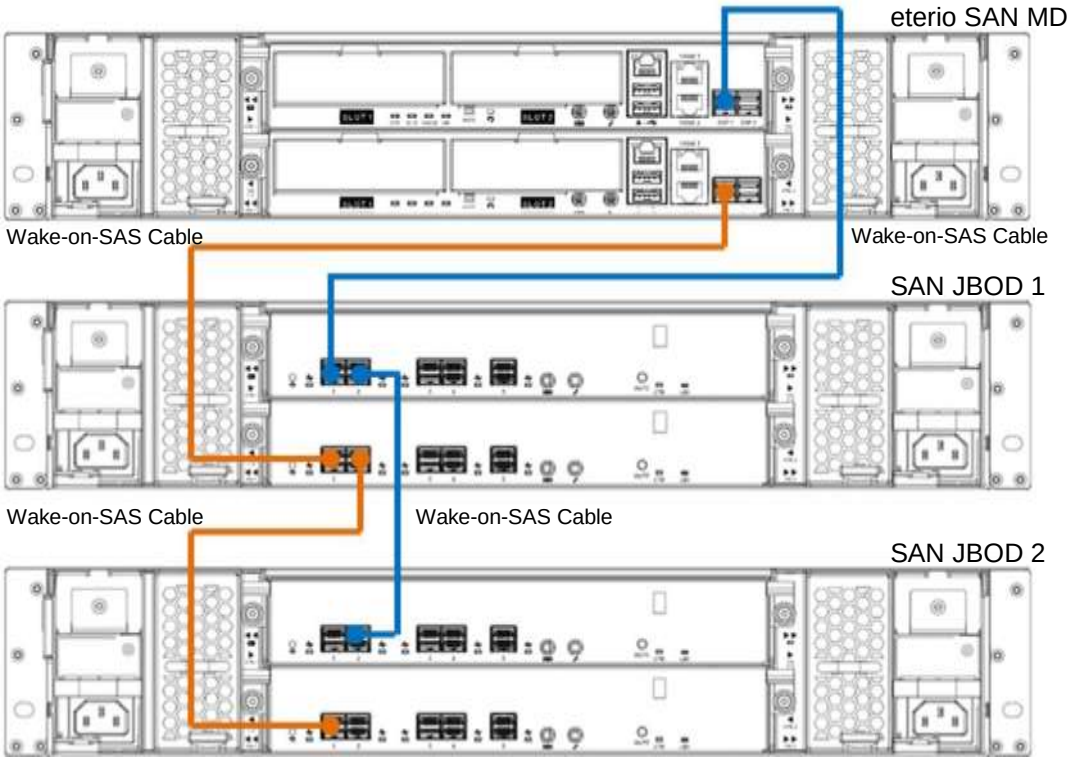

Figure 59: Cascade Topology: One eterio SAN MD / Two SAN JBODs / Dual Path

Reverse Topology: One eterio SAN MD / Two SAN JBODs / Dual Path

The SAN JBOD can be connected in redundant connection mode based on forward direction and backward direction. This provides the optimal networking reliability.

The following figure shows an example of a dual controller SAN MD-Series connected to a dual controller SAN JBOD series which is in turn connected to the second dual controller SAN JBOD series using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644). The connection in forward direction is shown as blue cables. The connection in backward direction is shown as orange cables.

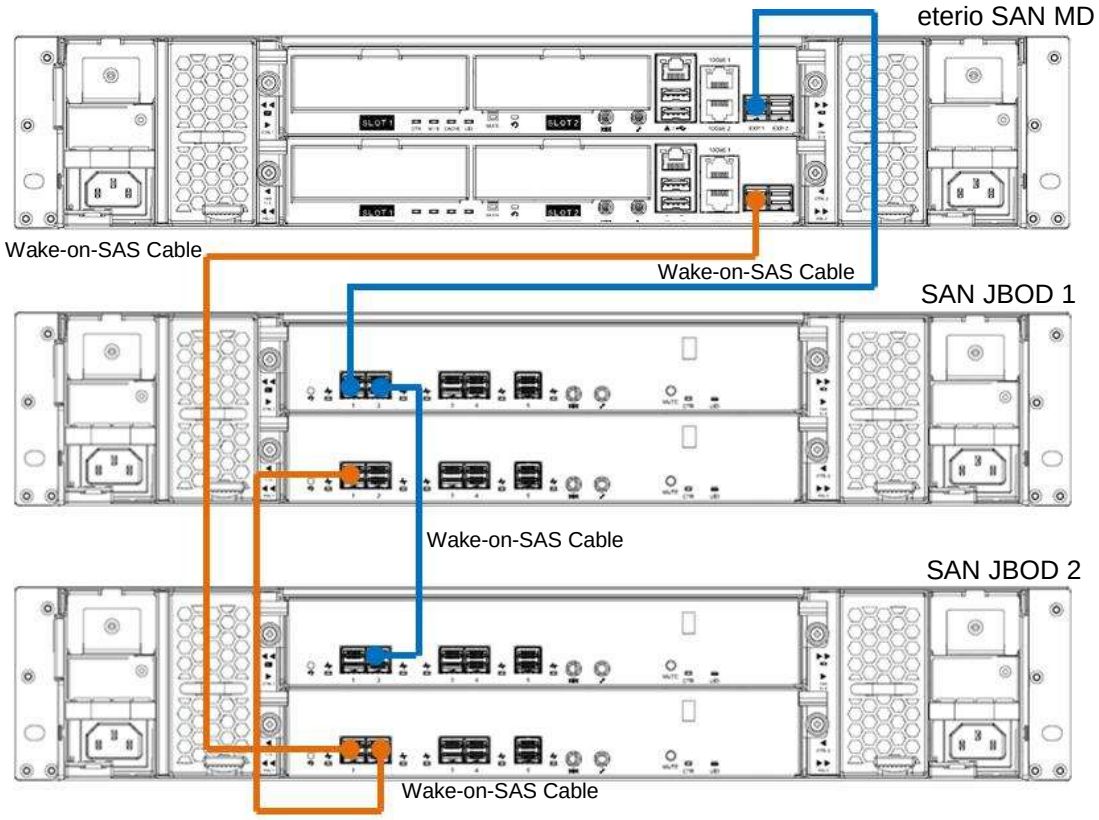

Figure 60: Reverse Topology: One eterio SAN MD / Two SAN JBODs / Dual Path

INFORMATION:

Reverse topology is available in ESOS firmware 1.1.0.

Tree Topology: One Server / Two SAN JBODs

The SAN JBOD can be connected in tree topology to reduce the latency.

The following figure shows an example of a dual controller eterio SAN MD-Series connected to two dual controller SAN JBOD series using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable with Wake-on-SAS, SFF-8644 to SFF-8644).

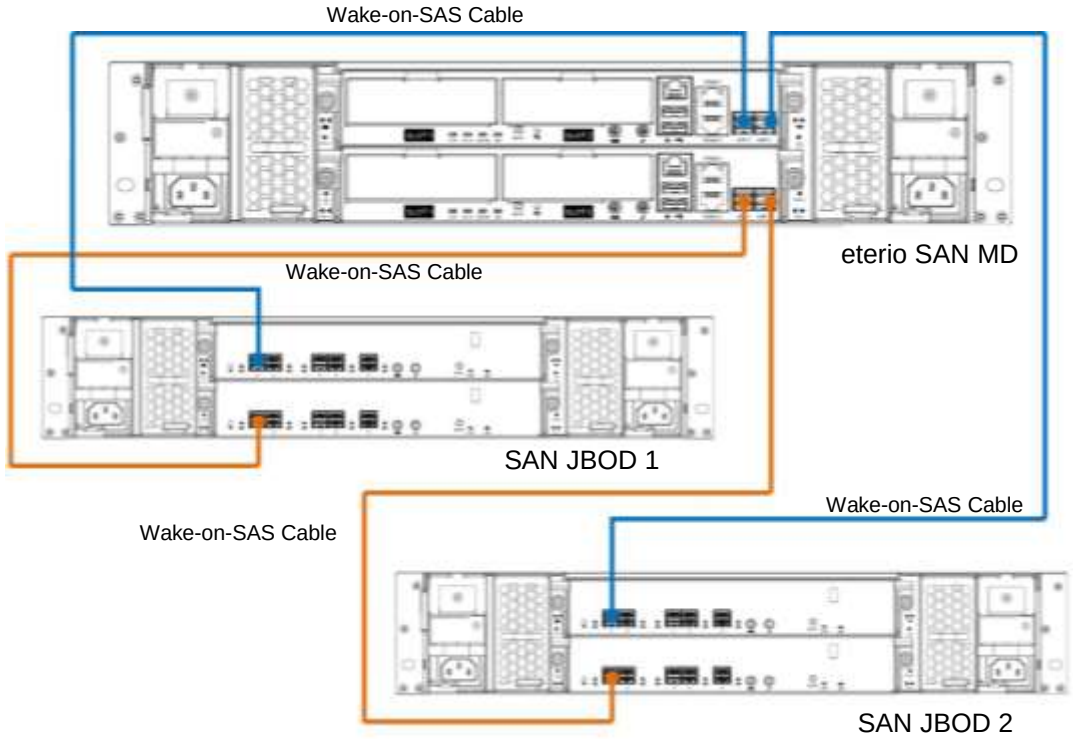

Figure 61: Tree Topology: One eterio SAN MD / Two SAN JBODs / Dual Path

INFORMATION:

Tree topology is available in ESOS firmware 1.1.0.

4.2.5. Introduction of Remote Replication

If users purchase two or more eterio SAN MD-Series systems and plan to deploy them in different locations, the **Remote Replication** function in eterio ESOS supports multiple topologies to suit various disaster recovery configurations. The following remote replication topologies are possible using native replication:

1. **One-Directional**

Figure 62: One-Directional Remote Replication

A Source Volume (S) in Site A is replicating to a Target Volume (T) in Site B. This is the most basic remote replication topology.

2. Bi-Directional

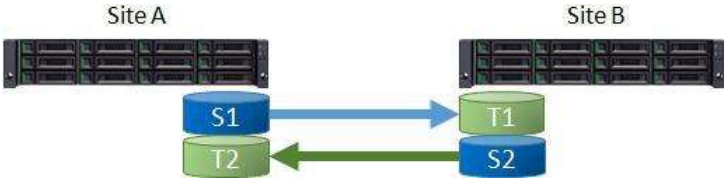

Figure 63: Bi-Directional Remote Replication

Each system in a two system topology acts as a replication target for the other's production data. A Source Volume (S1) in Site A is replicating to a Target Volume (T1) in Site B. And a Source Volume (S2) in Site B is replicating to a Target Volume (T2) in Site A.

3. One-to-Many

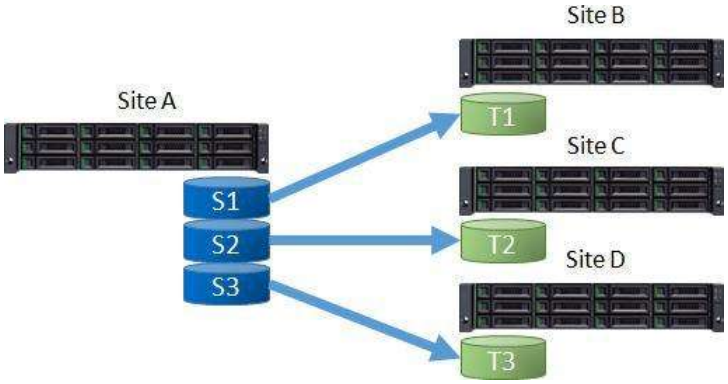

Figure 64: One-to-Many Remote Replication

A single source system replicates different storage resources to multiple target systems. A Source Volume (S1) in Site A is replicating to a Target Volume (T1) in Site B. At the same time, a Source Volume (S2) in Site A is replicating to a Target Volume (T2) in Site C. So does S3 in Site A to T3 in Site D.

4. Many-to-One

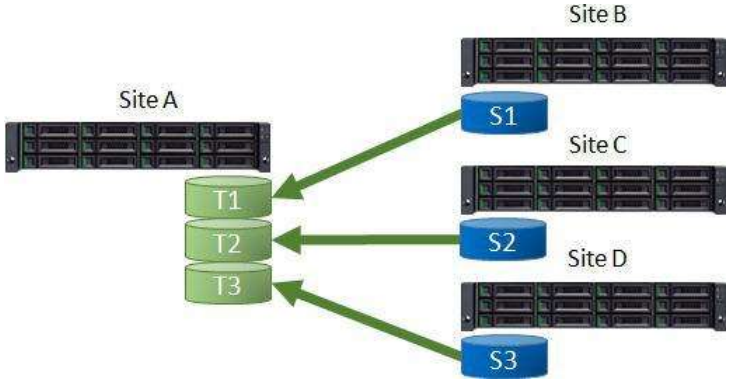

Figure 65: Many-to-One Remote Replication

Multiple source systems replicate to a single target system. A Source Volume (S1) in Site B is replicating to a Target Volume (T1) in Site A. At the same time, a Source Volume (S2) in Site C is replicating to a Target Volume (T2) in Site A. So, does S3 in Site D to T3 in Site A

5. Many-to-Many

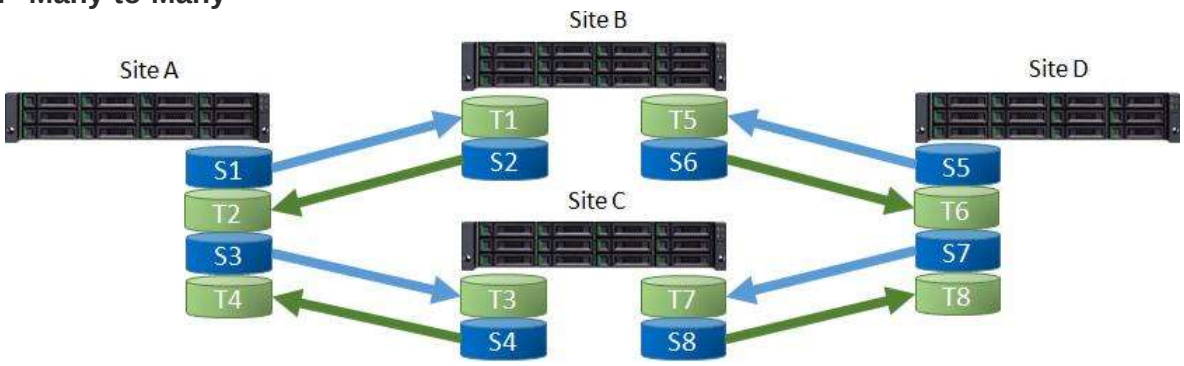

Figure 66: Many-to-Many Remote Replication

Combination with bi-Directional, one-to-many, and many-to-one, remote replication also supports Many-to-Many topology. Multiple source systems replicate to multiple target systems. A Source Volume (S1) in Site A is replicating to a Target Volume (T1) in Site B. At the same time, a Source Volume (S2) in Site B is replicating to a Target Volume (T2) in Site A. And does S3 to T3, S4 to T4, …, S8 to T8.

TIP:

Note that all supported topologies have a 1-to-1 configuration for each individual replication session in the topology.

The maximum replication task quantity per system is 32. It means that 32 systems are the maximum quantity of any many-to-one or one-to-many replication configuration.

If you want to learn more about the operations on remote replication, please refer to the Chapter 12.3, Managing Remote Replications in the eterio ESOS 4.0 User's Manual.

5. Descriptions of LEDs and Buttons

In this chapter, you can find all LED definitions and button behaviors of the eterio SAN MD-Series models. By reviewing this chapter, you will have a basic understanding about the current status of the system or specific components by recognizing the LED status.

5.1. Front Panel

In this session, we will describe the system controls and indicators, and the disk drive LEDs in the front panel.

5.1.1. System Controls and Indicators

XCubeSAN features the button and indication module on the right ear. Please refer to the following content for definitions of LED behaviors.

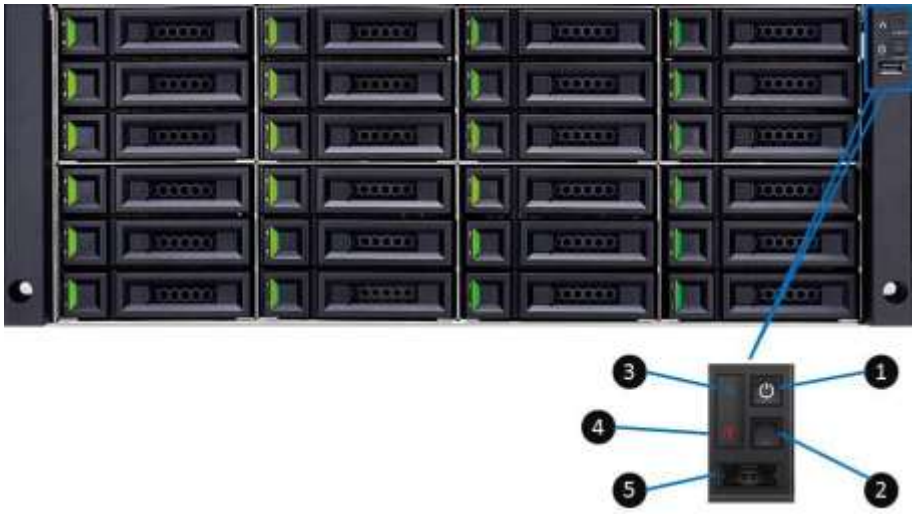

Figure 67: System Controls and Indicators

Table 44: Descriptions of the System Controls and Indicators LEDs

Number	Description	Definition
1	Enclosure Power Button / LED	**Power Button** • Press the button one time to turn ON the system power and keep pressing for 4 seconds to turn OFF the system power. **Power LED** • **Solid White**: Power is ON (at least one power supply unit is supplying power to the system). • **Blinking White**: The system is in the stage of boot or shutdown. • Off: The system is shutdown.
2	UID Button / LED	**UID (Unique Identifier) Button** • Press the button one time to turn it ON; press it again to turn it OFF. **UID (Unique Identifier) LED** • Press the button to turn it ON and press it again to turn it OFF. • **Solid Blue**: The system has been identified. • Off: The system has not been identified.
3	Enclosure Access LED	**Enclosure Access LED** (Indicate the host interface connectivity.) • **Blinking Blue**: The host interface activity is on-going. • Off: There is no host interface activity.
4	Enclosure Status LED	**Status LED** (Indicate current health status of the system.) • **Solid Amber**: System has errors including PSU failure, abnormal voltage, abnormal temperature, any fan module failed or removed, controller degraded, pool degraded, pool failure, SSD cache pool degraded, or SSD cache pool failure. • Off: The system is healthy.
5	USB Port	The USB port can be plug in the LCM (LCD Module)

5.1.2. Disk Drive LEDs

Please refer to the following content for definitions of LED behaviors.

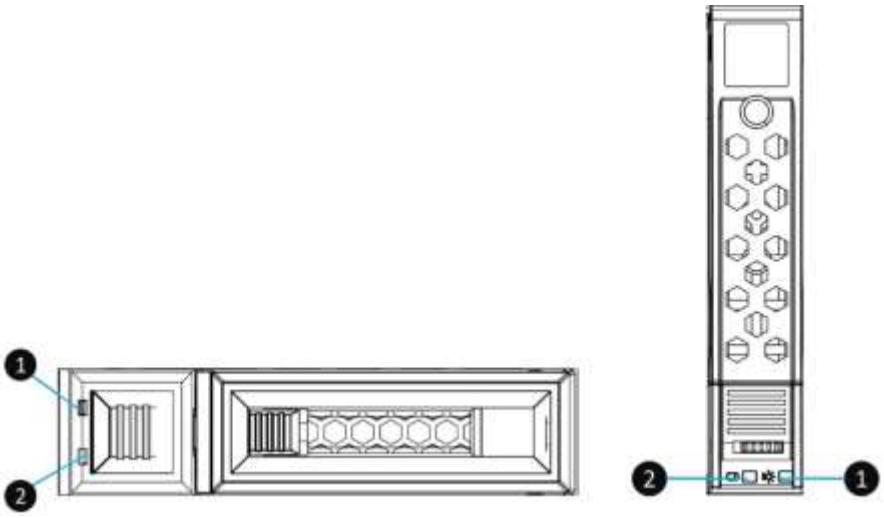

Figure 68: Disk Drive Indicators of LFF & SFF Disk Drive Tray

Table 45: Descriptions of Disk Drive LEDs

Number	Description	Definition
1	Disk Drive Power LED	• **Solid Blue**: The disk drive is inserted and no data access. • **Blinking Blue**: The disk drive is accessing data. • Off: There is no disk drive inserted.
2	Disk Drive Status LED	• **Solid Amber**: There is disk drive error. • **Blinking Amber** (interval of 0.5 sec): The disk drive is rebuilding. • **Blinking Amber** (interval of 0.05 sec): Identify the disk drive. • Off: The disk drive is healthy.

5.2. Rear Panel

In this session, we will describe the system control LEDs, PSU LEDs, host card LEDs, and the cache-to-flash module LED in the rear panel

5.2.1. Controller LEDs

Please refer to the following content for definitions of the LED behaviors.

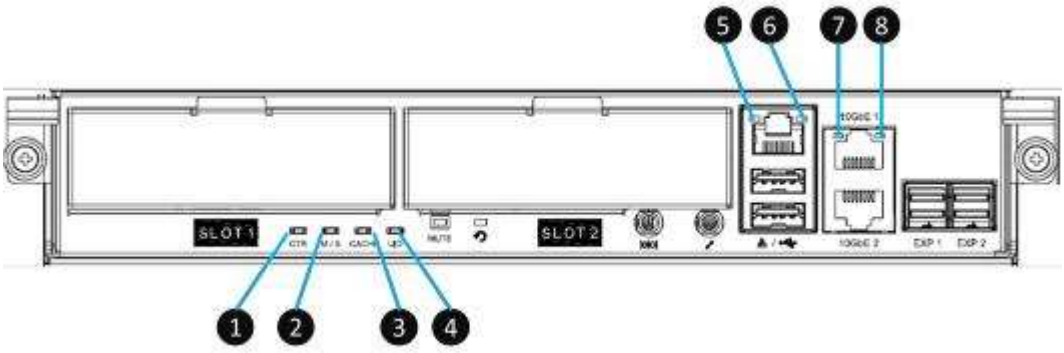

Figure 69: The Controller LEDs

Table 46: Descriptions of eterio SAN MD-Series Controller LEDs

Number	Description	Definition
1	Controller Status LED	• **Solid Green**: Controller status is normal. • **Solid Red**: System is booting, or the controller is failed.
2	Master / Slave LED	• **Solid Green**: This is the Master controller. • Off: This is the Slave controller.
3	Dirty Cache LED	• **Solid Amber**: Data on the cache is waiting for flush to disks. • Off: There is no data on the cache.
4	UID (Unique Identifier) LED	• **Solid Blue**: The enclosure is not being identified. • Off: The enclosure is not being identified.
5	Management Port Connection LED	• **Solid Green**: The connection is built and normal. • Off: No connection is built.
6	Management Port Accessing LED	• **Solid Amber**: Data is accessing.
7	10GbE iSCSI Port 1 LED	• **Solid Amber**: Data is accessing.
8	10GbE iSCSI Port 2 LED	• **Solid Amber**: Data is accessing.

5.2.2. Power Supply Unit LED

Please refer to the following content for definitions of the LED behaviors.

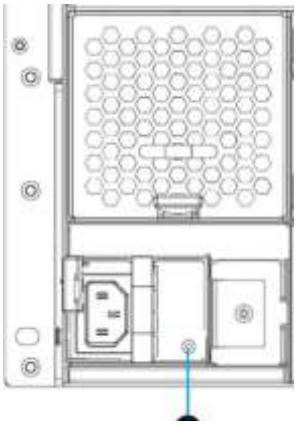

Figure 70: The Power Supply Unit LEDs

Table 47: Descriptions of the Power Supply Unit LED

Number	Description	Definition
1	PSU LED	• **Solid Green**: The PSU is on and normal. • **Blinking Green**: The PSU is off, +5VSB (Standby) is on. • **Solid Amber**: There is critical event caused shutdown. • **Blinking Amber**: There are PSU warning events including high temperature, high power, high current, slow fan, or under input voltage

5.2.3. Host Card LEDs

Please refer to the following content for definitions of the LED behaviors.

4-port 16Gb Fibre Channel Host Card (SFP+) LEDs

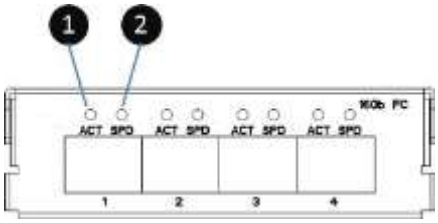

Figure 71: 4-port 16Gb Fibre Channel Host Card (SFP+) LEDs

Table 48: Descriptions of 4-port 16Gb Fibre Channel Host Card (SFP+) LEDs

Number	Description	Definition
1	Activity LED	• **Solid Green**: Asserted when the link is established (Link OK without I/O). • **Blinking Green**: Asserted when the link is established, and packets are being transmitted along with any receive activity (Access). • Off: No link is detected, or link fails.
2	Speed LED	• **Solid Blue**: Asserted when a 16G link is established and maintained. • **Solid Amber**: Asserted when an 8G link is established and maintained. • **Solid White**: Asserted when a 4G and below link is established and maintained. • Off: No link is detected, or link fails.

2-port 16Gb Fibre Channel Host Card (SFP+) LEDs

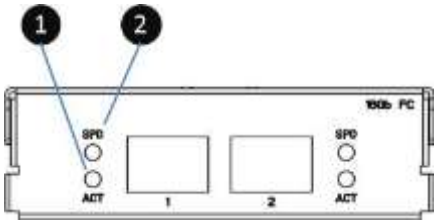

Figure 72: 2-port 16Gb Fibre Channel Host Card (SFP+) LEDs

Table 49: Descriptions of 2-port 16Gb Fibre Channel Host Card (SFP+) LEDs

Number	Description	Definition
1	Activity LED	• **Solid Green**: Asserted when the link is established (Link OK without I/O). • **Blinking Green**: Asserted when the link is established, and packets are being transmitted along with any receive activity (Access). • Off: No link is detected, or link fails.
2	Speed LED	• **Solid Blue**: Asserted when a 16G link is established and maintained. • **Solid Amber**: Asserted when an 8G link is established and maintained. • **Solid White**: Asserted when a 4G and below link is established and maintained. • Off: No link is detected, or link fails.

4-port 10GbE iSCSI Host Card (SFP+) LEDs

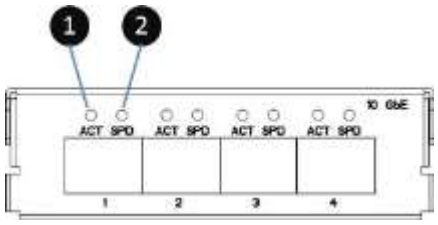

Figure 73: 4-port 10GbE iSCSI Host Card (SFP+) LEDs

Table 50: Descriptions of 4-port 10GbE iSCSI Host Card (SFP+) LEDs

Number	Description	Definition
1	Activity LED	• **Blinking Green**: Asserted when the link is established, and packets are being transmitted along with any receive activity (Access). • Off: No link is detected, or link fails.
2	Speed LED	• **Solid Blue**: Asserted when a 10G link is established and maintained. • **Solid Amber**: Asserted when an 1G link is established and maintained. • Off: No link is detected, or link fails.

2-port 10GBASE-T iSCSI Host Card (RJ45) LEDs

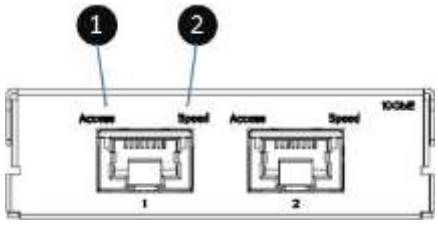

Figure 74: 2-port 10GBASE-T iSCSI Host Card (RJ45) LEDs

Table 51: Descriptions of 2-port 10GBASE-T iSCSI Host Card (RJ45) LEDs

Number	Description	Definition
1	Activity LED	• **Blinking Green**: Asserted when the link is established, and packets are being transmitted along with any receive activity (Access). • Off: No link is detected, or link fails.
2	Speed LED	• **Solid Green**: Asserted when a 10G link is established and maintained. • **Solid Amber**: Asserted when an 1G link is established and maintained. • Off: No link is detected, or link fails.

4-port 1GBASE-T iSCSI Host Card (RJ45) LEDs

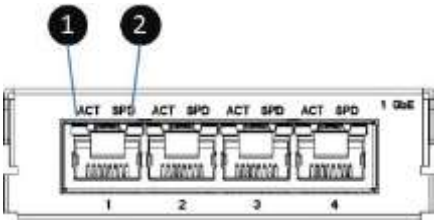

Figure 75: 4-port 1GBASE-T iSCSI Host Card (RJ45) LEDs

Table 52: Descriptions of 4-port 1GBASE-T iSCSI Host Card (RJ45) LEDs

Number	Description	Definition
1	Activity LED	• **Blinking Green**: Asserted when the link is established, and packets are being transmitted along with any receive activity (Access). • Off: No link is detected, or link fails.
2	Speed LED	• **Solid Amber**: Asserted when an 1G link is established and maintained. • **Solid Green**: Asserted when an 100M link is established and maintained. • Off: No link is detected, or link fails.

5.2.4. Cache-to-Flash Module LEDs and Button

Please refer to the following content for definitions of the LED and button behaviors.

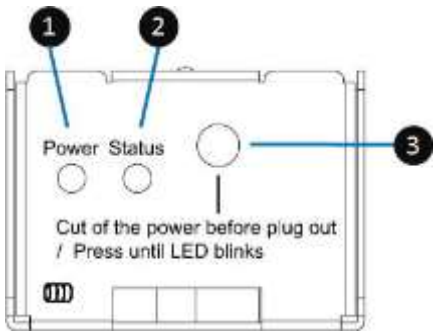

Figure 76: Flash Module LEDs and Button

Table 53: Descriptions of Flash Module LEDs and Button

Number	Description	Definition
1	Power LED	• **Solid Green**: Power is good at flash module. • Off: There is no power at flash module.
2	Status LED	• **Solid Blue**: The status of flash module is good. • **Blinking Blue** and **Amber Interlaced**: Installing or removing the flash module. • **Solid Amber**: The flash module is failed or wrong PCIe connection speed.
3	Attention Button	Used to prompt system that the flash module can be removed later.

CAUTION:

The flash module of Cache-to-Flash is hot swappable because it is a PCIe device. Before removing the flash module from the system chassis, you must press the attention button until the flash module status LED finished blinking. Otherwise, the flash module maybe damage. For more information about Cache-to-Flash modules, please refer to the chapter 3.5, Installing the Optional Cache-to-Flash Modules section and the chapter 6.5, Removing the Cache-to-Flash Modules section.

6. Quick Maintenance

This chapter provides quick maintenance and instruction of removing / installing FRU (Field Replaceable Unit) or optional components of all eterio SAN MD-Series models. All eterio SAN MD models feature the HA design, any of the FRU components can be hot swapped and replaced with zero downtime in the rare event of a component failure. If you encounter any issues caused by FRU components while operating eterio SAN MD-Series, please refer to related section and follow the quick troubleshooting procedures step by step.

CAUTION:

We recommend that all maintenance is carried out by a certified technician. Do not attempt to carry out any maintenance outside of those outlined in the following section of this guide. System damage due to incorrect maintenance or FRU replacement can affect your product warranty. If you are unsure of the problem related to your eterio SAN MD Series system, we strongly recommend you, to contact or get help from eterio support team:

- Via the Web: https://eterio.eu/serwis
- Via Telephone: +48 18 4436509
- Via Email: support@eterio.eu

6.1. Removing / Installing the Controller Module

This section outlines how to check the status of your controller module and the procedure of removing / installing the controller module when encountering problems.

Removing the Controller Module

CAUTION:

- The controller module is heavy and fragile; please use both hands while installing, removing, or carrying the controller module. Recommended place for removing the controller module: the system is in a well secured rack or on a stable surface.
- For single controller model, the controller must be installed into slot 1 (the top slot of the system in rear view) and you must install the dummy controller cage provided for the empty slot to ensure the proper system cooling.

If you see the system health becomes **Controller Degraded** in the ESOS UI **Dashboard → System Information** or the controller status LED shows solid red color, which means your controller module is encountering an issue or a hardware configuration mismatch (different memory size or different types of host cards are installed in the same slot number of different controllers) and need to be replaced immediately. You need to follow the procedures below to remove problematic controller module and install a healthy one.

System Information

MD4224S

Item	Information
System Name	eterio SAN
Model Name	MD4224S
Backplane ID	QW316
System Serial Number	MD18112100001700605
Firmware Version	4.0.0
System Controller Status	Dual Controller, Active-Active
System Health	Controller Degraded

More...

Figure 77: Warning Message of Failed Controller Module in the ESOS UI

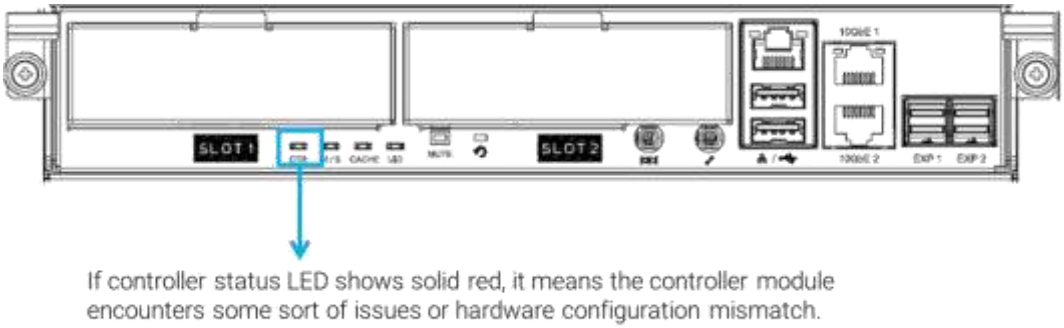

Figure 78: Warning Message of Controller Module by the Status LED

The following images illustrate mechanical components of the controller module.

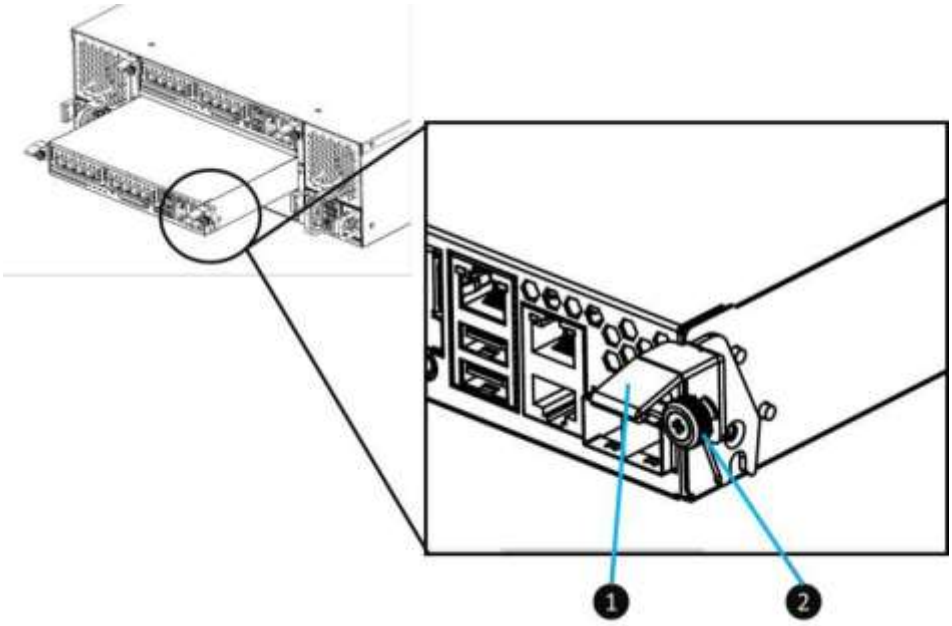

Figure 79: Mechanical Components of the Controller Module

Table 54: Mechanical Components of the Controller Module

Number	Description
1	Release Lever
2	Screw

The following content and images are detailed steps for removing the controller module from the system chassis.

- Use a standard screwdriver to loosen the thumb screws on each release levers.
- Pull down both levers at the same time and then pull out about half length of the controller module by holding two release levers.
- Use one hand to hold one end of the controller module (the side with release levers) and the other hand hold the bottom of the controller; pull out the controller module until it is free from the system chassis.

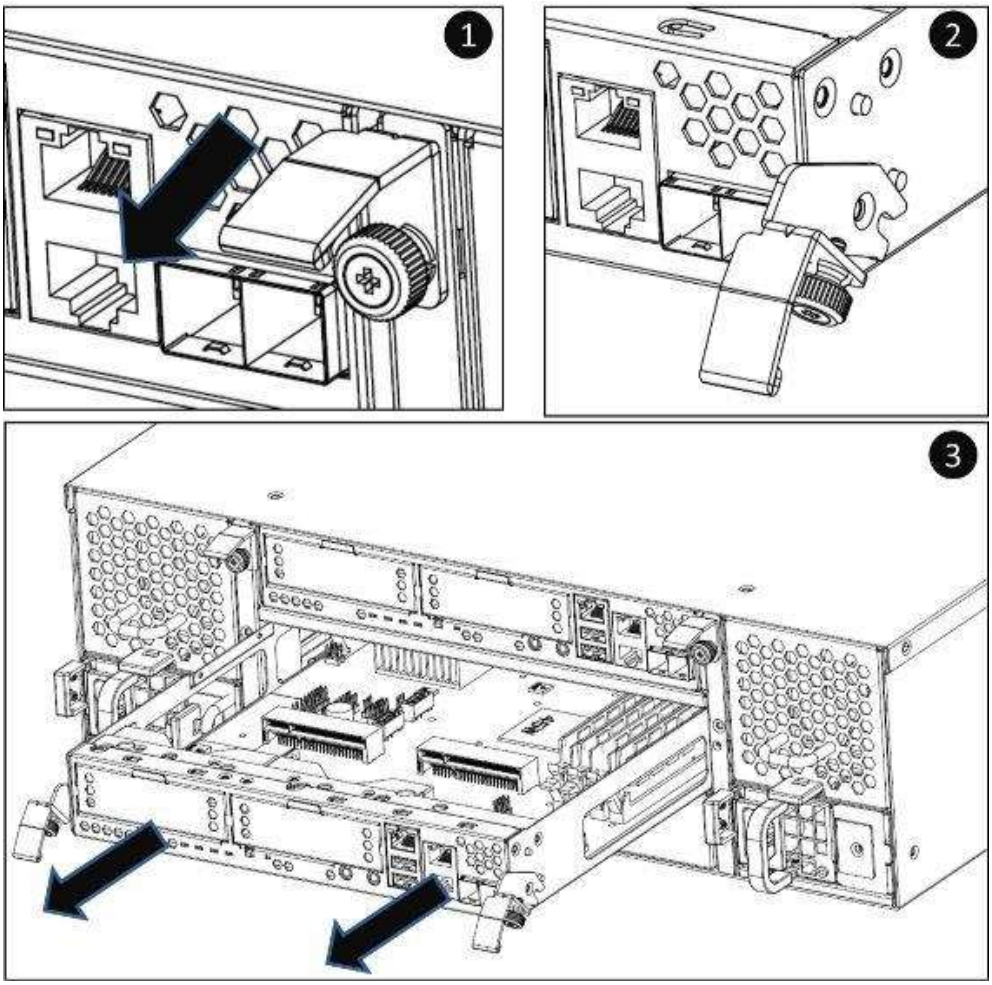

Figure 80: Procedures of Removing the Controller Module

Installing the Controller Module

The following content and images are the detail steps of installing the controller module into the system chassis.

- Make sure the position of both release levers of the controller is at downward.
- Align and place the controller to the empty controller slot.
- Push the controller module all the way into the controller slot until the position of two release levers move upward automatically.
- Pull up both release leavers at the same time until they totally parallel with the controller cage and then use a standard screw driver to tighten both screws.

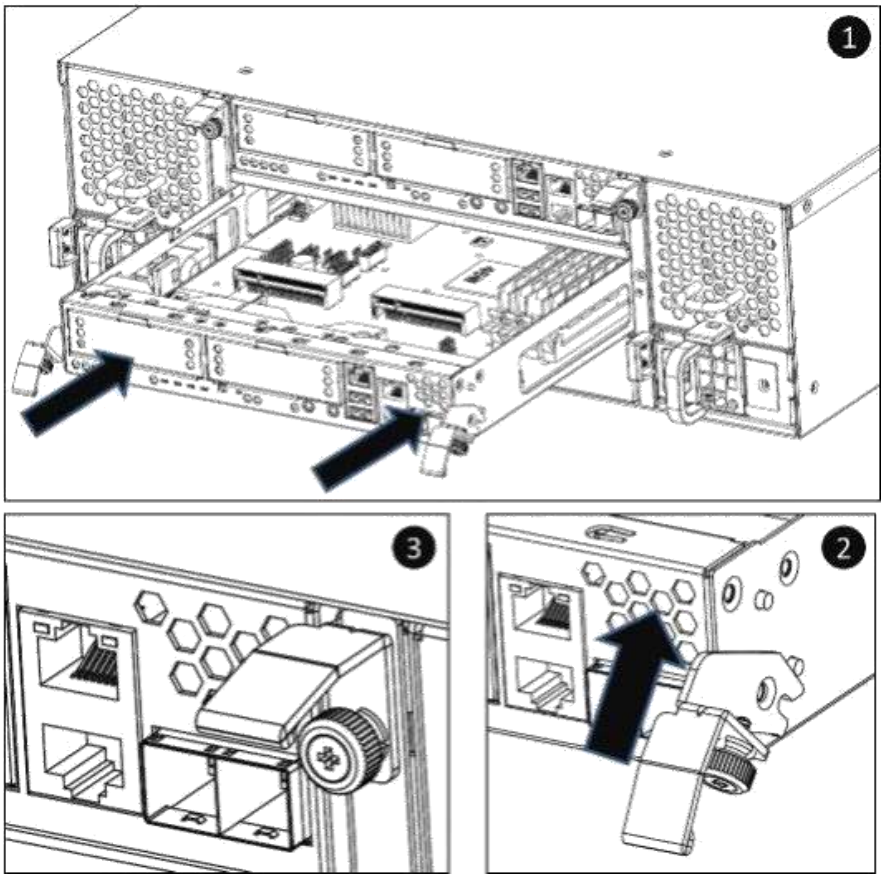

Figure 81: Detailed Procedures of the Controller Module installation

After about 150 seconds from the time you have installed the controller module into the system chassis, the status LED will show solid green color if controller module is successfully installed, then the web UI will show figure 82: System Healthy is **Good**.

System Information

MD4224S

Item	Information
System Name	eterio SAN
Model Name	MD4224S
Backplane ID	QW316
System Serial Number	MD18112100001700605
Firmware Version	4.0.0
System Controller Status	Dual Controller, Active-Active
System Health	Good

More...

Figure 82: Screenshot of the Controller Module Successfully Installed in ESOS UI

6.2. Removing / Installing the Power Supply Unit

The standard eterio SAN MD-Series system comes with two redundant PSUs (Power Supply Units) that allow users to hot swap it when one of the PSUs is not functioning.

All eterio SAN MD models are fitted with the same PSU, but the installation direction came differ. Please refer to the following content for the PSU removal / installation guide.

CAUTION:

The power supply unit is heavy and fragile; please use both hands while installing, removing, or carrying the controller module. Recommended place for removing the controller module: the system is in a well secured rack or on a stable surface

---

If you see the “System Health” showing **PSU Fault**, or the PSU LED shows solid or blinking amber color which means your PSU has encountered an issue and need to be replaced immediately. You need to follow the procedure of how to remove problematic PSU module and install a healthy one.

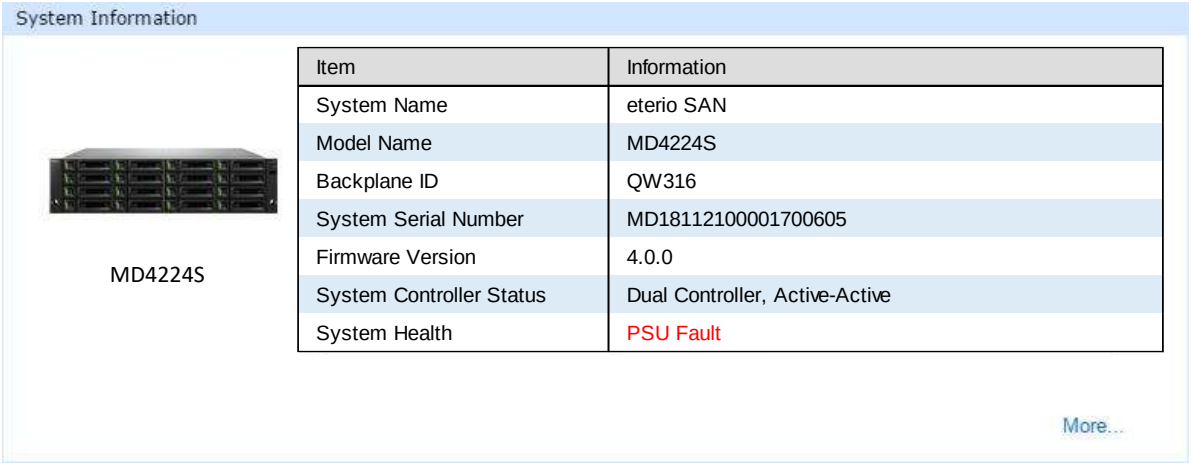

Figure 83: Warning Message of Failed PSU in ESOS UI

Removing the Power Supply Unit

The images and the table below provide description of mechanical components of the PSU. Please note that the PSU installed in 4U/3U or 2U system chassis are the same, but the installation direction is different (If you pull out the PSU from the system chassis, for 4U/3Usystems, the sticker on the PSU will be facing downwards; for 2U system, the sticker will be on the right-hand side). Please be sure to use the correct installation direction of the PSU to prevent any potential damage by improper installation

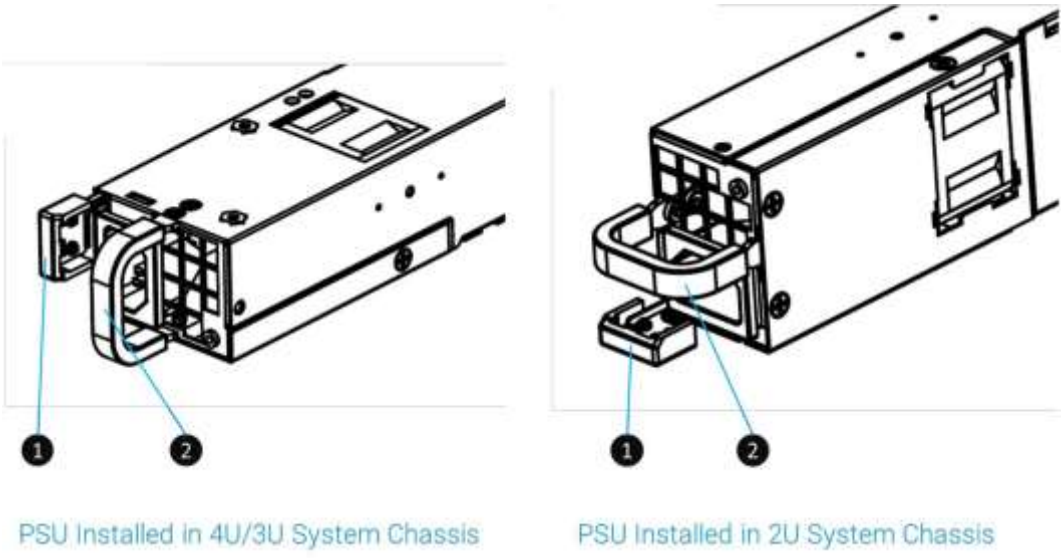

Figure 84: Mechanical Components of the PSU

Table 55: Mechanical Components of the PSU

Number	Description
1	PSU Release Tab
2	PSU Handle

Before removing the PSU, disconnect the power cord from the wall outlet; then remove the other end that is connected to the PSU.

The following are detailed steps of removing a PSU from the system chassis.

- Hold the PSU handle first, and then press the release tab.
- Pull out the power supply about half of the total PSU length.
- Use one hand to hold one end of the PSU (the side with release tab) and the other hand hold the bottom of the power supply unit; pull out the power supply unit until it is free from the system chassis.

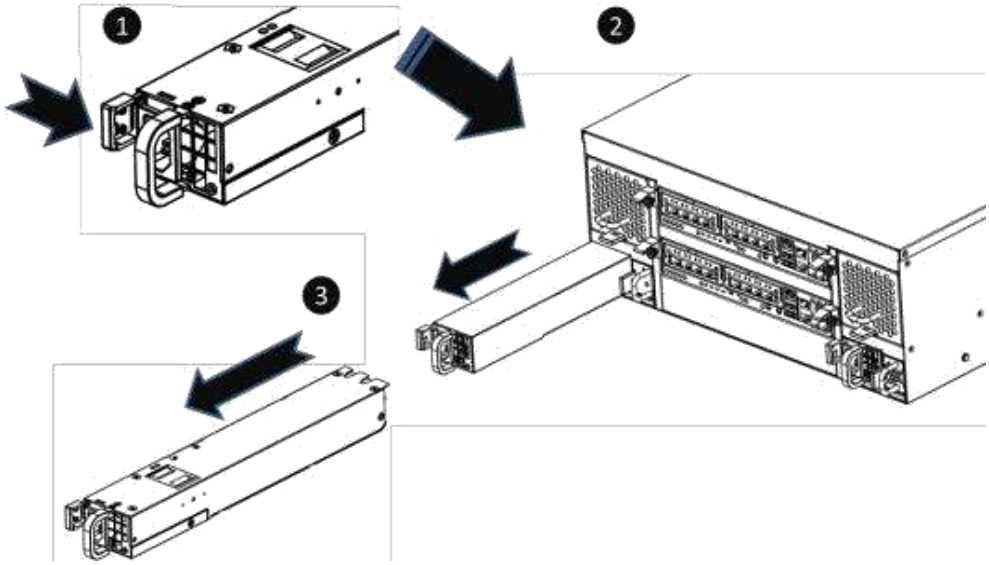

Figure 85: Procedures of Removing the Power Supply Unit

Installing the Power Supply Unit

The following are detailed steps of installing the PSU into the system chassis.

- Use one hand to hold one end of the power supply unit (the side with release tab and handle) and the other hand hold the bottom of the power supply unit; then align the PSU with the empty PSU slot.
- Push the PSU all the way into the empty slot until you hear the “click” sound from the release tab.

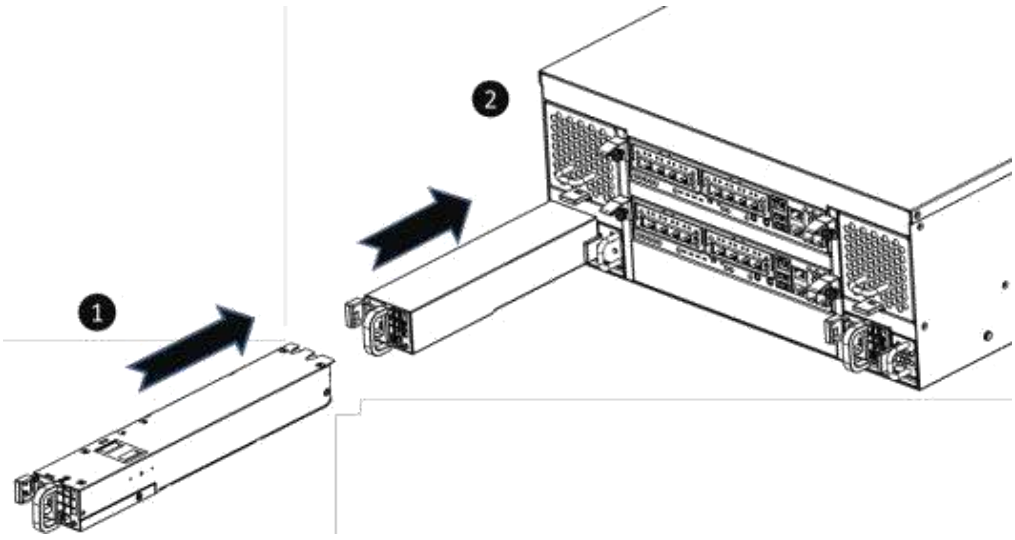

Figure 86: Installing the Power Supply Unit in the System Chassis

If the PSU is successfully installed, the status LED will show solid green color (if no other malfunction is encountered), then web UI will show Figure 87: System Health is **Good** and no warning message on the upper right side of the ESOS UI.

System Information

MD4224S

Item	Information
System Name	eterio SAN
Model Name	MD4224S
Backplane ID	QW316
System Serial Number	MD18112100001700605
Firmware Version	4.0.0
System Controller Status	Dual Controller, Active-Active
System Health	Good

More...

Figure 87: Screenshot of the Controller Module Successfully Installed in ESOS UI

6.3. Removing / Installing the Fan Module

The standard eterio SAN MD system comes with two redundant fan modules that allow you to hot swap it when one of the fan modules encounters an issue. If the fan module fails, it can be hot-swapped. The eterio SAN MD-Series utilizes two types of fan module for 4U/3U and 2U system chassis. Please refer to the following information for the fan module removing / installing procedures

CAUTION:

The fan module is heavy; please use both hands while removing, holding, or carrying the fan module. The fan module is hot swappable, but power off the system to do the fan module installing or removing is highly recommended. Recommended place for installing / removing a fan module: the system is on the well secured rack or onto stable surface

If you see the System Health showing **Fan Fault**, that means your fan module has encountered an issue and needs to be immediately replaced. You need to follow the procedures below to remove problematic fan module and install a healthy one.

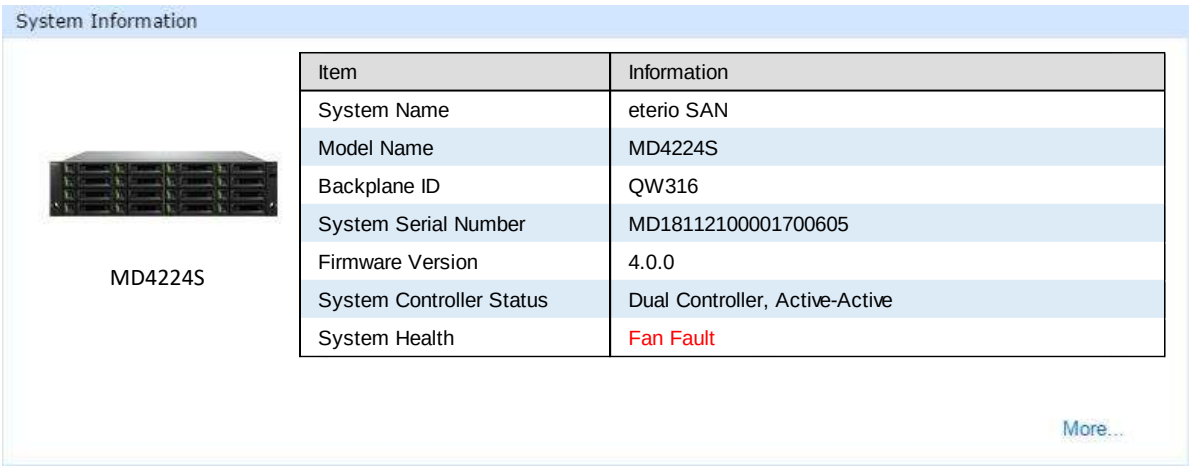

Figure 88: Warning Message of Failed Fan Module in the ESOS UI

Removing the Fan Module

Figures below are fan modules for 4U/3U or 2U system chassis.

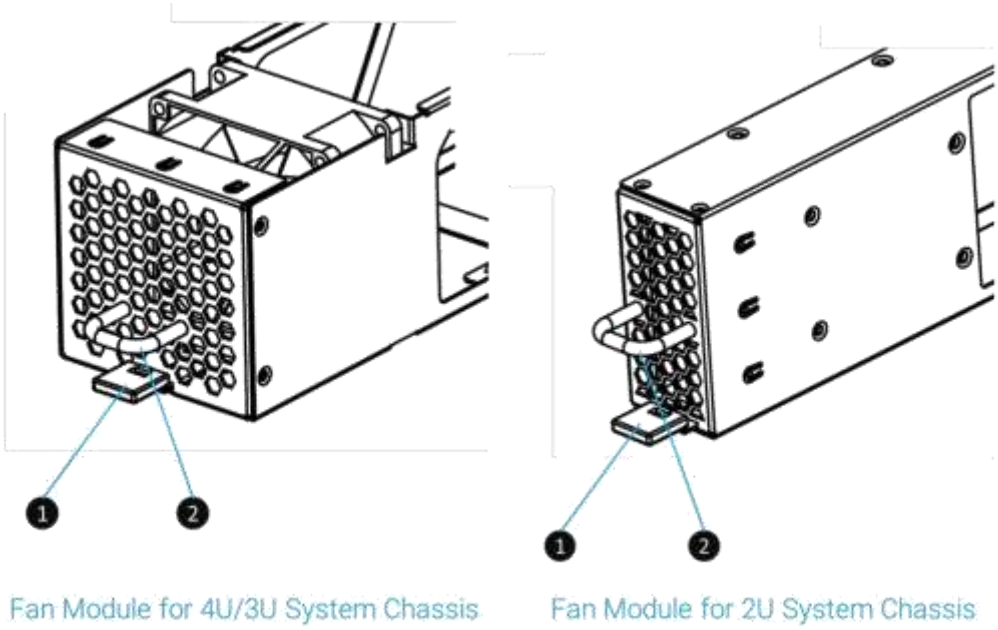

Figure 89: Mechanical Components of the Fan Module

Table 56: Mechanical Components of the Fan Module

Number	Description
1	The Fan Module Release Tab
2	The Fan Module Handle

The following details the steps of removing the fan module from the system chassis.

- Hold the fan module handle first, and then press the release tab.
- Pull out the fan module around half of the total fan module length.
- Use one hand to hold one end of the fan module (the side with release tab and handle) and the other hand hold the bottom of the module; pull out the module until it is free from the system chassis.

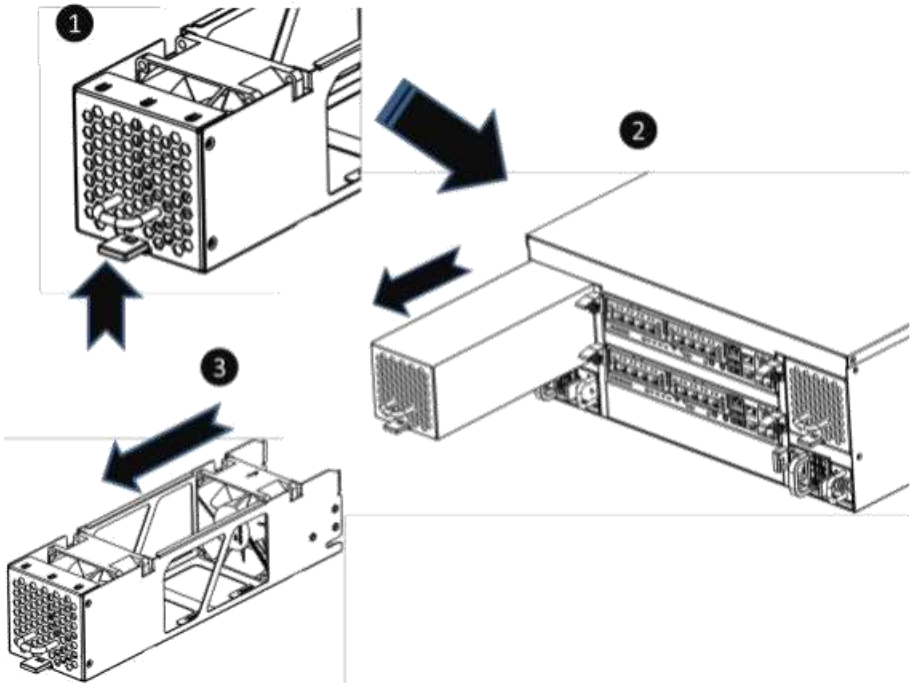

Figure 90: Procedures of Removing the Fan Module

Installing the Fan Module

The following details the steps of installing the fan module into the system chassis.

- Use one hand to hold one end of the fan module (the side with release tab and handle) and the other hand hold the bottom of the module; then align it with the empty slot. Installation direction of LFF and SFF systems is the same.
- Push the fan module all the way into the empty slot until hear the “click” sound from the release tab.

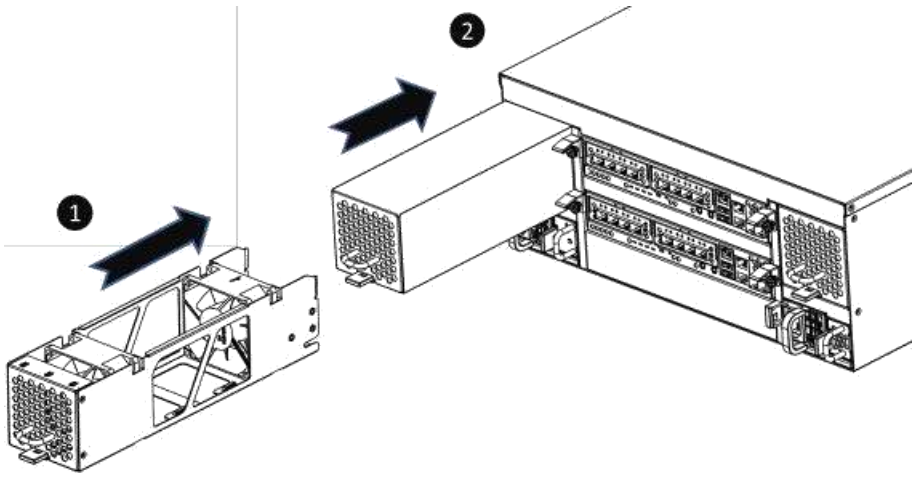

Figure 91: Procedures of Installing the Fan Module

If the fan module is successfully installed, the ESOS UI → **DASHBOARD** → **System Information** will show as figure 92: System Health is **Good** and no warning message on the upper right side of the ESOS UI.

System Information

MD4224S

Item	Information
System Name	eterio SAN
Model Name	MD4224S
Backplane ID	QW316
System Serial Number	MD18112100001700605
Firmware Version	4.0.0
System Controller Status	Dual Controller, Active-Active
System Health	Good

More...

Figure 92: Screenshot of the Controller Module Successfully Installed in ESOS UI

6.4. Removing the Host Card

If you encounter data connection problems from the host's side but you don't know which port or which host card is with problem, please go to ESOS UI → **HOST CONNECTIVITY** → **Overview**, it will show all host cards you have installed. If the host card has fault, all ports will have a fault and will show as Down.

The following figure is the example of one port failed of the 10GbE iSCSI host card.

Controller 1

Location	Name	Status	MAC Address/WWPN
Onboard	LAN1 (10Gb)	10 Gb/s	00:13:78:d3:02:72
Onboard	LAN2 (10Gb)	10 Gb/s	00:13:78:d3:02:73
Slot1	LAN1 (10Gb)	10 Gb/s	00:13:78:d3:02:74
Slot1	LAN2 (10Gb)	10 Gb/s	00:13:78:d3:02:75
Slot1	LAN3 (10Gb)	10 Gb/s	00:13:78:d3:02:76
Slot1	LAN4 (10Gb)	Down	00:13:78:d3:02:77
Slot2	LAN1 (1Gb)	1 Gb/s	00:13:78:d3:02:78
Slot2	LAN2 (1Gb)	1 Gb/s	00:13:78:d3:02:79
Slot2	LAN3 (1Gb)	1 Gb/s	00:13:78:d3:02:7a
Slot2	LAN4 (1Gb)	1 Gb/s	00:13:78:d3:02:7b

Figure 93: Example of a Failed Port on the 10GbE iSCSI Host Card

The following content and images are detailed steps of removing a host card from the system.

- Remove the controller module first. For detailed steps of removing a controller module; please refer to the chapter 6.1, Removing / Installing the Controller Module section.
  - Press the host card release button and disconnect the host card with the connector in the controller cage.
  - Pull the host card out until it is free from the controller cage.
- Install the substitute host card. The detailed steps of installing a host card; please refer to the chapter 3.3, Installing the Optional Host Cards section.
  - Install the dummy host card cage in the empty host card slot and tighten two screws.
  - Repeat the procedures above if there are other host cards need to be removed.
  - To ensure the system cooling, please install all dummy host adapter card cages if host cards are removed.

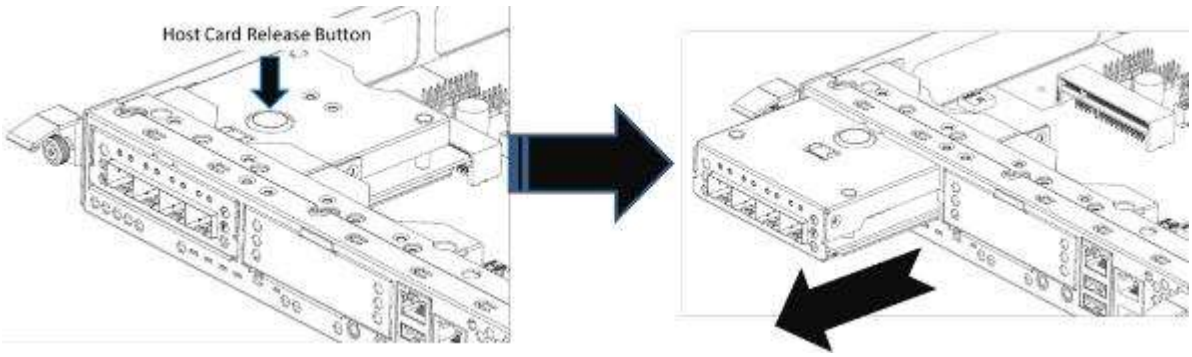

Figure 94: Procedures of Removing the Host Card from the Controller Cage

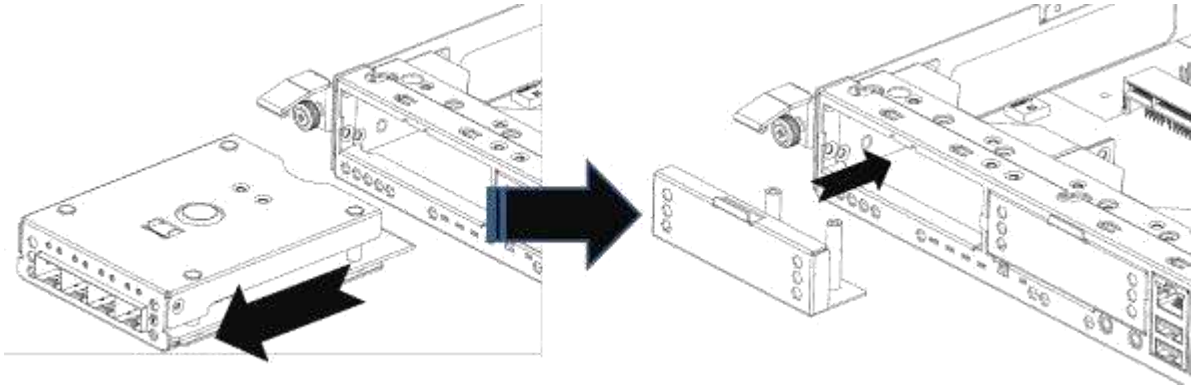

Figure 95: Procedures of Pull out the Host Card and Install Dummy Host Card Cage

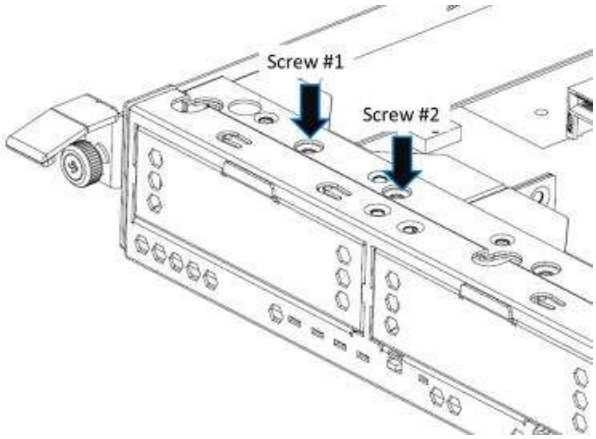

Figure 96: The Finished Installed Dummy Host Card Cage

6.5. Removing the Cache-to-Flash Modules

Navigate to the ESOS UI → **SYSTEM SETTINGS → Power → Cache to Flash** and view the status of the power module or flash module. If it shows **Failed**, that means your power module or flash is not functioning correctly and can't provide real time data protection anymore. You may need to replace the power module or flash to ensure continued protection.

The following figure is the example of a failed flash module.

Power Module

Item	Information
Status	Failed
Type	BBM
Power Level	100%
Temperature	+32.0(C)

Flash Module

Item	Information
Status	Good

Figure 97: Example of a Failed Power Module

Power Module

Item	Information
Status	Good
Type	BBM
Power Level	100%
Temperature	+32.0(C)

Flash Module

Item	Information
Status	Failed

Figure 98: Example of a Failed Flash Module

CAUTION:

The flash module of Cache-to-Flash is hot swappable because it is a PCIe device. Before removing the flash module from the system chassis, you must press the attention button until the flash module status LED finished blinking. Otherwise, the flash module maybe damage.

For more information about Cache-to-Flash modules, please refer to the chapter 3.5, Installing the Optional Cache-to-Flash Modules section and the chapter 5.2.4, Cache-to-Flash Module LEDs and Button section

---

The following content and image are detail steps of removing the flash module.

- Press the attention button of flash module until the flash module status LED is blinking. After blinking for a while, the LED will light off. At this point, you can safely remove the flash module

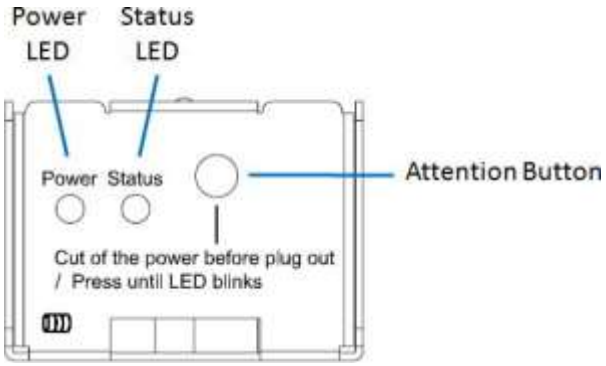

Figure 99: Pressing Attention Button of the Flash Module

- Press the release button of flash module and pull it out until it is free from system chassis.
- Install the substitute flash module. The detailed steps of installing the flash module, please refer to the chapter 3.5, Installing the Optional Cache-to-Flash Modules section.
- Install the dummy cache-to-flash cage and then use a standard screw driver to tighten it.

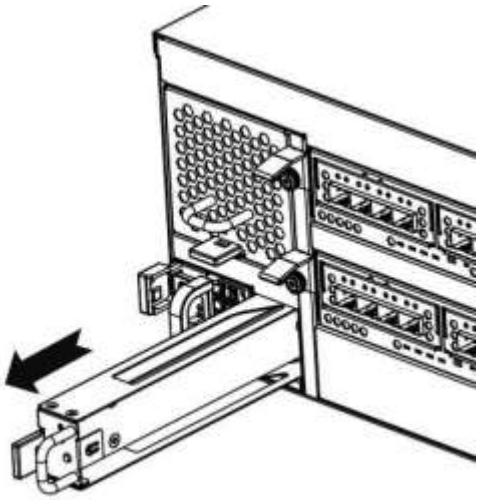

Figure 100: The Procedure of Removing the Flash Module from the System Chassis

The following content and image are detail steps of removing the power module.

- Press the release button of power module and pull it out until it is free from system chassis.
- Install the dummy cache-to-flash cage and then use a standard screw driver to tighten it.
- To ensure proper cooling of the system, please install all dummy cache-to-flash module cages if the flash or power module is removed.

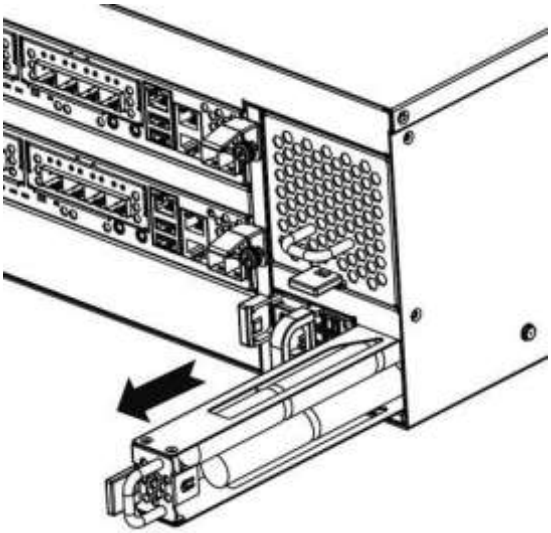

Figure 101: The Procedure of Removing the Power Module from the System Chassis

7. Support and Other Resources

7.1. Getting Technical Support

After installing your device, locate the serial number on the sticker located on the side of the chassis or from the ESOS UI -> **MAINTINANCE** > **System Information** and use it to register your product at https://eterio.eu. We recommend registering your product for firmware updates, document download, and latest news.

To contact eterio Support, please use the following information:

- Via the Web: https://eterio.eu/serwis
- Via Telephone: +48 18 4436509
- Via Email: support@eterio.eu

Information to Collect

- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages or capture screenshots
- Product-specific reports and logs
- Add-on products or components installed
- Third-party products or components installed

Information for Technical Support

The following system information is necessary for technical support. Please refer to following for what and where to get the information of your eterio SAN MD-Series model.

If the technical support requests you to download the Service Package, please navigate in the ESOS GUI → **SYSTEM SETTING** → **Maintenance** → **System Information**, and then click the **Download Service Package** button to download. Then the system will automatically generate a zip file the default download location of your web browser.

System

Item	Information
System Name	eterio SAN
Model Name	MD4224S
System Serial Number	MD181121000017006O5
System Controller Status	Dual Controller, Active-Active
Master Controller	Controller 1

Controller 1

Item	Information
Controller Serial Number	50013780080A0440
CPU	Intel(R) Xeon(R) Processor D-1500 4 Cores
Memory	8 GB
Host Card Slot 1	Empty
Host Card Slot 2	Empty
Firmware Version	1.2.0
SAS IOC Firmware Version	07.00.01.00
SAS Expander Firmware Version	1000

Controller 2

Item	Information
Controller Serial Number	50013780080A0380
CPU	Intel(R) Xeon(R) Processor D-1500 4 Cores
Memory	8 GB
Host Card Slot 1	Empty
Host Card Slot 2	Empty
Firmware Version	1.2.0
SAS IOC Firmware Version	07.00.01.00
SAS Expander Firmware Version	1000

Backplane

Item	Information
Backplane Serial Number	001378D40000
Backplane ID	QW316
MCU Version	1.2.0

Licenses

Item	Information
SSD Cache	Enabled
Auto Tiering	Enabled

Download Service Package

Figure 102: Download Service Package in the ESOS UI

7.2. Online Customer Support

For better customer support, every eterio SAN MD-Series models include the console cable for online support. Please follow the procedures below to setup the online help environment for eterio support team.

The following procedure will help you to setup the serial console via the console cable that is enclosed in the shipping carton. The following image is the appearance of the console cable.

Figure 103: Appearance of a Console Cable

Procedures to Setup the Serial Console

1. Setup the serial cable between the controller and one server/host like in the below image.

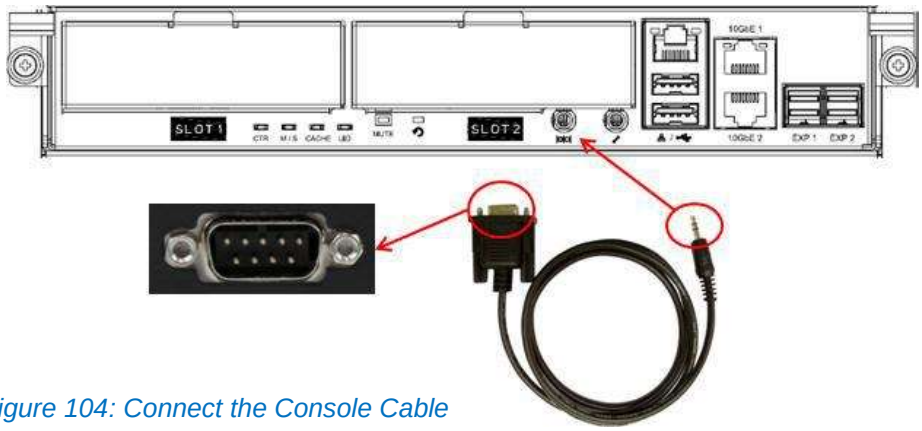

Figure 104: Connect the Console Cable

2. You must use terminal software such as HyperTerminal or Putty to open the console after the connection is made.

INFORMATION:

For more information about terminal software, please refer to

HyperTerminal: http://www.hilgraeve.com/hyperterminal/

PuTTY: http://www.putty.org/

---

3. Here we first demonstrate HyperTerminal. The console settings are on the following. Baud rate: 115200, 8 data bit, no parity, 1 stop bit, and no flow control Terminal type: vt100

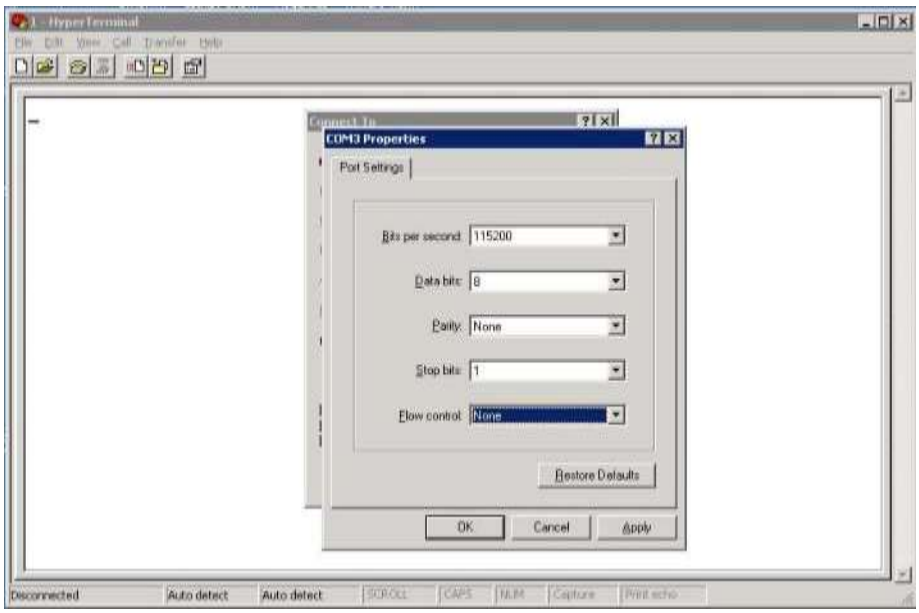

Figure 105: The Procedures of Setup Serial Console by HyperTerminal_ 1

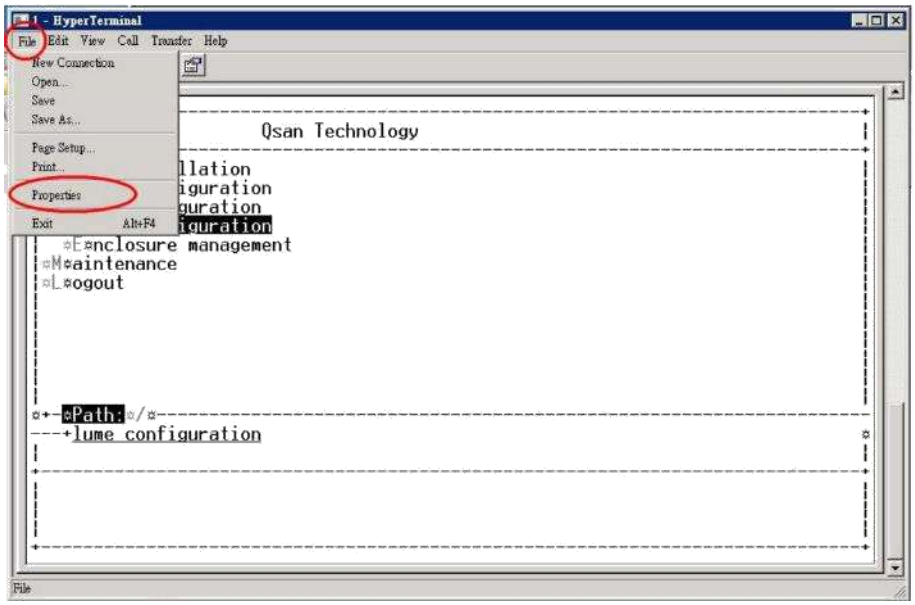

Figure 106: The Procedures of Setup Serial Console by HyperTerminal_ 2

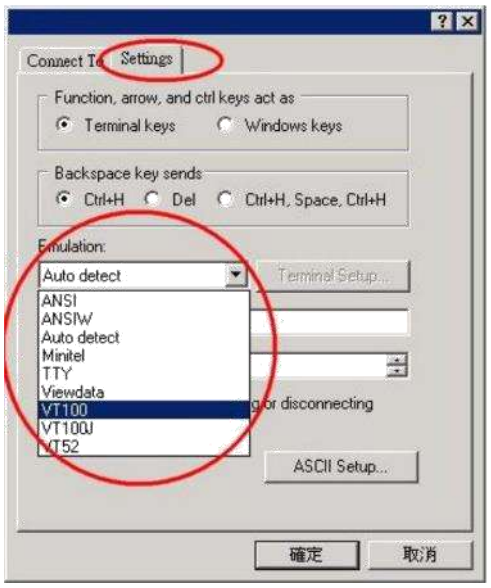

Figure 107: The Procedures of Setup Serial Console by HyperTerminal_ 3

4. If you are using PuTTY instead, please refer to below

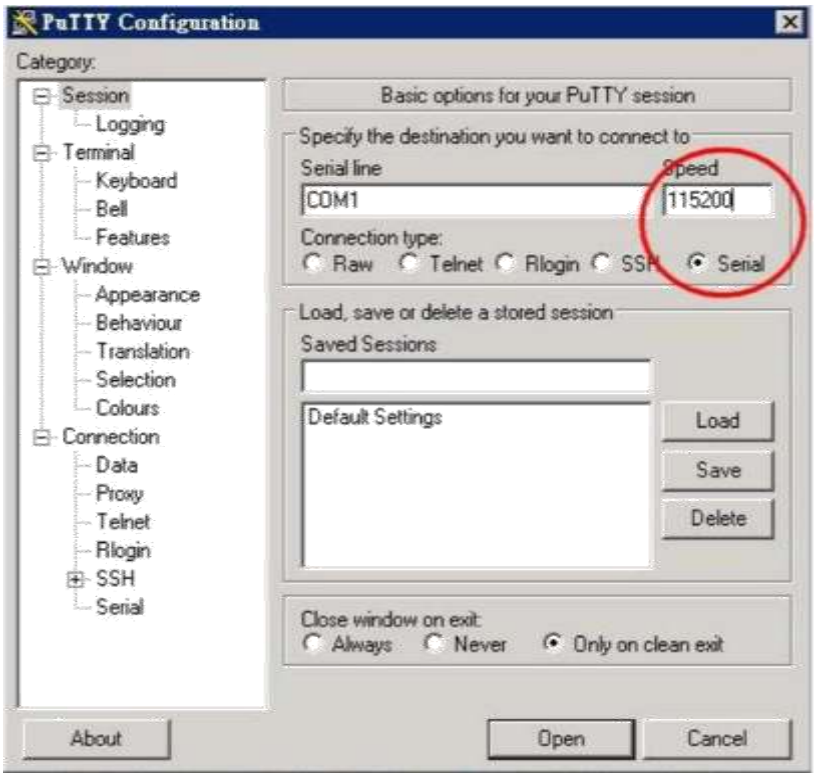

Figure 108: The Procedures of Setup Serial Console by PuTTY_1

Figure 109: The Procedures of Setup Serial Console by PuTTY_2

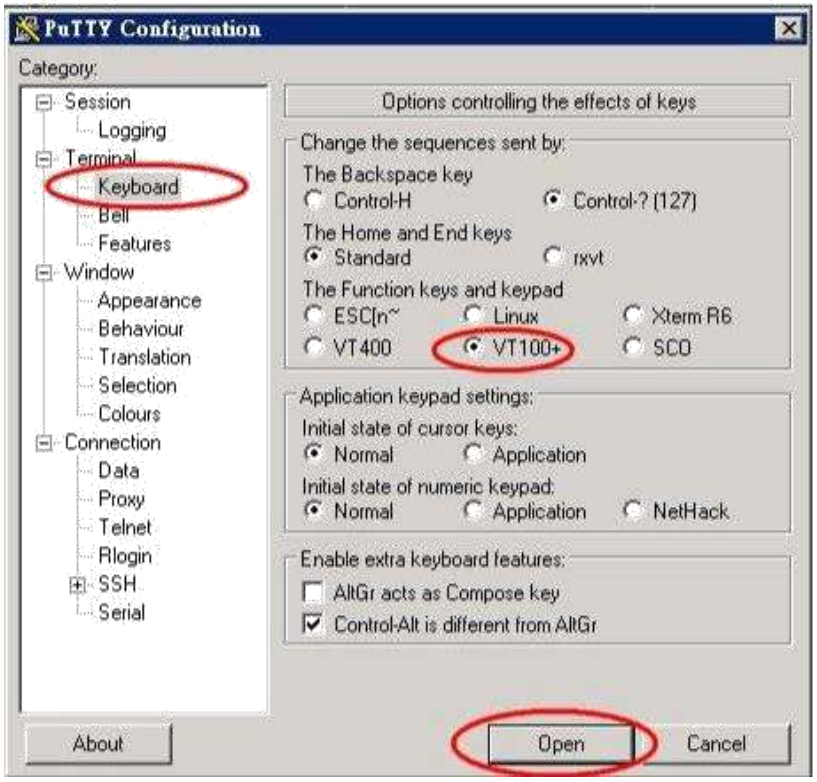

Figure 110: The Procedures of Setup Serial Console by PuTTY_3

5. Users should be able to login the controller system via console cable by following the procedures above.

Setup the Connection for Online Support

Following is the procedure to setup the connection for online support via TeamViewer:

- Please download the TeamViewer from following hyper link: https://www.teamviewer.com/en/download/
- Install TeamViewer.
- Please provide the ID/password showed on the application to eterio support team member to join the online support session.

7.3. Accessing Product Updates

To download product updates, please visit eterio website: https://eterio.eu

7.4. Documentation Feedback

eterio is committed to providing documentation that meets and exceeds your expectations. To help us improve the documentation, email any errors, suggestions, or comments to storage@eterio.eu.

When submitting your feedback, include the document title, part number, revision, and publication date located on the front cover of the document.

8. Regulatory Statements

8.1. FCC Statement

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards and Specifications listed below.

Technical Standard: FCC Part 15 Class A

IC ICES-003

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

8.2. CE Statement

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards and Specifications listed below.

Technical Standard: EMC DIRECTIVE 2014/30/EU

(EN55022 / EN55024)

8.3. UL Statement

Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. Circuit Overloading – Careful consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

CAUTION:

The main purpose of the system left, and right ears are for 19” rack use only. Do NOT use those ears to carry or transport the system.

The ITE is not intended to be installed and used in a home, school or public area accessible to the general population, and the thumbscrews should be tightened with a tool after both initial installation and subsequent access to the panel.

Warning: Always remove all power supply cords before service

This equipment intended for installation in restricted access locations.

- Access should only be allowed by qualified SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is using a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Recommended operation temperature: 0 ~ 40 °C (31.99 ~ 103.99 °F); operation rating (100-127 Vac, 50-60 Hz, 10.0 A; 200-240 Vac, 50-60 Hz, 5.0 A)

CAUTION (English):

Risk of explosion if battery is replaced by incorrect type. Please replace the same or equivalent type battery use and dispose of used batteries according to the instructions.

ATTENTION (French):

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACEE PAR UNE BATTERIE DE TYPE INCORRECT. METTRE AU REBUT LES BATTERIES USAGEES CONFORMEMENT AUX INSTRUCTIONS.

VORSICHT (German):

Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Entsorgung gebrauchter Batterien gemäß der Anleitung.

ADVERTENCIA (Spanish):

Las baterias pueden explotar si no se manipulan de forma apropiada. No desmonte ni tire las baterias al fuego. Siga las normativas locales al desechar las baterias agotadas.

UWAGA (Polish):

Ryzyko wybuchu w przypadku nieprawidłowej wymiany baterii. Zużyte baterie należy utylizować zgodnie z instrukcją.

INFORMATION:

eterio provides limited warranty for eterio-branded hardware products:

System hardware and peripheral product(s): 3 years limited warranty from date of original purchase with possibility to extend up to 5 years.

Battery Backup Module or super capacitor module (applies for cache-to-flash module): 1-year limited warranty from date of original purchase (only if not purchased together with the system)

For more detail warranty policy, please refer to eterio official web site: https://eterio.eu.

Appendix

Glossary and Acronym List

Table 57: Common Terminology

Item	Description
Web GUI	Web Graphic User Interface.
BBM	Battery Backup Module
SCM	Super Capacitor Module
SCSI	Small Computer System Interface
SAS	Serial Attached SCSI
HBA	Host Bus Adapter
SES	SCSI Enclosure Services
NIC	Network Interface Card
FC	Fibre Channel
FC-P2P	Point-to-Point
FC-AL	Arbitrated Loop
FC-SW	Switched Fabric
iSCSI	Internet Small Computer Systems Interface
LACP	Link Aggregation Control Protocol
MPIO	Multipath Input/Output
MC/S	Multiple Connections per Session
MTU	Maximum Transmission Unit
CHAP	Challenge Handshake Authentication Protocol. An optional security mechanism to control access to an iSCSI storage system over the iSCSI data ports.
iSNS	Internet Storage Name Service
SBB	Storage Bridge Bay. The objective of the Storage Bridge Bay Working Group (SBB) is to create a specification that defines mechanical, electrical and low-level enclosure management requirements for an enclosure controller slot that will support a variety of storage controllers from a variety of independent hardware vendors (“IHVs”) and system vendors.
6G-MUX	Bridge board is for SATA II disk to support dual controller mode.

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If User breaches any of its obligations under this EULA, Epsylon may terminate this EULA and take remedies available to Epsylon immediately.

Miscellaneous

- Epsylon reserves the right to modify this EULA.
- Epsylon reserves the right to renew the software or firmware anytime.
- Epsylon may assign its rights and obligations under this EULA to any third party without condition.
- This EULA will be binding upon and will inure to User’s successors and permitted assigns.
- This EULA shall be governed by and constructed according to the laws of Republic of Poland. Any disputes arising from or in connection with this EULA, User agree to submit to the jurisdiction of Poland, Warsaw district court as first instance trial.