

Storage Interoperability Matrix

The Cisco MDS and Storage Interoperability Matrix is the reference guide for validating supported connectivity between Cisco MDS switches and storage arrays.

It provides details on compatible storage controllers, supported FC protocols, and the fabric feature settings required for stable data paths. Following these specifications helps ensure full vendor support and reduces the risk of configuration-related outages in the storage environment.

Use this guide for regression testing and validating interoperability requirements, helping maintain a consistent, high-performance storage infrastructure as well.

This chapter includes the following topics:

- OSM Information, on page 1

OSM Information

More configuration information for host, target, switch, or optical equipment may be available on the OSM web site.

For HBA or CNA driver and firmware version and storage firmware version, see the following OSM websites to obtain their latest support matrix.

- Dell EMC—See the Dell EMC Interoperability support matrices. Refer to this matrix for comprehensive list of the latest supported Dell EMC storage arrays. Support Matrix is located here: http://elabnavigator.dell.com/vault/html/Stand-Alone_Switch.html. Target codes are listed here: https://www.dell.com/support/kbdoc/en-in/000228560/minimum-recommended-and-latest-code-versions-for-networking-products
- Hitachi Vantara—See the Product Interoperability Documentation: https://support.hitachivantara.com/en/answers/interoperability.html
- HPE—See the HPE Single Point of Connectivity Knowledge (SPOCK) website : https://www.hpe.com/storage/spock
- IBM—See http://www-03.ibm.com/systems/support/storage/ssic/interoperability.wss
- NetApp—See the Interoperability Matrix Tool (IMT): https://www.netapp.com/company/interoperability/
- Everpure Storage—See https://support.purestorage.com/FlashArray/Getting_Started_with_FlashArray/Compatibility_Matrix#Network_Adapters.2C_HBAs_and_Switches

The following table provides details on Disk Storage support.

Table 1: Disk Storage Support Matrix

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
IBM	DS8700, DS8800, DS8900	FC, FICON	Yes	—	—	Yes
	DS8900		Yes	—	—	Yes
	XIV Gen 3		Yes	—	—	Yes
	FlashSystem 840/V840	FC, FCoE	Yes	Yes	—	Yes
	SAN Volume Controller (SVC)		Yes	Yes	Yes	Yes
	FlashSystem 900, 9000, 9100	FC, FCoE, NVMe/FC	Yes		—	Yes
	FlashSystem 5000, 7200, 9200		Yes	Yes	—	Yes
	Storwize 5100, 7000		Yes	Yes	—	Yes
	FlashSystem 7300, 9500	FC, NVMe/FC	Yes	Yes	—	Yes
	FlashSystem A9000	FC	Yes		—	Yes

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
Dell EMC	VMAX Family	FC, FCoE, FICON	Yes	—	—	—
	VNX and VNXe Family	FC, FCoE	Yes	Yes	Yes	Yes
	XtremIO	FC	Yes	Yes	Yes	Yes
	DDR670		Yes	—	—	Yes
	VPLEX		Yes	—	—	Yes
	Unity Family		Yes	—	—	Yes
	PowerStore Family	FC, NVMe/FC	Yes	Yes	—	Yes
	PowerMAX	FC, NVMe/FC, FICON	Yes	Yes	—	Yes
	SC Series	FC	Yes	Yes	—	Yes

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
Hitachi Vantara	Virtual Storage Platform (VSP) 5100, 5100H, 5200, 5200H, 5500, 5500H, 5600, 5600H	FC, NVMe/FC, FICON	Yes	—	Yes	Yes
	Virtual Storage Platform (VSP) One Block 24, 26, 28, 26 QLC	FC, NVMe/FC	Yes	—	—	—
	Virtual Storage Platform (VSP) G1000G1500F1500	FC, FCoE, FICON	Yes	—	Yes	Yes
	Virtual Storage Platform (VSP) E990, E790, E790H, E590, E590H, E1090, E1090H, G900, G800, G700, G600, G400, G370, G200, F900, F800, F700, F600, F400, F370, F350	FC	Yes	—	Yes	Yes

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
HPE	P9500	FC, FCoE	Yes	Yes	Yes	Yes
	3PAR StoreServ 7000 8000 9000 10000 20000		Yes	Yes	Yes	Yes
	Primera 600 Storage	FC	Yes	—	—	Yes
	Alletra 6000, 9000		Yes	—	—	—
	MSA 1050 1060 2040 2050 2060		Yes	Yes	—	Yes
	XP7, XP8	FC, FICON	Yes	—	—	Yes
	Nimble Storage CS Series	FC	Yes	Yes	—	Yes
	Nimble Storage AFA Series		Yes	Yes	—	Yes
NetApp	AFF A-Series/C-Series	FC, FCoE, NVMe/FC	Yes	Yes	Yes	Yes
	FAS2000	FC, FCoE	Yes	Yes	Yes	Yes
	FAS3000		Yes	Yes	Yes	Yes
	FAS6000		Yes	Yes	Yes	Yes
	FAS8000	FC, FCoE, NVMe/FC	Yes	Yes	Yes	Yes
	FAS9000		Yes	Yes	Yes	Yes
	EF280, E2800	FC	Yes	—	—	Yes
	EF570, EF600, E5700	FC, NVMe/FC	Yes	—	—	Yes

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
Everpure Storage	FA-400 Series	FC	Yes	Yes	—	Yes
	FlashArray//M Series		Yes	Yes	—	Yes
	FlashArray//X Series	FC, NVMe/FC	Yes	Yes	—	—
	FlashArray//XL Series		Yes	Yes	—	—
	FlashArray//C Series		Yes	Yes	—	—
	FlashArray//E Series		Yes	Yes	—	—

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
Huawei	OceanStor F/V3 series 2100V3/2200, V3/2600, V3/2600F, V3/2800, V3/5300, V3/5500, V3/5500F, V3/5600, V3/5600F, V3/5800, V3/5800F, V3/6800, V3/6800F, V3/6900, V3/18500, V3/18500F, V3/18800, V3/18800F V3	FC, FCoE, NVMe/FC	Yes	Yes	—	Yes
	OceanStor DoradoV3 series Dorado 3000 V3/5000 V3/6000 V3/18000 V3		Yes	Yes	—	Yes
			Yes	Yes	—	Yes

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
	OceanStor K/F/V5 series 2600 V5/2800 V5/5100K V5/5200K V5/5300 V5/5300F V5/5300K V5/5500K V5/5500 V5/5500F V5/5600 V5/5600F V5/ 5800 V5/5800F V5/6800 V5/6800F V5/18500 V5/18500F V5/18800 V5/18800F V5 2810 V5/5110 V5/5110F V5/5110 V5 Enhanced/5110F V5 Enhanced/5210 V5/5210F V5/5210 V5 Enhanced/5210F V5 Enhanced/5310 V5/5310F V5/5510 V5/5510F V5/5610 V5/5610F V5/ 5810 V5/5810F V5/6810 V5/6810F V5/18510 V5/18510F V5/18810 V5/18810F					

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
	V5					
	OceanStor DoradoV6 series Dorado 3000 V6/5000 V6/6000 V6/8000 V6/18000 V6 /5300 V6/5500 V6/5600 V6/5800 V6/6800 V6/18500 V6/18800 V6/18800K V6		Yes	Yes	—	Yes
	OceanStor A series OceanStor A310/A800		—	Yes	—	Yes
	OceanStor Dorado V7 series Dorado 5000 6000 8000 18000 5000 6000 8000 18000		Yes	Yes	—	Yes

The following table provides details on Cisco UCS-B Series Fabric Interconnect support.

Table 2: Cisco UCS-B and X Series Fabric Interconnect Support Matrix

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 5xxx/2xxx	Cisco Nexus 7xxx	HBA/CNA/Operating Systems and UCS-M Version
Cisco	Cisco UCS 6200 Series Fabric Interconnects,	FC, FCoE, NVMe/FC	MDS NX-OS 7.x and above from Table 1 for 7.x	NX-OS 6.0(2)N1(1) and above from Table 1 for 6.x NX-OS 7.0(1)N1(1) and above from Table 1 for 7.x	NX-OS 7.x and above from Table 1 for 7.x	All HBA/CNA/Operating Systems and UCS releases listed i products.http://www.cisco.com/c/en/us/support/servers-unifi
	Cisco UCS 6300 Series Fabric Interconnects,					
	Cisco UCS 6400 Series Fabric Interconnects					
	Cisco UCS 6536 Fabric Interconnect					
	Cisco UCS 9108 100G Intelligent Fabric Module					

The following table provides details on NVMe over FC and FCoE support matrix.

Note Refer to Storage Vendors Matrix support documents for end to end NVMe/FC support details.

Table 3: NVMe over FC and FCoE Support Matrix

Cisco MDS and Nexus Switches	Vendor	HBA Model	Operating System	Cisco MDS 9xxx	Cisco Nexus 5xxx	Cisco Nexus 9xxx
Cisco MDS 97xx Cisco MDS 9396S Cisco MDS 9396T[1] Cisco MDS 9220i[2], Cisco MDS 9250i Cisco MDS 9132T Cisco MDS 9148S Cisco MDS 9148T[3] Cisco MDS 9148V[4] Cisco MDS 9124V[5] Cisco MDS 9396v[6] Cisco Nexus 56xx Cisco Nexus 93180YC-FX Cisco Nexus 93360YC-FX2	Emulex	LPe 32000, LPe 35000 LPe 36000	Windows Server 2016 Windows Server 2019 SLES 12 SP4 SLES 15 RHEL 7.6 and above RHEL 8.0 and above OL 8.2 (UEK) ESXi 7.0	MDS NX-OS 8.2(1) and above from Table 1 for 8.x	NX-OS 7.3(3)N1(1) and above from Table 1 for 7.x	NX-OS 7.0(3)I7(3) and above from Table 1 for 7.x
	QLogic	QLE 2700, QLE 2600	SLES 12 SP4 SLES 15 RHEL 7.6 RHEL 8.0	MDS NX-OS 8.2(1) and above from Table 1 for 8.x	NX-OS 7.3(3)N1(1) and above from Table 1 for 7.x	NX-OS 7.0(3)I7(3) and above from Table 1 for 7.x
	Cisco	VIC 14xx	RHEL 8.1 SLES 12 SP3 SLES 15 SP1 and above ESX 6.x and 7.x	MDS NX-OS 8.2(1) and above from Table 1 for 8.x	NX-OS 7.3(3)N1(1) and above from Table 1 for 7.x	NX-OS 7.0(3)I7(3) and above from Table 1 for 7.x

1 Cisco MDS 9396T switch requires Cisco MDS NX-OS Release 8.3(1) and later.
2 Cisco MDS 9220i switch requires Cisco MDS NX-OS Release 8.5(1) and later.
3 Cisco MDS 9148T switch requires Cisco MDS NX-OS Release 8.3(1) and later.
4 Cisco MDS 9148v switches requires Cisco MDS NX-OS Release 9.3(1) and later.
5 Cisco MDS 9124v switches requires Cisco MDS NX-OS Release 9.3(1) and later.
6 Cisco MDS 9124v switches requires Cisco MDS NX-OS Release 9.4(1) and later.

The following table provides details on Storage array support based on vendor self-certification.

Table 4: Storage Array Support based on Vendor Self-certification

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx	HBA/CNA	Operating System
Fujitsu	FUJITSU Storage ETERNUS DX60 Sx, DX100 Sx, DX200 Sx, DX500 Sx, DX600 Sx, DX900 Sx, DX200F, AF150 Sx, AF250, AF250 Sx, AF650, AF650 Sx	FC	Yes	—	Yes	Table 2	Table 2
	FUJITSU Storage ETERNUS DX8700 S3, DX8900 S3, DX8900 S4		Yes	—	—		
	FUJITSU Storage ETERNUS DX60 S2, DX80 S2, DX90 S2		Yes	—	Yes		
	FUJITSU Storage ETERNUS DX400 S2 Series, DX8000 S2 Series		Yes	—	Yes		
	FUJITSU Storage ETERNUS DX60, DX80, DX90		Yes	—	Yes		
			Yes	—	Yes		

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx	HBA/CNA	Operating System
	FUJITSU Storage ETERNUS DX400 Series						
	FUJITSU Storage ETERNUS DX8000 Series		Yes	—	Yes		
	FUJITSU Storage ETERNUS 2000, 4000, 8000		Yes	—	Yes		
	FUJITSU Storage ETERNUS DX100 S3, DX200 S3, DX500 S3, DX600 S3	FCOE	—	—	Yes		
	FUJITSU Storage ETERNUS DX80 S2, DX90 S2		—	—	Yes		
	FUJITSU Storage ETERNUS DX400 S2 Series		—	—	Yes		
	FUJITSU Storage ETERNUS DX8000 S2 Series		—	—	Yes		
	FUJITSU Storage ETERNUS AX Series	FC, FCoE, NVMe/FC	Yes	Yes	Yes		
		FC, FCoE	Yes	Yes	Yes		

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx	HBA/CNA	Operating System
	FUJITSU Storage ETERNUS HX2000 Series						
	FUJITSU Storage ETERNUS HX6000 Series	FC, FCoE, NVMe/FC	Yes	Yes	Yes		
	FUJITSU Storage ETERNUS HB1000 Series, HB2000 Series	FC	Yes	—	Yes		
	FUJITSU Storage ETERNUS AB Series, HB5000 Series	FC, NVMe/FC	Yes	—	Yes		
Tegile Systems	IntelliFlash Storage Array Family[7]	FC	Cisco MDS NX-OS Release 6.2(9) and above	—	NX-OS 6.0(2)x(x) and above from Table 1 for 6.x NX-OS 7.0(5)x(x) and above from Table 1 for 7.x	Qlogic 2500 Series Emulex 12000 CISCO VICM81KR CISCO VIC122x CISCO VIC128x CISCO VIC13xx	Windows2012 R2,SP1 RHEL 6.5 ESXi 5.5,5.1 ESX 5.0

Vendor	Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx	HBA/CNA	Operating System
Infinidat	InfiniBox F-Series	FC	Cisco MDS NX-OS Release 6.2(9) and above	—	Yes	Qlogic 2600 Series Qlogic 2700 Series LPE16000 Series LPE35000 Series	Windows 2016 Windows 2019 RHEL 7.9 RHEL 8.2 ESXi 6.7U3
Kaminario	K2 All Flash Array	FC	Cisco MDS NX-OS Release 6.2(9) and above	—	NX-OS 7.3(0)N1(1) and above from Table 1 for 7.x	Qlogic 2600 Series Qlogic 2500 Series	Windows2012 R2, SP1 Solaris 11 RHEL 7.2 ESX 6.0
Vexata	VX-100F	FC	Cisco MDS NX-OS Release 8.2(1) and later from Table 1 for 8.x	—	—	Qlogic 2500 Series Qlogic 2600 Series Qlogic 2700 Series Emulex 12000 Emulex 16000 Emulex 32000 CISCO VIC122x CISCO VIC 128x	Windows2012 R2,SP1 RHEL 7 SuSE 12 ESXi 5.5, ESX 6.5

[7] 8G FC only.

The following table provides details on Tape Storage support.

Table 5: Tape Storage Support Matrix

Vendor	Library/Drive Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
Oracle/STK	SL3000(Library)	FC	Yes	—	Yes
	SL500 (Library)		Yes	—	Yes
	SL150(Library)		Yes	—	Yes
	L700(Library)		Yes	—	Yes
	L180(Library)		Yes	—	Yes
	VTLplus		Yes	—	Yes
	STK-9840-C		Yes	—	Yes
	STK-9840-D		Yes	—	Yes
	STK-9940-B		Yes	—	Yes
	STK-T10K-A		Yes	—	Yes
	STK-T10K-B		Yes	—	Yes
	STK-T10K-C		Yes	—	Yes
	STK-T 10K-D	FC/FCoE	Yes	Yes	Yes
	HP LTO5	FC	Yes	—	Yes
	HP LTO6		Yes	—	Yes
	IBM LTO5		Yes	—	Yes
	IBM LTO6		Yes	—	Yes
	IBM LTO7		Yes	—	Yes
	HP HH LTO5		Yes	—	Yes
	HP HH LTO6		Yes	—	Yes
	IBM HH LTO6		Yes	—	Yes
	IBM HH LTO7		Yes	—	Yes
HPE	LTO3	FC	Yes	—	Yes
	LTO4		Yes	—	Yes
	LTO5		Yes	—	Yes
	LTO5HH		Yes	—	Yes
	LTO6HH		Yes	—	Yes
	LTO6		Yes	—	Yes
	LTO7		Yes	—	Yes
	LTO8		Yes	—	—
	LTO9		Yes	—	—

Vendor	Library/Drive Model	Protocol	Cisco MDS 9xxx	Cisco Nexus 7xxx	Cisco Nexus 5xxx
IBM	3584 (Library)	FC	Yes	—	Yes
	3592-EO5		Yes	—	—
	3952 – E08		Yes	—	—
	3952 – E06		Yes	—	—
	LTO3		Yes	—	Yes
	LTO4		Yes	—	Yes
	LTO5		Yes	—	Yes
	LTO6		Yes	—	Yes
	LTO7		Yes	—	Yes
	LTO8		Yes	—	—
	LTO9		Yes	—	—
	LTO10		Yes	—	—
	TS4300 (Library)		Yes	—	—
Quantum	I500 (Library)	FC	Yes	—	Yes
	HP LTO5		Yes	—	Yes
	HP LTO6		Yes	—	Yes
	IBM LTO5		Yes	—	Yes
	IBM LTO6		Yes	—	Yes
Spectralogic	T50e (Library)	FC	Yes	—	—
	IBM HHLTO6		Yes	—	—

The following table provides details on recommended iSCSI initiators.

Table 6: Recommended iSCSI initiators

iSCSI Initiators
Open iSCSI 2.0-873.29.el6
Microsoft iSCSI Initiator 6.2.9200.16813, 6.1.7601.18386 and 6.3.9600.17090