



CHAPTER 4

SAN Interconnect Device Matrix

This chapter lists devices tested by Cisco Solution-Interoperability Engineering group (iLAB) used for connecting SAN islands over metropolitan networks (MAN) and wide area networks (WAN).

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Customer Order Number:

Cisco Devices

Table 4-1 Cisco System Ethernet/ MAN/WAN Device Status

Vendor	MAN/WAN Device	Protocol	Qualified
Cisco Systems	Storage Router 5420, 5428, 5428-2	FC, iSCSI	Yes
Cisco Systems	ONS 1553/15540/15252/15454	FC	
Cisco Systems	Cisco 1000Base cWDM GBICs + Add/Drop Modules	FC	
Cisco Systems	IPS-4, IPS-8, MPS-14/2, MDS9216i, MDS9222i, MPS 18/4	iSCSI, FCIP	
Cisco Systems	Cisco 7000 Router w/Port Adapter Module (PAM)	FC	

Switch Interoperability Matrix

The switch Interoperability test was performed per the Fibre Channel Methodologies for Interconnect (FC-MI) Technical Report version 1.92 which describes common methodologies for facilitating interoperability in a heterogeneous switch SAN environment.

The MDS family is **SANmark** 3001 and 3002 qualified.

IBM Supports MDS InterOp Mode-1 (FC-MI standard), Mode-2 (Brocade PID=0), Mode-3 (Brocade PID=1), and Mode-4 (McDATA native). Please refer to the following IBM document for more information:

<ftp://service.boulder.ibm.com/storage/san/cisco/mds9216.pdf>

EMC Supports all MDS InterOp Modes with Brocade and McDATA outlined in the Switched Fabric Topology Parameters section EMC Support Matrix:

<http://www.emc.com/collateral/elab/emc-support-matrices.pdf>

HDS Supports MDS InterOp Mode-1 with Brocade and McDATA

HP Supports MDS InterOp Mode-1 with Brocade and McDATA, refer to the below link for more information:

<http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00758719/c00758719.pdf>

Table 4-2 Switch Interoperability Matrix

Switch Vendor	Switch Models	Firmware Version	Cisco SAN-OS Version	Interop Mode	
Brocade	2400, 2800	2.6.0j	1.2(1b)	1 ¹ , 2 ²	
		2.6.1a	1.2(1a)		
		2.6.1c	1.2(1b)		
		2.6.2	1.3(4a)		
		2.6.2b	2.0(1b)		
			2.1(1a)	1, 2, 3 ³	
	200E	5.1.0d	3.1.2b, 4.1(1a), 4.1(1b)	1, 3	
	3800	3800	3.02k	1.2(1a)	1, 2
			3.1.1	1.2(1a)	
			3.1.1c	1.2(1b)	
			3.1.2	1.3(4a)	
		3.1.3a	2.0(1b) 2.1(1a) 3.0(1) 3.0(2a) 3.0(2) 3.0(3) 3.1(2) 3.1(3)	1, 2, 3	
		3.2.1c	3.2(3a)		
			3.3(1a), 3.3(1c)		
	3900	3900	4.0.2d	1.2(1a)	1
			4.1.1		
			4.1.2b	1.2(1b)	
		3900	4.2.0b	1.3(4a)	1, 3
			4.2.2a	2.0(1b) 2.1(1a) 3.0(2a) 3.0(3)	
4.4.0f				3.0(1) 3.0(2) 3.0(2a) 3.0(3)	
				3.1(2) 3.1(3) 3.2(1a)	

Table 4-2 Switch Interoperability Matrix (continued)

Switch Vendor	Switch Models	Firmware Version	Cisco SAN-OS Version	Interop Mode
Brocade (continued)	3900	5.0.3	3.0(1)	1, 3
		5.0.3b	3.0(2)	
		5.0(3)	3.0(2a)	
			3.0(3)	
		5.1.0d	3.1(2) 3.1.3 3.2(1a)	1, 2, 3
		5.3.0	3.2(1a)	1
		5.3.0b	3.2(3a) 3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)	1, 3
	48000, 3850, 4100 ⁴	5.0.3	3.0(1)	1, 3
		5.0.3b	3.0(2)	
		5.0(3)	3.0(2a) 3.0(3)	
		5.3.0	3.2(1a)	1
		5.3.0b	3.2(3a) 3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)	1, 3
4012, 4024	5.3.0b	3.3(1a), 3.3(1c)	1, 3	
12000	5.0.5c	3.2(3a) 3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)	1, 3	
24000	5.1.0d	3.1(2), 3.2(1a)	1, 2, 3	
	5.3.0b	3.2(3a) 3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)	1, 3	
QLogic	SANbox2	1.4.0.43-0	1.3(4a)	Native
	SAN box 5200	6.0	2.1(2b)	
	SANbox64	1.5.1.04	1.3(4a)	
		2.01	1.3(4a)	
SANbox 5600	5.0.1.10.00	3.0(2a) 3.0(3)		
Cisco	NX-5020	4.0(0)N1(1)	3.2(3a)/FM 3.4(1)	Native

Table 4-2 Switch Interoperability Matrix (continued)

Switch Vendor	Switch Models	Firmware Version	Cisco SAN-OS Version	Interop Mode
McDATA	6064, 6140, 4500, 3232	4.01	1.2(1a)	1
		5.0.1	1.2(1b)	
		5.0.2	1.2(1a)	
			1.3(4a)	
		6.0	1.3(4a)	
		6.01		
		6.02	2.0(1b)	
		7.0	2.1(1a)	
	7.1.0.5			
	4500, 6140, 6064	7.1.0.5	3.0(1) 3.0(2a)	1, 4 ⁵
		8.1.014	3.0(1) 3.0(2a) 3.1(2)	
		9.00	3.0(3) 3.1(2) 3.1(3)	
		9.01	3.0(3), 3.2(1a)	
		9.06	3.2(1a)	
		9.06.00 22	3.2(3a)	
			4.1(1a), 4.1(1b)	
		9.07.01.4	3.3(1a), 3.3(1c)	
			4.1(1a), 4.1(1b)	
		3032	9.07.01.4	
	i10k	9.2.0.8	3.2(2c), 3.2(3), 3.2(3a)	
		9.7.1.5	3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)	
6064/6140 with 10G w/XPM card	9.06.00 22	3.2(3a)		
	9.07.01.4	3.3(1a), 3.3(1c), 4.1(1a), 4.1(1b)		
Inrange	FC/9000	04.00.04.06	1.3(4a)	No Interop Setting required

1. Cisco MDS interop mode 1 supports connectivity of Cisco MDS 9000 Family switches to other Fibre Channel vendor switches per the FC-MI standard document.
2. Cisco MDS interop mode 2 supports nondisruptive connectivity to Brocade Silksworm 2800 and 3800 switches family with Core-PID set to 0.
3. Cisco MDS interop mode 3 supports nondisruptive connectivity of all Brocade Silksworm switches including 3900 and 12000 switch family with Core-PID set to 1. We recommend that you use Cisco Fabric Manager for all MDS interop mode types with Brocade for zone administration.

4. Cisco SAN-OS 3.2(1a) is supported on Brocade switches running 5.3.0 only.
5. MDS interop mode 4 supports native connectivity to McDATA switches, and is supported for migration purposes. McDATA software security features such as Fabric Binding are not supported in this mode and must be disabled.
The McDATA/IBM Bladecenter embedded switch in McDATA mode is not supported in interop mode 4. Only the standard mode (mode 1) is supported. For HP Blade servers with embedded Brocade and McDATA switch Interoperability matrix, visit: <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00758719/c00758719.pdf> and http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00758729/c00758729.pdf?jumpid=reg_R1002_USEN. For procedures, guidelines, and techniques for implementing switch-to-switch interoperability refer to the *Cisco MDS 9000 Family Switch to Switch Interoperability Configuration Guide* at the following URL: http://www.cisco.com/en/US/products/hw/ps4159/ps4358/products_device_support_tables_list.html

NPV

The table below lists the OSM Qualified SAN-OS versions that support NPV.

Table 4-3 SAN-OS Versions Supporting NPV

Connecting to >>>	Cisco Core		Brocade Core	McData Core
	MDS 9200	MDS 9500		
IBM Blade Switch	SAN-OS 3.2(2c), SAN-OS 3.3(1c)	SAN-OS 3.2(2c), SAN-OS 3.3(1c)	SAN-OS 3.2(2c), SAN-OS 3.3(1c)	SAN-OS 3.2(2c), SAN-OS 3.3(1c)
HP Blade Switch	SAN-OS 3.2(1a) SAN-OS 3.3(1c)	SAN-OS 3.2(1a), SAN-OS 3.3(1c)	SAN-OS 3.2(1a), SAN-OS 3.3(1c)	SAN-OS 3.2(1a), SAN-OS 3.3(1c)

IBM eServer Bladecenter Interoperability Matrix

Table 4-4 MDS Interoperability with IBM eServer Bladecenter

	Blade SW Module Firmware	2062-D07, T07,D04, T04 (MDS 9500) Firmware	2054-E11 (MDS9513) Firmware	2062-D01/2061-020/ 040 (MDS9200/9100) Firmware	2053-424 (MDS9124) Firmware
Blade Center					
2-port FC Switch Module (No InterOp Mode Required)	2.0.1.09	1.3(2a) to 3.0(2a)	3.0(1) & 3.0(2a)	1.3(2a) to 3.0(2a)	NA
QLogic 6-port 2G Enterprise FC Switch Module (No InterOp Mode Required)	4.1.0.22 5.5.1.10	2.1(1a) to 3.0(2a) 3.0(2a)	3.0(1) & 3.0(2a) 3.0(2a)	2.1(1a) to 3.0(2a) 3.0(2a)	NA
QLogic 6-port 4G Enterprise FC Switch Module (No InterOp Mode Required)	5.5.1.10	3.0(2a) & higher	3.0(2a) & higher	3.0(2a) & higher	3.1(2)
McData 6-port 2/4G FC Switch Module (Standard Mode)	5.5.1.10	3.0(2a) & higher (default Mode)	3.0(1) & higher (default Mode)	3.0(2a) & higher (default Mode)	3.1(2), 3.3(1c) (default Mode)
Optical Pass-thru Module	NA	1.3(2a) to 3.0(2a)	3.0(1) & 3.0(2a)	1.3(2a) to 3.0(2a)	NA

Table 4-4 MDS Interoperability with IBM eServer BladeCenter (continued)

	Blade SW Module Firmware	2062-D07, T07,D04, T04 (MDS 9500) Firmware	2054-E11 (MDS9513) Firmware	2062-D01/2061-020/ 040 (MDS9200/9100) Firmware	2053-424 (MDS9124) Firmware
Blade Center					
Brocade Enterprise SAN Switch Module (InterOp Mode)	4.2.1a	1.3(4a), 2.0(2b), 2.1(1a)	3.0(2a) (InterOp Mode 1)	1.3(4a), 2.0(2b), 2.1(1a)	NA
Brocade Entry SAN Switch Module (InterOp Mode)	5.0.3a	3.0(1), 3.0(2), 3.0(2a) (InterOp Mode 1)		3.0(1), 3.0(2), 3.0(2a) (InterOp Mode 1)	
Brocade Enterprise SAN Switch Module (Native Mode)	4.2.1a	1.3(4a), 2.0(2b), 2.1(1a)	3.0(2a) (InterOp Mode 3)	1.3(4a), 2.0(2b), 2.1(1a)	NA
Brocade Entry SAN Switch Module (Native Mode)	5.0.3a	3.0(1), 3.0(2), 3.0(2a) (InterOp Mode 3)		3.0(1), 3.0(2), 3.0(2a) (InterOp Mode 3)	
Brocade 4G 6-port SAN Switch Module (InterOp Mode)	5.0.3a	3.0(1), 3.0(2), 3.0(2a) & higher (InterOp Mode 1)	3.0(2a) & higher (InterOp Mode 1)	3.0(1), 3.0(2), 3.0(2a) & higher (InterOp Mode 1)	3.1(2) (InterOp Mode 1)
Brocade 4G 6-port SAN Switch Module (Native Mode)	5.0.3a	3.0(1), 3.0(2), 3.0(2a) & higher (InterOp Mode 3)	3.0(2a) & higher (InterOp Mode 3)	3.0(1), 3.0(2), 3.0(2a) & higher (InterOp Mode 3)	3.1(2) (InterOp Mode 3)

**Note**

Refer to the following URL for full IBM SAN Volume Controller compatibility information with Cisco MDS 9000 Family switches: <http://www-1.ibm.com/support/docview.wss?rs=591&uid=ssg1S1002472>

NPV Interoperability Matrix

Table 4-5 Cisco N-Port Virtualization (NPV) InterOp Matrix

MDS 9124e Blade Switch (edge)	Switch Vendor Model	Switch Vendor Code Version	Cisco SAN-OS	Cisco MDS Switch Mode	Switch Vendor Mode
Switch Vendor					
Brocade	Silkworm 3900,24000, 48000	5.3.0	3.2(1a), 3.3(1c), 4.1(1a), 4.1(1b)	Native (NPV enabled)	Native (NPIV enabled)
	M6140	9.0.6	3.2(1a), 3.3(1c), 4.1(1a), 4.1(1b)		

